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All India Coordinated Wheat and Barley Improvement Project

**PROGRESS REPORT
2013-2014**

Vol. VI

BARLEY NETWORK

**A.S. Kharub
Dinesh Kumar
Jogendra Singh
Vishnu Kumar
R. Selva Kumar
Anil Khippal
Rekha Malik
Ajay Verma
Subhash Katare
Indu Sharma**



DIRECTORATE OF WHEAT RESEARCH
(Indian Council of Agricultural Research)
P.O. BOX - 158, AGRASAIN MARG, KARNAL -132 001



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Ajit Singh
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(A.S. Kharub)

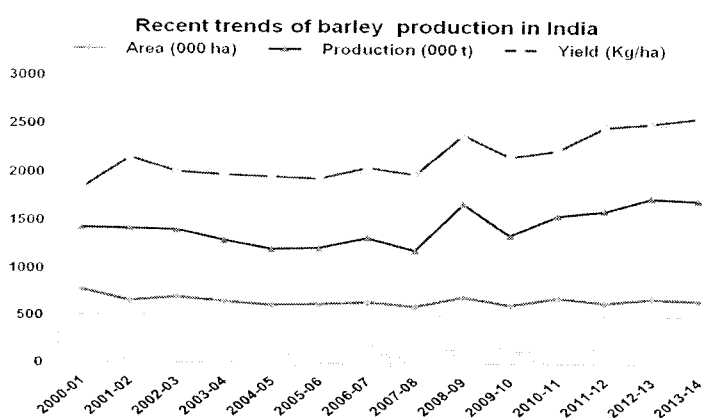
CONTENTS

| | | |
|----|--|---------------|
| 1. | Research highlights of Barley Network | 1.1 – 1.13 |
| 2. | Crop Improvement | 2.1 - 2.111 |
| | (i) Break up of the 2012-13 barley network yield trials as proposed, conducted, data received, and data not reported | 2.1 |
| | (ii) Performance of the centres during 2012-13 | 2.2 – 2.5 |
| | (iii) Parentage of barley varieties under Network testing | 2.6 - 2.9 |
| | (iv) Data on yield, disease, agronomic and grain characters of varieties under test in different network Yield trials / nurseries. | |
| | Rainfed Trials-Plains | 2.10 - 2.12 |
| | Rainfed Trials-NH Zone | 2.13 - 2.16 |
| | Irrigated Trials (Feed barley) | 2.17 - 2.32 |
| | Irrigated Trials (Malt barley) | 2.33 - 2.45 |
| | Soil Salinity Tolerance Trials | 2.46 - 2.48 |
| | Dual Purpose Barley Trials | 2.49 - 2.64 |
| | Trials rejected | 2.65 - 2.69 |
| | International Nurseries Evaluation | 2.70 - 2.96 |
| | National Nurseries Evaluation | 2.97 - 2.101 |
| | (v) Breeder Seed Production | 2.102- 2.108 |
| | (vi) DNA Fingerprinting (AVT-II Entries) | 2.109 - 2.111 |
| 3. | Crop Protection | 3.1 - 3.54 |
| 4. | Resource Management | 4.1 - 4.51 |
| 5. | Quality Evaluation | 5.1 - 5.83 |
| 6. | Zonal Monitoring Reports | 6.1 - 6.15 |

RESEARCH HIGHLIGHTS OF BARLEY NETWORK

CROP SITUATION

The crop season 2013-14 was good for barley production as the productivity enhanced (2.38%) over the previous year. The 3rd advance estimates for Rabi 2013-14 have indicated nearly 1730 thousand tons of barley production in 671.0 thousand ha area with a productivity of 25.8 q/ha. The main reason for better production during the current year was the availability of new high yielding genotypes, initial good winter season, increase in grain filling period of the crop due to increase in winter period to the tune of nearly a week in different zones. This year malt quality parameters were better in drier areas like Durgapura as compared to earlier years. However, beta glucan contents were slightly higher in general as compared to previous year. During the season damage due to lodging was observed due to rain at maturity stage in some parts of the region and it was more in timely sown feed barley as compared to malt barley and late sown crop of feed and malt barley. There was also aphid infestation in congenial atmosphere where not much winter rains occurred and caused some damage in certain areas. There has been a concern raised at various platforms for area decline under barley in India, however, in last more than 12 years, the area has stabilized and there has been gain in productivity resulting in higher production.



State wise situation shows that slight increase in area in Punjab and slight decrease in Haryana was noticed and total production almost at par with the previous year. However there has been an increase in productivity in major states during these years.

Estimates of barley area, production and productivity in major barley growing states

| State | Area (000 ha) | | | Production (000 T) | | | Yield (q/ ha) | | |
|------------|---------------|---------|----------|--------------------|---------|----------|---------------|---------|----------|
| | 2011-12 | 2012-13 | 2013-14* | 2011-12 | 2012-13 | 2013-14* | 2011-12 | 2012-13 | 2013-14* |
| Bihar | 10.8 | 10.4 | 10.5 | 16.7 | 15.2 | 15.2 | 15.4 | 14.6 | 14.4 |
| Haryana | 42.0 | 48.0 | 36.0 | 153.0 | 167.0 | 140.0 | 36.4 | 34.8 | 38.9 |
| H.P. | 22.1 | 22.3 | 22.5 | 30.4 | 36.3 | 29.6 | 13.8 | 16.2 | 13.2 |
| J&K | 7.3 | 11.9 | 11.8 | 4.2 | 7.0 | 6.8 | 5.7 | 5.8 | 5.8 |
| M.P. | 81.0 | 84.9 | 86.0 | 138.3 | 144.9 | 139.0 | 17.1 | 17.1 | 16.2 |
| Punjab | 12.0 | 13.0 | 17.0 | 47.0 | 47.0 | 61.0 | 39.1 | 36.1 | 35.9 |
| Rajasthan | 278.0 | 307.9 | 298.1 | 789.2 | 852.6 | 876.5 | 28.4 | 27.7 | 29.4 |
| U. P. | 158.0 | 168.0 | 160.0 | 404.0 | 446.0 | 424.0 | 25.5 | 26.5 | 26.5 |
| Uttrakhand | 23.0 | 22.4 | 23.0 | 28.0 | 30.7 | 32.0 | 12.2 | 13.7 | 13.9 |
| All India | 643.4 | 695.1 | 671.1 | 1618.0 | 1752.4 | 1730.3 | 25.1 | 25.2 | 25.8 |

*Third advance estimates

Though the MSP of barley (Rs.1100/-) is much lower than wheat (Rs.1400/-), but during current season the market price of barley remained higher (up to Rs. 1300/q and in August it goes up to Rs 1500/q) as compared to wheat. The main reason of this was the demand of malting and brewing industry in northern India. Some malt industries had also followed "contract farming" with malt type varieties to ensure regular supply of the quality raw material for their units. This has given much needed impetus to the barley cultivation under better managed conditions and we can expect further rise in productivity. Thus there is a need of support in terms of quality seed, assured procurement and price from industries/government side to increase its area, production and productivity.

The monitoring teams surveyed the major barley growing areas during the season in addition to visiting the experiments at coordinated centres. The observations indicate that the crop season was by and large a disease free year in major barley growing areas, with some incidence

of yellow rust in foothills and mid hills. The incidence of leaf blights was observed in the eastern zone. Aphid incidence was observed in Central, NWP and NEP zones.

New initiatives were undertaken to improve plant type for lodging resistance and to enhance yield and quality of malt purpose barley through pre-breeding, churning germplasm and integration of molecular breeding, incorporating new genes for resistance against biotic and abiotic stresses, improving of food purpose barley through screening of germplasm and pre-breeding and to popularize the health benefits of barley (higher beta glucan content) by publications. Linkages with national and international organisations, industry and farmers were also strengthened.

CROP IMPROVEMENT

NEW BARLEY VARIETIES RELEASED

Four new barley varieties namely viz. DWRB 92, BH 946, HUB 113 and BHS 400 were identified during 52nd AICW&B workers meet at CSAUA&T, Kanpur. Subsequently in the 67th and 68th minutes of Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops (CVRC) all the varieties were released/ notified for cultivation in different zones.

| Variety | Parentage | Area of adaptation | Production conditions | Salient characteristics | Developed at |
|---------|----------------------------|--------------------|-----------------------|--|---------------|
| DWRB92 | DWR28 / DWR 45 | NWP Zone | Irrigated timely sown | Two-row malt barley with good grain under timely sown conditions, resistant to stripe and leaf rusts | DWR Karnal |
| BH 946 | BIIMS22A/B 11549/RD2552 | NWP Zone | Irrigated timely sown | Six row feed barley with tolerance to yellow and brown rust | CCSHAU, Hisar |
| HUB 113 | Karan 280/C138 | NEP Zone | Irrigated timely sown | Six row feed barley with high yields and disease resistance | BHU, Varanasi |
| BHS 400 | 34 th IBON 9009 | NH Zone | Rainfed timely sown | Six row feed barley with tolerance to yellow and brown rust | IARI, Shimla |

COORDINATED YIELD EVALUATION TRIALS

- Out of 119 yield evaluation trials proposed, 109 (91.6%) trials were conducted. Ten trials were either not conducted/failed and data were not received in time. After the analysis, only 94 trials (79.0% of proposed 86.2% of conducted) were found good for reporting.

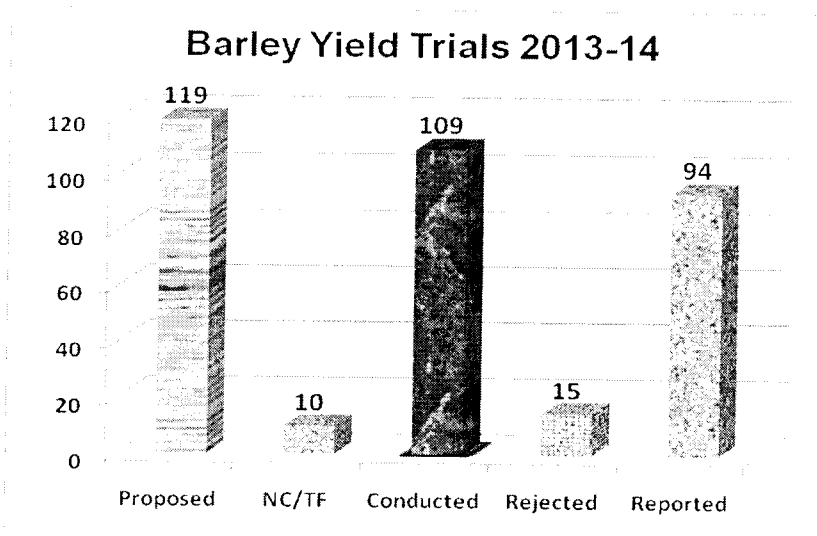
- These trials were conducted at 12 main centres and 37 testing centres (including ICAR, SAUs and State Department of Agriculture) during *rabi* 2013-14.

- In all 124 test entries contributed by 12 centres, were evaluated against 26 checks in the coordinated yield trials under rainfed (plains and hills), Irrigated (plains) and saline soils conditions under timely/ late sown conditions. The new barley entries include malt, feed or dual purposes types and mostly were hulled type with a few hull-less types in northern hills zone.

Malt Barley Evaluation

Timely sown

- The AVT-MB (IR-TS) was proposed at 12 centres in NWPZ. The trials were conducted at all the centres. The results from all the locations, except Bhatinda (UR) and Mathura (LSM) were considered for zonal mean compilation. The trial consisted of 4 test entries and 4



checks viz. BH 902, K551 (both six-row) and DWRB 92 and DWRUB52 (both two-row malt barley) making a total of 8 entries. The mean grain yield was exhibited as 48.4 q/ha, which ranged from 30.19 q/ha (Karnal) to 58.59 q/ha (Ludhiana). Entry PL 874 (50.6 q/ha) ranked first and was significantly superior to the best check DWRB 92 (47.5 q/ha), which comprised alone in the first Non-Significant Group. The final year entry DWRB 101 (47.9 q/ha) ranked third and was numerically high to the best check DWRB 92, whereas another final year entry RD 2849 ranked fifth with 46.9 q/ha mean grain yield.

- The IVT malt barley under timely sown condition was proposed at 10 locations in NWPZ, and was conducted at 9 centres. The trial was proposed with 16 entries and 3 checks viz. DWRB 92, DWRUB 52 and BH 902. Entries BH 988, BH 989, KB 1354 and RD 2892 were reported as mixtures/segregating, while entries viz. KB 1349, DWRB 123, DWRB 124, RD 2894, DWRB 128 and check DWRUB 52 were having some off types and need purification. The trial mean ranged from 35.78 q/ha (Karnal) to 56.01 q/ha (Bhatinda), with 47.5 q/ha NWPZ mean. The entries DWRB 123 (52.5 q/ha) and DWRB 128 (51.7 q/ha) were significantly superior to the best check DWRUB 52 (49.4 q/ha) and were grouped in the first non-significant group along with the entries RD 2891 (50.8 q/ha) and DWRB 124 (50.5 q/ha), respectively.

Late sown

- The AVT malt barley under late sown conditions was proposed at 8 centres in NWPZ and was conducted at all locations. The trial consisted of DWRB 118 and final year entry BH 968 with 4 checks viz. DWRB 73, DWRB 91 (both two-row), DWRUB 64 (six-row) and BH 902 (six-row feed barley). The trial mean ranged from 30.54 q/ha (SG Nagar) to 51.55 q/ha (Bhatinda), with 39.1 q/ha NWPZ mean. The check variety DWRB 91 (41.9 q/ha) ranked first followed by the final year entry BH 968 (41.1 q/ha) and were grouped in the first non-significant group.
- The IVT Malt Barley under late sown conditions was proposed at 7 locations in NWPZ and was conducted and reported from 6 centres. The trial was proposed with 15 entries and 3 checks including both the two and six row type barleys aimed to be tested as malt type. The trial mean yield ranged from 31.82 q/ha (Karnal) to 55.52 q/ha (Bhatinda) with zonal mean as 42.0 q/ha, indicating good yield under late sown crop. The check DWRB 91 ranked first with 47.5 q/ha grain yield followed by entry DWRB 121 (46.3 q/ha) and DWRB 123 (46.0 q/ha) in the first non-significant group.

Feed Barley Evaluation

Irrigated

- The AVT (irrigated) was proposed at 11 locations and were conducted at 10 locations in NWPZ. The trial comprised of one test entry and four checks viz., BH 902, BH 946, RD 2035 and RD 2552. The final year entry RD 2832 (42.39 q/ha) ranked second in first non significant group in NWPZ. However, check BH 946 (45.91 q/ha) ranked first and was grouped in first non significant group.
- In central zone, the AVT (irrigated) was proposed at five locations and all trials were conducted in the zone. The trial mean ranged from 28.98 q/ha (Udaipur) to 58.76 q/ha (S.K. Nagar) in the zone. The final year entry BH 959 (42.0 q/ha) ranked second and was grouped in the first non-significant group. While check PL 751 (43.7 q/ha) ranked first and was in NSG group.
- The IVT feed barley was proposed at 15 locations comprising of NWPZ (6), NEPZ (5) and central zone (4) in northern and central plains. The trial consisted of 21 entries and 7 checks, namely BH 946, BH 902, HUB 113, Jyoti, PL 751, RD 2552 and RD 2786. In NWPZ, check BH 946 (48.6 q/ha) ranked first and was in first non significant group. While test entry BH 981 ranked second with 46.4 q/ha mean grain yield in first NSG. In NEPZ, check Jyoti (49.0 q/ha) ranked first and was followed by two more checks RD 2552 (48.2 q/ha) and HUB 113 (47.5 q/ha) and two entries NDB 1580 (48.2 q/ha) and HUB 113 (47.5 q/ha), in the first NSG. Similarly, in case of central zone, check BH 946 (48.0 q/ha) ranked first and was followed by two more checks (RD 2552 and HUB 113) in the first non-significant.

Rainfed Plain

- The IVT (rainfed) for north-eastern plains zone was proposed at 9 locations including five in UP, two in Bihar and one each in M.P and Jharkhand. The results from 6 locations revealed that at zonal level, the check Lakhan ranked first with 33.60 q/ha mean grain yield and was followed by PL 882 (33.4 q/ha), JB 292 (33.40 q/ha) and KB 1347 (32.40 q/ha) in the first non significant group.

Rainfed Hills

- The AVT trial consisted of 17 entries and 4 checks namely, BHS 352, VLB 118, HBL 113 and BHS 400. The trial was proposed at 13 locations in the NH zone comprising of Uttrakhand, H.P. and J&K hills. Trial was conducted at 10 centres, except Sundernagar, Gaggar and Chakrauta centres in the zone. The trial means of ten locations considered for reporting, ranged from 10.42 q/ha (Rajouri) to 58.97 q/ha (Bajaura). The check variety BHS 400 (34.1 q/ha) ranks first in the first non-significant group while final year entry UPB 1031 (33.2 q/ha) showed second rank in the first non significant group in the zone.
- The IVT trial was proposed at 13 locations in the NH Zone comprising of Uttrakhand, H.P. and J&K hills. The trial consisted of 17 test entries and four checks namely, BHS 352, BHS 400, HBL 113 and VLB 118. The trial means of the locations considered for reporting, ranged from 10.42 q/ha (Rajouri) to 58.97 q/ha (Bajaura). In general the crop situation was very good in zone. The check variety BHS 400 (34.1 q/ha) ranks first in the first non-significant group while final year entry UPB 1031 (33.2 q/ha) showed second rank in the first non significant group in the zone.

Salinity-alkalinity

- A special alkalinity/salinity trial was proposed at 8 locations and was conducted at all centres except Bhilwara. The trial consisted of 17 test entries (contributed by five centres) and 3 checks viz. NDB 1173, RD 2552 and RD 2794. The overall results of grain yield indicated that check NDB 1173 (33.5 q/ha) was ranked first and was in the first non significant group. However, none of the entry was in the first non significant group.

Dual purpose

- In order to evaluate the performance of new barley genotypes for single cut forage and grain yield, coordinated trials on dual purpose barley were proposed in all zones in plains as well in Northern hills under the collaborative programme with AICRP-FC, Jhansi. The IVT was proposed under irrigated conditions in NWPZ, NEPZ and Central zones and rainfed conditions in Northern Hills Zone. The overall performance of the genotypes for forage cum grain yield is to be taken into consideration for promotion / retention of the entry in the trial.
- The trial consisted of 15 entries and 4 checks, representing different centres in three zones of plains. The IVT (common set of new entries) was proposed in NWPZ (9) and NEPZ (6) at 17 locations. In case of NWPZ, entry KB 1369 ranked first and was in first non significant group for grain yield. However, based on zonal mean of grain and forage yield taken together, none of the entry exhibited superiority and could not be considered for promotion to AVT. In NEPZ, entry NDB 1584 (24.5 q/ha) ranked first followed by HUB 238 (23.4 q/ha), in first non significant group. In case of forage yield, check Azad (137.4 q/ha) ranked first followed by check RD 2552 (132.4 q/ha) in the first NSG. Based on zonal mean of grain and forage yield taken together none of the entry exhibited superiority and could not be considered for promotion of AVT. In central zone for grain yield, entry HUB 239 (26.8 q/ha) ranked first followed by check RD 2035 (25.5 q/ha) and entry HUB 238 (25.4 q/ha), in the first non significant group. However, for forage yield entry RD 2880 (257.25 q/ha) ranked first in the first NSG. Thus, none of the entry was in first NSG simultaneously for grain and forage yield and no AVT could be constituted in central zone for dual purpose.

ZONAL MONITORING

The teams constituted for monitoring of Barley Network Yield Trials & Nurseries in central zone, NWPZ, NEPZ and NH Zone, visited different locations of the three zones at the most appropriate stage of the crop and recorded observations about the varietal performance, conduct

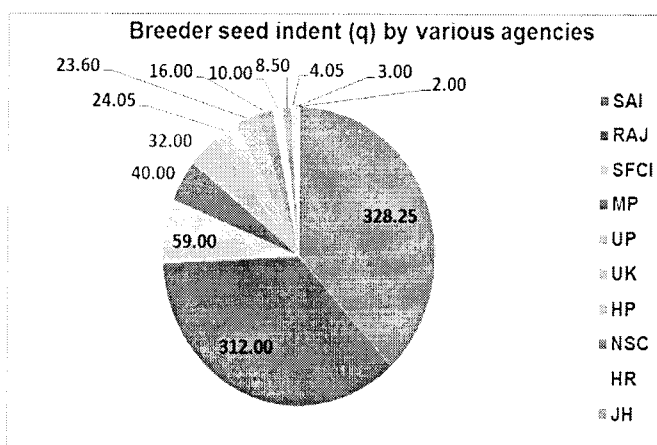
of trials, disease/ pest incidence and genetic purity of the test entries. The team in NHZ was common for wheat and barley crops, while in other two zones barley monitoring was done little earlier keeping the crop stage in mind. On the spot decisions were taken about the rejection of trials and purity of test entries through consensus. The proceedings of these teams meetings have been circulated for necessary action by concerned breeders and other scientists and copies of the same is appended in this report for record.

Zonal monitoring visits of the barley teams

| Zone | Date | Centres to be visited | Team Members |
|--------------|--------------------|---|--|
| CZ | 15-18 Feb., 2014 | Udaipur, Banswara, Kota | Drs. Vishnu Kumar, SR Verma, P. Shekhawat, Sudesh Kumar, Anil Khippal |
| NEPZ | 24-28 Feb., 2014 | Kanpur, Dalipnagar, Faizabad, Varanasi, Mirzapur, Tisuihi, Rewa | Drs. Jogendra Singh, R. Selvakumar, PK Gupta, SR Vishwakarma, RK Singh |
| NWPZ Team I | 03-06, March, 2014 | Agra, Mathura, Durgapura, Tabiji, Navgaon and Bawal | Drs. Vishnu Kumar, PS Shekhawat, Sudesh Kumar, SR Verma |
| NWPZ Team II | 07-10, March, 2014 | Ludhiana, Bhatinda, Sriganganagar, Hlsar | Drs. D. Kumar, R Selvakumar, Anil Khippal, AS Shekhawat BS Cheema |
| NHZ I | 7-9 April, 2014 | Berthein, Kangra, Malan, Palampur | Drs DP Walia, SK Rana, AS Kharub |
| NHZ II | 15-18 April, 2014 | Dhaulakuan, Shimla, Sundernagar, Bajaura, Katrain | Drs Vijay Rana, Gurudev Singh, Vikas Gupta, R Selvakumar |
| NHZ III | 15-16 April, 2014 | Majhera, Almora | Drs Laxmikant, JP Jaiswal, SK Jain |

BREEDER SEED PRODUCTION

A consolidated indent of 862.45q breeder seed of 42 varieties was received from Deputy Commissioner (Seeds), DAC, MoA, Govt. of India. The indent included requirement of ten 10 states, 2 public sector corporations and private agencies for the season *rabi*, 2013-14. The major proportion of the breeder seed indent was for SAI (328.25q) followed by Rajasthan state (312q), State Farm Corporation of India, New Delhi (59q), Madhya Pradesh (40q) etc. A total breeder seed for production of 843.10q for 38 varieties was allocated



for production at 10 seed producing centres over seven states. In view of availability of high yielding and resistant varieties, breeder seed indent for very old varieties viz. BH 75 (1985) and PL 172 (1987) was not accepted unanimously, while due to unavailability of the nucleus seed the indent for varieties Dolma and DL 88 could not be honoured.

A net production of 1782.64q breeder seed against allocated varieties was reported, which was surplus (939.54q) in comparison to the allocated quantity. However, breeder seed of the varieties namely HBL 316, HBL 391, K 508, NDB 209, NDB 1020, PRB 502 and UPB 1008 was not produced at their originating centres as per allocation. The maximum production was observed for variety RD 2552 (370 q) followed by RD 2035 (307 q), RD 2715 (224 q), RD 2660 (180 q) etc. However, a deficit seed production was reported for varieties DWRUB 64 (-9.40), VL 85 (-8.82), RD 2786 (-8.00), RD 2668 (-7.00) etc. at different production centres.

A total 67.28 q nucleus seed production of 37 varieties was reported. The maximum nucleus seed production was observed for variety PL 426 (7.50q) followed by RD 2552 (5.23 q), RD 2715 (4.52 q), RD 2794 (4.30 q), RD 2592 (3.77 q) etc. In addition, test stock multiplications for the varieties viz. DWRB 92 (141.60q), HUB 113 (17 q), BH 946 (77 q) and BHS 400 (52.80q) were also reported from State Farms Corporation of India Ltd.

GERMPLASM EVALUATION & EXCHANGE

- An Elite International Barley Germplasm Nursery (EIBGN) constituted with 45 genotypes selected from international trial/nursery was supplied for conduct at all locations of Barley Network under AICW&BIP during rabi, 2013-14. Most of the entries were utilized by the centres either in hybridization programme or selected for further evaluation.
- A National Barley Genetic Stock Nursery (NBGSN) was constituted with promising entries from AICW&BIP trials/nurseries. During 2013-14 crop seasons, this nursery included 23 entries, which included sources for malting quality traits, yield and yield components and disease resistance. The nursery was supplied to 11 centres under barley network for conduct and data were received from 11 centres. Most of the entries were utilized by centres mainly in their hybridization program.
- During 2013-14, 583 barley accessions from the DWR active collection were rejuvenated as regular maintenance activity of germplasm conservation and 287 accessions were evaluated for yield and its component traits at DWR, Hisar farm.
- During 2013-14, 7 International trials/nurseries (2012-13) and 8 International trials/nurseries (2013-14) received from ICARDA were conducted at different centres under barley network and data were received from the respective centres. 315 barley promising entries were selected by the breeders from these trials/nurseries during field day organized by DWR at the last week of March, 2014.

CROP PROTECTION

BARLEY CROP HEALTH REPORT

During 2013-14 crop season, yellow rust was observed in Uttarakhand, Himachal Pradesh, Jammu and Kashmir and Nepal in some of the farmer's fields. There was no report of natural occurrence of black rust in barley from any of the barley growing areas of India except from Bhowali and Dharwad. Brown rust of barley was observed on few plants from Jammu and Kashmir and Nepal. Three rusts of barley were observed at NBPGR, Regional Station, Bhowali (Uttarakhand) on land races only.

Pathotype distribution

Thirty five samples of barley rusts received from different parts India were analyzed at DWR, Flwoerdale station, Shimla. Among the four samples of barley yellow (stripe) rust (*Puccinia striiformis* f. sp. *hordei*) analyzed, pathotype 1S0 (M) was most frequent and was identified in two samples from Himachal Pradesh and one from Jammu and Kashmir. Pathotype 0S0 (57) was observed in one sample from Jammu and Kashmir.

Among the 30 samples of black (stem) rust (*P. graminis* f. sp. *tritici*) analyzed from the lines of IBDSN, NBDSN and EBDSN, pathotype 79G31 (11) was encountered in all 29 samples. Sole sample of black rust from Bhowali (Uttarakhand) yielded pathotype 24G5(21-1).

Seedling Resistance Test (SRT)

Ninety one lines of EBDSN and 187 lines NBDSN were evaluated at seedling stage against five pathotypes of barley yellow rust viz. (0S0-1) 24, (0S0)57, 4S0(G),1S0(M), 5S0 (Q) and mixture of *Puccinia striiformis hordei* (Yellow /stripe rust), three pathotypes 79G31(11),62G29(40A) and 19G35(42) of *P. graminis tritici* (Black/stem rust) and mixture of five isolates of *P. hordei* (Brown/leaf rust) under controlled conditions of greenhouse.

Rust resistant lines in NBDSN

None of the lines were resistant to all three rusts of barley or brown and black rusts or black and yellow rusts only. Sixteen lines viz., VLB140, UPB1038, BH902, RD2833, BH902, RD2860, RD2889, RD2890, RD2887, DWRB127, RD2875, RD2552 (C), RD2786 (C), KB1369, RD2883, RD2882 were found resistant to all brown and yellow rusts.

PL880, BH992 and AZAD (C) were resistant to all the pathotypes of black rust. Lines RD2552, BH902, DWRUB64 (C), KB1369, RD2874, RD2881 and RD2715 (C) were resistant to all the pathotypes of yellow rust of barley.

Rust resistant lines in EBDSN

Two lines viz. VLB132 and RD2786 were resistant to all the rusts. There were no accession showing resistance to both brown and black rusts or black and yellow rusts only. Sixteen lines were resistant to both brown and yellow rusts

Adult plant resistance (APR)

Initial Barley Disease Screening Nursery (IBDSN)

Out of 357 IBDSN entries tested, 41 entries were found to be free from rust (ACI = 0) resistant (ACI<10) to stripe rust and 137 entries have ACI less than 10. For stem rust, 73 entries were found to be having HS<10 out of these, 48 were free from stem rust (HS=0). In case of leaf blight screening, 12 entries were found to fall between average score of 23 and highest score of 57 against leaf blight.

National Barley Disease Screening Nursery (NBDSN)

During 2013-14, a total of 187 entries from AVT and IVT yield trials including checks were screened against stripe rust, stem rust, leaf blight, aphids and cereal cyst nematode (CCN) at hot spot locations. The leaf rust did not appear in Kanpur and therefore, no data is reported on leaf rust.

| | |
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| Stripe rust ACI 0 (17 entries) | DWRB124, DWRB127, DWRB128, DWRUB64 (C), HUB113 (C), KB1369, RD2552 (C), RD2715 (C), RD2833, RD2874, RD2880, RD2883, RD2886, RD2887, RD2889, UPB1038 and UPB1040 |
| Stripe rust ACI 0<10 | 119 entries |
| LB AV. Up to 35 & HS up to 57 (20 Entries) | BH972, BH976, BH981, BH983, BH990, BHS424, BHS429, BHS430, DWRB111, DWRB91, HBL719, KB1351, NDB1592, RD2552, RD2895, RD2896, UPB1031, UPB1038, VLB137 and VLB140 |
| SR 0 (32 Entries) | AZAD (C), BH902 (C), BH968, BH976, BH989, BH992, DWRB101, DWRB121, DWRB122, DWRB123, DWRB126, DWRB128, DWRB92 (C), DWRUB52 (C), HUB237, JB293, KB1349, NDB1577, NDB1580, PL751 (C), PL874, PL880, RD2786 (C), RD2877, RD2878, RD2880, RD2891, RD2893, RD2894, RD2895, RD2897 and UPB1037 |

Elite Barley Disease Screening Nursery (EBDSN)

Out of 91 entries screened in EBDSN, the following entries were confirmed for resistance against the particular disease under AICW&BIP.

| | |
|--|---|
| YR ACI = 0 17 Entries | HBL714, DWRB112, DWRB116, HBL713, RD2552, RD2786, RD2853, RD2854, RD2858, RD2861, RD2863, RD2865, RD2866, RD2867, RD2868, VLB132 and VLB135 |
| YR ACI = 0<1 16 Entries | DWRB111, BH977, BH979, BHS 420, BHS380, DWRB117, DWRB121, HBL 712, RD2830, RD2832, RD2833, RD2856, RD2857, RD2862, RD2864 and RD2869 |
| LB AV. upto 35 & HS Up to 57 (5 Entries) | DWRB112, DWRB113, DWRB115, DWRB116 and VLB133 |
| PM Upto 3 (11 Entries) | BH979, BHS380, BHS416, DWRB91, K508, K551, RD2035, RD2552, VLB118, VLB130 and VLB133 |

Chemical control of barley foliar blight

To validate the effectiveness of various fungicides against foliar blight an experiment was conducted and it has been observed that seed treatment with Vitavax @ 3g/Kg followed by spraying with Tilt / Folicur @ 0.1% is effective for management of leaf blight.

In all centres, seed treatment with Raxil @ 2g/Kg recorded higher yield or at par with seed treatment with Vitavax @3g/Kg seed.

Chemical control of stripe rust

To validate the effectiveness of various fungicides on stripe rust an experiment was conducted and it was found that spraying with Tilt @0.1% and Bayleton @0.1% recorded lower disease severity and higher yield.

Screening of NBDSN barley entries against foliar aphids

The promising entries identified from previous screening were planted in single row. At Ludhiana, Pantnagar and Vijapur, all the entries were having large number of aphids and were categorized as susceptible (grade 4) or highly susceptible (grade 5) to barley aphid. At Kanpur, the entries VLB 138, RD 2786 (C), DWRB 126 and HUB 113 (C) were found to be resistant and entry BH 902 were found to be moderately resistant and rest of them were susceptible (grade 4) or highly susceptible (grade 5) to barley aphid. At Durgapura, the Nine entries DWRB 130, VLB 130, RD2035, DWRUB 52, RD 2552, RD 2888, BH 984, RD 2889 and RD 2892 were found to be

resistant and thirty five entries VLB 137, UPB 1037, HBL 719, UPB 1038, HBL 731, UPB 1037, VLB 137, UPB 1038, RD 2552, BH 946, RD 2786 (C), BH 959, RD 2833, PL 751 (C), DWRB 101, PL 874, BH 902, DWRU B64, BH 968, NDB 1592, BH 972, BH 989, DWRB 127, BH 988, KB 1369, BH 980, RD 2875, PL 880, RD 2552 (C), BH 946 (C), HUB 238, RD 2035 (C), RD 2715 (C) and RD 2879 were found to be moderately resistant and rest of them were susceptible (grade 4) or highly susceptible (grade 5) to barley aphid. At Karnal, the three entries HUB 233, PL 882 and JB 292 were found to be moderately resistant and rest of them were susceptible (grade 4) or highly susceptible (grade 5) to barley aphid. The differential reaction of aphids on entries showed the availability of biotypes of barley foliar aphids in various locations.

Chemical control of foliage feeding barley aphids (*Rhopalosiphum maidis*)

The objective of conducting this experiment was to find out eco-friendly and high potent molecules, which are more efficient, at lower doses than presently recommended molecules. At Durgapura, the minimum aphid population at 1 day, 2 day and 7 day after spray was recorded in clothianidin but at par with imidacloprid 200 SL, chlorantranilipride 18.5 SC, acetamiprid 20 SP insecticidal treatments. The minimum aphid population at 15th day after spray was recorded in clothianidin (2.67:47.55). At Ludhiana, one day after spray, acetamiprid (1.22 aphids/tiller) recorded minimum aphids/tiller and was at par with all other insecticidal treatments. Similar results were recorded 2 and 7 days after treatment. However, fifteen days after treatment Flubendamide (0.10 aphid/tiller) was the best treatment and it was at par with other insecticidal treatments. At Vijapur, on 7th day, the aphid population was recorded minimum in flubendiamide and was at par with rest of the insecticidal treatments. At Kanpur, maximum aphid control was achieved from clothianidin (50WDG) and imidacloprid 17.8 SL spray after recorded 2.6 and 2.8 aphids infestation and were at par chlorantranilipride (18.5 SC) and Flubendamide 3.2 aphids in insecticidal treatments. At Karnal, 2nd day after spray minimum aphid population was noticed in clothianidin 50 WDG @ 15 g.a.i./ha(1.27) as compared to rest of the treatments. On 7th day, the aphid population was recorded minimum in Flubendamide 480 SC@ 20 g a.i./ha(0.53) and was at par with rest of the insecticidal treatments. Similarly on 15th day, the aphid population was recorded minimum in Flubendamide 480 SC@ 20 g a.i./ha and thiamethoxam 25 WG @ 12.5 g a.i./ha (0.27).

Screening of NBDSN barley entries against CCN

All the entries were found to be either S or HS to CCN and none of the entries were showing resistance to aphids in all centres and all were showing HS = 5. However, the entries viz., BH959, BH980, DWRB121, DWRB125, DWRB127, DWRB91 (C), DWRUB64 (C), KB1367, NDB1577, NDB1758, PL751 (C), RD2035 (C), RD2832, RD2833 and RD2877 showing resistance against CCN at Hisar indicating the presence of different biotype in Hisar

RESOURCE MANAGEMENT

The evaluation of second year AVT entries was taken up in Northern Hill Zone, North Western Plains Zone and Central Zone. There were five trials with AVT second year entries. The irrigated, timely sown feed and malt barley trials (timely and late sown) were conducted in the North Western Plains. Timely sown feed barley trials were also conducted in Central Zone and Northern Hill Zone. Out of the 24 proposed trials for varietal evaluation, all were conducted and reported. In special trials (Intercropping, date of sowing, sprinkler irrigation, sulphur application, N doses and schedules, phosphorus and potash application and weed management), out of 40 proposed at different locations, 42 were conducted.

EVALUATION OF NEW GENOTYPES

Rainfed timely sown feed barley (NHZ)

The performance of test entry (VLB 130) was evaluated against three checks (BHS 380 and HBL 276) and three nitrogen levels (40, 60 and 80 kg N/ha) at five locations namely Malan, Bajaura, Shimla, Almora and Imphal. The test entry VLB 130 and best check HBL 276 were statistically at par at all N levels. The test entry and checks responded up to 80 kg N/ha.

Timely sown feed barley (NWPZ)

The performance of test entries RD 2832 was evaluated against three checks RD 2552, BH 902 and BH 946 at five locations (Agra, Durgapura, Hisar, Ludhiana and Karnal). The checks BH 902 and BH 946 were superior to the new entry under normal sown conditions and the check BH 946 was superior under late sown condition.

Timely sown malt barley (NWPZ)

The performance of test entry DWRB 101 and RD 2849 were evaluated against three checks (DWRUB 52, BH 902 and DWRB 92) and the new entries were superior to two row checks but six row check BH 902 produced highest yield. Except the test entry BH 902 and DWRB 92, all other genotypes responded up to 120 kg N/ha

Late sown malt barley (NWPZ)

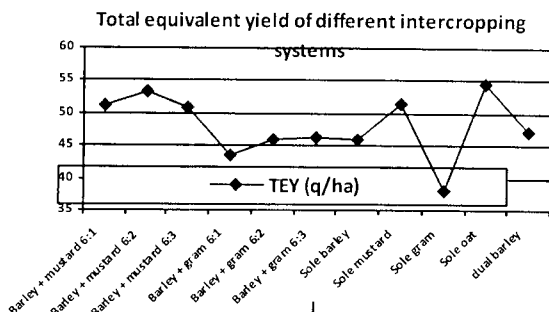
The performance of test entry BH 968 and the best check DWRB 91 were significantly at par and other two checks (DWRB 73 and DWRUB 64) were inferior to the new entry and best check. The new entry BH 968 and DWRB 73 responded up to 120 kg N/ha but DWRB 91 and DWRUB 64 response was up to 90 kg N/ha.

Timely sown feed barley (CZ)

The performance of test entries (BH 959 and RD 2833) were evaluated against three checks (PL 751 and RD 2786) at four locations namely Kota, Gwalior, Udaipur and Rewa under normal and late sown conditions. Test entry BH 959 and the checks PL 751 and RD 2786 were at par and other test entry RD 2833 was inferior to checks and test entry BH 959 under normal as well as late sown situations.

REFINEMENT OF PRODUCTION TECHNOLOGIES

SPL-1: Intercropping of mustard and gram in barley

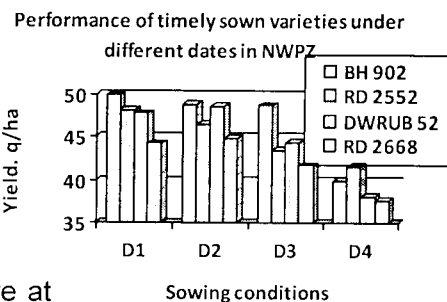


This trial was conducted with eleven treatments of intercrops and sole crops (barley + mustard 6:1, barley + mustard 6:2, barley + mustard 6:3; barley + gram 2:1, barley + gram 4:2, barley + gram 6:3, sole mustard, sole gram, sole oat, dual barley) at three locations (Agra, Durgapura and Hisar). Three years pooled data showed that sole crop of mustard recorded highest total equivalent yield followed by barley + mustard. Sole crop of barley and dual purpose barley were at par in total equivalent yield and closely followed by intercropping of mustard in barley.

SPL 2 Fine tune the date of sowing under changing climatic conditions

Timely and sown irrigated in NWPZ

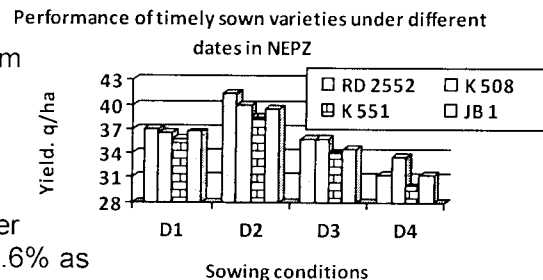
Four varieties (BH 902, RD 2552, DWRUB 52 and RD 2668) were evaluated against four dates of sowing (starting from last week of October to last week of November, 10 days interval) to fine-tune the sowing dates under changing agro climatic conditions. The results showed that sowing date last week of October to 10th of November was found better among the four dates, sowing after 10th November showed decrease in yield in all varieties except BH 902 which gave better yield till 20th of November sowing. Overall first and second dates of sowing were at par and thereafter a significant decrease in yield of all varieties except BH 902. The yield reduced by 0.06, 6.21, 17.24 % as the dates advanced by 10 days.



Under late sown situations, sowing up to 10th of December was found significantly better among the four dates, sowing after 10th of December showed decrease in yield in all varieties except DWRUB 64. Overall, there was significant decrease in yield of all varieties as the sowing date advanced. Among varieties, DWRB 91 was ranked at first position followed by RD 2508, DWRUB 64 and DWRB 73. The yield reduced by 5.83, 13.2, 25.8 % as the dates advanced.

Timely sown irrigated barley in NEPZ

Four varieties (RD 2552, K 508, K 551 and JB 1) evaluated against four dates of sowing (dates starting from second week of November to second week of December, 10 days interval) show that sowing between 15-24 November was found superior to other dates of sowing. The yield was low in 5-14 November sowing may be due to less tillering and the yield was low after 25th November sowing due to late sown crop. The yield reduced by 12.1, 20.6% as

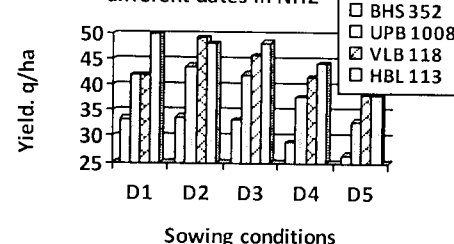


the dates advanced after 24th November and the yield was also reduced by 8.27% before 15th November sowing.

Timely sown rainfed barley in NHZ

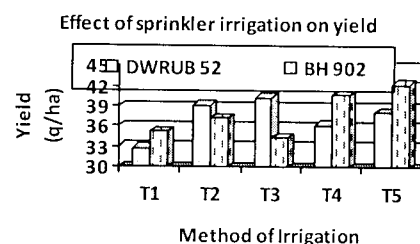
Four varieties (BHS 352, UPB 1008, VLB 118 and HBL 113) evaluated against five dates of sowing (dates starting from 25th October goes up to 25 December, at 15 days interval) at Almora, Bajaura and Malan show that the yield increased up to second date of sowing (10-24 November) and after that the yield decreased as the date advanced up to last date (25 Dec. to 09 Jan.) in all varieties except HBL 113 which produced highest yield under third date of sowing (25 November-09 December). The yield increased at second date of sowing by 4.48% and then reduced by 3.14, 12.7 and 22.3% as the dates advanced by 15 days.

Performance of timely sown varieties under different dates in NHZ



SPL 3 Effect of sprinkler irrigation on yield and quality of barley crop

The trial was conducted with four of sprinkler irrigation (T1: 20DAS + 15 days interval, T2: 20DAS + 20 days interval, T3: 20DAS + 25 days interval, T4: 20DAS + 30 days interval) and T5: one flood irrigation at Durgapura to evaluate the method of sprinkler irrigation in respect of malting quality and productivity. Sprinkler irrigation initially 20 days after sowing and thereafter at 30 days interval and flood irrigation recorded the better yield as compared to sprinkler irrigation with interval of 15, 20 & 25 days. BH 902 produced was better in 30 days interval and flood irrigation while DWRUB better was in 20 and 25 days sprinkler irrigation.



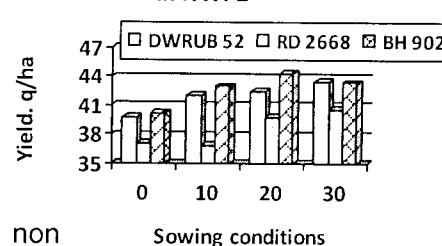
SPL 4 Effect of chemical/ fertiliser on yield of barley crop

The trial was conducted with an objective to evaluate spray of fertilisers and chemicals for enhancing productivity of barley. Chemical/fertiliser spray of CaCl₂ 0.2%, KNO₃ 0.2%, KNO₃ (0.1%)+ CaCl (0.1%) and DAP (0.1%)+ KCl(0.1%) were at par in productivity. Water spray and no spray produced significantly lower yields. Three year results showed that DAP (0.1%)+ KCl(0.1%), KNO₃(0.1%)+CaCl₂(0.1%), CaCl-0.2%, KNO₃-0.2% were statistically similar and better among all treatments.

SPL 5 Effect of S application on productivity and quality

The trial was conducted with an objective to evaluate the effect of sulphur application on yield and quality of barley crop. The results show that sulphur application increased the productivity of all varieties up to 30kg S/ha but results were at par at 20 and 30 kg S/ha. BH 902 and DWRUB 52 were more responsive to S as compared to RD 2668.

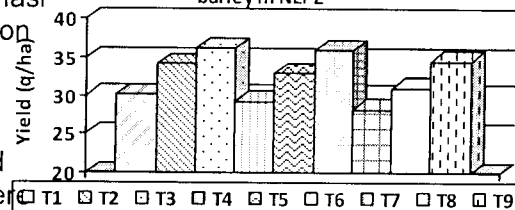
Barley productivity under S application in NWPZ



SPL: 6 Effect of mulching and irrigation on yield in NEPZ

The objective of the trial was to compare mulching and irrigation treatments in respect of productivity of barley and water saving. The experiment was conducted at Kanpur, Rewa, Varanasi with nine treatments of mulching (0, 4, 6 t mulch/ha) and irrigation (0,1,2 irrigation). Pooled results showed that mulch application and irrigation increased the yield significantly. The highest yield was attained with combination of mulching and two irrigations, although there was no significant difference in yield due to difference in residue load. Significant lower yield was observed in no mulch, no irrigation combination.

Effect of mulching and irrigation on yield of barley in NEPZ



SPL-7: Dose and time of nitrogen application in dual purpose barley in NHZ

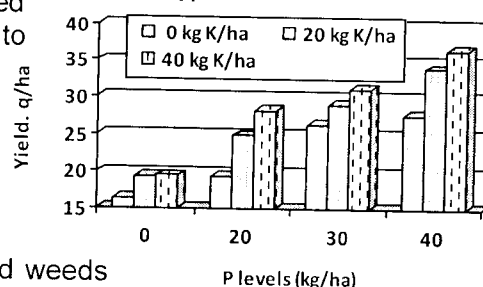
The trial was conducted with an objective to optimise dose and time of N application to increase the productivity. The trial with five doses of nitrogen (0, 20, 40, 60 and 80 kg/ha) with three schedule of application (Full basal, 1/2 at basal+1/2 after 1st rain, 2/3 at basal+1/3 1st rain) were undertaken at Almora. The results revealed that grain yield increased significantly with the increase in the level of nitrogen only up to 60 kg N/ha thereafter the yield decreased. The yield of

barley was similar at the three N schedules but higher yields were recorded in 1/2 basal+1/2 after rain and 2/3 basal+1/2 after rain as compared to full basal.

SPL 8 Doses of Phosphorus and Potash application in barley in NHZ

The trial was conducted with four doses of phosphorus (0, 20, 30, 40 kg/ha) and three doses of potash (0, 20, 40 kg/ha) to optimise doses of phosphorus and potash application at Malan, Bajaura and Almora. Pooled results revealed that the yield increased significantly with the increase in the doses of phosphorus up to the level of 40 kg/ha at all levels of potash and the yield increased as the dose of potash increased up to the level of 40 kg/ha at all levels of phosphorus except at zero P level. Overall, optimum and higher yield levels were obtained at 40 kg of phosphorus and 40 kg of potash per ha.

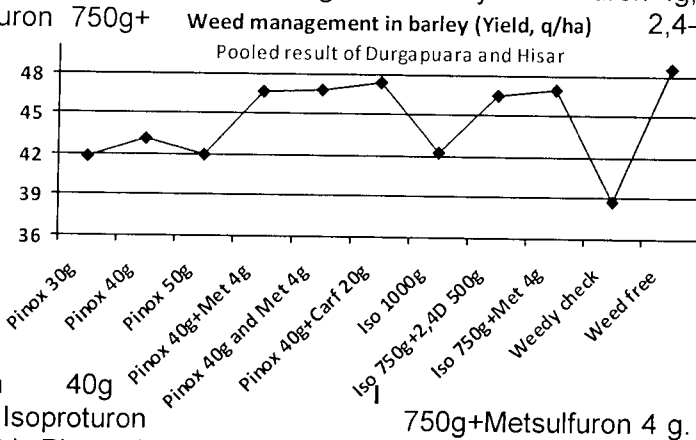
Barley productivity phosphorus and potash application in NHZ



SPL 9 & 10 Weed management in Barley

One trial was conducted to manage the broad leaved weeds through herbicides at Kanpur, Varanasi, Durgapura. Eleven treatments of metsulfuron and carfentrazone in combination or single, weedy check and weed free were used. Pooled data revealed that the yield was statistically at par in the treatments Metsulfuron+Carfentrazone 20g, Metsulfuron+Carfentrazone 25g, Metsulfuron+ Carfentrazone 20g+ NIS 0.2%, Metsulfuron+Carfentrazone 25g+ NIS 0.2% but the highest yield was recorded in weed free treatment. Among the herbicides the best treatment is Metsulfuron+Carfentrazone 25g+ NIS 0.2% which produced 1.73 q/ha less as compared to weed free treatment.

Another trial was conducted to manage the Grasses and broad leaved weeds through herbicides at Hisar, Durgapura, Bajaora and Malan. Eleven treatments of penoxoden and isoproturan in combination with metsulfuron, carfentrazone, 2,4 D or single, weedy check and weed free were used. Pooled data of Durgapura and Hisar showed that the yield was statistically at par in the treatments Pinoxoden 40g+Carfentrazone 20g, Pinoxoden 40g followed by Metsulfuron 4g, Pinoxoden 40g +Metsulfuron 4g, Isoproturon 750g+ 2,4-D 500g, Isoproturon 750g+Metsulfuron 4 g but the highest yield was recorded in weed free treatment. Among the herbicides, the best treatment was Pinoxoden 40g+Carfentrazone 20g which produced 1.29 q/ha less compared to weed free treatment. Pooled data of Bajaura and Malan revealed that the yield was statistically at par in the treatments Pinoxoden 50g, Pinoxoden 40g+Carfentrazone 20g, Pinoxoden 40g +Metsulfuron 4g, Isoproturon 1000g, Isoproturon 750g+Metsulfuron 4 g. Among all the treatments, the best treatment is Pinoxoden 40g+Carfentrazone 20g.



QUALITY EVALUATION

Malting quality

The Barley Network Unit took up the evaluation of grain samples of Advanced Varietal Trial (AVT) and Initial Varietal Trial (IVT) on malt barley received from various test sites at its central facility for malting quality evaluation. The malt barley varietal trials were conducted in NWPZ during Rabi 2013-14, in two sowing dates as separate sets. The trial conducting centres were requested to provide about 500 gm grain sample of each genotype. The grain samples were received from nine locations (Hisar, Karnal, Bawal, Ludhiana, Bathinda, Durgapura, Mathura, Modipuram and Pantnagar) in timely sown and from six locations (Hisar, Karnal, Ludhiana, Bathinda, Modipuram and Durgapura,) in late sown conditions. This year a total of 368 coded entries were received. There were 16 test entries in IVT (TS) which were analyzed with three checks, while 15 test entries in IVT (LS) were evaluated with three checks. In case of AVT (TS), four entries (BH 976, DWRB

101, PL 874 and RD 2849) with four checks and in AVT (LS) two entries (BH 968 and DWR 118) with four checks were analyzed.

There were several entries observed promising for individual traits, after the detailed analysis across locations in the NWP Zone. This was done by the system of scoring giving due weight age to important traits. Thus based on the ten important traits (a maximum possible score of 30), entries BH 987 and DWRB 127 were having better overall malting quality score as compared to checks under timely sown conditions. In late sown trials BH 992 was found promising. The promising entries for different traits are listed below in the table:

| Traits | Promising entries | |
|---|---------------------|------------------|
| | Timely sown | Late sown |
| Test Weight | DWR 101, RD 2849 | BH 968, DWRB 118 |
| Protein content | PL 874 | - |
| Husk Content | RD 2849 | BH 968 |
| Malt Friability | PL 874, RD 2849 | |
| Beta glucan % (≤ 4.0 %) | - | BH 968 |
| Kolbach Index | DWRB 101 | |
| Overall Malting Quality (Overall score > best check) | BH 987 and DWRB 127 | BH 992 |

Barley quality screening nursery

A total of 82 genotypes divided in six subgroups were tested at eight locations for different quality traits under timely sown conditions. The aim of the exercise is to identify entries having stable biochemical/quality traits, which are considered important for malting/nutritional quality of barley. The promising entries identified for different traits are listed below:

| S. No. | Trait | Genotype |
|--------|--|---|
| 1 | High beta glucan ($\geq 6.5\%$ dwb) | 20th I BON3, BCU554, BH963, DWR30 |
| 2 | Low beta glucan ($< 3.0\%$ dwb) | Manjula |
| 3 | High protein content ($\geq 14\%$ dwb) | BCU 1224, 2237, 2241, 4968, 5173 & 5474 |
| 4 | Low husk content ($< 10.5\%$) | DWRB 107 |
| 5 | High thousand grain weight (> 50 g) | BK 1107, BK 1127 |
| 7 | High anti-oxidant activity (ABTS, > 11.0 Trolox Eq. /g sample) | KASOTA |

Feed barley

The feed grain samples from various trials and grown at different locations were analysed for few physical parameters and protein content. Each centre was requested to provide a grain sample of 250 g.

| S.No. | Trial | Test weight | Thousand grain weight | Bold grain (%) | Crude protein |
|-------|---|------------------|-----------------------|----------------|-----------------------------|
| 1 | AVT (Rainfed Barley) – NHZ | BH 352 © | BHS 424 | VLB 138 | UPB 1037 |
| 2 | AVT (Irrigated Feed Barley) – NWPZ | RD 2035 © | BH 946 © | BH 946 © | RD 2832 |
| 3 | AVT (Irrigated) – CZ | PL 751 © | RD 2786 © | RD 2833 | RD 2786 © |
| 4 | IVT (Irrigated Feed Barley) – NWPZ/NEPZ/ CZ | PL 880 | BH 981 | BH 902 © | BH 982 |
| 5 | IVT (Rainfed Feed Barley) –NEPZ | HUB 232, DWRB129 | NDB 1577 | NDB 1577 | RD 2884 |
| 6 | AVT (SAL/ALK) – NWPZ/NEPZ | BH 972 | RD 2886 | RD2794 © | KB 1375 |
| 7 | IVT (Dual Purpose Barley) – NWPZ/ NEPZ/ CZ | NDB 1585 | RD 2878 | RD 2878 | UPB 1041, UPB 1042, HUB 239 |
| 8 | AVT (Dual Purpose Barley) – NHZ | HBL 276 © | BHS 431 | HBL 717 | BHS 431 |

The parameters analysed included grain crude protein content (%), test weight (kg/hl), thousand grain weight (g) and grain plumpness. A total of 821 samples were received encompassing 105 of AVT (Rainfed) from north hill zone; 30 of AVT (Irrigated) from north western zone; 16 of AVT (Irrigated) from central zone; 280 of IVT (Irrigated) from north western, north eastern and central zone; 100 of IVT (Rainfed) from north eastern plain zone; 100 of AVT (SAL/ALK) from north western and north eastern plain zones; 152 of IVT (dual purpose barley) north western, north eastern and central zones and 38 from AVT (dual purpose barley) of north hill zone. The entries with highest value for each of the parameter analyzed are listed below:

MOLECULAR PROFILING OF AVT FINAL YEAR ENTRIES (2012-13)

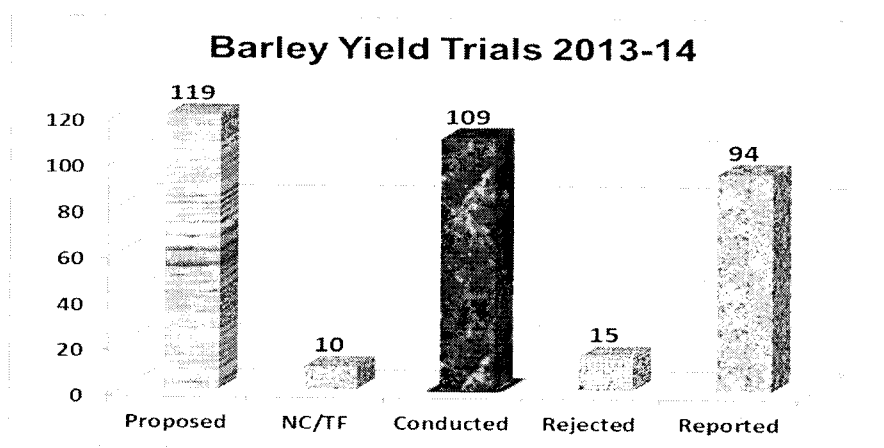
AVT final year entries for three zones viz. North-Western Plains, Central zone and Northern Hills were used to characterize at molecular level and understand the genetic variability in Indian barley lines. A set of twenty two genotypes including test entries and checks were screened using barley specific microsatellite markers. Total 40 SSR markers covering all the seven chromosomes of barley were screened with the final year test entries (RD2832, DWRB101, RD2849, BH968, RD2833, BH959 and VLB130) and fourteen check varieties (BH902, RD2035, RD2552, BH946, DWRUB52, BH902, DWRB92, K551, DWRB73, DWRUB64, DWRB91, PL751, RD2786, HBL276 and BHS380) to develop molecular profiles. In total 73 alleles were scored in selected genotypes and 1533 data points were generated for PCR based amplification profiles of AVT 2nd year entries. The number of alleles ranged from 1 to 4 with an average of 1.82 alleles per locus. The band fragment size varied from 106 bp to 800 bp with PIC values ranging from 0 to 0.501. Out of 40 molecular markers screened, 24 were found polymorphic for the entries and checks. Interestingly, molecular statistics were observed more variable as compared to last two crop seasons. This suggested that genetic variability of barley genotypes has increased for major barley growing regions of India. This increased variability may also be due to use of new SSR markers this year to comprehensively cover barley genome.

Crop Improvement

BREAK UP OF BARLEY NETWORK YIELD TRIALS
(RABI 2013- 14)

| S. No. | Trial Name | No. of Trials | | | | |
|--------|-------------------------|---------------|--------------------------------------|---------------|---|-------------------------------|
| | | Proposed | Not Conducted / Failed/ Not Received | Data Received | Data Rejected | Data Reported |
| 1. | AVT (RF) Hills | 13 | 3 (Gagar, Chakrauta & Sundernagar) | 10 | - | 10 |
| 2. | AVT (IR-FB) – NWPZ | 11 | 1 (Pantnagar) | 10 | 1 (Durgapura) | 9 |
| 3. | AVT (IR-FB) – CZ | 5 | - | 5 | 1 (Banswara) | 4 |
| 4. | AVT (IR-TS) Malt Barley | 12 | - | 12 | 2 (Mathura & Bhatinda) | 10 |
| 5. | AVT (IR-LS) Malt Barley | 8 | 1 (Pantnagar) | 7 | - | 7 |
| 6. | AVT-SST | 8 | 2 (Bhilwara & Dalipnagar) | 6 | - | 6 |
| 7. | AVT (Dual Type) Hills | 5 | - | 5 | - | 5 |
| 8. | IVT (RF) NEPZ | 8 | 1 (Mirzapur) | 7 | 1 (Sabour) | 6 |
| 9. | IVT (IR) Plains | 15 | - | 15 | 3 (Pantnagar, Tabiji and Pusa) | 12 |
| 10. | IVT (IR-TS) Malt Barley | 10 | 1 (Pantnagar) | 9 | 1 (Mathura) | 8 |
| 11. | IVT (IR-LS) Malt Barley | 7 | 1 (Pantnagar) | 6 | - | 6 |
| 12. | IVT (Dual Type) Plains | 17 | - | 17 | 6 (Anand, Banswara, Jhansi, Jalore, Vijapur and Kota) | 11 |
| | TOTAL | 119 | 10 | 109 | 15 | 94 |
| | | | | 91.60% | 13.76% | 86.24%(R) 79.0%(P) |

P= percent of proposed trials, R= percent of received trials



Performance of test sites during Rabi 2013-14

| No. | Centres | No. of Trials | | Trials Rejected/ Failed/ Not reported | | |
|-------------------------|------------------|---------------|-----------|---------------------------------------|---|---------------|
| | | Allotted | Conducted | No. | Name | Reason |
| (A) MAIN CENTRES | | | | | | |
| 1. | Almora | 2 | 2 | - | - | - |
| 2. | Bajaura | 2 | 2 | - | - | - |
| 3. | Durgapura | 7 | 7 | 1 | AVT-IR-FB | UR |
| 4. | Faizabad | 5 | 5 | - | - | - |
| 5. | Hisar | 8 | 8 | - | - | - |
| 6. | Kanpur | 3 | 3 | - | - | - |
| 7. | Karnal | 5 | 5 | - | - | - |
| 8. | Ludhiana | 7 | 7 | - | - | - |
| 9. | Rewa | 3 | 3 | - | - | - |
| 10. | Shimla | 2 | 2 | - | - | - |
| 11. | Varanasi | 3 | 3 | - | - | - |
| 12. | Pantnagar | 6 | 2 | 1 | IVT-IR-FB, (*AVT-IR-NWPZ, *AVT-LS-MB, *IVT-TS-MB, *IVT-LS-MB) | LSM, (*NC) |
| | Total (A) | 53 | 49 | 2 | | |

Contd....

Performance of test sites during Rabi 2013-14 (contd....)

| No. | Centres | No. of Trials | | Trials Rejected | | |
|--|-------------------|---------------|------------|-----------------|----------------------------|----------|
| | | Allotted | Conducted | No. | Name | Reason |
| (B) TESTING CENTRES /SAU / DEPTT. OF AGRIC. | | | | | | |
| 1. | Anand | 1 | 1 | 1 | IVT-DP-CZ | LSM |
| 2. | Banswara | 3 | 3 | 2 | AVT-IR-FB-CZ, IVTDP | LSM, RMT |
| 3. | Bawal | 4 | 4 | - | - | - |
| 4. | Bathinda | 5 | 5 | 1 | AVT-IR-TS-MB | UR |
| 5. | Berthein | 1 | 1 | - | - | - |
| 6. | Bhilwara | 1 | - | - | - | - |
| 7. | Bikaner | 1 | 1 | - | - | - |
| 8. | Chakrauta | 1 | - | - | - | - |
| 9. | Dalipnagar | 1 | - | - | - | - |
| 10. | Dhaulakuan | 2 | 2 | - | - | - |
| 11. | Gagar | 1 | - | - | - | - |
| 12. | Jabalpur | 1 | 1 | - | - | - |
| 13. | Jalore | 1 | 1 | 1 | IVT-DP | LSM |
| 14. | Jhansi | 1 | 1 | 1 | IVT-DP-CZ | LSM |
| 15. | Kangra | 1 | 1 | - | - | - |
| 16. | Katrain | 1 | 1 | - | - | - |
| 17. | Kota | 2 | 2 | 1 | IVT-DP | RMT |
| 18. | Majhera | 2 | 2 | - | - | - |
| 19. | Malan | 1 | 1 | - | - | - |
| 20. | Mathura | 2 | 2 | 2 | AVT-IR-TS-MB, IVT-IR-TS-MB | LSM, UR |
| 21. | Mirzapur | 1 | - | - | - | - |
| 22. | Modipuram | 5 | 5 | - | - | - |
| 23. | Navgaon | 4 | 4 | - | - | - |
| 24. | Palampur | 1 | 1 | - | - | - |
| 25. | Pusa, IARI RS | 2 | 2 | 1 | IVT-RF-NEPZ | LSM |
| 26. | Rajauri | 1 | 1 | - | - | - |
| 27. | Rampura | 1 | 1 | - | - | - |
| 28. | Ranichauri | 1 | 1 | - | - | - |
| 29. | Rohtak | 1 | 1 | - | - | - |
| 30. | Sabour | 1 | 1 | 1 | - | - |
| 31. | S.G. Nagar | 3 | 3 | - | - | - |
| 32. | S.K. Nagar | 2 | 2 | - | - | - |
| 33. | Sunder Nagar | 1 | - | - | - | NC |
| 34. | Tabiji | 2 | 2 | 1 | IVT-IR-FB | LSM |
| 35. | Tissuhi | 1 | 1 | - | - | - |
| 36. | Udaipur | 3 | 3 | - | - | - |
| 37. | Vijapur | 3 | 3 | 1 | IVT-DP | LSM |
| | Total (B) | 66 | 60 | 13 | | |
| | G.T. (A+B) | 119 | 109 | 15 | | |

RMT= rejected by monitoring team, TF= trial failed, LSM= low yield levels LS= late sowing, HCV= High CV, UR= Unrealistic yield, LR = Late receipt of results, ES = Early sowing than recommended dates LS= late sowing than recommended dates NC= Not conducted.

Trial wise locations during Rabi 2013-14

| S no. | Trial Name | Locations | Total |
|-------|-------------------------|---|------------|
| 1 | AVT (RF) Hills | Bajaura, Berthein, Kangra, Katrain, Malan, Shimla, Sundernagar, Almora, Ranichauri, Majhera, Gagar, Chakrauta, Rajauri | 13 |
| 2 | AVT (IR-FB) – NWPZ | Dhaulakuan, Bawal, Hisar, Rohtak, Bathinda, Ludhiana, Pantnagar, Durgapura, Navgaon, Tabiji, Sriganganagar | 11 |
| 3 | AVT (IR-FB) - CZ | Kota, Udaipur, Banswara, SKnagar, Vijapur | 5 |
| 4 | AVT (IR-TS) Malt Barley | Dhaulakuan, Hisar, Karnal, Bawal, Bathinda, Ludhiana, Navgaon, Durgapura, Modipuram, Mathura, Pantnagar, Sriganganagar | 12 |
| 5 | AVT (IR-LS) Malt Barley | Hisar, Karnal, Bathinda, Ludhiana, Durgapura, Modipuram, Pantnagar, Sriganganagar | 8 |
| 6 | IVT (RF) NEPZ | Kanpur, Varanasi, Faizabad, Mirzapur, Tisuihi, Rewa, IARI Pusa, Sabour | 8 |
| 7 | IVT (IR-FB) Plains | Hisar, Ludhiana, Durgapura, Tabiji, Banswara, Navgaon, Udaipur, Pantnagar, Kanpur, Varanasi, Faizabad, Rewa, IARI, Pusa, Vijapur, S.K. Nagar | 15 |
| 8 | IVT (IR-TS) Malt Barley | Bawal, Hisar, Karnal, Ludhiana, Bathinda, Durgapura, Navgaon, Modipuram, Mathura, Pantnagar | 10 |
| 9 | IVT (IR-LS) Malt Barley | Hisar, Karnal, Ludhiana, Bathinda, Durgapura, Modipuram, Pantnagar | 7 |
| 10 | AVT-SST | Dalipnagar, Faizabad (2), Hisar, Bawal, Rampura, Bhilwara, DWR Hisar | 8 |
| 11 | IVT (Dual Type) Plains | Bikaner, Jalore, Durgapura, Kota, Udaipur, Jabalpur, Rewa, Hisar, Ludhiana, Kanpur, Faizabad, Varanasi, Jhansi, Modipuram, Anand, Banswara, Vijapur | 17 |
| 12 | AVT (Dual Type) Hills | Shimla, Bajaura, Palampur, Almora, Majhera | 5 |
| | Total | | 119 |

Center wise Summary Rabi 2013-14

| S No. | Centre | Trials proposed | Total |
|--|------------------|---|------------|
| (A) MAIN CENTRES | | | |
| 1. | Almora | AVT(RF-NHZ), AVT(DUAL) | 2 |
| 2. | Bajaura | AVT(RF)NHZ, AVT(DUAL) | 2 |
| 3. | Durgapura | AVT(IR), IVT(IR), AVT(M)TS, IVT(M)TS, AVT (M)LS, IVT(M)LS), IVT (DUAL), | 7 |
| 4. | Faizabad | IVT(RF), IVT(IR), SST(2 SETS), IVT (DUAL) | 5 |
| 5. | Hisar | AVT(IR), IVT(IR), AVT(M)TS, IVT(M)TS, AVT (M)LS, IVT(M)LS, SST, IVT(DUAL) | 8 |
| 6. | Kanpur | IVT(RF), IVT(IR), IVT(DUAL), | 3 |
| 7. | Karnal | AVT(M)TS, IVT(M)TS, AVT (M)LS, IVT(M)LS, AVT-SST | 5 |
| 8. | Ludhiana | AVT(IR), IVT(IR), AVT(M)TS, IVT(M)TS, AVT (M)LS, IVT(M)LS, IVT(DUAL), | 7 |
| 9. | Rewa | IVT(RF), IVT(IR), IVT(DUAL), | 3 |
| 10. | Shimla | AVT(RF)NH, AVT(DUAL), | 2 |
| 11. | Varanasi | IVT(RF), IVT(IR), IVT(DUAL), | 3 |
| 12. | Pantnagar | AVT(IR), IVT(IR), AVT(M)TS, IVT(M)TS, AVT (M)LS, IVT(M)LS | 6 |
| | | Sub Total | 53 |
| (B) TESTING CENTRES /SAU / DEPTT. OF AGRIC. | | | |
| S No. | Centre | Trials conducted | Total |
| 1. | Anand | IVT(DUAL)TS | 1 |
| 2. | Bawal | AVT(IR), AVT(M)TS, IVT(M)TS, SST | 4 |
| 3. | Banswara | IVT(IR), IVT (DUAL), AVT(IR-CZ) | 3 |
| 4. | Bathinda | AVT(IR), AVT(M)TS, IVT(M)TS, AVT (M)LS, IVT(M)LS | 5 |
| 5. | Berthein | AVT(RF)NHZ | 1 |
| 6. | Bhilwara | SST | 1 |
| 7. | Bikaner | IVT(DUAL)TS | 1 |
| 8. | Dalipnagar | SST | 1 |
| 9. | Dhaulakuan | AVT (IR), AVT(M)TS | 2 |
| 10. | Gagar | AVT(RF)NHZ | 1 |
| 11. | Jabalpur | IVT(DUAL)TS | 1 |
| 12. | Jalore | IVT(DUAL)TS | 1 |
| 13. | Jhansi | IVT(DUAL)TS | 1 |
| 14. | Kangra | AVT(RF)NHZ | 1 |
| 15. | Katrain | AVT(RF)NHZ | 1 |
| 16. | Kota | IVT(DUAL)TS, AVT(IR-CZ) | 2 |
| 17. | Majhera | AVT(RF)NHZ, AVT(DUAL) | 2 |
| 18. | Malan | AVT(RF)NHZ | 1 |
| 19. | Mathura | AVT(M)TS, IVT(M)TS | 2 |
| 20. | Mirzapur | IVT(RF) | 1 |
| 21. | Modipuram | AVT(M)TS, IVT(M)TS, AVT (M)LS, IVT(M)LS, IVT(DUAL)TS | 5 |
| 22. | Nagau/ Chakrauta | AVT(RF)NHZ | 1 |
| 23. | Navgaon | AVT(IR), AVT(M)TS, IVT(M)TS, IVT (IR) | 4 |
| 24. | Palampur | AVT(DUAL) | 1 |
| 25. | Pusa, IARI RS | IVT(RF), IVT(IR) | 2 |
| 26. | Rajauri | AVT-RF-NHZ | 1 |
| 27. | Rampura | SST | 1 |
| 28. | Ranichauri | AVT(RF)NHZ | 1 |
| 29. | Rohtak | AVT(IR) | 1 |
| 30. | S.K. Nagar | IVT(IR), AVT(IR-CZ) | 2 |
| 31. | Sriganganagar | AVT(M)TS, AVT(M) LS, AVT(IR), | 3 |
| 32. | Sunder Nagar | AVT(RF)NHZ | 1 |
| 33. | Tabiji | AVT(IR), IVT(IR) | 2 |
| 34. | Tissuhi | IVT(RF) | 1 |
| 35. | Udaipur | IVT (IR), IVT(DUAL)TS, AVT(IR-CZ) | 3 |
| 36. | Vijapur | IVT(IR), IVT(DUAL), AVT(IR-CZ) | 3 |
| 37. | Sabour | IVT-RF-NEPZ | 1 |
| | | SUB TOTAL | 66 |
| | | G TOTAL (A+B) | 119 |

PARENTAGE OF STRAINS UNDER BARLEY NETWORK TESTING IN RABI 2013-14

| No. | CONTRIBUTING CENTRE | SYMBOLS |
|-----|---------------------------|-------------|
| 1 | ALMORA, V.P.K.A.S. | VLB |
| 2 | BAJAURA, R.R.S. (CSKHPKV) | HBL |
| 3 | DURGAPURA, A.R.S.(SKRAU) | RD |
| 4 | FAIZABAD, N.D.U.A&T. | NDB |
| 5 | HISAR, C.C.S.H.A.U. | BH |
| 6 | KANPUR, C.S.A.U.&T. | KB |
| 7 | KARNAL,D.W.R. | DWRB, DWRUB |
| 8 | LUDHIANA, P.A.U. | PL |
| 9 | PANTNAGAR, G.B.P.U.A.&T. | UPB |
| 10 | REWA, J.N.K.V. | JB |
| 11 | SHIMLA, RS, I.A.R.I | BHS |
| 12 | VARANASI, B. H. U. | HUB |

| S.No. | Entries | Parentage |
|-------------------------------|---------|--|
| IARI,RS, Shimla | | |
| 1 | BHS423 | IBYT-LRA-C-1(2009-10) |
| 2 | BHS424 | IBON-HI-15(2009-10) |
| 3 | BHS425 | IBON-HI-31(2009-10) |
| 4 | BHS427 | IBYT-MRA-20(2009-10) |
| 5 | BHS428 | IBON-HI-36(2009-10) |
| 6 | BHS429 | IBON-HI-37(2009-10) |
| 7 | BHS430 | IBLSGP-13(2008-09) |
| 8 | BHS431 | IBON-HI-33(2009-10) |
| 9 | BHS432 | IBON-HI-41(2009-10) |
| GBPUA&T, Pantnagar | | |
| 10 | UPB1031 | RD2624/(P.STO/3/LBIRAN/UNABO/LIGNEE640/4/BLLU/5/...) |
| 11 | UPB1037 | IBYT-MRA-14 (EIBGN 2010-11-2) |
| 12 | UPB1038 | RD2552/RD2670 |
| 13 | UPB1039 | IBON-LRA-M-79 (EIBGN 2010-11-37) |
| 14 | UPB1040 | IBON-LRA-M-31 (EIBGN 2010-11-30) |
| 15 | UPB1041 | IBON-HI-33 (EIBGN 2012-13-45) |
| 16 | UPB1042 | INBYT-LRA-M-17 (EIBGN 2010-11) |
| VPKAS, Almora | | |
| 17 | VLB130 | IBON-HI-107(MSEL//BUCK M8.88/E.ACACIA) |
| 18 | VLB137 | BR2/CARMEN-B//LIMON |
| 19 | VLB138 | PAMIR-147/SONATA/3/PAMIR-154//ICB-100709/WB156 |
| 20 | VLB139 | DEMAY/RIKA |
| 21 | VLB140 | KORU/TRIUMPH-BAR//GUNTHER/3/MSEL |
| CSKHPKV, RRS, Bajaura | | |
| 22 | HBL713 | HBL 276/HBL 364 |
| 23 | HBL717 | EMBSN10/ HBL276 |
| 24 | HBL718 | HBSN19/ HBL276 |
| 25 | HBL719 | IBYT12/HBL276 |
| 26 | HBL731 | IBYT-HI-1 (EIBGN 2011-12) |

| CCSHAU, Hisar | | |
|------------------------------|--------|------------------------------------|
| 27 | BH959 | BH393/BH331 |
| 28 | BH968 | 32 nd IBON209/BH674 |
| 29 | BH972 | 29 th EIBGN-22/BH 646 |
| 30 | BH976 | K792/RD2668 |
| 31 | BH980 | NBD1276/BH393 |
| 32 | BH981 | RD2660/RD2683 |
| 33 | BH982 | 13 th EMBSN-14/RD2683 |
| 34 | BH983 | NDB1289/JB42 |
| 35 | BH984 | 2005EIBGN-4/BH646 |
| 36 | BH985 | JB47/K792 |
| 37 | BH986 | RD2670/K792 |
| 38 | BH987 | K792/RD2668 |
| 39 | BH988 | 33 rd IBON-200/DWRUB-52 |
| 40 | BH989 | 2005 EIBGN-4/BH855 |
| 41 | BH990 | NDB1281/BH674 |
| 42 | BH991 | 28 th IBYT-3/RD2668 |
| 43 | BH992 | RD2660/DWRUB52 |
| BHU, Varanasi | | |
| 44 | HUB231 | DL88/RD2508 |
| 45 | HUB232 | 26 th IBYT-7-1/RD2624 |
| 46 | HUB233 | DL88/22nd IBYT15 |
| 47 | HUB234 | 26 th IBYT18-2/KARAN280 |
| 48 | HUB235 | 22 nd IBYT-2/RD2552 |
| 49 | HUB236 | DL88/22nd IBYT15 |
| 50 | HUB237 | EIBGN07-18/RD2508 |
| 51 | HUB238 | DL88/RD2508 |
| 52 | HUB239 | 26 th IBYT19-3/RD2615 |
| JNKV, Rewa | | |
| 53 | JB290 | JB58/RD2508 |
| 54 | JB291 | DL88/K633 |
| 55 | JB292 | JB101/BG105 |
| 56 | JB293 | RD2503/JB14 |
| SKRAU, ARS, Durgapura | | |
| 57 | RD2832 | RD2552/PL512//RD2624 |
| 58 | RD2833 | PETUNIA/TOCTE/CONGONA//RD2592 |
| 59 | RD2849 | ISEBON-128(08-09)/PL705 |
| 60 | RD2860 | RD2552/ADABELLA/M-111/CANELA |
| 61 | RD2874 | NDB1173/BH902//RD2715 |
| 62 | RD2875 | RD2552/PL419//RD2508 |
| 63 | RD2876 | RD2660/PENCO/CHEVRON-BAR |
| 64 | RD2877 | RD2052/DWR64//RD2660 |
| 65 | RD2878 | RD2618/RD2620//RD2552 |
| 66 | RD2879 | RD2624/RD2715//RIHANE03 |
| 67 | RD2880 | SARA-1-BAR/CAPUCONA20//RD2592 |
| 68 | RD2881 | RD2634/NDB1020/RD2660 |
| 69 | RD2882 | RD2683/DWR64//K560 |
| 70 | RD2883 | RD2706/RD2634//MARA/3/CANELA |
| 71 | RD2884 | RD2634/NDB1020//RD2579 |
| 72 | RD2885 | RD2715/K551//BH393 |
| 74 | RD2886 | RD2715/K750//PETUNIA-1 |
| 75 | RD2887 | RD2670/RD2683//BLLU/PINON |
| 76 | RD2888 | RD2683/RD2503//RD2683 |
| 77 | RD2889 | RD2552/UBL-9//GLORIA-BAR |

| | | |
|-----------------------------|---------|-------------------------------------|
| 78 | RD2890 | BH393/RD2360//RD2715 |
| 79 | RD2891 | CLIPPER/DWR46//RD2615 |
| 80 | RD2892 | RD2624/RD2503//RD2618 |
| 81 | RD2893 | RD2651/DWR17//RD2819 |
| 82 | RD2894 | UB1005/DWR44//RD2552 |
| 83 | RD2895 | DWR39/RD2651//RD2668 |
| 84 | RD2896 | CONGONA/BLLU//RD2668 |
| 85 | RD2897 | RD2035/IBON-6//DWR39 |
| 86 | RD2898 | DWR46/RD2651//PL508 |
| PAU, Ludhiana | | |
| 87 | PL874 | IBON-LRA-C-10 (2009-10) |
| 88 | PL880 | PL426/BC473 |
| 89 | PL881 | PL426/K537 |
| 90 | PL882 | PL426/K537 |
| CSAUA&T, Kanpur | | |
| 91 | KB1347 | Jagriti/K614 |
| 92 | KB1349 | CANELA/CONLON |
| 93 | KB1351 | K141/K713 |
| 94 | KB1353 | K508/RD2676 |
| 95 | KB1354 | SHENMAI NO.3/MSEL |
| 96 | KB1360 | K560/BH553 |
| 97 | KB1363 | MSEL/PFC9214 |
| 98 | KB1367 | PFC8023/MSEL |
| 99 | KB1369 | Jagriti/K169 |
| 100 | KB1370 | JYOTI/RD2552 |
| 101 | KB1375 | K551/HUB158 |
| NDUA&T, Faizabad | | |
| 102 | NDB1577 | NB2/K580 |
| 103 | NDB1578 | BCB128/NDB940 |
| 104 | NDB1580 | NB3/HUB114 |
| 105 | NDB1584 | IBCB-S(2008-09)-39 |
| 106 | NDB1585 | 31 st IBON-MRA-96/NDB217 |
| 107 | NDB1586 | (IBYT-MRA-24-2008-09) |
| 108 | NDB1587 | IBON-HI-31(2008-09) |
| 109 | NDB1592 | IBCB-S(2008-09)-31 |
| 110 | NDB1600 | NDB208/ALFA93 |
| DWR, Karnal | | |
| 111 | DWRB101 | DWR28/BH581 |
| 112 | DWRB111 | INBYT-14(2010-11) |
| 113 | DWRB118 | DWRUB52/DWRUB54 |
| 114 | DWRB121 | DWRUB52/DWR28 |
| 115 | DWRB122 | DWRUB52/BCU5734 |
| 116 | DWRB123 | DWRUB54/DWR51 |
| 117 | DWRB124 | DWRUB54/DWRUB64 |
| 118 | DWRB125 | DWRUB54/RD2668 |
| 119 | DWRB126 | DWRUB62/BCU5754 |
| 120 | DWRB127 | DWR45/DWR46 |
| 121 | DWRB128 | DWRUB54/DWRUB75 |
| 122 | DWRB129 | IEBON-52(2010-11) |
| 123 | DWRB130 | IBYT-MRA-12(2011-12) |
| 124 | DWRB131 | IBYT-LRA-M-11(2011-12) |
| Checks | | |
| 1 | AZAD | K12/K19 |
| 2 | BH902 | BH495/RD2552 |

| | | |
|----|---------|--|
| 3 | BH946 | BHMS22A/BH549//RD2552 |
| 4 | BHS352 | HBL240/BHS504//VLB129 |
| 5 | BHS380 | VOILET/MJA/7/ABN-B6/BA/GAL//FZA-B/5/DG/DC-B/PT-BAR/3/RA-B/BA/3/4/TRYIGAL |
| 6 | BHS400 | 34 th IBON-9009 |
| 7 | DWRB73 | PL710/DWR17 |
| 8 | DWRB91 | DWR46/RD2552 |
| 9 | DWRB92 | DWR28/DWR45 |
| 10 | DWRUB52 | DWR17/K551 |
| 11 | DWRUB64 | DL472/PL705 |
| 12 | HBL113 | SELECTION FROM/ZYPHYZE |
| 13 | HBL276 | HBL233/HBL238 |
| 14 | HUB113 | KARAN280/C138 |
| 15 | JYOTI | K 12/C 251 |
| 16 | K551 | P 464/JYOTI |
| 17 | K603 | K257/C138 |
| 18 | Lakhan | K12/IB226 |
| 19 | NDB1173 | BYTLRA 3-(1994-95)/NDB217 |
| 20 | PL751 | K 226/PL226 |
| 21 | RD2035 | RD103/PL101 |
| 22 | RD2552 | RD2035/DL472 |
| 23 | RD2715 | RD387/BH602//RD2035 |
| 24 | RD2786 | RD2634/NDB1020//K425 |
| 25 | RD2794 | RD2035/RD2683 |
| 26 | VLB118 | 14 th EMBSN-9313 |

Rainfed Trials Plains

INITIAL VARIETAL TRIAL (RAINFED) – NEPZ

The IVT (rainfed) for north-eastern plains zone was proposed at nine locations including five in U.P, two in Bihar and one each in the states of M.P. & Jharkhand. All the trials were conducted except Ranchi while data were not received from Mirzapur. The trial data from six centres were considered for zonal mean. However, Sabour could not be considered for zonal mean due to low yield levels.

The trial consisted of 18 test entries and two checks, namely Lakhan and K 603. The monitoring team monitored this trial during the crop season at Rewa, Kanpur, Mirzapur, Tissuhi, Faizabad and Varanasi in NEPZ. Entry DWRB 129 was having off types, which needs purification.

No serious disease/pest problems were observed in the trials, except moderate to high leaf blight incidence on most of the entries. A few entries like JB 293, RD 2885, RD 2883 and RD 2882 recorded susceptible reaction to leaf blight.

The location means ranged from 1.01 q/ha (Pusa) to 43.18 q/ha (Varansi) indicating a wide range in grain yield.

The results from six locations revealed that at zonal level, the check Lakhan ranked first with 33.60 q/ha mean grain yield and was followed by PL 882 (33.4 q/ha), JB 292 (33.4 q/ha) and KB 1347 (32.4 q/ha) in the first non-significant group.

IVT-RF-TS-NEPZ

Location wise and Zonal means (Grain Yield in q/ha)

| Varieties | Codes | Pusa | | Kanpur | | Faizabad | | Tissuhi | | Rewa | | Varanasi | | NEPZ* | |
|------------|-------------|---------|----|----------|----|----------|----|----------|----|---------|----|----------|----|-------|----|
| | | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk |
| DWRB 129 | IVTRFNEP-13 | 21.67 | 11 | 30.71 | 5 | 28.93 | 8 | 19.50 | 11 | 40.80 | 6 | 38.96 | 8 | 30.1 | 9 |
| HUB 231 | IVTRFNEP-5 | 21.12 | 12 | 27.17 | 9 | 27.48 | 9 | 27.66 | 3 | 41.80 | 2 | 35.66 | 12 | 30.1 | 7 |
| HUB 232 | IVTRFNEP-2 | 19.31 | 15 | 25.27 | 13 | 36.78 | 1 | 19.32 | 12 | 36.51 | 18 | 39.90 | 6 | 29.5 | 10 |
| HUB 233 | IVTRFNEP-10 | 20.29 | 13 | 23.51 | 15 | 24.46 | 14 | 17.03 | 14 | 36.90 | 16 | 36.21 | 11 | 26.4 | 15 |
| HUB 234 | IVTRFNEP-12 | 22.50 | 10 | 28.80 | 8 | 27.17 | 10 | 23.85 | 9 | 41.41 | 5 | 37.08 | 10 | 30.1 | 8 |
| HUB 235 | IVTRFNEP-3 | 25.91 | 7 | 25.00 | 14 | 32.31 | 4 | 27.11 | 4 | 35.81 | 19 | 43.15 | 2 | 31.5 | 6 |
| JB 292 | IVTRFNEP-7 | 25.29 | 8 | 34.24 | 2 | 29.29 | 6 | 25.72 | 6 | 42.40 | 1 | 43.18 | 1 | 33.4 | 3 |
| JB 293 | IVTRFNEP-16 | 9.28 | 16 | 21.74 | 18 | 19.02 | 16 | 20.17 | 10 | 38.48 | 12 | 32.11 | 16 | 23.5 | 17 |
| KB 1347 | IVTRFNEP-1 | 31.63 | 2 | 30.71 | 6 | 31.70 | 5 | 25.66 | 7 | 34.40 | 20 | 40.25 | 5 | 32.4 | 4 |
| KB 1351 | IVTRFNEP-4 | 25.94 | 6 | 30.71 | 6 | 25.06 | 13 | 17.21 | 13 | 39.30 | 9 | 32.73 | 15 | 28.5 | 11 |
| KB 1360 | IVTRFNEP-20 | 26.41 | 5 | 34.78 | 1 | 25.36 | 12 | 10.87 | 20 | 39.50 | 8 | 33.00 | 14 | 28.3 | 12 |
| NDB 1577 | IVTRFNEP-6 | 28.22 | 3 | 26.77 | 10 | 29.29 | 6 | 25.85 | 5 | 40.30 | 7 | 39.72 | 7 | 31.7 | 5 |
| PL 881 | IVTRFNEP-14 | 23.80 | 9 | 32.20 | 3 | 20.83 | 15 | 11.65 | 18 | 39.29 | 10 | 35.27 | 13 | 27.2 | 14 |
| PL 882 | IVTRFNEP-8 | 31.85 | 1 | 25.82 | 12 | 34.12 | 2 | 25.36 | 8 | 41.80 | 2 | 41.69 | 3 | 33.4 | 2 |
| RD 2882 | IVTRFNEP-19 | 1.45 | 19 | 18.48 | 20 | 15.70 | 19 | 13.53 | 16 | 37.60 | 15 | 28.29 | 20 | 19.2 | 20 |
| RD 2883 | IVTRFNEP-18 | 1.01 | 20 | 19.97 | 19 | 16.61 | 18 | 16.30 | 15 | 38.40 | 13 | 31.79 | 17 | 20.7 | 18 |
| RD 2884 | IVTRFNEP-11 | 8.01 | 17 | 22.01 | 16 | 32.97 | 3 | 12.68 | 17 | 37.70 | 14 | 31.52 | 18 | 24.1 | 16 |
| RD 2885 | IVTRFNEP-17 | 1.70 | 18 | 22.01 | 16 | 15.40 | 20 | 11.05 | 19 | 36.80 | 17 | 30.31 | 19 | 19.5 | 19 |
| K 603 (c) | IVTRFNEP-9 | 19.93 | 14 | 26.36 | 11 | 18.60 | 17 | 28.38 | 2 | 38.60 | 11 | 37.22 | 9 | 28.2 | 13 |
| LAKHAN (c) | IVTRFNEP-15 | 27.21 | 4 | 32.20 | 3 | 26.87 | 11 | 32.61 | 1 | 41.50 | 4 | 41.35 | 4 | 33.6 | 1 |
| G.M. | | 19.63 | | 26.92 | | 25.90 | | 20.58 | | 38.97 | | 36.47 | | 28.1 | |
| S.E.(M) | | 1.09 | | 1.32 | | 1.44 | | 1.25 | | 2.55 | | 0.53 | | 0.61 | |
| C.D. | | 3.08 | | 3.73 | | 4.08 | | 3.54 | | 7.23 | | 1.50 | | 1.69 | |
| C.V. | | 11.07 | | 9.79 | | 11.12 | | 12.15 | | 13.10 | | 2.90 | | | |
| D.O.S. | | 6-11-13 | | 31-10-13 | | 7-11-13 | | 10-11-13 | | 7-11-13 | | 8-11-13 | | | |

ZONE: NEPZ
RABI – 2013-14

INITIAL VARIETAL TRIAL - (RF)
Summary of ancillary and disease data

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | | | DISEASE REACTION | | | | | |
|---------|------------|----------------------|----------------------|--------------------------|----------------------------------|-----------------------|-------------|-----------------------|-----------------------|-----|----|----|----|------------------|-------|-----------|--------------|-------------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Sm. Mean & Range | Two/Six row | Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Spot Leaf | Hel. Disease | Leaf Blight | APHID (L-5) |
| 1 | DWRB 129 | 76 (61-96) | 121 (98-140) | 82 (64-98) | 91 (32-174) | 2 (1-3) | 6 | LY | 38 (34-40) | H | | | | | 48 | 24 | | | |
| 2 | HUB 231 | 71 (56-90) | 119 (93-138) | 75 (64-86) | 67 (25-101) | 3 (2-5) | 6 | Y | 38 (32-44) | H | | | | | 57 | 58 | | | |
| 3 | HUB 232 | 78 (64-90) | 121 (108-142) | 76 (60-93) | 84 (40-116) | 3 (1-5) | 6 | LY | 35 (31-39) | H | | | | | 68 | 12 | | | |
| 4 | HUB 233 | 74 (64-88) | 120 (102-141) | 85 (68-96) | 78 (20-119) | 3 (2-5) | 6 | LY | 36 (34-41) | H | | | | | 89 | 68 | | | |
| 5 | HUB 234 | 81 (70-89) | 122 (112-141) | 75 (58-91) | 83 (26-111) | 2 (1-4) | 6 | LY | 34 (28-37) | H | | | | | 68 | 68 | | | |
| 6 | HUB 235 | 70 (68-75) | 114 (103-139) | 83 (59-97) | 73 (21-110) | 2 (1-4) | 6 | LY | 37 (30-42) | H | | | | | 57 | 35 | | | |
| 7 | JB 292 | 76 (70-81) | 119 (112-140) | 86 (60-97) | 75 (26-99) | 4 (2-5) | 6 | LY | 40 (31-44) | H | | | | | 56 | 56 | | | |
| 8 | JB 293 | 73 (70-76) | 116 (105-138) | 85 (71-95) | 65 (17-120) | 4 (3-5) | 6 | LY | 34 (22-42) | H | | | | | 99 | 89 | | | |
| 9 | KB 1347 | 68 (62-74) | 112 (98-141) | 75 (58-86) | 74 (38-101) | 2 (1-3) | 6 | LY | 38 (29-45) | H | | | | | 57 | 24 | | | |
| 10 | KB 1351 | 97 (72-109) | 131 (119-147) | 93 (75-108) | 92 (30-175) | 3 (2-5) | 6 | LY | 34 (25-41) | H | | | | | 79 | 12 | | | |
| 11 | KB 1360 | 96 (73-104) | 130 (118-148) | 88 (57-109) | 78 (13-128) | 3 (2-4) | 6 | LY | 35 (24-44) | H | | | | | 79 | 12 | | | |
| 12 | NDB 1577 | 70 (60-78) | 116 (100-147) | 80 (67-93) | 70 (32-92) | 3 (3-4) | 6 | LY | 39 (34-45) | H | | | | | 89 | 23 | | | |
| 13 | PL 881 | 94 (71-101) | 131 (121-146) | 87 (60-107) | 67 (21-99) | 3 (2-4) | 6 | LY | 36 (28-45) | H | | | | | 68 | 12 | | | |
| 14 | PL 892 | 76 (61-99) | 121 (102-146) | 79 (73-86) | 107 (61-175) | 3 (2-3) | 6 | LY | 34 (28-40) | H | | | | | 57 | 36 | | | |
| 15 | RD 2882 | 66 (61-71) | 112 (97-137) | 73 (59-88) | 67 (41-108) | 4 (2-5) | 6 | Y | 35 (19-42) | H | | | | | 99 | 99 | | | |
| 16 | RD 2883 | 67 (61-74) | 111 (96-136) | 74 (62-92) | 59 (16-119) | 4 (2-5) | 6 | Y | 33 (16-42) | H | | | | | 99 | 89 | | | |
| 17 | RD 2884 | 77 (67-90) | 121 (109-142) | 73 (44-90) | 96 (36-163) | 2 (1-3) | 6 | LY | 37 (33-42) | H | | | | | 68 | 35 | | | |
| 18 | RD 2885 | 70 (64-78) | 113 (99-136) | 73 (54-97) | 65 (25-117) | 4 (3-5) | 6 | Y | 33 (19-40) | H | | | | | 99 | 68 | | | |
| 19 | K 603 (c) | 74 (69-78) | 118 (107-140) | 88 (71-100) | 81 (31-122) | 4 (3-5) | 6 | LY | 37 (33-43) | H | | | | | 99 | 35 | | | |
| 20 | LAKHAN (c) | 74 (69-77) | 119 (107-142) | 92 (68-100) | 93 (38-142) | 3 (2-4) | 6 | LY | 38 (34-40) | H | | | | | 57 | 24 | | | |

Rainfed Trials - Hills

ADVANCED VARIETAL TRIAL (RAINFED) – N H Zone

The AVT and IVT of NH zone under rainfed conditions have been merged together to have one common AVT and the entry has to be tested for three years consecutively for qualifying for identification proposal. The trial was proposed at 13 locations in the NH Zone comprising of Uttarakhand, H.P. and J&K hills. Trial was conducted at 10 centres, except Sundernagar, Gagar and Chakrauta centres in the zone. The results from ten locations only are reported for zonal means.

The trial consisted of 17 entries and four checks namely, BHS 352, VLB 118, HBL 113 and BHS 400.

The zonal monitoring team visited the trials in Uttarakhand as well as Himachal Pradesh at many centres along with wheat group. In case of varietal purity, entries DWRB 130, DWRB 111, BHS 423 and VLB 140 were recommended for purification by the team. The team reported that entries HBL 713, VLB 118, UPB 1031 and BHS 400 showed promising performance in breeding trials at Malan, Kangra and Berthin locations. However, yellow rust up to 10S was reported in entry BHS 427 at Malan.

The trial means of the locations considered for reporting, ranged from 10.42 q/ha (Rajouri) to 58.97 q/ha (Bajaura). In general the crop situation was very good in zone. The check variety BHS 400 (34.1 q/ha) ranks first in the first non-significant group while final year entry UPB 1031 (33.2 q/ha) showed second rank in the first non significant group in the zone.

AVT-R F-TS-NH zone

Location wise and zonal means in q/ha

| Varieties | Codes | Majhera | | | Malan | | | Almora | | | Berthn | | | Shimla | | |
|-------------|----------|------------|----|---|---------|----|---|------------|----|---|------------|----|---|---------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| BHS 423 | NHGBZ 20 | 25.23 | 11 | 0 | 40.63 | 5 | 1 | 37.82 | 12 | 0 | 44.20 | 4 | 0 | 21.38 | 4 | 1 |
| BHS 424 | NHGBZ 17 | 25.23 | 11 | 0 | 30.54 | 15 | 0 | 35.87 | 15 | 0 | 32.37 | 12 | 0 | 12.80 | 17 | 0 |
| BHS 425 | NHGBZ 7 | 28.34 | 7 | 1 | 34.42 | 11 | 0 | 39.27 | 10 | 0 | 34.60 | 9 | 0 | 17.51 | 11 | 0 |
| BHS 427 | NHGBZ 18 | 32.61 | 1 | 1 | 31.57 | 13 | 0 | 30.84 | 18 | 0 | 28.57 | 17 | 0 | 11.96 | 19 | 0 |
| DWRB 111 | NHGBZ 3 | 18.25 | 21 | 0 | 25.62 | 21 | 0 | 35.37 | 17 | 0 | 26.79 | 19 | 0 | 11.59 | 21 | 0 |
| DWRB 130 | NHGBZ 10 | 29.50 | 4 | 1 | 39.34 | 6 | 1 | 45.92 | 2 | 0 | 40.18 | 5 | 0 | 20.59 | 5 | 0 |
| HBL 713 | NHGBZ 2 | 23.68 | 14 | 0 | 46.07 | 1 | 1 | 45.34 | 3 | 0 | 39.29 | 6 | 0 | 19.69 | 7 | 0 |
| HBL 718 | NHGBZ 14 | 19.02 | 20 | 0 | 26.92 | 19 | 0 | 27.72 | 19 | 0 | 27.90 | 18 | 0 | 11.71 | 20 | 0 |
| HBL 719 | NHGBZ 16 | 24.84 | 13 | 0 | 25.88 | 20 | 0 | 25.72 | 21 | 0 | 22.10 | 20 | 0 | 19.57 | 9 | 0 |
| HBL 731 | NHGBZ 9 | 28.34 | 7 | 1 | 29.76 | 16 | 0 | 36.87 | 14 | 0 | 31.25 | 14 | 0 | 12.56 | 18 | 0 |
| UPB 1031 | NHGBZ 19 | 27.17 | 9 | 0 | 41.15 | 4 | 1 | 49.73 | 1 | 1 | 47.32 | 2 | 1 | 20.17 | 6 | 0 |
| UPB 1037 | NHGBZ 15 | 25.62 | 10 | 0 | 30.83 | 14 | 0 | 39.31 | 9 | 0 | 34.60 | 9 | 0 | 13.53 | 15 | 0 |
| UPB 1038 | NHGBZ 21 | 20.96 | 18 | 0 | 35.46 | 9 | 0 | 42.93 | 4 | 0 | 37.50 | 8 | 0 | 16.67 | 14 | 0 |
| VLB 137 | NHGBZ 11 | 22.52 | 16 | 0 | 38.30 | 7 | 0 | 40.49 | 8 | 0 | 29.91 | 15 | 0 | 17.27 | 12 | 0 |
| VLB 138 | NHGBZ 12 | 22.13 | 17 | 0 | 28.47 | 18 | 0 | 39.18 | 11 | 0 | 32.14 | 13 | 0 | 18.24 | 10 | 0 |
| VLB 139 | NHGBZ 13 | 19.41 | 19 | 0 | 38.04 | 8 | 0 | 41.44 | 5 | 0 | 33.26 | 11 | 0 | 16.97 | 13 | 0 |
| VLB 140 | NHGBZ 8 | 31.06 | 2 | 1 | 34.42 | 11 | 0 | 35.51 | 16 | 0 | 38.39 | 7 | 0 | 19.69 | 8 | 0 |
| BHS 352 (c) | NHGBZ 4 | 22.90 | 15 | 0 | 29.24 | 17 | 0 | 25.77 | 20 | 0 | 21.21 | 21 | 0 | 13.53 | 16 | 0 |
| BHS 400 (c) | NHGBZ 1 | 29.50 | 4 | 1 | 44.51 | 3 | 1 | 40.53 | 7 | 0 | 54.02 | 1 | 1 | 23.91 | 2 | 1 |
| HBL 113 (c) | NHGBZ 6 | 28.73 | 6 | 1 | 35.46 | 9 | 0 | 36.91 | 13 | 0 | 29.46 | 16 | 0 | 25.00 | 1 | 1 |
| VLB 118 (c) | NHGBZ 5 | 30.28 | 3 | 1 | 45.29 | 2 | 1 | 40.81 | 6 | 0 | 46.43 | 3 | 1 | 22.10 | 3 | 1 |
| G.M. | | 25.49 | | | 34.85 | | | 37.78 | | | 34.83 | | | 17.45 | | |
| S.E.(M) | | 1.74 | | | 2.61 | | | 1.13 | | | 2.90 | | | 1.30 | | |
| C.D. | | 4.92 | | | 7.37 | | | 3.19 | | | 8.21 | | | 3.68 | | |
| C.V. | | 13.64 | | | 14.96 | | | 5.97 | | | 16.67 | | | 14.93 | | |
| DOS | | 31-10-2013 | | | 6-11-13 | | | 20-10-2013 | | | 22-10-2013 | | | 5-11-13 | | |

AVT - R F - NH ZONE
Location wise and Zonal Means in q/ha

| Varieties | Codes | Bajaura | | Rajouri | | Kangra | | Katrain | | Ranichauri | | NHZ* | | | | | | | |
|-------------|----------|------------|----|---------|------------|--------|---|------------|----|------------|------------|------|---|------------|----|---|------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | | | |
| BHS 423 | NHGBZ 20 | 52.38 | 5 | 0 | 15.85 | 10 | 0 | 25.48 | 14 | 0 | 29.23 | 6 | 0 | 18.12 | 18 | 0 | 31 | 8 | 0 |
| BHS 424 | NHGBZ 17 | 26.70 | 20 | 0 | 15.85 | 8 | 0 | 22.88 | 16 | 0 | 23.31 | 11 | 0 | 19.93 | 16 | 0 | 24.5 | 17 | 0 |
| BHS 425 | NHGBZ 7 | 40.42 | 12 | 0 | 13.00 | 17 | 0 | 27.87 | 5 | 1 | 15.22 | 21 | 0 | 25.36 | 7 | 0 | 27.6 | 11 | 0 |
| BHS 427 | NHGBZ 18 | 36.07 | 16 | 0 | 19.25 | 2 | 1 | 27.51 | 8 | 1 | 21.62 | 14 | 0 | 22.34 | 13 | 0 | 26.2 | 15 | 0 |
| DWRB 111 | NHGBZ 3 | 37.02 | 14 | 0 | 17.66 | 5 | 0 | 18.23 | 21 | 0 | 16.30 | 20 | 0 | 21.74 | 15 | 0 | 22.9 | 20 | 0 |
| DWRB 130 | NHGBZ 10 | 36.14 | 15 | 0 | 12.23 | 19 | 0 | 27.77 | 7 | 1 | 28.38 | 7 | 0 | 36.23 | 1 | 1 | 31.6 | 5 | 0 |
| HBL 713 | NHGBZ 2 | 48.44 | 8 | 0 | 14.40 | 12 | 0 | 29.22 | 1 | 1 | 31.28 | 3 | 1 | 15.10 | 20 | 0 | 31.2 | 6 | 0 |
| HBL 718 | NHGBZ 14 | 35.39 | 17 | 0 | 18.48 | 4 | 0 | 26.25 | 12 | 0 | 20.29 | 16 | 0 | 23.55 | 10 | 0 | 23.7 | 18 | 0 |
| HBL 719 | NHGBZ 16 | 23.51 | 21 | 0 | 13.99 | 14 | 0 | 20.48 | 19 | 0 | 21.38 | 15 | 0 | 26.57 | 5 | 0 | 22.4 | 21 | 0 |
| HBL 731 | NHGBZ 9 | 38.04 | 13 | 0 | 14.09 | 13 | 0 | 19.26 | 20 | 0 | 19.93 | 17 | 0 | 30.19 | 3 | 0 | 26 | 16 | 0 |
| UPB 1031 | NHGBZ 19 | 58.97 | 1 | 1 | 13.63 | 15 | 0 | 26.14 | 13 | 0 | 33.09 | 1 | 1 | 15.10 | 20 | 0 | 33.2 | 2 | 1 |
| UPB 1037 | NHGBZ 15 | 44.90 | 10 | 0 | 10.42 | 21 | 0 | 26.86 | 10 | 0 | 22.34 | 13 | 0 | 26.57 | 5 | 0 | 27.5 | 12 | 0 |
| UPB 1038 | NHGBZ 21 | 50.75 | 7 | 0 | 12.73 | 18 | 0 | 22.07 | 18 | 0 | 30.19 | 4 | 1 | 19.32 | 17 | 0 | 28.9 | 9 | 0 |
| VLB 137 | NHGBZ 11 | 28.19 | 19 | 0 | 20.79 | 1 | 1 | 22.14 | 17 | 0 | 28.26 | 8 | 0 | 24.76 | 9 | 0 | 27.3 | 13 | 0 |
| VLB 138 | NHGBZ 12 | 42.60 | 11 | 0 | 15.85 | 8 | 0 | 28.74 | 3 | 1 | 27.54 | 10 | 0 | 16.30 | 19 | 0 | 27.1 | 14 | 0 |
| VLB 139 | NHGBZ 13 | 54.55 | 4 | 1 | 12.05 | 20 | 0 | 26.59 | 11 | 0 | 18.48 | 19 | 0 | 25.36 | 7 | 0 | 28.6 | 10 | 0 |
| VLB 140 | NHGBZ 8 | 51.77 | 6 | 0 | 16.39 | 6 | 0 | 29.16 | 2 | 1 | 28.02 | 9 | 0 | 27.78 | 4 | 0 | 31.2 | 7 | 0 |
| BHS 352 (c) | NHGBZ 4 | 34.78 | 18 | 0 | 13.09 | 16 | 0 | 27.28 | 9 | 1 | 19.44 | 18 | 0 | 23.55 | 10 | 0 | 23.1 | 19 | 0 |
| BHS 400 (c) | NHGBZ 1 | 54.89 | 2 | 1 | 16.03 | 7 | 0 | 24.58 | 15 | 0 | 29.35 | 5 | 0 | 23.55 | 10 | 0 | 34.1 | 1 | 1 |
| HBL 113 (c) | NHGBZ 6 | 54.76 | 3 | 1 | 18.57 | 3 | 0 | 27.78 | 6 | 1 | 31.64 | 2 | 1 | 32.61 | 2 | 0 | 32.1 | 3 | 0 |
| VLB 118 (c) | NHGBZ 5 | 45.31 | 9 | 0 | 14.72 | 11 | 0 | 28.13 | 4 | 1 | 23.19 | 12 | 0 | 22.34 | 14 | 0 | 31.9 | 4 | 0 |
| G.M. | | 42.65 | | | 15.19 | | | 25.45 | | | 24.69 | | | 23.64 | | | 28.2 | | |
| S.E.(M) | | 2.26 | | | 0.56 | | | 0.82 | | | 1.13 | | | 0.59 | | | 0.54 | | |
| C.D. | | 6.39 | | | 1.58 | | | 2.34 | | | 3.22 | | | 1.68 | | | 1.49 | | |
| C.V. | | 10.59 | | | 7.36 | | | 5.58 | | | 7.89 | | | 4.30 | | | | | |
| DOS | | 09-11-2013 | | | 10-11-2013 | | | 14-11-2013 | | | 09-11-2013 | | | 29-10-2013 | | | | | |

ADVANCED VARIETAL TRIAL (RF) Hills

ZONE: NHZ
RABI – 2013-14

Summary of ancillary and disease data

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | | | DISEASE REACTION | | | | | |
|---------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|-------------|-----------------------|-----------------------|-----|-----|----|----|------------------|-------|------|-----------------|-------------------|-----------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/Six row | Grain Colour | 1000 g.w Mean & Range | H/N | Y.L | BR | BI | L (%) | C (%) | SMUT | Leaf Spot (1-9) | Leaf Blight (1-9) | PMI (1-9) |
| 1 | BHS 423 | 123 (103-158) | 177 (142-197) | 84 (63-101) | 106 (68-154) | 2 (1-4) | 6 | Y | 40 (35-46) | H | 5S | | | | | 3 | | | |
| 2 | BHS 424 | 123 (103-154) | 177 (142-196) | 89 (69-114) | 106 (70-182) | 2 (1-4) | 2 | Y | 56 (45-60) | H | 10S | | | | | 3 | | | |
| 3 | BHS 425 | 123 (99-156) | 175 (139-194) | 82 (67-101) | 84 (61-139) | 2 (1-4) | 6 | Y | 49 (43-53) | H | F | | | | 1 | | | | |
| 4 | BHS 427 | 119 (97-157) | 174 (139-196) | 91 (70-114) | 101 (68-172) | 2 (1-4) | 6 | Y | 38 (34-44) | H | 10S | | | | 1 | | | | |
| 5 | DWRB 111 | 126 (110-154) | 178 (147-200) | 97 (80-116) | 100 (74-156) | 2 (1-4) | 2 | A | 45 (39-50) | HL | F | | | | 1 | | | | |
| 6 | DWRB 130 | 119 (93-151) | 175 (139-195) | 88 (70-101) | 103 (73-163) | 2 (1-4) | 6 | Y | 39 (34-41) | H | S | | | | 1 | | | | |
| 7 | HLB 713 | 130 (113-153) | 179 (152-196) | 88 (72-103) | 113 (73-146) | 2 (1-4) | 6 | Y | 42 (38-47) | H | F | | | | 3 | | | | |
| 8 | HLB 718 | 127 (111-159) | 177 (149-197) | 96 (76-110) | 90 (54-149) | 3 (2-4) | 6 | A | 37 (32-46) | HL | F | | | | 1 | | | | |
| 9 | HLB 719 | 128 (112-156) | 175 (146-194) | 96 (78-109) | 88 (55-121) | 3 (1-4) | 6 | A | 39 (30-52) | HL | F | | | | 3 | | | | |
| 10 | HLB 731 | 115 (89-155) | 176 (136-197) | 85 (66-109) | 127 (66-161) | 2 (1-4) | 2 | Y | 49 (56-55) | H | 5S | | | | 3 | | | | |
| 11 | UPB 1031 | 124 (103-157) | 177 (142-195) | 81 (65-98) | 103 (64-150) | 2 (1-4) | 6 | Y | 43 (36-47) | H | 5S | | | | 3 | | | | |
| 12 | UPB 1037 | 119 (101-154) | 176 (141-193) | 80 (61-95) | 127 (95-183) | 2 (1-4) | 2 | Y | 48 (45-50) | H | F | | | | 5 | | | | |
| 13 | UPB 1038 | 119 (101-157) | 175 (144-196) | 86 (65-104) | 101 (56-142) | 2 (1-4) | 6 | Y | 44 (37-49) | H | F | | | | 3 | | | | |
| 14 | VLB 137 | 120 (94-153) | 175 (144-200) | 83 (67-106) | 126 (60-194) | 2 (1-4) | 2 | Y | 42 (33-48) | H | S | | | | 1 | | | | |
| 15 | VLB 138 | 135 (121-157) | 180 (154-200) | 99 (79-115) | 138 (91-170) | 2 (1-4) | 2 | Y | 50 (42-54) | H | 10S | | | | 3 | | | | |
| 16 | VLB 139 | 127 (108-151) | 175 (147-194) | 93 (72-109) | 120 (68-192) | 3 (1-4) | 6 | Y | 39 (32-44) | H | 5S | | | | 3 | | | | |
| 17 | VLB 140 | 121 (99-154) | 171 (105-200) | 96 (78-114) | 120 (71-202) | 2 (1-4) | 2 | Y | 54 (47-59) | H | F | | | | 3 | | | | |
| 18 | BHS 352 (c) | 123 (101-152) | 173 (138-192) | 93 (75-105) | 88 (53-159) | 2 (1-4) | 6 | A | 39 (31-44) | HL | 5S | | | | 1 | | | | |
| 19 | BHS 400 (c) | 128 (110-155) | 179 (148-195) | 96 (80-113) | 104 (79-169) | 2 (1-4) | 6 | Y | 43 (34-48) | H | F | | | | 1 | | | | |
| 20 | HLB 113 (c) | 133 (109-160) | 179 (145-195) | 86 (76-100) | 146 (80-220) | 2 (1-4) | 2 | Y | 36 (32-40) | H | F | | | | 3 | | | | |
| 21 | VLB 118 (c) | 120 (101-153) | 175 (145-193) | 91 (70-107) | 84 (55-125) | 3 (2-4) | 6 | Y | 47 (39-58) | H | 5S | | | | 3 | | | | |

Irrigated Trials Plains

ADVANCED VARIETAL TRIAL (IRRIGATED) PLAINS

NWP Zone

The AVT (irrigated) was proposed at 11 locations and were conducted at 10 locations, except Panthnagar centre in NWPZ. The data from all trial conducting centres were reported and the Durgapura (unrealistic yield) data were not included for reporting in zonal compilation. The trial comprised of one test entry and four checks viz. BH 902, BH 946, RD 2035 and RD 2552. The test entry RD 2832 was in final year of evaluation.

The trial was monitored by the team at Ludhiana, Bathinda, Sriganaganagar, and Hisar. All the trials were in good conditions. No serious disease incidence was observed in the zone. However, few entries showed incidence of covered and loose smut.

The trial mean ranged from 21.60 q/ha (Dhaulakuan) to 63.27 q/ha (Hisar) in the Zone. The analysis of grain yield data indicated that the final year entry RD 2832 (42.39 q/ha) ranked second in zonal mean. However, Check BH 946 (45.91 q/ha) was found at rank first in non significant group.

CEN ZONE

The AVT (irrigated) was proposed at five centres in the zone and was conducted by all the centres. The data of Banswara (LSM) location was not included in zonal means and data from Vijapur, SK Nagar, Kota and Udaipur locations were pooled for analysis of mean in central zone. The trial consisted of two entries namely, RD 2833 and BH 959 and two checks viz. PL 751 and RD 2786.

The trial was monitored at Vijapur, Udaipur and SK Nagar centres in the zone and no serious disease and pest incidences were reported in the trials.

The trial mean ranged from 28.98 q/ha (Udaipur) to 58.76 q/ha (S.K. Nagar) in the zone. Final year entry BH 959 (42.0 q/ha) ranked second and was in the first non-significant group. Although check PL 751 (43.7 q/ha) ranked first in NSG group.

AVT-IR-FB-NWPZ

Location wise and zonal means in q/ha

| Varieties | Codes | Tabiji | | | Hisar | | | S.G. Nagar | | | Navgaon | | | Bawal | | |
|-------------|--------------|------------|----|---|------------|----|---|------------|----|---|------------|----|---|------------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| RD 2832* | AVTIRFBNWP-1 | 38.59 | 4 | 0 | 44.27 | 5 | 0 | 41.96 | 3 | 0 | 42.88 | 1 | 1 | 54.63 | 3 | 1 |
| BH 902 (c) | AVTIRFBNWP-3 | 44.93 | 1 | 1 | 52.81 | 3 | 0 | 38.84 | 5 | 0 | 29.99 | 3 | 0 | 43.79 | 5 | 0 |
| BH 946 (c) | AVTIRFBNWP-4 | 39.22 | 3 | 0 | 63.27 | 1 | 1 | 41.45 | 4 | 0 | 24.21 | 5 | 0 | 54.69 | 2 | 1 |
| RD 2035 (c) | AVTIRFBNWP-5 | 36.50 | 5 | 0 | 53.79 | 2 | 0 | 44.78 | 1 | 1 | 35.72 | 2 | 0 | 56.91 | 1 | 1 |
| RD 2552 (c) | AVTIRFBNWP-2 | 41.36 | 2 | 0 | 49.28 | 4 | 0 | 44.42 | 2 | 1 | 26.89 | 4 | 0 | 46.20 | 4 | 0 |
| G.M. | | 40.12 | | | 52.68 | | | 42.29 | | | 31.94 | | | 51.24 | | |
| S.E.(M) | | 0.68 | | | 1.37 | | | 0.83 | | | 1.15 | | | 1.38 | | |
| C.D. | | 2.10 | | | 4.21 | | | 2.56 | | | 3.54 | | | 4.27 | | |
| C.V. | | 3.40 | | | 5.19 | | | 3.93 | | | 7.20 | | | 5.40 | | |
| DOS | | 19-11-2013 | | | 14-11-2013 | | | 24-11-2013 | | | 22-11-2013 | | | 13-11-2013 | | |

*Data from Durgapura are not included in zonal means due to unrealistic yield of one entry.

AVT-IR-FB-NWPZ

Location wise and Zonal Means in q/ha

| Varieties | Codes | Bathinda | | | Ludhiana | | | Dhaulakuan | | | Rohtak | | | Zonal | | |
|-------------|--------------|----------|----|---|------------|----|---|------------|----|---|------------|----|---|-------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| RD 2832* | AVTIRFBNWP-1 | 49.24 | 1 | 1 | 26.27 | 5 | 0 | 37.71 | 1 | 1 | 40.10 | 5 | 0 | 42.39 | 2 | 0 |
| BH 902 (c) | AVTIRFBNWP-3 | 41.11 | 4 | 0 | 39.31 | 2 | 0 | 21.60 | 5 | 0 | 48.31 | 3 | 0 | 40.90 | 3 | 0 |
| BH 946 (c) | AVTIRFBNWP-4 | 41.59 | 3 | 0 | 44.02 | 1 | 1 | 34.03 | 2 | 1 | 53.86 | 1 | 1 | 45.91 | 1 | 1 |
| RD 2035 (c) | AVTIRFBNWP-5 | 42.03 | 2 | 0 | 31.34 | 3 | 0 | 25.76 | 4 | 0 | 45.65 | 4 | 0 | 38.02 | 5 | 0 |
| RD 2552 (c) | AVTIRFBNWP-2 | 35.90 | 5 | 0 | 30.25 | 4 | 0 | 29.79 | 3 | 0 | 50.24 | 2 | 0 | 39.49 | 4 | 0 |
| G.M. | | 41.97 | | | 34.24 | | | 29.78 | | | 47.63 | | | 41.34 | | |
| S.E.(M) | | 1.43 | | | 1.35 | | | 2.00 | | | 0.36 | | | 0.44 | | |
| C.D. | | 4.41 | | | 4.15 | | | 6.16 | | | 1.10 | | | 1.22 | | |
| C.V. | | 6.82 | | | 7.86 | | | 13.42 | | | 1.49 | | | | | |
| DOS | | 18-11-13 | | | 12-11-2013 | | | 23-11-13 | | | 18-11-2013 | | | | | |

AVT-IR-FB-CEN Zone
Location wise and Zonal Means in q/ha

| Varieties | Codes | Vijaipur | | | S.K.Nagar | | | Kota | | | Udaipur | | | CEN Z* | | |
|-------------|-------------|------------|----|---|------------|----|---|------------|----|---|------------|----|---|--------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| BH 959* | AVTIRFBCZ-2 | 33.91 | 3 | 0 | 58.76 | 1 | 1 | 45.51 | 1 | 1 | 29.81 | 3 | 0 | 42 | 2 | 1 |
| RD 2833* | AVTIRFBCZ-3 | 36.25 | 2 | 0 | 57.09 | 2 | 1 | 41.58 | 3 | 0 | 30.06 | 2 | 0 | 41.2 | 3 | 0 |
| PL 751 (c) | AVTIRFBCZ-4 | 40.86 | 1 | 1 | 54.96 | 3 | 1 | 43.64 | 2 | 1 | 35.41 | 1 | 1 | 43.7 | 1 | 1 |
| RD 2786 (c) | AVTIRFBCZ-1 | 31.65 | 4 | 0 | 52.33 | 4 | 0 | 40.37 | 4 | 0 | 28.98 | 4 | 0 | 38.3 | 4 | 0 |
| G.M. | | 35.67 | | | 55.79 | | | 42.77 | | | 31.06 | | | 41.3 | | |
| S.E.(M) | | 1.53 | | | 1.77 | | | 0.83 | | | 0.57 | | | 0.64 | | |
| C.D. | | 4.61 | | | 5.35 | | | 2.50 | | | 1.73 | | | 1.8 | | |
| C.V. | | 10.50 | | | 7.79 | | | 4.75 | | | 4.52 | | | | | |
| DOS | | 19-11-2013 | | | 21-11-2013 | | | 17-11-2013 | | | 13-11-2013 | | | | | |

*Data from Banswara (LSM) are not included in zonal means.

ADVANCED VARIETAL TRIAL (IR)
Summary of ancillary and disease data

ZONE: NWPZ
RABI – 2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | DISEASE REACTION | | | | | | | |
|---------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|-------------|-----------------------|-----------------------|-----|------------------|-----|----|-------|-----------|-----------------------|-------------------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/Six row | Colour | 1000 g.w Mean & Range | H/N | Y L HS ACI | BR | BL | SM UT | Leaf Spot | Hel. Disease Leaf Net | Leaf Blight (1-9) | APHID (1-5) |
| 1 | RD 2832 | 93 (83-102) | 133 (118-141) | 99 (89-115) | 120 (92-146) | 4 (2-6) | 6 | Y | 40 (34-44) | H | 20S | 0 | | 0 | 89 | 89 | 56 | |
| 2 | BH 902 (c) | 93 (82-100) | 136 (123-149) | 106 (90-120) | 127 (104-149) | 3 (1-5) | 6 | Y | 44 (42-45) | H | 20S | 0 | | 0 | 56 | 56 | 67 | |
| 3 | BH 946 (c) | 93 (81-105) | 137 (126-147) | 105 (85-121) | 131 (120-132) | 1 (1-2) | 6 | Y | 41 (35-48) | H | F | 0 | | 2 | 67 | 78 | 56 | |
| 4 | RD 2035 (c) | 90 (82-96) | 135 (125-142) | 103 (75-118) | 119 (108-130) | 4 (3-4) | 6 | Y | 41 (36-47) | H | 100S | 10S | | 2 | 56 | 45 | 56 | |
| 5 | RD 2552 (c) | 93 (78-100) | 137 (120-148) | 99 (85-108) | 123 (90-141) | 4 (3-5) | 6 | Y | 40 (34-45) | H | F | TS | | 10 | 45 | 34 | 67 | |

ADVANCED VARIETAL TRIAL (IR)
Summary of ancillary and disease data

ZONE: CZ
RABI –2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | DISEASE REACTION | | | | | | | |
|---------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|-------------|-----------------------|-----------------------|-----|------------------|-----|----|------|----------------------|-------------------|-----|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/Six row | Colour | 1000 g.w Mean & Range | H/N | Y/L | BR | BL | SMUT | Hel. Disease STR (%) | Leaf Blight (1-9) | CCN | APHID (1-5) |
| 1 | BH 959 | 68 (52-86) | 107 (84-123) | 80 (68-100) | 92 (69-117) | 3 (2-4) | 6 | Y | 43 (40-45) | H | | 5MR | | | | 10 | | |
| 2 | RD 2833 | 70 (57-83) | 106 (91-116) | 78 (73-81) | 84 (58-102) | 3 (2-4) | 6 | Y | 45 (39-57) | H | | 5MS | | | | 20 | | |
| 3 | PL 751 (c) | 67 (52-83) | 106 (86-119) | 79 (70-99) | 99 (63-117) | 3 (2-5) | 6 | Y | 40 (38-46) | H | | 0 | | | | 2 | | |
| 4 | RD 2786 (c) | 72 (62-86) | 109 (92-125) | 96 (86-103) | 85 (60-118) | 2 (2-3) | 6 | Y | 42 (37-49) | H | | 0 | | | | 2 | | |

INITIAL VARIETAL TRIAL (IRRIGATED) FEED BARLEY

The IVT feed barley was proposed at 16 locations comprising of NWPZ (6), NEPZ (5) and central zone (4) in northern and central plains. The trial was conducted at all the locations. In NWPZ, the results from four locations were pooled for zonal compilation, as data from Pantnagar (LSM) and Tabiji (LSM) were not included in zonal means. In case of NEPZ, four locations data were included in zonal means. However, data of Pusa location could not be included in zonal means due to LSM. In central zone, yield data of all locations were pooled for zonal means.

The trial consisted of 21 entries and 7 checks, namely BH 946, BH902, HUB 113, Jyoti, PL751, RD 2552 and RD 2786. The trial was monitored during the crop season in NWPZ (Hisar and Ludhiana), NEPZ (Kanpur, Faizabad, Varanasi and Rewa) and central zone (Banswara, SK Nagar, Udaipur and Vijapur) by the zonal monitoring teams. In NWPZ, entry KB 1367 showed mixtures while off types were found in entries BH 981, UPB 1040, UPB 1042 and HUB 113 in NEP zone. In case of Central zone, entries NDB 1580, BH 981, HUB 237, UPB 1040, PL 880, PL 881, RD 2786, RD 290, UPB 1041 and KB 1367 were observed as segregating/ mixtures, while KB1353, KB 1369, BH 980, UPB 1042, BH 902 and PL 751 were having off types and need purifications, based on NWPZ, NEPZ and central zone monitoring teams observations.

In NWPZ, no serious disease incidence was observed except covered smut on few entries. In case of NEPZ, leaf blight was scored 68 and above in the entries BH 982, RD 2875, RD 2876, RD 2786 and RD 2877 while stripe rust was recorded in the entry PL 751.

In case of grain yield, in NWPZ, check BH 946 (48.6 q/ha) ranked first and was in first non significant group. The test entry BH 981 ranked second with 46.4 q/ha mean grain yield in the first NSG. This entry was significantly superior over four checks viz., HUB 113 (43.3 q/ha), PL 751 (42.8 q/ha), RD 2552 (42.2 q/ha) and JOYTI (36.0 q/ha). In NEPZ, check Jyoti (49.0 q/ha) ranked first and was followed by two more checks RD 2552 (48.2 q/ha) and HUB 113 (47.5 q/ha) in the first NSG. However, entries NDB 1580 (47.1 q/ha) and BH 980 (46.6 q/ha) ranked fourth and fifth and was in first non significant group. In case of central zone, check RD 2552 ranked first followed by testing entry RD 2875 in first Non-Significant Group. On national basis check BH 946 (48.00 q/ha) ranked first followed by other checks RD 2552 (47.80 q/ha) and HUB 113 (46.90 q/ha) in the first non-significant group.

IVT-IR-TS-FB
Location wise and Zonal means (Grain Yield in q/ha)

| Varieties | Code | Durgapura | | | Naygaon | | | Hisar | | | Ludhiana | | | NWPZ* | | |
|-------------|----------|-----------|-------|----------|---------|-------|----------|-------|-------|----------|----------|-------|------|-------|------|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| | | BH 981 | 57.97 | 5 | 0 | 31.00 | 17 | 0 | 45.39 | 15 | 0 | 51.09 | 1 | 1 | 46.4 | 2 |
| BH 980 | 21.74 | 28 | 0 | 34.60 | 9 | 0 | 51.27 | 8 | 1 | 39.13 | 13 | 0 | 36.7 | 21 | 0 | |
| BH 982 | 36.23 | 19 | 0 | 34.21 | 12 | 0 | 54.64 | 2 | 1 | 38.77 | 14 | 0 | 41.0 | 12 | 0 | |
| HUB 236 | 31.40 | 26 | 0 | 34.34 | 10 | 0 | 37.22 | 22 | 0 | 47.83 | 5 | 1 | 37.7 | 20 | 0 | |
| HUB 237 | 55.56 | 6 | 0 | 34.02 | 13 | 0 | 32.39 | 26 | 0 | 36.23 | 17 | 0 | 39.5 | 15 | 0 | |
| JB 290 | 41.06 | 15 | 0 | 29.84 | 20 | 0 | 52.37 | 5 | 1 | 46.38 | 6 | 1 | 42.4 | 9 | 0 | |
| JB 291 | 38.65 | 16 | 0 | 35.98 | 5 | 0 | 35.11 | 24 | 0 | 32.61 | 23 | 0 | 35.6 | 24 | 0 | |
| KB 1353 | 38.65 | 16 | 0 | 29.17 | 22 | 0 | 50.59 | 9 | 0 | 49.28 | 3 | 1 | 41.9 | 11 | 0 | |
| KB 1367 | 33.82 | 23 | 0 | 29.13 | 23 | 0 | 50.48 | 11 | 0 | 39.13 | 12 | 0 | 38.1 | 18 | 0 | |
| KB 1369 | 45.29 | 10 | 0 | 35.46 | 6 | 0 | 27.02 | 28 | 0 | 35.14 | 19 | 0 | 35.7 | 23 | 0 | |
| NDB 1580 | 38.65 | 16 | 0 | 35.02 | 7 | 0 | 45.15 | 16 | 0 | 37.68 | 16 | 0 | 39.1 | 16 | 0 | |
| NDB 1758 | 28.99 | 27 | 0 | 29.86 | 19 | 0 | 38.03 | 21 | 0 | 40.94 | 10 | 0 | 34.5 | 25 | 0 | |
| PL 880 | 43.48 | 11 | 0 | 27.83 | 24 | 0 | 50.07 | 12 | 0 | 51.09 | 2 | 1 | 43.1 | 7 | 0 | |
| PL 881 | 70.05 | 1 | 1 | 38.16 | 3 | 0 | 38.28 | 20 | 0 | 32.61 | 23 | 0 | 44.8 | 5 | 0 | |
| RD 2874 | 45.89 | 9 | 0 | 40.39 | 2 | 1 | 36.94 | 23 | 0 | 35.51 | 18 | 0 | 39.7 | 14 | 0 | |
| RD 2875 | 48.31 | 7 | 0 | 22.76 | 26 | 0 | 29.61 | 27 | 0 | 28.99 | 27 | 0 | 32.4 | 27 | 0 | |
| RD 2876 | 33.82 | 23 | 0 | 24.41 | 25 | 0 | 42.24 | 18 | 0 | 28.99 | 27 | 0 | 32.4 | 28 | 0 | |
| RD 2877 | 33.82 | 23 | 0 | 19.87 | 28 | 0 | 47.54 | 14 | 0 | 31.16 | 25 | 0 | 33.1 | 26 | 0 | |
| UPB 1040 | 42.27 | 14 | 0 | 29.39 | 21 | 0 | 52.25 | 6 | 1 | 35.14 | 19 | 0 | 39.8 | 13 | 0 | |
| UPB 1041 | 43.48 | 11 | 0 | 22.64 | 27 | 0 | 39.81 | 19 | 0 | 44.93 | 8 | 0 | 37.7 | 19 | 0 | |
| UPB 1042 | 36.23 | 19 | 0 | 30.46 | 18 | 0 | 50.56 | 10 | 0 | 38.77 | 14 | 0 | 39.0 | 17 | 0 | |
| BH 946 (c) | 60.39 | 4 | 0 | 36.73 | 4 | 0 | 53.45 | 3 | 1 | 43.84 | 9 | 0 | 48.6 | 1 | 1 | |
| BH 902 (c) | 62.80 | 3 | 0 | 32.00 | 15 | 0 | 47.84 | 13 | 0 | 39.86 | 11 | 0 | 45.6 | 3 | 0 | |
| HUB 113 (c) | 48.31 | 7 | 0 | 33.75 | 14 | 0 | 58.19 | 1 | 1 | 32.97 | 22 | 0 | 43.3 | 6 | 0 | |
| JYOTI (c) | 33.94 | 22 | 0 | 31.34 | 16 | 0 | 33.18 | 25 | 0 | 45.65 | 7 | 1 | 36.0 | 22 | 0 | |
| PL 751 (c) | 35.21 | 21 | 0 | 34.33 | 11 | 0 | 52.69 | 4 | 1 | 48.91 | 4 | 1 | 42.8 | 8 | 0 | |
| RD 2552 (c) | 43.48 | 11 | 0 | 43.01 | 1 | 1 | 51.70 | 7 | 1 | 30.80 | 26 | 0 | 42.2 | 10 | 0 | |
| RD 2786 (c) | 67.63 | 2 | 1 | 34.82 | 8 | 0 | 43.09 | 17 | 0 | 35.14 | 19 | 0 | 45.2 | 4 | 0 | |
| G.M. | 43.47 | | | 31.95 | | | 44.54 | | | 39.23 | | | 39.8 | | | |
| S.E.(M) | 1.85 | | | 1.31 | | | 2.53 | | | 1.96 | | | 0.98 | | | |
| C.D. | 5.19 | | | 3.67 | | | 7.12 | | | 5.50 | | | 2.71 | | | |
| C.V. | 8.49 | | | 8.18 | | | 11.36 | | | 9.97 | | | | | | |
| D.O.S. | 12-11-13 | | | 20-11-13 | | | 14-11-13 | | | 12-11-13 | | | | | | |

IVT-IR-TS-FB
Location wise and Zonal means (Grain yield in q/ha)

| Varieties | Code | Varanasi | | | Rewa | | | Faizabad | | | Kanpur | | | NEPZ | | |
|-------------|------------|----------|----|---|----------|----|---|----------|----|---|----------|----|---|-------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| BH 981 | IVTIRFB-4 | 45.88 | 3 | 1 | 37.00 | 24 | 0 | 44.69 | 11 | 0 | 41.85 | 12 | 0 | 42.4 | 15 | 0 |
| BH 980 | IVTIRFB-8 | 41.40 | 10 | 0 | 46.89 | 13 | 1 | 54.47 | 6 | 0 | 43.48 | 7 | 0 | 46.6 | 5 | 1 |
| BH 982 | IVTIRFB-7 | 31.90 | 23 | 0 | 44.83 | 21 | 1 | 40.46 | 15 | 0 | 23.10 | 25 | 0 | 35.1 | 23 | 0 |
| HUB 236 | IVTIRFB-1 | 39.81 | 15 | 0 | 46.39 | 19 | 1 | 50.79 | 7 | 0 | 33.97 | 20 | 0 | 42.7 | 11 | 0 |
| HUB 237 | IVTIRFB-6 | 36.11 | 22 | 0 | 50.30 | 1 | 1 | 35.87 | 21 | 0 | 35.87 | 18 | 0 | 39.5 | 19 | 0 |
| JB 290 | IVTIRFB-23 | 43.72 | 4 | 0 | 46.80 | 14 | 1 | 32.31 | 23 | 0 | 42.39 | 10 | 0 | 41.3 | 17 | 0 |
| JB 291 | IVTIRFB-13 | 41.56 | 8 | 0 | 49.13 | 3 | 1 | 37.14 | 20 | 0 | 42.12 | 11 | 0 | 42.5 | 13 | 0 |
| KB 1353 | IVTIRFB-2 | 43.41 | 6 | 0 | 48.15 | 7 | 1 | 39.07 | 17 | 0 | 42.93 | 9 | 0 | 43.4 | 9 | 0 |
| KB 1367 | IVTIRFB-28 | 41.20 | 13 | 0 | 36.51 | 26 | 0 | 50.24 | 8 | 0 | 35.87 | 19 | 0 | 41.0 | 18 | 0 |
| KB 1369 | IVTIRFB-5 | 43.54 | 5 | 0 | 48.45 | 5 | 1 | 37.86 | 18 | 0 | 48.37 | 2 | 1 | 44.6 | 7 | 0 |
| NDB 1580 | IVTIRFB-3 | 46.70 | 1 | 1 | 46.09 | 20 | 1 | 54.65 | 5 | 0 | 40.76 | 13 | 0 | 47.1 | 4 | 1 |
| NDB 1758 | IVTIRFB-27 | 41.38 | 11 | 0 | 44.62 | 22 | 1 | 41.18 | 13 | 0 | 43.48 | 6 | 0 | 42.7 | 12 | 0 |
| PL 880 | IVTIRFB-14 | 46.30 | 2 | 1 | 36.80 | 25 | 0 | 48.91 | 9 | 0 | 46.20 | 4 | 1 | 44.6 | 8 | 0 |
| PL 881 | IVTIRFB-16 | 28.64 | 27 | 0 | 49.92 | 2 | 1 | 30.01 | 24 | 0 | 43.07 | 8 | 0 | 37.9 | 20 | 0 |
| RD 2874 | IVTIRFB-26 | 41.16 | 14 | 0 | 46.80 | 15 | 1 | 41.06 | 14 | 0 | 40.76 | 13 | 0 | 42.4 | 14 | 0 |
| RD 2875 | IVTIRFB-9 | 31.48 | 24 | 0 | 48.15 | 7 | 1 | 22.22 | 27 | 0 | 23.10 | 26 | 0 | 31.2 | 25 | 0 |
| RD 2876 | IVTIRFB-10 | 28.97 | 26 | 0 | 47.76 | 10 | 1 | 23.25 | 26 | 0 | 22.28 | 27 | 0 | 30.6 | 27 | 0 |
| RD 2877 | IVTIRFB-24 | 27.69 | 28 | 0 | 47.55 | 11 | 1 | 29.11 | 25 | 0 | 16.30 | 28 | 0 | 30.2 | 28 | 0 |
| UPB 1040 | IVTIRFB-11 | 38.49 | 18 | 0 | 37.51 | 23 | 0 | 37.74 | 19 | 0 | 29.89 | 21 | 0 | 35.9 | 21 | 0 |
| UPB 1041 | IVTIRFB-25 | 41.52 | 9 | 0 | 36.02 | 27 | 0 | 39.98 | 16 | 0 | 26.09 | 23 | 0 | 35.9 | 22 | 0 |
| UPB 1042 | IVTIRFB-12 | 36.32 | 21 | 0 | 35.92 | 28 | 0 | 34.30 | 22 | 0 | 29.62 | 22 | 0 | 34.0 | 24 | 0 |
| BH 946 (c) | IVTIRFB-20 | 38.76 | 17 | 0 | 49.13 | 3 | 1 | 54.95 | 4 | 0 | 38.04 | 17 | 0 | 45.2 | 6 | 0 |
| BH 902 (c) | IVTIRFB-15 | 41.38 | 11 | 0 | 46.68 | 16 | 1 | 41.61 | 12 | 0 | 39.13 | 16 | 0 | 42.2 | 16 | 0 |
| HUB 113 (c) | IVTIRFB-21 | 42.82 | 7 | 0 | 46.58 | 17 | 1 | 56.76 | 3 | 1 | 44.02 | 5 | 0 | 47.5 | 3 | 1 |
| JYOTI (c) | IVTIRFB-17 | 36.36 | 20 | 0 | 48.05 | 9 | 1 | 62.80 | 1 | 1 | 48.91 | 1 | 1 | 49.0 | 1 | 1 |
| PL 751 (c) | IVTIRFB-18 | 39.10 | 16 | 0 | 47.45 | 12 | 1 | 46.20 | 10 | 0 | 39.40 | 15 | 0 | 43.0 | 10 | 0 |
| RD 2552 (c) | IVTIRFB-19 | 37.10 | 19 | 0 | 46.58 | 17 | 1 | 61.11 | 2 | 1 | 47.83 | 3 | 1 | 48.2 | 2 | 1 |
| RD 2786 (c) | IVTIRFB-22 | 30.04 | 25 | 0 | 48.35 | 6 | 1 | 20.83 | 28 | 0 | 24.46 | 24 | 0 | 30.9 | 26 | 0 |
| G.M. | | 38.67 | | | 45.16 | | | 41.77 | | | 36.90 | | | 40.6 | | |
| S.E.(M) | | 0.45 | | | 2.04 | | | 2.46 | | | 1.61 | | | 0.90 | | |
| C.D. | | 1.28 | | | 5.75 | | | 6.93 | | | 4.53 | | | 2.50 | | |
| C.V. | | 2.35 | | | 9.05 | | | 11.79 | | | 8.72 | | | | | |
| D.O.S. | | 19-11-13 | | | 14-11-13 | | | 25-11-13 | | | 19-11-13 | | | | | |

IVT-FB-TS-CZ

Location wise and Zonal means (Grain Yield in q/ha)

| Varieties | Code | Vijapur | | | Udaipur | | | SK Nagar | | | Banswara | | | CZ | | | Overall | | |
|-------------|-------|----------|-------|-------|----------|-------|-------|----------|-------|-------|----------|-------|------|-------|------|------|---------|------|----|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| | | BH 981 | 31.92 | 24 | 0 | 32.42 | 18 | 0 | 44.69 | 25 | 0 | 49.52 | 19 | 0 | 39.6 | 27 | 0 | 42.8 | 13 |
| BH 980 | 50.04 | 1 | 1 | 30.98 | 24 | 0 | 56.40 | 8 | 1 | 49.52 | 19 | 0 | 46.7 | 11 | 0 | 43.3 | 9 | 0 | |
| BH 982 | 47.19 | 3 | 1 | 34.02 | 16 | 0 | 62.32 | 1 | 1 | 48.31 | 23 | 0 | 48.0 | 7 | 0 | 41.3 | 17 | 0 | |
| HUB 236 | 33.23 | 21 | 0 | 34.24 | 15 | 0 | 40.10 | 27 | 0 | 58.88 | 10 | 0 | 41.6 | 23 | 0 | 40.7 | 18 | 0 | |
| HUB 237 | 25.21 | 27 | 0 | 36.82 | 9 | 0 | 50.72 | 15 | 0 | 78.50 | 1 | 1 | 47.8 | 8 | 0 | 42.3 | 14 | 0 | |
| HUB 290 | 40.04 | 14 | 0 | 40.90 | 3 | 0 | 47.89 | 20 | 0 | 66.43 | 7 | 1 | 48.8 | 6 | 1 | 44.2 | 6 | 0 | |
| JB 291 | 32.99 | 22 | 0 | 36.09 | 11 | 0 | 46.20 | 24 | 0 | 54.35 | 16 | 0 | 42.4 | 21 | 0 | 40.2 | 20 | 0 | |
| KB 1353 | 34.90 | 19 | 0 | 32.83 | 17 | 0 | 50.97 | 14 | 0 | 62.20 | 8 | 0 | 45.2 | 17 | 0 | 43.5 | 8 | 0 | |
| KB 1367 | 31.46 | 25 | 0 | 31.60 | 22 | 0 | 49.64 | 17 | 0 | 48.31 | 23 | 0 | 40.3 | 26 | 0 | 39.8 | 22 | 0 | |
| KB 1369 | 45.90 | 6 | 1 | 30.79 | 25 | 0 | 52.29 | 12 | 1 | 51.93 | 17 | 0 | 45.2 | 16 | 0 | 41.8 | 15 | 0 | |
| NDB 1580 | 35.11 | 18 | 0 | 36.74 | 10 | 0 | 57.67 | 5 | 1 | 49.52 | 19 | 0 | 44.8 | 18 | 0 | 43.6 | 7 | 0 | |
| NDB 1758 | 31.15 | 26 | 0 | 38.61 | 6 | 0 | 47.46 | 21 | 0 | 46.50 | 26 | 0 | 40.9 | 25 | 0 | 39.4 | 23 | 0 | |
| PL 880 | 40.56 | 13 | 0 | 28.40 | 26 | 0 | 51.21 | 13 | 0 | 68.84 | 5 | 1 | 47.3 | 10 | 0 | 45.0 | 5 | 0 | |
| PL 881 | 21.81 | 28 | 0 | 39.24 | 4 | 0 | 38.74 | 28 | 0 | 55.56 | 15 | 0 | 38.8 | 28 | 0 | 40.5 | 19 | 0 | |
| RD 2874 | 46.32 | 4 | 1 | 39.10 | 5 | 0 | 48.97 | 19 | 0 | 51.33 | 18 | 0 | 46.4 | 12 | 0 | 42.9 | 12 | 0 | |
| RD 2875 | 44.41 | 8 | 1 | 31.28 | 23 | 0 | 56.76 | 7 | 1 | 77.29 | 2 | 1 | 52.4 | 2 | 1 | 38.7 | 25 | 0 | |
| RD 2876 | 40.80 | 10 | 0 | 27.53 | 27 | 0 | 59.30 | 3 | 1 | 56.76 | 13 | 0 | 46.1 | 15 | 0 | 36.3 | 28 | 0 | |
| RD 2877 | 40.56 | 12 | 0 | 35.08 | 13 | 0 | 61.11 | 2 | 1 | 48.31 | 23 | 0 | 46.3 | 14 | 0 | 36.5 | 27 | 0 | |
| UPB 1040 | 32.95 | 23 | 0 | 32.36 | 19 | 0 | 49.52 | 18 | 0 | 49.52 | 19 | 0 | 41.1 | 24 | 0 | 38.9 | 24 | 0 | |
| UPB 1041 | 36.87 | 17 | 0 | 32.04 | 21 | 0 | 43.06 | 26 | 0 | 73.67 | 3 | 1 | 46.4 | 13 | 0 | 40.0 | 21 | 0 | |
| UPB 1042 | 34.06 | 20 | 0 | 25.98 | 28 | 0 | 50.48 | 16 | 0 | 56.76 | 13 | 0 | 41.8 | 22 | 0 | 38.3 | 26 | 0 | |
| BH 946 (c) | 45.97 | 5 | 1 | 32.23 | 20 | 0 | 54.59 | 11 | 1 | 67.63 | 6 | 1 | 50.1 | 3 | 1 | 48.0 | 1 | 1 | |
| BH 902 (c) | 48.30 | 2 | 1 | 41.55 | 2 | 0 | 59.30 | 3 | 1 | 40.46 | 27 | 0 | 47.4 | 9 | 0 | 45.1 | 4 | 0 | |
| HUB 113 (c) | 44.28 | 9 | 0 | 35.92 | 12 | 0 | 47.28 | 22 | 0 | 72.46 | 4 | 1 | 50.0 | 4 | 1 | 46.9 | 3 | 1 | |
| JYOTI (c) | 37.36 | 15 | 0 | 35.05 | 14 | 0 | 46.98 | 23 | 0 | 57.97 | 11 | 0 | 44.3 | 19 | 0 | 43.1 | 10 | 0 | |
| PL 751 (c) | 37.33 | 16 | 0 | 38.02 | 7 | 0 | 56.28 | 9 | 1 | 39.86 | 28 | 0 | 42.9 | 20 | 0 | 42.9 | 11 | 0 | |
| RD 2552 (c) | 40.74 | 11 | 0 | 53.51 | 1 | 1 | 57.07 | 6 | 1 | 60.39 | 9 | 0 | 52.9 | 1 | 1 | 47.8 | 2 | 1 | |
| RD 2786 (c) | 45.70 | 7 | 1 | 36.82 | 8 | 0 | 56.04 | 10 | 1 | 57.37 | 12 | 0 | 49.0 | 5 | 1 | 41.7 | 16 | 0 | |
| G.M. | 38.47 | | | 35.00 | | | 51.54 | | | 57.08 | | | 45.5 | | | 42.0 | | | |
| S.E.(M) | 2.04 | | | 1.84 | | | 3.86 | | | 4.59 | | | 1.65 | | | 0.71 | | | |
| C.D. | 5.75 | | | 5.18 | | | 10.86 | | | 12.90 | | | 4.57 | | | 1.96 | | | |
| C.V. | 10.63 | | | 10.53 | | | 14.98 | | | 16.07 | | | | | | | | | |
| D.O.S. | | 19-11-13 | | | 12-11-13 | | | 21-11-13 | | | 25-11-13 | | | | | | | | |

INITIAL VARIETAL TRIAL (IR-FB)
Summary of ancillary and disease data

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE REACTION | | | | | |
|---------|----------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------|-----------------------|-----|------------------|-----|------------------|------------|-------------|-----|-------------|--|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | Y.L. (Max & ACI) | BR | SMUT L (%) | SMUT C (%) | Leaf Blight | CCN | APHID (1-5) | |
| 1 | BH 980 | 86 (77-95) | 127 (108-144) | 101 (90-109) | 110 (86-130) | 3 (1-6) | 6 | Y | 40 (36-45) | H | | | | | 56 | | | |
| 2 | BH 981 | 92 (77-106) | 129 (108-144) | 102 (90-123) | 129 (80-181) | 3 (1-4) | 2 | Y | 49 (45-53) | H | | TS | | | 35 | | | |
| 3 | BH 982 | 89 (74-100) | 126 (104-142) | 95 (82-111) | 114 (85-140) | 2 (1-3) | 6 | Y | 40 (28-46) | H | | | | | 89 | | | |
| 4 | HUB 236 | 91 (80-101) | 127 (110-140) | 106 (96-114) | 99 (70-120) | 2 (1-3) | 6 | Y | 41 (34-47) | H | | 10S | | | 78 | | | |
| 5 | HUB 237 | 93 (77-109) | 129 (108-143) | 103 (91-124) | 96 (66-134) | 2 (1-3) | 6 | Y | 41 (31-48) | H | | | | | 67 | | | |
| 6 | JB 290 | 92 (80-99) | 128 (110-142) | 92 (84-100) | 99 (79-121) | 2 (1-3) | 6 | Y | 43 (38-50) | H | | | | | 56 | | | |
| 7 | JB 291 | 90 (77-107) | 128 (106-142) | 102 (83-128) | 102 (72-131) | 3 (1-4) | 6 | Y | 36 (29-43) | H | | | | | 35 | | | |
| 8 | KB 1353 | 89 (76-100) | 128 (102-144) | 94 (83-110) | 96 (82-116) | 2 (1-3) | 6 | Y | 42 (38-46) | H | | TS | | | 56 | | | |
| 9 | KB 1367 | 90 (81-104) | 129 (111-140) | 102 (98-107) | 124 (96-180) | 2 (1-3) | 2 | Y | 45 (38-55) | H | | | | | 45 | | | |
| 10 | KB 1369 | 92 (80-108) | 132 (111-150) | 101 (92-112) | 93 (42-121) | 2 (1-3) | 6 | Y | 43 (37-48) | H | | | | | 46 | | | |
| 11 | NDB 1580 | 91 (77-108) | 130 (104-149) | 102 (89-116) | 99 (76-113) | 2 (1-3) | 6 | Y | 38 (32-46) | H | | | | | 45 | | | |
| 12 | NDB 1758 | 88 (71-101) | 125 (101-139) | 93 (78-100) | 101 (78-124) | 2 (1-3) | 6 | Y | 41 (35-51) | H | | TS | | | 46 | | | |
| 13 | PL 880 | 91 (79-101) | 130 (104-148) | 96 (82-103) | 132 (72-190) | 2 (1-3) | 2 | Y | 50 (46-55) | H | | 20S | | | 57 | | | |
| 14 | PL 881 | 93 (73-108) | 129 (107-144) | 110 (92-131) | 109 (87-136) | 3 (1-4) | 6 | Y | 44 (32-50) | H | | | | | 23 | | | |

INITIAL VARIETAL TRIAL (IR-FB)
Summary of ancillary and disease data

ZONE: NWPZ
RABI – 2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE REACTION | | | | |
|---------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------|-----------------------|-----------------------|----------------|------|------|------------------|-------------|-----|-------------|----|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | YL (Max & ACI) | RUST | SMUT | | Leaf Blight | CCN | APHID (1-5) | |
| 15 | RD 2874 | 90 (74-102) | 129 (108-143) | 97 (88-115) | 108 (68-126) | 2 (1-3) | 6 | Y | 45 (41-53) | H | | | | | | | | 34 |
| 16 | RD 2875 | 84 (79-89) | 127 (114-143) | 96 (80-121) | 97 (74-126) | 3 (3-3) | 6 | Y | 37 (25-46) | H | | | | | | | | 68 |
| 17 | RD 2876 | 84 (75-89) | 126 (112-136) | 95 (88-99) | 105 (77-133) | 2 (1-3) | 6 | Y | 39 (26-47) | H | | | | | | | | 89 |
| 18 | RD 2877 | 86 (77-92) | 124 (102-135) | 91 (72-106) | 97 (66-128) | 2 (1-3) | 6 | Y | 37 (19-51) | H | | | | | | | | 89 |
| 19 | UPB 1040 | 91 (75-109) | 129 (105-145) | 98 (85-115) | 137 (92-194) | 3 (1-4) | 2 | Y | 41 (28-49) | H | | | | | | | | 57 |
| 20 | UPB 1041 | 92 (76-109) | 130 (108-144) | 94 (85-99) | 115 (72-165) | 2 (1-3) | 2 | Y | 46 (35-53) | H | | | | | | | | 78 |
| 21 | UPB 1042 | 94 (77-107) | 130 (108-145) | 97 (86-108) | 126 (72-178) | 2 (1-3) | 2 | Y | 38 (30-48) | H | | | | | | | | 35 |
| 22 | BH 902 (c) | 90 (71-103) | 130 (103-150) | 96 (88-110) | 106 (79-131) | 3 (1-4) | 6 | Y | 42 (36-45) | H | | | | | | | | 45 |
| 23 | BH 946 (c) | 89 (74-101) | 127 (104-146) | 93 (86-102) | 120 (85-157) | 3 (1-4) | 6 | Y | 41 (31-48) | H | | | | | | | | 56 |
| 24 | HUB 113 (c) | 89 (77-104) | 130 (106-149) | 95 (78-110) | 118 (101-128) | 2 (1-3) | 6 | Y | 40 (33-47) | H | | | | | | | | 78 |
| 25 | JYOTI (c) | 89 (82-98) | 127 (108-140) | 100 (67-129) | 98 (58-122) | 3 (1-6) | 6 | Y | 46 (42-51) | H | | | | | | | | 67 |
| 26 | PL 751 (c) | 88 (77-97) | 126 (106-143) | 92 (84-101) | 119 (80-132) | 2 (1-3) | 6 | Y | 38 (34-44) | H | | | | | | | | 78 |
| 27 | RD 2552 (c) | 91 (77-102) | 129 (104-146) | 89 (70-102) | 109 (84-140) | 2 (1-3) | 6 | Y | 38 (33-43) | H | | | | | | | | 57 |
| 28 | RD 2786 (c) | 87 (80-99) | 129 (110-144) | 97 (85-108) | 102 (85-126) | 3 (1-4) | 6 | Y | 40 (24-50) | H | | | | | | | | 89 |

INITIAL VARIETAL TRIAL (FB)
Summary of ancillary and disease data

ZONE: NEPZ
RABI – 2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | | | DISEASE REACTION | | | | |
|---------|----------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------|-----------------------|-----|----------------|----|-------|------------------|-----------|--------------------------|-------------|--|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | YL (Max & ACI) | BR | L (%) | C (%) | Spot Leaf | Hel. Disease Leaf Blight | APHID (1-5) | |
| 1 | BH 980 | 81 (78-82) | 123 (117-132) | 97 (92-105) | 148 (75-269) | 4 (2-5) | 6 | LY | 35 (32-40) | H | | | | | 58 | 12 | | |
| 2 | BH 981 | 87 (83-89) | 125 (119-135) | 95 (76-108) | 166 (82-314) | 2 (1-5) | 2 | LY | 43 (38-46) | H | | | | | 46 | 12 | | |
| 3 | BH 982 | 80 (74-83) | 120 (115-125) | 87 (73-98) | 128 (60-268) | 3 (1-5) | 6 | Y | 34 (22-43) | H | | | | | 99 | 68 | | |
| 4 | HUB 236 | 82 (74-88) | 122 (115-129) | 98 (83-108) | 137 (48-278) | 4 (3-5) | 6 | LY | 38 (33-43) | H | | | | | 89 | 12 | | |
| 5 | HUB 237 | 86 (81-90) | 123 (118-132) | 96 (89-105) | 122 (67-240) | 3 (1-5) | 6 | LY | 37 (29-42) | H | | | | | 89 | 23 | | |
| 6 | JB 290 | 85 (80-90) | 123 (116-133) | 88 (66-102) | 168 (61-442) | 3 (3-4) | 6 | LY | 39 (36-45) | H | | | | | 78 | - | | |
| 7 | JB 291 | 86 (78-93) | 125 (118-131) | 101 (96-106) | 136 (61-261) | 3 (3-3) | 6 | LY | 38 (29-47) | H | | | | | 58 | - | | |
| 8 | KB 1353 | 81 (78-85) | 122 (117-132) | 93 (82-98) | 155 (55-325) | 4 (3-4) | 6 | LY | 39 (34-44) | H | | | | | 2 | 12 | | |
| 9 | KB 1367 | 84 (73-89) | 124 (119-133) | 95 (88-105) | 181 (93-433) | 3 (2-3) | 2 | LY | 41 (36-45) | H | | | | | 58 | 12 | | |
| 10 | KB 1369 | 86 (79-91) | 126 (117-137) | 96 (90-101) | 137 (67-273) | 3 (1-5) | 6 | LY | 38 (35-42) | H | | | | | 58 | 12 | | |
| 11 | NDB 1580 | 81 (78-85) | 124 (117-134) | 104 (102-107) | 131 (50-270) | 3 (1-4) | 6 | LY | 40 (36-42) | H | | | | | 58 | 12 | | |
| 12 | NDB 1758 | 81 (77-86) | 121 (117-125) | 94 (84-99) | 130 (67-235) | 3 (3-4) | 6 | Y | 39 (33-43) | H | | | | | 58 | 12 | | |
| 13 | PL 880 | 83 (79-85) | 125 (119-134) | 91 (80-112) | 143 (48-271) | 3 (2-3) | 2 | LY | 43 (39-49) | H | | | | | 58 | 12 | | |
| 14 | PL 881 | 87 (73-98) | 125 (119-132) | 105 (92-112) | 167 (80-408) | 3 (1-4) | 6 | LY | 37 (23-44) | H | | | | | 58 | 12 | | |

**INITIAL VARIETAL TRIAL (FB)
Summary of ancillary and disease data**

**ZONE: NEPZ
RABI – 2013-14**

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | | | DISEASE REACTION | | | | |
|---------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------|-----------------------|-----|-------------------|----|-------|------------------|-----------|--------------|-------------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | Yield (Max & ACI) | BR | L (%) | C (%) | Spot Leaf | Hel. Disease | Leaf Blight | APHID (1-5) |
| 15 | RD 2874 | 85 (76-91) | 126 (117-137) | 97 (89-104) | 121 (72-204) | 3 (2-3) | 6 | LY | 38 (32-44) | H | | | | | 57 | - | | |
| 16 | RD 2875 | 75 (67-80) | 117 (108-123) | 89 (77-98) | 138 (60-304) | 3 (2-5) | 6 | Y | 33 (23-40) | H | | | | 99 | 89 | | | |
| 17 | RD 2876 | 73 (67-78) | 116 (111-122) | 89 (79-101) | 141 (52-340) | 4 (3-5) | 6 | Y | 31 (22-38) | H | | | | 99 | 79 | | | |
| 18 | RD 2877 | 79 (77-82) | 120 (117-123) | 75 (60-88) | 146 (54-401) | 3 (1-5) | 6 | Y | 31 (18-42) | H | | | | 99 | 89 | | | |
| 19 | UPB 1040 | 86 (79-95) | 124 (117-132) | 97 (80-111) | 168 (91-318) | 2 (1-3) | 2 | LY | 40 (32-47) | H | | | | 2 | 12 | | | |
| 20 | UPB 1041 | 83 (74-93) | 125 (117-131) | 97 (82-112) | 147 (45-305) | 3 (2-3) | 2 | LY | 40 (36-43) | H | | | | 89 | 12 | | | |
| 21 | UPB 1042 | 85 (82-89) | 123 (117-132) | 96 (83-106) | 182 (99-298) | 2 (1-3) | 2 | LY | 37 (32-43) | H | | | | 89 | 12 | | | |
| 22 | BH 902 (c) | 83 (78-90) | 125 (117-133) | 91 (86-97) | 149 (75-313) | 3 (1-4) | 6 | LY | 40 (34-45) | H | | | | 78 | - | | | |
| 23 | BH 946 (c) | 84 (78-90) | 123 (116-133) | 94 (82-100) | 144 (68-241) | 4 (1-5) | 6 | LY | 35 (32-40) | H | | | | 99 | - | | | |
| 24 | HUB 113 (c) | 82 (78-85) | 124 (118-131) | 90 (77-101) | 193 (60-495) | 4 (3-5) | 6 | LY | 35 (27-42) | H | | | | 99 | 12 | | | |
| 25 | JYOTI (c) | 77 (76-80) | 122 (115-132) | 102 (90-110) | 138 (63-277) | 4 (3-5) | 6 | LY | 37 (29-42) | H | | | | 58 | - | | | |
| 26 | PL 751 (c) | 83 (74-90) | 122 (116-132) | 84 (67-94) | 137 (47-293) | 2 (1-4) | 6 | LY | 37 (32-41) | H | | | | 78 | - | | | |
| 27 | RD 2552 (c) | 84 (79-89) | 125 (119-134) | 85 (68-100) | 151 (64-262) | 4 (3-5) | 6 | LY | 36 (32-39) | H | | | | 78 | - | | | |
| 28 | RD 2786 (c) | 80 (75-86) | 119 (107-125) | 95 (80-106) | 149 (70-366) | 4 (2-5) | 6 | LY | 32 (23-41) | H | | | | 99 | 99 | | | |

INITIAL VARIETAL TRIAL (FB)
Summary of ancillary and disease data

ZONE: CZ
RABI – 2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE REACTION | | | | | | |
|---------|----------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|-----------------------|-----------------------|-----|----|------------------|----|-------|-------|---------|--------------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | STR (%) | Hel. Disease | APHID (1-5) |
| 1 | BH 980 | 67 (54-85) | 105 (94-116) | 91 (85-101) | 94 (59-129) | 2 | 6 | Y | 47 (43-51) | H | | TR | | | | | | |
| 2 | BH 981 | 70 (59-86) | 108 (95-119) | 96 (90-103) | 121 (69-163) | 2 | 2 | Y | 51 (46-60) | H | | 5MS | | | | | | |
| 3 | BH 982 | 66 (56-84) | 106 (94-117) | 96 (89-111) | 89 (57-106) | 2 | 6 | Y | 45 (39-51) | H | | 5MR | | | | | | |
| 4 | HUB 236 | 69 (56-85) | 106 (100-117) | 97 (86-108) | 115 (47-167) | 2 | 6 | Y | 46 (43-51) | H | | 5S | | | | | | |
| 5 | HUB 237 | 72 (60-87) | 109 (99-119) | 96 (92-97) | 100 (53-139) | 2 | 6 | Y | 45 (41-49) | H | | TMS | | | | | | |
| 6 | JB 290 | 70 (62-85) | 109 (101-118) | 89 (74-107) | 110 (60-157) | 2 | 6 | Y | 43 (38-47) | H | | 5S | | | | | | |
| 7 | JB 291 | 77 (72-86) | 112 (102-121) | 95 (82-112) | 109 (53-139) | 2 | 6 | Y | 41 (35-44) | H | | 5S | | | | | | |
| 8 | KB 1353 | 70 (62-83) | 106 (101-116) | 88 (80-101) | 111 (54-145) | 2 | 6 | Y | 45 (42-47) | H | | 5S | | | | | | |
| 9 | KB 1367 | 73 (64-86) | 109 (99-120) | 93 (76-106) | 119 (83-137) | 2 | 2 | Y | 48 (44-54) | H | | 5MS | | | | | | |
| 10 | KB 1369 | 72 (65-86) | 112 (102-119) | 93 (81-105) | 115 (60-170) | 2 | 6 | Y | 46 (42-53) | H | | 5MS | | | | | | |
| 11 | NDB 1580 | 74 (64-84) | 113 (102-123) | 94 (78-113) | 100 (61-135) | 2 | 6 | Y | 45 (41-50) | H | | 5S | | | | | | |
| 12 | NDB 1758 | 72 (64-87) | 106 (101-116) | 93 (88-95) | 108 (57-146) | 2 | 6 | Y | 44 (41-49) | H | | 5S | | | | | | |
| 13 | PL 880 | 68 (54-87) | 107 (98-119) | 82 (74-87) | 108 (71-129) | 2 | 2 | Y | 47 (44-52) | H | | 0 | | | | | | |
| 14 | PL 881 | 75 (59-87) | 112 (98-123) | 96 (85-105) | 105 (57-142) | 2 | 6 | Y | 48 (43-56) | H | | 10S | | | | | | |

**INITIAL VARIETAL TRIAL (FB)
Summary of ancillary and disease data**

**ZONE: CZ
RABI – 2013-14**

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE REACTION | | | | | |
|---------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------|-----------------------|-----|----|-----|------------------|-------|-------|---------|--------------------------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | STR (%) | Hel. Disease Leaf Blight | APHID (1-5) |
| 15 | RD 2874 | 71 (63-84) | 110 (100-121) | 91 (87-96) | 99 (57-149) | 2 | 6 | Y | 46 (42-53) | H | | 10S | | | | | | |
| 16 | RD 2875 | 70 (60-84) | 107 (100-116) | 86 (70-101) | 119 (55-190) | 2 (1-2) | 6 | Y | 46 (41-52) | H | | 0 | | | | | | |
| 17 | RD 2876 | 69 (61-83) | 106 (100-114) | 90 (84-98) | 99 (57-149) | 2 | 6 | Y | 49 (45-55) | H | | 5S | | | | | | |
| 18 | RD 2877 | 68 (56-85) | 108 (95-122) | 85 (75-102) | 95 (59-117) | 2 | 6 | Y | 44 (40-53) | H | | 5S | | | | | | |
| 19 | UPB 1040 | 73 (64-85) | 110 (98-119) | 84 (69-100) | 127 (82-173) | 2 | 2 | Y | 43 (39-46) | H | | 0 | | | | | | |
| 20 | UPB 1041 | 71 (62-87) | 109 (98-119) | 92 (79-97) | 121 (72-170) | 2 | 2 | Y | 44 (36-54) | H | | 10S | | | | | | |
| 21 | UPB 1042 | 70 (54-86) | 106 (91-118) | 78 (67-90) | 129 (92-193) | 2 | 2 | Y | 41 (38-48) | H | | 5S | | | | | | |
| 22 | BH 902 (c) | 72 (65-85) | 110 (95-121) | 91 (84-103) | 107 (59-143) | 2 | 6 | Y | 45 (39-53) | H | | 5S | | | | | | |
| 23 | BH 946 (c) | 68 (57-85) | 105 (94-116) | 88 (80-98) | 88 (56-109) | 2 | 6 | Y | 45 (41-51) | H | | 10S | | | | | | |
| 24 | HUB 113 (c) | 73 (66-86) | 111 (102-119) | 85 (72-101) | 114 (61-169) | 2 | 6 | Y | 48 (42-53) | H | | 10S | | | | | | |
| 25 | JYOTI (c) | 75 (64-85) | 110 (102-118) | 96 (75-120) | 108 (56-172) | 2 | 6 | Y | 45 (41-51) | H | | 0 | | | | | | |
| 26 | PL 751 (c) | 68 (58-84) | 107 (101-115) | 79 (70-88) | 103 (64-135) | 2 | 6 | Y | 43 (38-46) | H | | 0 | | | | | | |
| 27 | RD 2552 (c) | 74 (66-85) | 113 (102-125) | 87 (77-97) | 112 (65-151) | 2 | 6 | Y | 44 (38-49) | H | | 10S | | | | | | |
| 28 | RD 2786 (c) | 71 (63-86) | 109 (94-120) | 92 (83-98) | 113 (61-152) | 2 | 6 | Y | 45 (41-50) | H | | TMS | | | | | | |

Irrigated Trials Malt Barley

ADVANCED VARIETAL TRIAL (IR-TS) - MALT BARLEY

The AVT-MB (IR-TS) was proposed at 12 centres in NWPZ. The trials were conducted at all the centres. The results from all the locations, except Bhatinda (UR) and Mathura (LSM) were considered for zonal mean compilation.

The trial consisted of 4 test entries and 4 checks viz. BH 902, K551 (both six-row) and DWRB 92 and DWRUB52 (both two-row malt barley) making a total of 8 entries, where entries DWRB 101 and RD 2849 were in the final year of evaluation.

The trial was monitored at Ludhiana, Bathinda, Sriganaganagar, Hisar, Bawal, Navgaon and Durgapura centres during crop season. Entries PL 874 and BH 976 had few off types at some locations.

The medium leaf blight reactions were recorded in the entries namely BH 976 (45) followed by RD 2849 (35) and PL 874 (23) etc. Medium aphid incidence was observed in all the entries, while stripe rust of 20S reaction was also reported from Dhaulakuan location in check variety K 551.

The mean grain yield was exhibited as 48.4 q/ha, which ranged from 30.19 q/ha (Karnal) to 58.59 q/ha (Ludhiana) indicating a wide difference across the centres. The crop season was very favourable at most of the locations indicated by the site means, Entry PL 874 (50.6 q/ha) ranked first and was significantly superior to the best check DWRB 92 (47.5 q/ha), which comprised alone in the first Non-Significant Group. The final year entry DWRB 101 (47.9 q/ha) ranked third and was numerically high to the best check DWRB 92, whereas another final year entry RD 2849 ranked fifth with 46.9 q/ha mean grain yield.

AVT-MB-TS-NWPZ

Location wise (Grain Yield in q/ha)

| Varieties | Codes | Hisar | | Karnal | | Bawal | | Ludhiana | | Durgapura | |
|-----------|-------------|------------|----|------------|----|------------|----|------------|----|------------|----|
| | | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk |
| BH 976 | AVTIRMBTS-3 | 60.12 | 3 | 32.83 | 3 | 50.88 | 2 | 68.29 | 2 | 57.87 | 3 |
| DWRB 101* | AVTIRMBTS-1 | 59.19 | 4 | 37.17 | 1 | 49.52 | 4 | 57.64 | 5 | 55.56 | 4 |
| PL 874 | AVTIRMBTS-2 | 63.40 | 1 | 30.22 | 4 | 53.10 | 1 | 68.52 | 1 | 59.41 | 2 |
| RD 2849* | AVTIRMBTS-5 | 58.09 | 5 | 33.89 | 2 | 48.19 | 5 | 63.43 | 4 | 49.23 | 7 |
| BH 902@ | AVTIRMBTS-7 | 60.36 | 2 | 20.00 | 8 | 44.49 | 8 | 49.54 | 7 | 48.15 | 8 |
| DWRB 92@ | AVTIRMBTS-6 | 56.86 | 6 | 28.06 | 7 | 50.31 | 3 | 54.86 | 6 | 65.43 | 1 |
| DWRUB 52@ | AVTIRMBTS-8 | 55.89 | 7 | 29.28 | 6 | 48.15 | 6 | 64.12 | 3 | 54.32 | 5 |
| K 551@ | AVTIRMBTS-4 | 45.56 | 8 | 30.11 | 5 | 46.48 | 7 | 42.36 | 8 | 51.85 | 6 |
| G.M. | | 57.43 | | 30.19 | | 48.89 | | 58.59 | | 55.23 | |
| S.E.(M) | | 1.30 | | 2.35 | | 1.63 | | 1.50 | | 2.17 | |
| C.D. | | 3.82 | | 6.91 | | 4.79 | | 4.42 | | 6.37 | |
| C.V. | | 4.52 | | 15.57 | | 6.65 | | 5.13 | | 7.84 | |
| DOS | | 13-11-2013 | | 18-11-2013 | | 13-11-2013 | | 12-11-2013 | | 22-11-2013 | |

Location wise (Grain Yield in q/ha)

| Varieties | Codes | Modipuram | | Pantnagar | | Navaon | | SG Nagar | | Dhaulakuan | | NWPZ* Mean | |
|-----------|-------------|------------|----|------------|----|------------|----|------------|----|------------|----|------------|----|
| | | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk |
| BH 976 | AVTIRMBTS-3 | 35.83 | 8 | 44.51 | 1 | 39.34 | 8 | 63.24 | 1 | 33.75 | 5 | 48.7 | 2 |
| DWRB 101* | AVTIRMBTS-1 | 40.86 | 6 | 40.71 | 3 | 46.33 | 3 | 58.33 | 2 | 33.33 | 6 | 47.9 | 3 |
| PL 874 | AVTIRMBTS-2 | 44.46 | 4 | 40.75 | 2 | 52.30 | 2 | 57.96 | 4 | 35.76 | 2 | 50.6 | 1 |
| RD 2849* | AVTIRMBTS-5 | 41.56 | 5 | 38.08 | 4 | 43.16 | 6 | 56.48 | 5 | 36.67 | 1 | 46.9 | 5 |
| BH 902@ | AVTIRMBTS-7 | 45.23 | 3 | 32.60 | 7 | 55.18 | 1 | 51.20 | 7 | 32.22 | 7 | 43.9 | 7 |
| DWRB 92@ | AVTIRMBTS-6 | 48.06 | 1 | 36.19 | 6 | 42.26 | 7 | 58.15 | 3 | 35.07 | 4 | 47.5 | 4 |
| DWRUB 52@ | AVTIRMBTS-8 | 46.57 | 2 | 36.60 | 5 | 43.66 | 5 | 50.46 | 8 | 35.63 | 3 | 46.5 | 6 |
| K 551@ | AVTIRMBTS-4 | 38.55 | 7 | 26.88 | 8 | 45.22 | 4 | 52.50 | 6 | 24.03 | 8 | 40.4 | 8 |
| G.M. | | 42.64 | | 37.04 | | 45.93 | | 56.04 | | 33.31 | | 48.4 | |
| S.E.(M) | | 1.02 | | 0.59 | | 1.48 | | 1.03 | | 2.40 | | 0.5 | |
| C.D. | | 3.01 | | 1.74 | | 4.35 | | 3.03 | | 7.07 | | 1.5 | |
| C.V. | | 4.80 | | 3.20 | | 6.45 | | 3.67 | | 14.43 | | | |
| DOS | | 20-11-2013 | | 25-11-2013 | | 23-11-2013 | | 24-11-2013 | | 23-11-2013 | | | |

*Data from Mathura (LSM) & Bhatinda (UR) are not included in zonal mean.

ADVANCED VARIETAL TRIAL MALT BARLEY (TS)
Summary of ancillary and disease data

ZONE : NWPZ
RABI –2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE REACTION | | | | | | |
|---------|--------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|-----------------------|------------------------|-----|-----|------------------|----|-------|-------|-------------|-----|-------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Grain Colour | 1000 g.w. Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Leaf Blight | CCN | APHID |
| 1 | BH 976 | 91 (86-98) | 133 (111-147) | 95 (80-102) | 141 (112-182) | 3 (2-5) | 2 | Y | 46 (39-54) | H | TS | | | | | 45 | | 2 |
| 2 | DWRB 101* | 91 (82-98) | 133 (115-148) | 98 (88-108) | 147 (113-188) | 2 (1-3) | 2 | Y | 47 (37-56) | H | F | | | | | 12 | | 5 |
| 3 | PL 874 | 89 (81-95) | 133 (114-146) | 93 (72-106) | 146 (113-185) | 3 (2-3) | 2 | Y | 47 (39-58) | H | F | | | | | 23 | | 3 |
| 4 | RD 2849* | 90 (82-102) | 133 (114-155) | 95 (74-108) | 138 (90-180) | 2 (1-3) | 2 | Y | 46 (37-50) | H | F | | | | | 35 | | 1 |
| 5 | BH 902 (c) | 93 (83-102) | 135 (113-147) | 101 (74-119) | 112 (72-134) | 3 (1-5) | 6 | Y | 44 (36-52) | H | F | | | | | 56 | | 5 |
| 6 | DWRB 92 (c) | 91 (87-96) | 132 (112-145) | 94 (78-104) | 136 (103-173) | 3 (2-3) | 2 | Y | 53 (43-60) | H | F | | | | | 67 | | 2 |
| 7 | DWRUB 52 (c) | 91 (86-101) | 132 (111-153) | 95 (77-107) | 140 (108-171) | 3 (2-3) | 2 | Y | 46 (40-54) | H | F | | | | | 35 | | 5 |
| 8 | K 551 (c) | 88 (81-92) | 130 (112-143) | 109 (88-122) | 101 (76-120) | 3 (1-5) | 6 | Y | 45 (34-54) | H | 20S | | | | | 67 | | 4 |

INITIAL VARIETAL TRIAL (IR-TS) - MALT BARLEY

The IVT malt barley under timely sown condition was proposed at 10 locations in NWPZ, and was conducted at 9 centres, except Pantnagar centre. The results from all trial conducting centres were received. After the analysis, data from 8 locations were pooled for NWPZ mean, while yield data of Mathura (UR) were not included in zonal means.

The trial was proposed with 16 entries and 3 checks viz. DWRB 92, DWRUB 52 and BH 902. Check, BH902 is feed type barley and was included for the comparison of yield levels of two and six row barley. The zonal monitoring group visited the trial at Hisar, Ludhiana, Bathinda, Bawal, Navgaon and Durgapura centres. Entries BH 988, BH 989, KB 1354 and RD 2892 were reported as mixtures/segregating, while entries viz. KB 1349, DWRB 123, DWRB 124, RD 2894, DWRB 128 and check DWRUB 52 were having some off types and need purification.

During zonal monitoring, incidence of yellow rust up to 30S was observed in the entries KB 1354, RD 2891, KB 1363 and BH 988, while 40S reaction was recorded in the entry RD 2894 at Durgapura centre.

The trial mean ranged from 35.78 q/ha (Karnal) to 56.01 q/ha (Bhatinda), with 47.5 q/ha NWPZ mean, indicating very good yield levels in the favourable season.

The entries DWRB 123 (52.5 q/ha) and DWRB 128 (51.7 q/ha) were significantly superior to the best check DWRUB 52 (49.4 q/ha) and were grouped in the first non-significant group along with the entries RD 2891 (50.8 q/ha) and DWRB 124 (50.5 q/ha), respectively.

IVT-IR-TS-MB-NWPZ
Location wise & Zonal means (Grain Yield in q/ha)

| Varieties | Codes | Navgaon | | Hisar | | Karnal | | Ludhiana | | Bathinda | | Modipuram | | Bawal | | Durgapura | | NWPZ* | | | | |
|------------|--------------|------------|----|------------|------------|------------|------------|------------|------------|------------|------------|-----------|---|-------|----|-----------|-------|-------|---|-------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| BH987 | IVT-MB-TS-1 | 54.63 | 2 | 0 | 56.56 | 11 | 1 | 30.90 | 14 | 0 | 61.81 | 4 | 1 | 39.24 | 7 | 0 | 51.70 | 7 | 1 | 49.8 | 6 | 0 |
| BH988 | IVT-MB-TS-19 | 45.81 | 12 | 0 | 56.64 | 10 | 1 | 26.67 | 17 | 0 | 54.83 | 14 | 0 | 37.96 | 10 | 0 | 42.44 | 12 | 0 | 45.3 | 15 | 0 |
| BH989 | IVT-MB-TS-2 | 50.96 | 7 | 0 | 57.27 | 9 | 1 | 37.92 | 8 | 0 | 65.14 | 2 | 1 | 34.10 | 16 | 0 | 41.36 | 14 | 0 | 48.2 | 10 | 0 |
| DWRB122 | IVT-MB-TS-6 | 52.00 | 4 | 0 | 55.59 | 13 | 1 | 40.97 | 4 | 1 | 47.95 | 17 | 0 | 37.46 | 11 | 0 | 27.78 | 19 | 0 | 47.9 | 12 | 0 |
| DWRB123 | IVT-MB-TS-9 | 47.35 | 10 | 0 | 58.31 | 6 | 1 | 45.63 | 1 | 1 | 67.26 | 1 | 1 | 36.27 | 12 | 0 | 50.93 | 8 | 1 | 52.5 | 1 | 1 |
| DWRB124 | IVT-MB-TS-11 | 51.42 | 5 | 0 | 62.05 | 2 | 1 | 37.85 | 9 | 0 | 57.36 | 7 | 0 | 36.23 | 13 | 0 | 44.44 | 11 | 0 | 50.5 | 4 | 1 |
| DWRB126 | IVT-MB-TS-10 | 51.35 | 6 | 0 | 58.73 | 5 | 1 | 40.28 | 5 | 1 | 56.77 | 10 | 0 | 38.27 | 8 | 0 | 46.30 | 10 | 0 | 49.6 | 7 | 0 |
| DWRB127 | IVT-MB-TS-17 | 31.41 | 19 | 0 | 47.65 | 17 | 0 | 26.39 | 19 | 0 | 59.97 | 5 | 0 | 40.20 | 6 | 0 | 42.44 | 12 | 0 | 43.7 | 16 | 0 |
| DWRB128 | IVT-MB-TS-14 | 63.99 | 1 | 1 | 64.24 | 1 | 1 | 41.88 | 3 | 1 | 49.13 | 16 | 0 | 42.79 | 2 | 0 | 48.15 | 9 | 0 | 51.7 | 2 | 1 |
| KB1349 | IVT-MB-TS-8 | 38.71 | 18 | 0 | 42.07 | 18 | 0 | 29.65 | 16 | 0 | 42.15 | 18 | 0 | 30.29 | 19 | 0 | 39.81 | 17 | 0 | 38.8 | 19 | 0 |
| KB1354 | IVT-MB-TS-3 | 54.32 | 3 | 0 | 52.33 | 15 | 0 | 30.42 | 15 | 0 | 56.60 | 11 | 0 | 42.52 | 3 | 0 | 52.16 | 5 | 1 | 47.9 | 11 | 0 |
| KB1363 | IVT-MB-TS-7 | 38.90 | 17 | 0 | 41.71 | 19 | 0 | 26.46 | 18 | 0 | 40.45 | 19 | 0 | 33.72 | 17 | 0 | 40.90 | 15 | 0 | 39.3 | 18 | 0 |
| RD2891 | IVT-MB-TS-4 | 50.32 | 9 | 0 | 57.89 | 8 | 1 | 38.47 | 7 | 0 | 56.81 | 9 | 0 | 41.05 | 5 | 0 | 52.47 | 4 | 1 | 50.8 | 3 | 1 |
| RD2892 | IVT-MB-TS-18 | 43.80 | 15 | 0 | 51.37 | 16 | 0 | 36.88 | 10 | 0 | 59.86 | 6 | 0 | 38.04 | 9 | 0 | 30.86 | 18 | 0 | 43.7 | 17 | 0 |
| RD2893 | IVT-MB-TS-5 | 39.17 | 16 | 0 | 60.57 | 4 | 1 | 38.96 | 6 | 0 | 46.76 | 11 | 0 | 31.75 | 18 | 0 | 53.24 | 2 | 1 | 47.4 | 13 | 0 |
| RD2894 | IVT-MB-TS-12 | 50.53 | 8 | 0 | 56.47 | 12 | 1 | 36.74 | 11 | 0 | 57.08 | 8 | 0 | 47.26 | 1 | 1 | 53.09 | 3 | 1 | 49.9 | 5 | 0 |
| BH902(c) | IVT-MB-TS-13 | 45.71 | 14 | 0 | 55.55 | 14 | 1 | 32.99 | 13 | 0 | 54.13 | 15 | 0 | 35.30 | 14 | 0 | 54.32 | 1 | 1 | 46.5 | 14 | 0 |
| DWRB92(c) | IVT-MB-TS-16 | 46.65 | 11 | 0 | 58.18 | 7 | 1 | 36.39 | 12 | 0 | 64.86 | 3 | 1 | 41.78 | 4 | 0 | 40.90 | 15 | 0 | 49.0 | 9 | 0 |
| DWRUB52(c) | IVT-MB-TS-15 | 45.76 | 13 | 0 | 60.68 | 3 | 1 | 44.44 | 2 | 1 | 55.45 | 13 | 0 | 35.22 | 15 | 0 | 53.47 | 8 | 0 | 49.4 | 8 | 0 |
| G.M. | | 47.52 | | | 55.47 | | | 35.78 | | | 56.01 | | | 37.87 | | | 45.52 | | | 47.5 | | |
| S.E.(M) | | 2.68 | | | 3.24 | | | 2.34 | | | 2.14 | | | 1.45 | | | 1.70 | | | 0.8 | | |
| C.D. | | 7.56 | | | 9.13 | | | 6.59 | | | 6.03 | | | 4.09 | | | 4.78 | | | 2.2 | | |
| C.V. | | 11.29 | | | 11.68 | | | 13.08 | | | 7.65 | | | 7.67 | | | 6.44 | | | 7.78 | | |
| DOS | | 22-11-2013 | | 13-11-2013 | 18-11-2013 | 18-11-2013 | 13-11-2013 | 18-11-2013 | 20-11-2013 | 13-11-2013 | 22-11-2013 | | | | | | | | | | | |

*Data from Mathura (UR) are not included in zonal mean

INITIAL VARIETAL TRIAL (TS) MALT BARLEY

**ZONE : NWPZ
RABI – 2013-14**

Summary of ancillary and disease data

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE REACTION | | | | | | |
|---------|----------|----------------------------|----------------------------|--------------------------------|---|------------------------------|--------------------|-----------------------|-----------------------------|-----|-----|------------------|----|------------------------|--|----------------|-----|-------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Grain Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | SMUT L (%) C (%) | | Leaf Blight | CCN | APHID |
| 1 | BH 987 | 93 (80-100) | 132 (116-149) | 94 (71-109) | 137 (106-195) | 2 (1-3) | 2 | Y | 54 (46-61) | H | | | | | | 45 | | |
| 2 | BH 988 | 88 (75-96) | 130 (114-148) | 108 (88-120) | 134 (92-189) | 3 (2-3) | 2 | Y | 47 (40-54) | H | 30S | | | | | 34 | | |
| 3 | BH 989 | 90 (76-97) | 132 (113-152) | 96 (62-116) | 135 (80-176) | 2 (2-2) | 2 | Y | 47 (41-55) | H | | | | | | 12 | | |
| 4 | DWRB 122 | 91 (79-98) | 131 (115-151) | 93 (72-106) | 142 (110-170) | 3 (2-3) | 2 | Y | 49 (45-52) | H | 20S | | | | | 12 | | |
| 5 | DWRB 123 | 87 (75-94) | 130 (111-145) | 95 (66-107) | 137 (92-186) | 3 (1-4) | 2 | Y | 49 (39-56) | H | | | | | | 13 | | |
| 6 | DWRB 124 | 92 (79-99) | 131 (112-143) | 95 (76-108) | 154 (110-192) | 1 (1-1) | 2 | Y | 52 (47-57) | H | | | | | | 24 | | |
| 7 | DWRB 126 | 87 (77-93) | 129 (112-141) | 97 (75-105) | 135 (92-179) | 2 (1-3) | 2 | Y | 48 (40-52) | H | | | | | | 34 | | |
| 8 | DWRB 127 | 87 (75-98) | 129 (115-147) | 103 (92-112) | 137 (91-185) | 2 (2-2) | 2 | Y | 57 (50-65) | H | | | | | | 45 | | |
| 9 | DWRB 128 | 90 (75-100) | 129 (113-141) | 97 (68-112) | 134 (108-182) | 1 (1-1) | 2 | Y | 50 (47-58) | H | | | | | | 56 | | |
| 10 | KB 1349 | 92 (78-99) | 129 (116-141) | 105 (87-122) | 126 (84-190) | 2 (1-2) | 2 | Y | 56 (49-62) | H | 20S | | | | | 23 | | |
| 11 | KB 1354 | 93 (78-101) | 132 (112-147) | 101 (86-114) | 131 (72-185) | 1 (1-1) | 2 | Y | 52 (46-57) | H | 30S | | | | | 67 | | |

INITIAL VARIETAL TRIAL (TS) MALT BARLEY
Summary of ancillary and disease data

ZONE : NWPZ
RABI – 2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | | | DISEASE REACTION | | | | |
|---------|--------------|----------------------------|----------------------------|--------------------------------|--|------------------------------|--------------------|-----------------|-----------------------------|-----|-----|----|----|------------------|----------|----------------|-----|-------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Grain Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Leaf Blight | CCN | APHID |
| 12 | KB 1363 | 92 (81-98) | 130 (113-143) | 104 (73-121) | 121 (94-170) | 1 (1-1) | 2 | Y | 45 (41-49) | H | 30S | | | | | 56 | | |
| 13 | RD 2891 | 89 (76-97) | 129 (110-145) | 97 (72-109) | 128 (88-178) | 3 (1-5) | 2 | Y | 50 (46-54) | H | 30S | | | | | 12 | | |
| 14 | RD 2892 | 88 (77-94) | 129 (112-143) | 98 (86-107) | 131 (101-167) | 1 (1-1) | 2 | Y | 50 (46-54) | H | | | | | | 12 | | |
| 15 | RD 2893 | 90 (77-97) | 129 (109-146) | 100 (84-110) | 123 (96-170) | 2 (1-2) | 2 | Y | 50 (42-56) | H | | | | | | 23 | | |
| 16 | RD 2894 | 92 (75-99) | 131 (116-145) | 97 (78-110) | 139 (112-190) | 2 (1-2) | 2 | Y | 59 (51-63) | H | 40S | | | | | 34 | | |
| 17 | BH 902 (c) | 91 (78-102) | 133 (119-150) | 102 (82-112) | 118 (91-134) | 2 (1-3) | 6 | Y | 44 (37-48) | H | | | | | | 34 | | |
| 18 | DWRB 92 (c) | 93 (78-100) | 132 (114-151) | 97 (82-106) | 145 (112-181) | 1 (1-1) | 2 | Y | 55 (45-62) | H | | | | | | 45 | | |
| 19 | DWRUB 52 (c) | 90 (74-100) | 131 (116-147) | 96 (76-108) | 137 (80-194) | 3 (1-4) | 2 | Y | 48 (38-54) | H | | | | | | 13 | | |

ADVANCED VARIETAL TRIAL (IR-LS) - MALT BARLEY

The AVT malt barley under late sown conditions was proposed at 8 centres in NWPZ and was conducted at all locations, except Pantnagar centre. The results from all the centres were considered for NWPZ mean compilation.

The trial consisted of DWRB 118 and final year entry BH 968 with 4 checks viz. DWRB 73, DWRB 91 (both two-row), DWRUB 64 (six-row) and BH 902 (six-row feed barley). The trial was monitored at Hisar, Bathinda, Ludhiana, Sriganganagar and Durgapura centres during the crop season.

During zonal monitoring the incidence of yellow rust was observed in the entry BH 968 (20S) and check BH 902 (30S), respectively at Durgapura centre. Leaf blight reactions of 23 and 13 were also reported for entries BH 968 and DWRB 118, respectively.

The trial mean ranged from 30.54 q/ha (SG Nagar) to 51.55 q/ha (Bhatinda), with 39.1 q/ha NWPZ mean. The crop season was different than normal, with winter rainfall, and as a result the yield levels at most of the locations were above normal late sown conditions.

The check variety DWRB 91 (41.9 q/ha) ranked first followed by the final year entry BH 968 (41.1 q/ha) and were grouped in the first non-significant group. The entry DWRB 118 ranked fourth and depicted 39.3 q/ha mean grain yield.

AVT-MB-LS-NWPZ
Location wise (Grain Yield in q/ha)

| Varieties | Codes | Hisar | | Karnal | | Bathinda | | Ludhiana | | | | | |
|-------------|-----------|------------|----|------------|-------|------------|---|------------|----|------------|-------|---|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | | | |
| AVTIRMBLS-5 | BH 968* | 50.53 | 1 | 1 | 31.06 | 4 | 1 | 49.83 | 4 | 0 | 41.20 | 1 | 1 |
| AVTIRMBLS-6 | DWRB 118 | 46.84 | 4 | 1 | 36.81 | 1 | 1 | 58.49 | 2 | 1 | 25.69 | 6 | 0 |
| AVTIRMBLS-2 | BH 902@ | 46.96 | 3 | 1 | 36.19 | 2 | 1 | 53.08 | 3 | 0 | 40.05 | 2 | 1 |
| AVTIRMBLS-3 | DWRB 73@ | 43.67 | 6 | 0 | 27.75 | 5 | 0 | 41.47 | 6 | 0 | 35.88 | 4 | 0 |
| AVTIRMBLS-1 | DWRB 91@ | 47.09 | 2 | 1 | 34.67 | 3 | 1 | 62.81 | 1 | 1 | 38.19 | 3 | 1 |
| AVTIRMBLS-4 | DWRUB 64@ | 44.77 | 5 | 0 | 26.89 | 6 | 0 | 43.64 | 5 | 0 | 29.40 | 5 | 0 |
| G.M. | | 46.64 | | | 32.23 | | | 51.55 | | | 35.07 | | |
| S.E.(M) | | 1.34 | | | 1.95 | | | 1.80 | | | 1.69 | | |
| C.D. | | 4.03 | | | 5.88 | | | 5.44 | | | 5.10 | | |
| C.V. | | 5.73 | | | 12.12 | | | 7.00 | | | 9.65 | | |
| DOS | | 10-12-2013 | | 17-12-2013 | | 12-12-2013 | | 12-12-2013 | | 12-12-2013 | | | |

Location wise (Grain Yield in q/ha)

| Varieties | Codes | Modipuram | | SG Nagar | | Durgapura | | NWPZ | | | | | |
|-------------|-----------|------------|----|------------|-------|------------|---|------------|----|---|------|---|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | | | |
| AVTIRMBLS-5 | BH 968* | 36.67 | 1 | 1 | 31.30 | 3 | 0 | 46.91 | 3 | 1 | 41.1 | 2 | 1 |
| AVTIRMBLS-6 | DWRB 118 | 33.77 | 4 | 0 | 33.98 | 1 | 1 | 39.51 | 5 | 0 | 39.3 | 4 | 0 |
| AVTIRMBLS-2 | BH 902@ | 31.94 | 5 | 0 | 28.80 | 5 | 0 | 48.15 | 2 | 1 | 40.7 | 3 | 1 |
| AVTIRMBLS-3 | DWRB 73@ | 34.18 | 3 | 1 | 28.98 | 4 | 0 | 49.38 | 1 | 1 | 37.3 | 5 | 0 |
| AVTIRMBLS-1 | DWRB 91@ | 36.50 | 2 | 1 | 31.76 | 2 | 1 | 42.28 | 4 | 0 | 41.9 | 1 | 1 |
| AVTIRMBLS-4 | DWRUB 64@ | 30.83 | 6 | 0 | 28.43 | 6 | 0 | 34.57 | 6 | 0 | 34.1 | 6 | 0 |
| G.M. | | 33.98 | | | 30.54 | | | 43.47 | | | 39.1 | | |
| S.E.(M) | | 0.86 | | | 0.86 | | | 1.21 | | | 0.5 | | |
| C.D. | | 2.59 | | | 2.59 | | | 3.64 | | | 1.5 | | |
| C.V. | | 5.05 | | | 5.64 | | | 5.56 | | | | | |
| DOS | | 19-12-2013 | | 17-12-2013 | | 08-12-2013 | | 08-12-2013 | | | | | |

ADVANCED VARIETAL TRIAL MALT BARLEY (LS)

Summary of ancillary and disease data

**ZONE : NWPZ
RABI – 2013-14**

| Sr. No | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | DISEASE / PEST REACTION | | | | | | |
|--------|--------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------------|-----------------------|-----|-----|-------------------------|----|-------|-------|--------|-----|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Grain Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Blight | CCN | Aphid (1-5) |
| 1 | BH 968* | 85 (80-91) | 120 (118-122) | 93 (86-109) | 144 (104-190) | 3 (2-3) | 2 | Y | 44 (38-49) | H | 20S | | | | | 13 | | |
| 2 | DWRB 118 | 83 (77-93) | 120 (116-126) | 96 (88-102) | 130 (93-184) | 3 (3-3) | 2 | Y | 46 (37-56) | H | | | | | | 13 | | |
| 3 | BH 902 (c) | 87 (82-89) | 124 (120-130) | 98 (80-110) | 108 (91-122) | 3 (3-3) | 6 | Y | 41 (35-44) | H | 30S | | | | | 23 | | |
| 4 | DWRB 73 (c) | 84 (81-91) | 119 (117-122) | 87 (80-104) | 120 (72-178) | 3 (1-4) | 2 | Y | 51 (42-55) | H | | | | | | 23 | | |
| 5 | DWRB 91 (c) | 84 (80-93) | 120 (118-126) | 95 (81-115) | 126 (93-175) | 3 (2-3) | 2 | Y | 62 (57-66) | H | | | | | | 25 | | |
| 6 | DWRUB 64 (c) | 79 (74-83) | 122 (118-128) | 93 (81-105) | 108 (80-134) | 2 (1-3) | 6 | Y | 42 (40-44) | H | | | | | | 23 | | |

INITIAL VARIETAL TRIAL (IR-LS)-MALT BARLEY

The IVT Malt Barley under late sown conditions was proposed at 7 locations in NWPZ and was conducted and reported from 6 centres. The trial was not conducted at Pantnagar centre. The results from all the centres were considered for zonal compilation.

The trial was proposed with 15 entries and 3 checks including both the two and six row type barleys aimed to be tested as malt type. The trials were monitored at Hisar, Ludhiana, Bathinda and Durgapura during the crop season. The entries namely BH 991, DWRB 121, RD 2896, RD 2897, and RD 2898 were observed as mixture/segregating, while few off types were noticed in the entries viz. BH 990 and RD 2895 and check DWRB 91. Yellow rust reaction up to 30S was recorded in the entries BH 990, BH 991 and check BH 902, while the entries RD 2897 and RD 2898 showed reaction of 20S.

The trial mean yield ranged from 31.82 q/ha (Karnal) to 55.52 q/ha (Bhatinda) with zonal mean as 42.0 q/ha, indicating good yield under late sown crop. The results of grain yield indicated that in NWPZ, check DWRB 91 ranked first with 47.5 q/ha grain yield followed by entry DWRB 121 (46.3 q/ha) and DWRB 123 (46.0 q/ha) in the first non-significant group.

IVT-IR-LS-MB-NWPZ
Location wise & Zonal means (Grain Yield in q/ha)

| Varieties | Codes | Hisar | | | Karnal | | | Ludhiana | | | Modipuram | | | Bathinda | | | Durgapura | | | NWPZ* | | | | | |
|-----------|--------------|------------|----|---|------------|----|---|------------|----|---|------------|----|---|------------|----|---|------------|----|---|------------|----|---|------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | | | |
| BH 990 | IVT-MB-LS-1 | 36.92 | 18 | 0 | 31.78 | 11 | 0 | 31.94 | 14 | 0 | 33.33 | 9 | 0 | 39.97 | 17 | 0 | 49.38 | 7 | 0 | 49.38 | 7 | 0 | 37.2 | 16 | 0 |
| BH 991 | IVT-MB-LS-18 | 40.60 | 16 | 0 | 25.90 | 16 | 0 | 29.63 | 15 | 0 | 22.18 | 18 | 0 | 39.69 | 18 | 0 | 49.38 | 7 | 0 | 49.38 | 7 | 0 | 34.6 | 18 | 0 |
| BH 992 | IVT-MB-LS-16 | 46.26 | 11 | 0 | 33.89 | 5 | 0 | 39.81 | 6 | 1 | 26.66 | 16 | 0 | 53.96 | 13 | 0 | 61.73 | 2 | 1 | 61.73 | 2 | 1 | 43.7 | 6 | 0 |
| DWRB 121 | IVT-MB-LS-17 | 47.30 | 10 | 1 | 33.37 | 8 | 0 | 42.59 | 2 | 1 | 31.40 | 13 | 0 | 58.61 | 8 | 0 | 64.81 | 1 | 1 | 64.81 | 1 | 1 | 46.3 | 2 | 1 |
| DWRB 123 | IVT-MB-LS-5 | 51.70 | 4 | 1 | 35.40 | 2 | 1 | 40.28 | 5 | 1 | 35.76 | 7 | 0 | 60.63 | 5 | 1 | 52.47 | 6 | 0 | 52.47 | 6 | 0 | 46.0 | 3 | 1 |
| DWRB 124 | IVT-MB-LS-6 | 45.25 | 12 | 0 | 32.57 | 9 | 0 | 38.89 | 7 | 0 | 43.48 | 1 | 1 | 60.42 | 6 | 1 | 46.30 | 12 | 0 | 46.30 | 12 | 0 | 44.5 | 5 | 0 |
| DWRB 125 | IVT-MB-LS-10 | 52.63 | 3 | 1 | 29.31 | 15 | 0 | 33.33 | 13 | 0 | 34.10 | 8 | 0 | 51.01 | 14 | 0 | 49.38 | 7 | 0 | 49.38 | 7 | 0 | 41.6 | 12 | 0 |
| DWRB126 | IVT-MB-LS-7 | 44.48 | 14 | 0 | 33.54 | 7 | 0 | 37.04 | 10 | 0 | 37.11 | 5 | 0 | 65.66 | 1 | 1 | 33.95 | 16 | 0 | 33.95 | 16 | 0 | 42.0 | 10 | 0 |
| DWRB 128 | IVT-MB-LS-12 | 51.20 | 6 | 1 | 39.38 | 1 | 1 | 43.52 | 1 | 1 | 38.27 | 3 | 0 | 58.78 | 7 | 0 | 37.04 | 15 | 0 | 37.04 | 15 | 0 | 44.7 | 4 | 0 |
| PL 880 | IVT-MB-LS-9 | 48.37 | 7 | 1 | 34.10 | 4 | 1 | 38.89 | 7 | 0 | 29.63 | 15 | 0 | 61.77 | 3 | 1 | 46.30 | 12 | 0 | 46.30 | 12 | 0 | 43.2 | 7 | 0 |
| PL 881 | IVT-MB-LS-11 | 47.65 | 8 | 1 | 31.46 | 13 | 0 | 21.30 | 18 | 0 | 37.92 | 4 | 0 | 58.61 | 8 | 0 | 30.86 | 17 | 0 | 30.86 | 17 | 0 | 38.0 | 15 | 0 |
| RD 2895 | IVT-MB-LS-2 | 37.27 | 17 | 0 | 25.76 | 17 | 0 | 40.74 | 4 | 1 | 36.92 | 6 | 0 | 49.62 | 15 | 0 | 27.78 | 18 | 0 | 27.78 | 18 | 0 | 36.3 | 17 | 0 |
| RD 2896 | IVT-MB-LS-3 | 51.54 | 5 | 1 | 32.57 | 9 | 0 | 28.24 | 17 | 0 | 43.33 | 2 | 1 | 45.66 | 16 | 0 | 46.30 | 11 | 0 | 46.30 | 11 | 0 | 41.3 | 13 | 0 |
| RD 2897 | IVT-MB-LS-8 | 55.27 | 1 | 1 | 31.74 | 12 | 0 | 34.72 | 12 | 0 | 26.43 | 17 | 0 | 55.24 | 12 | 0 | 55.56 | 4 | 0 | 55.56 | 4 | 0 | 43.2 | 8 | 0 |
| RD 2898 | IVT-MB-LS-4 | 45.18 | 13 | 0 | 30.42 | 14 | 0 | 28.70 | 16 | 0 | 32.83 | 11 | 0 | 57.74 | 11 | 0 | 55.56 | 4 | 0 | 55.56 | 4 | 0 | 41.7 | 11 | 0 |
| BH 902@ | IVT-MB-LS-14 | 42.48 | 15 | 0 | 34.51 | 3 | 1 | 38.89 | 7 | 0 | 32.10 | 12 | 0 | 60.73 | 4 | 1 | 49.38 | 7 | 0 | 49.38 | 7 | 0 | 43.0 | 9 | 0 |
| DWRB 91@ | IVT-MB-LS-13 | 53.30 | 2 | 1 | 33.68 | 6 | 0 | 42.59 | 2 | 1 | 31.17 | 14 | 0 | 62.60 | 2 | 1 | 61.73 | 3 | 1 | 61.73 | 3 | 1 | 47.5 | 1 | 1 |
| DWRUB 64@ | IVT-MB-LS-15 | 47.38 | 9 | 1 | 23.47 | 18 | 0 | 35.19 | 11 | 0 | 33.18 | 10 | 0 | 58.61 | 8 | 0 | 46.30 | 12 | 0 | 46.30 | 12 | 0 | 40.7 | 14 | 0 |
| G.M. | | 46.93 | | | 31.82 | | | 35.91 | | | 33.66 | | | 55.52 | | | 48.01 | | | 48.01 | | | 42.0 | | |
| S.E.(M) | | 3.04 | | | 1.90 | | | 1.59 | | | 1.25 | | | 2.18 | | | 1.87 | | | 1.87 | | | 0.8 | | |
| C.D. | | 8.59 | | | 5.34 | | | 4.49 | | | 3.54 | | | 6.14 | | | 5.28 | | | 5.28 | | | 2.3 | | |
| C.V. | | 12.98 | | | 11.91 | | | 8.87 | | | 7.45 | | | 7.85 | | | 7.81 | | | 7.81 | | | | | |
| DOS | | 10-12-2013 | | | 17-12-2013 | | | 12-12-2013 | | | 19-12-2013 | | | 12-12-2013 | | | 08-12-2013 | | | 08-12-2013 | | | | | |

INITIAL VARIETAL TRIAL - MB (LS)
Summary of ancillary and disease data

ZONE : NWPZ
RABI - 2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE REACTION | | | | | | |
|---------|--------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------|-----------------------|-----|-----|----|------------------|-------|-------|-------------|--------------|-----|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Leaf Blight | Hel. Disease | CCN | APHID (1-5) |
| 1 | BH 990 | 87 (85-91) | 118 (116-122) | 95 (80-105) | 112 (80-181) | 3 (3-3) | 2 | Y | 49 (43-60) | H | 30S | | | | | | 23 | | |
| 2 | BH 991 | 86 (83-93) | 118 (116-124) | 102 (97-110) | 118 (80-181) | 2 (1-3) | 2 | Y | 47 (45-50) | H | 30S | | | | | 45 | | | |
| 3 | BH 992 | 85 (82-91) | 120 (117-124) | 89 (76-102) | 119 (98-166) | 2 (1-3) | 2 | Y | 41 (35-46) | H | | | | | | 13 | | | |
| 4 | DWRB 121 | 85 (81-91) | 122 (120-128) | 89 (72-109) | 114 (86-160) | 2 (1-3) | 2 | Y | 51 (51-53) | H | 20S | | | | | 45 | | | |
| 5 | DWRB 123 | 83 (78-90) | 120 (118-122) | 93 (75-107) | 137 (115-183) | 3 (2-3) | 2 | Y | 51 (48-55) | H | | | | | | 25 | | | |
| 6 | DWRB 124 | 88 (85-95) | 121 (117-125) | 93 (79-110) | 123 (92-161) | 3 (3-3) | 2 | Y | 49 (46-53) | H | | | | | | 35 | | | |
| 7 | DWRB 125 | 84 (79-94) | 121 (116-128) | 95 (82-116) | 125 (95-169) | 3 (2-3) | 2 | Y | 57 (48-65) | H | | | | | | 45 | | | |
| 8 | DWRB 126 | 85 (79-94) | 120 (116-128) | 88 (75-104) | 111 (78-169) | 3 (2-3) | 2 | Y | 48 (44-51) | H | | | | | | 35 | | | |
| 9 | DWRB 128 | 88 (85-95) | 122 (118-128) | 95 (88-107) | 127 (103-162) | 2 (1-3) | 2 | Y | 51 (51-52) | H | | | | | | 36 | | | |
| 10 | PL 880 | 84 (77-89) | 120 (117-122) | 89 (81-101) | 113 (70-178) | 3 (3-3) | 2 | Y | 44 (39-48) | H | | | | | | 34 | | | |
| 11 | PL 881 | 91 (86-99) | 121 (120-122) | 101 (82-126) | 92 (75-113) | 3 (2-4) | 6 | Y | 43 (40-46) | H | | | | | | 68 | | | |
| 12 | RD 2895 | 86 (82-95) | 120 (118-122) | 89 (76-104) | 126 (96-171) | 3 (2-3) | 2 | Y | 50 (45-55) | H | | | | | | 13 | | | |
| 13 | RD 2896 | 84 (79-92) | 119 (116-124) | 87 (74-103) | 120 (78-172) | 3 (2-4) | 2 | Y | 46 (45-50) | H | | | | | | 34 | | | |
| 14 | RD 2897 | 84 (78-91) | 120 (118-122) | 92 (80-112) | 131 (107-168) | 1 (1-1) | 2 | Y | 48 (43-50) | H | 20S | | | | | 23 | | | |
| 15 | RD 2898 | 84 (80-91) | 121 (117-128) | 87 (73-106) | 124 (81-190) | 4 (1-6) | 2 | Y | 47 (38-52) | H | 20S | | | | | 45 | | | |
| 16 | BH 902 (c) | 87 (84-93) | 124 (115-130) | 96 (88-104) | 97 (83-115) | 3 (3-3) | 6 | Y | 48 (45-52) | H | 30S | | | | | 13 | | | |
| 17 | DWRB 91 (c) | 82 (73-92) | 119 (114-128) | 95 (81-112) | 110 (85-170) | 3 (2-3) | 2 | Y | 51 (45-59) | H | | | | | | 56 | | | |
| 18 | DWRUB 64 (c) | 80 (72-86) | 118 (116-121) | 91 (79-102) | 92 (81-115) | 4 (3-4) | 6 | Y | 44 (42-48) | H | | | | | | 36 | | | |

Salinity-Alkalinity Trials

SOIL SALINITY TOLERANCE YIELD TRIAL

A special alkalinity/salinity trial was proposed at 8 locations and was conducted at all centres except Bhilwara location. The data were received from six centres and the results from 6 locations were considered for zonal means. The trial consisted of 17 test entries (contributed by five centres) and 3 checks viz. NDB 1173, RD 2552, and RD 2794. The trials were monitored at Hisar, Faizabad and Kanpur centres by the team during the crop season. The trial conducted at Dalipnagar location was rejected by monitoring team due to irregular germination in nine plots in all replications.

Entries NDB 1586, BH 972, RD 2889, RD 2887, NDB 1600, KB 1375, RD 2794 and NDB 1587 were having off types while entries NDB 1592, BH 972, BH 986, BH 985 and KB 1370 were reported as mixtures. In case of disease incidence, no rusts and leaf blights were recorded at the trial.

The trial means ranged from 13.83 q/ha (Faizabad-I) to 45.22 q/ha (Hisar), with 28.10 q/ha trial mean. The overall results of grain yield indicated that check NDB 1173 (33.5 q/ha) showed rank first and was in the first non-significant group.

AVT-SST- IR

Location wise and zonal means (Grain Yield in q/ha)

| Varieties | Codes | Hisar | | | Faizabad-I | | | Faizabad-II | | | Rambura | | | Bawal | | | DWR Hisar | | | Mean | | |
|--------------|-----------|------------|------------|------------|------------|------------|---------|-------------|----|---|---------|----|---|-------|----|---|-----------|----|-------|------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | Yield | Rk | | |
| BH 972 | AVTSST-10 | 42.28 | 2 | 1 | 19.69 | 11 | 0 | 22.46 | 8 | 0 | 21.32 | 15 | 0 | 42.42 | 4 | 1 | 37.69 | 2 | 1 | 31 | 3 | 0 |
| BH 984 | AVTSST-9 | 41.43 | 4 | 1 | 22.28 | 3 | 1 | 17.09 | 20 | 0 | 21.44 | 14 | 0 | 36.50 | 11 | 0 | 30.01 | 10 | 0 | 28.1 | 11 | 0 |
| BH 985 | AVTSST-17 | 41.00 | 7 | 1 | 15.70 | 18 | 0 | 19.75 | 16 | 0 | 24.71 | 8 | 0 | 33.57 | 14 | 0 | 31.87 | 6 | 0 | 27.8 | 13 | 0 |
| BH 986 | AVTSST-16 | 40.65 | 8 | 1 | 17.21 | 17 | 0 | 17.45 | 18 | 0 | 23.54 | 12 | 0 | 27.08 | 19 | 0 | 29.81 | 12 | 0 | 26 | 19 | 0 |
| DWRB 131 | AVTSST-4 | 40.52 | 10 | 1 | 24.40 | 1 | 1 | 22.34 | 9 | 0 | 24.76 | 7 | 0 | 37.14 | 10 | 0 | 21.17 | 18 | 0 | 28.4 | 8 | 0 |
| KB 1370 | AVTSST-2 | 41.87 | 3 | 1 | 20.53 | 8 | 0 | 21.32 | 11 | 0 | 21.93 | 13 | 0 | 31.73 | 17 | 0 | 22.93 | 17 | 0 | 26.7 | 18 | 0 |
| KB 1375 | AVTSST-20 | 24.83 | 20 | 0 | 15.10 | 19 | 0 | 20.89 | 13 | 0 | 15.10 | 19 | 0 | 26.84 | 20 | 0 | 16.28 | 20 | 0 | 19.8 | 20 | 0 |
| NDB 1586 | AVTSST-5 | 40.59 | 9 | 1 | 19.57 | 12 | 0 | 20.83 | 14 | 0 | 24.21 | 9 | 0 | 38.25 | 8 | 1 | 27.02 | 16 | 0 | 28.4 | 7 | 0 |
| NDB 1587 | AVTSST-19 | 41.30 | 5 | 1 | 19.38 | 13 | 0 | 21.62 | 10 | 0 | 24.13 | 10 | 0 | 29.14 | 18 | 0 | 29.54 | 14 | 0 | 27.5 | 15 | 0 |
| NDB 1592 | AVTSST-1 | 39.64 | 11 | 1 | 13.83 | 20 | 0 | 23.13 | 5 | 0 | 21.32 | 15 | 0 | 37.47 | 9 | 0 | 29.98 | 11 | 0 | 27.6 | 14 | 0 |
| NDB 1600 | AVTSST-15 | 41.06 | 6 | 1 | 21.98 | 4 | 1 | 17.21 | 19 | 0 | 23.64 | 11 | 0 | 32.58 | 16 | 0 | 27.42 | 15 | 0 | 27.3 | 17 | 0 |
| RD 2860 | AVTSST-11 | 30.56 | 16 | 0 | 21.20 | 6 | 0 | 23.07 | 6 | 0 | 24.82 | 6 | 0 | 44.81 | 1 | 1 | 32.07 | 5 | 0 | 29.4 | 4 | 0 |
| RD 2866 | AVTSST-6 | 28.68 | 17 | 0 | 19.20 | 14 | 0 | 30.86 | 1 | 1 | 16.00 | 18 | 0 | 43.81 | 2 | 1 | 31.06 | 8 | 0 | 28.3 | 10 | 0 |
| RD 2887 | AVTSST-14 | 28.59 | 18 | 0 | 21.14 | 7 | 0 | 28.44 | 3 | 1 | 20.89 | 17 | 0 | 35.24 | 12 | 0 | 33.00 | 3 | 0 | 27.9 | 12 | 0 |
| RD 2888 | AVTSST-8 | 35.79 | 13 | 1 | 22.71 | 2 | 1 | 22.89 | 7 | 0 | 31.91 | 3 | 0 | 43.60 | 3 | 1 | 29.64 | 13 | 0 | 31.1 | 2 | 0 |
| RD 2889 | AVTSST-12 | 28.58 | 19 | 0 | 20.29 | 9 | 0 | 20.95 | 12 | 0 | 28.25 | 5 | 0 | 41.36 | 6 | 1 | 31.12 | 7 | 0 | 28.4 | 6 | 0 |
| RD 2890 | AVTSST-13 | 31.53 | 15 | 0 | 19.14 | 15 | 0 | 29.35 | 2 | 1 | 15.10 | 19 | 0 | 42.33 | 5 | 1 | 32.58 | 4 | 0 | 28.3 | 9 | 0 |
| NDB 1173 (c) | AVTSST-7 | 45.22 | 1 | 1 | 19.87 | 10 | 0 | 20.77 | 15 | 0 | 34.00 | 2 | 1 | 41.18 | 7 | 1 | 40.02 | 1 | 1 | 33.5 | 1 | 1 |
| RD 2552 (c) | AVTSST-3 | 37.81 | 12 | 1 | 21.44 | 5 | 0 | 27.84 | 4 | 1 | 35.43 | 1 | 1 | 33.21 | 15 | 0 | 19.47 | 19 | 0 | 29.2 | 5 | 0 |
| RD 2794 (c) | AVTSST-18 | 32.50 | 14 | 0 | 17.63 | 16 | 0 | 19.20 | 17 | 0 | 30.19 | 4 | 0 | 34.60 | 13 | 0 | 30.21 | 9 | 0 | 27.4 | 16 | 0 |
| G.M. | | 36.72 | | | 19.61 | | | 22.37 | | | 24.13 | | | 36.64 | | | 29.14 | | | 28.1 | | |
| S.E.(M) | | 3.40 | | | 0.92 | | | 1.12 | | | 1.19 | | | 2.54 | | | 1.16 | | | 0.8 | | |
| C.D. | | 9.64 | | | 2.60 | | | 3.17 | | | 3.36 | | | 7.18 | | | 3.29 | | | 2.21 | | |
| C.V. | | 18.53 | | | 9.35 | | | 10.00 | | | 9.83 | | | 13.84 | | | 7.97 | | | | | |
| DOS | | 14-11-2013 | 25-11-2013 | 30-12-2013 | 25-11-2013 | 19-11-2013 | 8.11.13 | | | | | | | | | | | | | | | |

ADVANCED VARIETAL TRIAL – Salinity

Summary of ancillary and disease data

ZONE: NWPZ / NEPZ
RABI – 2013-14

| Sr. No. | ENTRY | AGRONOMIC CHARACTERS | | | | | | | CHARACTERISTICS | | | DISEASE REACTION | | | | | | |
|---------|--------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------|-----------------------|-----|-----|------------------|----|-------|-------|---------|--------------------------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Colour | 1000 g.w Mean & Range | H/N | Yl. | BR | BL | L (%) | C (%) | STR (%) | Hel. Disease Leaf Blight | APHID (1-5) |
| 1 | BH 972 | 83 (81-86) | 129 (119-142) | 74 (32-103) | 106 (94-122) | 2 (1-3) | - | Y | 43 (40-48) | H | | | | | | | 78 | |
| 2 | BH 984 | 84 (71-92) | 125 (110-138) | 78 (34-102) | 86 (71-105) | 1 (1-5) | - | Y | 40 (37-44) | H | | | | | | | 89 | |
| 3 | BH 985 | 80 (67-94) | 123 (103-140) | 72 (35-95) | 81 (58-121) | 2 (1-5) | - | Y | 43 (33-54) | H | | | | | | | 89 | |
| 4 | BH 986 | 90 (85-95) | 134 (125-146) | 85 (34-125) | 81 (59-114) | 3 (2-5) | - | Y | 47 (38-55) | H | | | | | | | 67 | |
| 5 | DWRB 131 | 86 (82-91) | 128 (118-140) | 76 (32-101) | 89 (75-114) | 2 (1-3) | - | Y | 43 (40-46) | H | | | | | | | 89 | |
| 6 | KB 1370 | 87 (80-97) | 130 (119-140) | 80 (31-112) | 91 (65-137) | 2 (1-3) | - | Y | 42 (33-49) | H | | | | | | | 67 | |
| 7 | KB 1375 | 89 (80-96) | 130 (118-140) | 77 (32-106) | 82 (60-128) | 4 (3-5) | - | Y | 43 (39-50) | H | | | | | | | 79 | |
| 8 | NDB 1586 | 88 (84-94) | 130 (120-144) | 89 (34-116) | 101 (72-146) | 2 (1-3) | - | Y | 40 (35-43) | H | | | | | | | 57 | |
| 9 | NDB 1587 | 93 (88-98) | 135 (128-142) | 82 (38-106) | 100 (78-136) | 3 (2-5) | - | Y | 44 (40-50) | H | | | | | | | 78 | |
| 10 | NDB 1592 | 85 (81-91) | 128 (118-136) | 80 (31-113) | 94 (69-120) | 2 (1-5) | - | Y | 43 (41-47) | H | | 10S | | | | | 78 | |
| 11 | NDB 1600 | 89 (79-94) | 132 (126-140) | 75 (38-109) | 95 (76-117) | 2 (1-5) | - | Y | 39 (32-47) | H | | | | | | | 67 | |
| 12 | RD 2860 | 77 (66-84) | 120 (99-136) | 78 (32-105) | 83 (59-116) | 3 (2-3) | - | Y | 40 (34-45) | H | | | | | | | 89 | |
| 13 | RD 2886 | 79 (70-89) | 124 (108-140) | 81 (35-108) | 91 (72-136) | 1 (1-2) | - | Y | 43 (34-49) | H | | | | | | | 89 | |
| 14 | RD 2887 | 79 (68-92) | 124 (103-142) | 78 (33-108) | 77 (42-106) | 3 (1-6) | - | Y | 41 (38-44) | H | | TS | | | | | 89 | |
| 15 | RD 2888 | 83 (80-86) | 129 (118-142) | 75 (35-100) | 89 (68-131) | 3 (1-6) | - | Y | 46 (40-56) | H | | | | | | | 78 | |
| 16 | RD 2889 | 80 (63-94) | 121 (100-137) | 76 (39-108) | 87 (65-111) | 2 (1-3) | - | Y | 40 (30-49) | H | | | | | | | 89 | |
| 17 | RD 2890 | 80 (64-97) | 124 (103-142) | 85 (35-108) | 82 (67-107) | 1 (1-2) | - | Y | 42 (37-46) | H | | | | | | | 89 | |
| 18 | NDB 1173 (c) | 84 (80-91) | 130 (118-142) | 78 (34-116) | 91 (60-138) | 1 (1-2) | - | Y | 38 (32-42) | H | | TS | | | | | 56 | |
| 19 | RD 2552 (c) | 90 (81-96) | 130 (118-142) | 76 (31-99) | 92 (59-141) | 2 (1-3) | - | Y | 42 (39-44) | H | | | | | | | 68 | |
| 20 | RD 2794 (c) | 81 (62-93) | 123 (99-140) | 73 (35-100) | 110 (90-128) | 2 (1-3) | - | Y | 45 (40-50) | H | | | | | | | 89 | |

Dual Purpose Trials

COLLABORATIVE YIELD TRIALS ON DUAL PURPOSE BARLEY

In order to evaluate the performance of new barley genotypes for single cut forage and grain yield, coordinated trials on dual purpose barley were proposed for rabi 2013-14, in all zones in plains as well in northern hills zone under the collaborative programme with AICRP-FC, Jhansi. The technical programme was formulated in the AICW&BIP annual meet at Kanpur in September, 2013.

The AVT was proposed under rainfed conditions of Northern Hills Zone. Similarly one trial was proposed for dual purpose in Northern Hills zone.

The objective of the trials was to evaluate the barley genotypes for their green forage yield (at about 55 days stage in irrigated conditions of plains and at 70-75 days or first node stage under rainfed conditions in NH Zone) and then for the grain yield from the regenerated crop after the cut. The over all performance of the genotypes for forage cum grain yield is to be taken into consideration for promotion / retention of the entry in the trial.

Initial Varietal Trial (NWP, NEP and Central Zones)

The trial consisted of 15 entries and 4 checks, representing different centres in three zones. The IVT (common set of new entries) was proposed in NWPZ (9) and NEPZ (6) at 17 locations. The data were received from the fifteen centres. The trials of Kota and Banswara centres were rejected by monitoring team due to no/very less regeneration in the entries. After analysis data of both grain and forage yield from Jhansi, Anand and Vijapur were rejected due to LSM in Central Zone while data received from Jalore was not included grain yield. The trial was monitored at Hisar and Ludhiana centres in NWPZ, Kanpur, Faizabad, Varanasi and Rewa in NEPZ and Banswara, Kota and Udaipur in Central zone by different teams. Amongst the entries BH 980, RD2880, UPB 1042 and RD 2879 were reported as segregating, while HUB 238, KB 1347, NDB 1584 and RD 2715 had few off-types and needs purification.

In case of NEPZ, leaf blight was reported in the entries RD 2880, RD 2881, RD 2879, RD 2715 and RD 2878.

In case of NWPZ, trial means for grain yield of the locations considered for reporting ranged from Bikaner (9.46 q/ha) to Ludhiana (78.55 q/ha). In general the crop situation was very good in zone. The entry KB 1369 ranks first in NWPZ and was in first non significant group.

In case of NEPZ, trial means for grain yield of the locations considered for reporting ranged from Faizabad (9.42 q/ha) to Kanpur (31.52 q/ha). In general crop situation was very good in Zone. The entry NDB 1584 showed rank first followed by HUB 238 in first NSG.

In case of central zone, entry HUB 239 (26.8q/ha) revealed rank first followed by check RD 2035 (25.5 q/ha) and entry HUB 238 (25.4 q/ha) in first non significant group.

On national basis entry RD 2878 (30.1 q/ha) was ranked first for mean grain yield followed by check RD 2035 (29.7 q/ha) in the first non significant group.

In NWPZ, a wide range of variation was observed for forage yield of the locations from Bikaner (38.38 q/ha) to Ludhiana (346.39 q/ha). The entry RD 2878

(207.9 q/ha) showed rank first followed by RD 2880 (9202.6 q/ha) and RD 2881 (201.4 q/ha) in first NSG. However, check RD 2715 ranked fourth in the zone and was in first non significant group.

In NEPZ, checks Azad (137.4 q/ha) and RD 2552 (132.4 q/ha) were ranked first and second in non significant group for forage yield in trial mean respectively.

However, in central zone, entry RD 2880 ranks first for forage yield and was in first non significant group.

At national level, RD 2880 showed rank first and then RD 2878 ranked second in NSG for forage yield.

As a result, entry RD 2878 was observed rank second for mean forage yield while rank first for mean grain yield in the first non significant group on national basis.

AVT (Dual Purpose)-RF-TS – (Northern Hills Zone):

Grain and forage yield

The Advanced varietal trial for dual purpose was proposed at 5 locations under rainfed conditions of Uttarakhand and Himachal Pradesh in the NH zone. The results from all locations were reported for zonal means.

The trial consisted of 17 entries and two checks [BHS 380 and HBL 276], whereas entry VLB 130 was in final year of evaluation.

The zonal monitoring team visited at Uttarakhand as well as Himachal Pradesh at many centres along with wheat group. All trials were in very good conditions. In case of varietal purity, entries BHS 428, BHS 431, HBL 731 and UPB 1039 were recommended for purification. However, entry BHS 429 was recommended to be dropped from further testing. The monitoring team recommended that replication I of the trial conducted at Palampur location should not be considered for analysis due to mismatch of entries. However, data of three replications (R2, R3 and R4) can be considered for analysis. No disease incidence was reported for the trial.

The trial means for grain yield of the locations considered for reporting ranged from Majhera (10.48 q/ha) to Palampur (49.12 q/ha). In general the crop situation was very good in the zone. The entry BHS 429 (29.1 q/ha), BHS 432 (28.6 q/ha), VLB 138 (28.5 q/ha), BHS 430 (28.3 q/ha) and VLB 139 (28.2 q/ha) were significantly higher over best check BHS 380 (25.7 q/ha) and were in first NSG.

The trial means for forage yield of the locations considered for reporting ranged from Majhera (8.15 q/ha) to Bajaura (49.93 q/ha). The entry VLB 137 (26.9 q/ha) ranked first followed by VLB 719 (25.7 q/ha) and BHS 431 (24.6) and were in first NSG. The entries were superior over both the checks.

Based on grain and forage yields together, no entry were in the first non-significant group for grain yield, as well as forage yield. Thus entry may not be considered for promotion to AVT final year evaluation for dual purpose in NH zone under rainfed conditions.

IVT-Dual-IR-TS
Location wise and Zonal means (Grain Yield in q/ha)

| Varieties | Code | Durgapura | | | Bikaner | | | Modipuram | | | Hisar | | | Ludhiana | | | NWPZ | | |
|-------------|---------------|-----------|----|---|---------|----|---|-----------|----|---|-------|----|---|----------|----|---|-------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| BH 980 | IVTIRTS DP-4 | 24.15 | 15 | 0 | 29.70 | 1 | 1 | 29.71 | 6 | 0 | 42.06 | 5 | 1 | 63.10 | 4 | 0 | 37.7 | 3 | 0 |
| BH 983 | IVTIRTS DP-6 | 36.23 | 12 | 0 | 12.04 | 16 | 0 | 17.42 | 17 | 0 | 38.06 | 11 | 0 | 67.05 | 3 | 0 | 34.2 | 8 | 0 |
| HUB 238 | IVTIRTS DP-3 | 19.32 | 17 | 0 | 9.46 | 19 | 0 | 18.21 | 15 | 0 | 42.79 | 3 | 1 | 41.96 | 13 | 0 | 26.3 | 19 | 0 |
| HUB 239 | IVTIRTS DP-19 | 38.65 | 8 | 0 | 10.47 | 18 | 0 | 28.08 | 10 | 0 | 42.62 | 4 | 1 | 47.17 | 12 | 0 | 33.4 | 9 | 0 |
| KB 1347 | IVTIRTS DP-14 | 26.57 | 14 | 0 | 13.09 | 13 | 0 | 17.33 | 18 | 0 | 36.23 | 13 | 0 | 39.82 | 14 | 0 | 26.6 | 18 | 0 |
| KB 1369 | IVTIRTS DP-9 | 50.72 | 1 | 1 | 13.18 | 11 | 0 | 29.41 | 7 | 0 | 38.62 | 9 | 0 | 77.62 | 2 | 1 | 41.9 | 1 | 1 |
| NDB 1584 | IVTIRTS DP-10 | 24.15 | 15 | 0 | 10.51 | 17 | 0 | 23.07 | 11 | 0 | 36.92 | 12 | 0 | 53.37 | 8 | 0 | 29.6 | 13 | 0 |
| NDB 1585 | IVTIRTS DP-2 | 38.65 | 8 | 0 | 13.82 | 9 | 0 | 17.63 | 16 | 0 | 46.05 | 2 | 1 | 57.57 | 6 | 0 | 34.7 | 7 | 0 |
| RD 2878 | IVTIRTS DP-18 | 41.06 | 7 | 0 | 12.80 | 14 | 0 | 34.18 | 1 | 1 | 19.32 | 19 | 0 | 30.51 | 19 | 0 | 27.6 | 16 | 0 |
| RD 2879 | IVTIRTS DP-15 | 38.65 | 8 | 0 | 16.11 | 7 | 0 | 32.64 | 4 | 1 | 21.38 | 17 | 0 | 37.11 | 15 | 0 | 29.2 | 14 | 0 |
| RD 2880 | IVTIRTS DP-11 | 41.06 | 5 | 0 | 19.66 | 4 | 0 | 28.89 | 9 | 0 | 31.76 | 14 | 0 | 33.43 | 17 | 0 | 31.0 | 11 | 0 |
| RD 2881 | IVTIRTS DP-12 | 48.31 | 2 | 1 | 24.91 | 2 | 0 | 15.46 | 19 | 0 | 20.50 | 18 | 0 | 33.80 | 16 | 0 | 28.6 | 15 | 0 |
| UPB 1040 | IVTIRTS DP-1 | 41.06 | 5 | 0 | 13.13 | 12 | 0 | 18.90 | 13 | 0 | 48.32 | 1 | 1 | 60.84 | 5 | 0 | 36.5 | 4 | 0 |
| UPB 1041 | IVTIRTS DP-5 | 31.40 | 13 | 0 | 12.70 | 15 | 0 | 18.48 | 14 | 0 | 41.55 | 7 | 1 | 52.39 | 10 | 0 | 31.3 | 10 | 0 |
| UPB 1042 | IVTIRTS DP-7 | 43.48 | 3 | 0 | 13.48 | 10 | 0 | 29.14 | 8 | 0 | 38.16 | 10 | 0 | 53.89 | 7 | 0 | 35.6 | 5 | 0 |
| AZAD (c) | IVTIRTS DP-8 | 19.32 | 17 | 0 | 14.63 | 8 | 0 | 33.82 | 3 | 1 | 27.82 | 15 | 0 | 53.28 | 9 | 0 | 29.8 | 12 | 0 |
| RD 2035 (c) | IVTIRTS DP-17 | 19.32 | 17 | 0 | 24.56 | 3 | 0 | 33.97 | 2 | 1 | 41.94 | 6 | 1 | 78.55 | 1 | 1 | 39.7 | 2 | 0 |
| RD 2552 (c) | IVTIRTS DP-13 | 38.65 | 8 | 0 | 17.78 | 6 | 0 | 30.19 | 5 | 0 | 38.67 | 8 | 0 | 52.26 | 11 | 0 | 35.5 | 6 | 0 |
| RD 2715 (c) | IVTIRTS DP-16 | 43.48 | 3 | 0 | 19.00 | 5 | 0 | 19.90 | 12 | 0 | 22.51 | 16 | 0 | 31.17 | 18 | 0 | 27.2 | 17 | 0 |
| G.M. | | 34.96 | | | 15.84 | | | 25.07 | | | 35.54 | | | 50.78 | | | 32.4 | | |
| S.E.(M) | | 1.26 | | | 1.48 | | | 1.36 | | | 2.71 | | | 0.56 | | | 0.73 | | |
| C.D. | | 3.58 | | | 4.20 | | | 3.86 | | | 7.74 | | | 1.59 | | | 2.02 | | |
| C.V. | | 7.22 | | | 18.71 | | | 10.86 | | | 13.19 | | | 2.22 | | | | | |

IVT-Dual-IR-TS

Location wise and Zonal means (Forage Yield in q/ha)

| Varieties | Code | Durgapura | | | Bikaner | | | Modipuram | | | Hisar | | | Ludhiana | | | NWPZ | | |
|-------------|--------------|-----------|----|---|----------|----|---|-----------|----|---|----------|----|---|----------|----|---|-------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| | | | | | | | | | | | | | | | | | | | |
| BH 980 | IVTIRTSDP-4 | 161.84 | 9 | 0 | 55.28 | 17 | 0 | 341.67 | 1 | 1 | 95.01 | 16 | 0 | 286.14 | 4 | 0 | 188.0 | 9 | 0 |
| BH 983 | IVTIRTSDP-6 | 157.00 | 10 | 0 | 77.16 | 7 | 0 | 297.46 | 6 | 0 | 165.06 | 3 | 0 | 280.12 | 5 | 0 | 195.4 | 6 | 0 |
| HUB 238 | IVTIRTSDP-3 | 157.00 | 10 | 0 | 103.71 | 2 | 1 | 296.38 | 7 | 0 | 178.74 | 1 | 1 | 243.98 | 11 | 0 | 196.0 | 5 | 0 |
| HUB 239 | IVTIRTSDP-19 | 120.77 | 15 | 0 | 73.97 | 10 | 0 | 219.20 | 18 | 0 | 70.85 | 18 | 0 | 192.77 | 17 | 0 | 135.5 | 18 | 0 |
| KB 1347 | IVTIRTSDP-14 | 169.08 | 6 | 0 | 72.46 | 11 | 0 | 262.68 | 15 | 0 | 135.27 | 9 | 0 | 219.88 | 15 | 0 | 171.9 | 12 | 0 |
| KB 1369 | IVTIRTSDP-9 | 173.91 | 5 | 0 | 62.70 | 15 | 0 | 297.83 | 5 | 0 | 136.88 | 8 | 0 | 277.11 | 6 | 0 | 189.7 | 7 | 0 |
| NDB 1584 | IVTIRTSDP-10 | 132.85 | 14 | 0 | 76.75 | 8 | 0 | 265.22 | 13 | 0 | 140.10 | 6 | 0 | 231.93 | 14 | 0 | 169.4 | 14 | 0 |
| NDB 1585 | IVTIRTSDP-2 | 150.97 | 13 | 0 | 72.21 | 12 | 0 | 178.74 | 19 | 0 | 121.58 | 12 | 0 | 289.16 | 3 | 0 | 162.5 | 15 | 0 |
| RD 2878 | IVTIRTSDP-18 | 169.08 | 6 | 0 | 79.03 | 6 | 0 | 309.78 | 3 | 1 | 135.27 | 9 | 0 | 346.39 | 1 | 1 | 207.9 | 1 | 1 |
| RD 2879 | IVTIRTSDP-15 | 157.00 | 10 | 0 | 75.59 | 9 | 0 | 293.48 | 8 | 0 | 148.15 | 5 | 0 | 271.08 | 7 | 0 | 189.1 | 8 | 0 |
| RD 2880 | IVTIRTSDP-11 | 205.31 | 1 | 1 | 91.18 | 3 | 0 | 281.88 | 10 | 0 | 121.58 | 11 | 0 | 313.25 | 2 | 0 | 202.6 | 2 | 1 |
| RD 2881 | IVTIRTSDP-12 | 185.99 | 2 | 0 | 84.59 | 5 | 0 | 309.78 | 3 | 1 | 167.47 | 2 | 1 | 259.04 | 9 | 0 | 201.4 | 3 | 1 |
| UPB 1040 | IVTIRTSDP-1 | 108.70 | 16 | 0 | 38.38 | 19 | 0 | 268.84 | 12 | 0 | 108.70 | 15 | 0 | 174.70 | 19 | 0 | 139.9 | 17 | 0 |
| UPB 1041 | IVTIRTSDP-5 | 84.54 | 19 | 0 | 44.64 | 18 | 0 | 263.41 | 14 | 0 | 69.24 | 19 | 0 | 183.73 | 18 | 0 | 129.1 | 19 | 0 |
| UPB 1042 | IVTIRTSDP-7 | 108.70 | 16 | 0 | 59.69 | 16 | 0 | 260.87 | 17 | 0 | 75.68 | 17 | 0 | 204.82 | 16 | 0 | 142.0 | 16 | 0 |
| AZAD (c) | IVTIRTSDP-8 | 166.67 | 8 | 0 | 67.74 | 14 | 0 | 269.93 | 11 | 0 | 164.25 | 4 | 0 | 253.01 | 10 | 0 | 184.3 | 10 | 0 |
| RD 2035 (c) | IVTIRTSDP-17 | 176.33 | 4 | 0 | 116.44 | 1 | 1 | 262.68 | 15 | 0 | 120.77 | 13 | 0 | 240.96 | 13 | 0 | 183.4 | 11 | 0 |
| RD 2552 (c) | IVTIRTSDP-13 | 108.70 | 16 | 0 | 68.04 | 13 | 0 | 292.75 | 9 | 0 | 110.31 | 14 | 0 | 271.08 | 8 | 0 | 170.2 | 13 | 0 |
| RD 2715 (c) | IVTIRTSDP-16 | 181.16 | 3 | 0 | 85.02 | 4 | 0 | 339.86 | 2 | 1 | 138.49 | 7 | 0 | 243.98 | 11 | 0 | 197.7 | 4 | 1 |
| G.M. | | 151.35 | | | 73.93 | | | 279.60 | | | 126.49 | | | 251.74 | | | 176.6 | | |
| S.E.(M) | | 5.89 | | | 7.01 | | | 15.04 | | | 4.68 | | | 7.29 | | | 3.92 | | |
| C.D. | | 16.69 | | | 19.86 | | | 42.63 | | | 13.38 | | | 20.68 | | | 10.88 | | |
| C.V. | | 7.78 | | | 18.95 | | | 10.75 | | | 6.41 | | | 5.79 | | | | | |
| D.O.S. | | 12-11-13 | | | 23-11-13 | | | 18-11-13 | | | 14-11-13 | | | 6-11-13 | | | | | |

IVT-Dual-IR-TS

Location wise and Zonal means (Grain yield in q/ha)

| Varieties | Code | Varanasi | | | Kanpur | | | Faizabad | | | Rewa | | | NEPZ | | |
|-------------|-------------|----------|----|---|--------|----|---|----------|----|---|-------|----|---|-------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| BH 980 | IVIRTSDP-4 | 16.88 | 11 | 0 | 13.59 | 17 | 0 | 24.52 | 2 | 0 | 24.36 | 3 | 1 | 19.8 | 10 | 0 |
| BH 983 | IVIRTSDP-6 | 21.81 | 3 | 1 | 16.30 | 11 | 0 | 20.59 | 8 | 0 | 23.28 | 12 | 1 | 20.5 | 7 | 0 |
| HUB 238 | IVIRTSDP-3 | 14.57 | 15 | 0 | 29.89 | 3 | 1 | 27.17 | 1 | 1 | 21.84 | 19 | 1 | 23.4 | 2 | 1 |
| HUB 239 | IVIRTSDP-19 | 22.46 | 1 | 1 | 13.59 | 17 | 0 | 18.12 | 11 | 0 | 23.58 | 10 | 1 | 19.4 | 12 | 0 |
| KB 1347 | IVIRTSDP-14 | 19.50 | 6 | 0 | 14.13 | 15 | 0 | 16.30 | 14 | 0 | 23.70 | 7 | 1 | 18.4 | 16 | 0 |
| KB 1369 | IVIRTSDP-9 | 14.81 | 13 | 0 | 14.95 | 12 | 0 | 21.44 | 5 | 0 | 23.75 | 6 | 1 | 18.7 | 15 | 0 |
| NDB 1584 | IVIRTSDP-10 | 21.36 | 5 | 1 | 31.25 | 2 | 1 | 20.71 | 7 | 0 | 24.72 | 1 | 1 | 24.5 | 1 | 1 |
| NDB 1585 | IVIRTSDP-2 | 16.79 | 12 | 0 | 19.84 | 9 | 0 | 23.25 | 4 | 0 | 23.33 | 11 | 1 | 20.8 | 6 | 0 |
| RD 2878 | IVIRTSDP-18 | 14.57 | 16 | 0 | 31.52 | 1 | 1 | 11.84 | 15 | 0 | 22.68 | 16 | 1 | 20.2 | 9 | 0 |
| RD 2879 | IVIRTSDP-15 | 14.46 | 18 | 0 | 28.26 | 4 | 0 | 10.57 | 16 | 0 | 24.12 | 4 | 1 | 19.4 | 14 | 0 |
| RD 2880 | IVIRTSDP-11 | 14.61 | 14 | 0 | 13.04 | 19 | 0 | 9.66 | 18 | 0 | 24.42 | 2 | 1 | 15.4 | 19 | 0 |
| RD 2881 | IVIRTSDP-12 | 14.49 | 17 | 0 | 14.95 | 12 | 0 | 9.42 | 19 | 0 | 23.10 | 14 | 1 | 15.5 | 18 | 0 |
| UPB 1040 | IVIRTSDP-1 | 19.50 | 6 | 0 | 21.74 | 8 | 0 | 17.39 | 13 | 0 | 22.91 | 15 | 1 | 20.4 | 8 | 0 |
| UPB 1041 | IVIRTSDP-5 | 21.75 | 4 | 1 | 26.36 | 5 | 0 | 19.32 | 10 | 0 | 23.64 | 9 | 1 | 22.8 | 3 | 0 |
| UPB 1042 | IVIRTSDP-7 | 19.17 | 9 | 0 | 13.86 | 16 | 0 | 20.83 | 6 | 0 | 24.06 | 5 | 1 | 19.5 | 11 | 0 |
| AZAD (c) | IVIRTSDP-8 | 17.24 | 10 | 0 | 23.10 | 7 | 0 | 24.15 | 3 | 0 | 22.62 | 17 | 1 | 21.8 | 4 | 0 |
| RD 2035 (c) | IVIRTSDP-17 | 19.32 | 8 | 0 | 14.95 | 12 | 0 | 19.57 | 9 | 0 | 23.70 | 8 | 1 | 19.4 | 13 | 0 |
| RD 2552 (c) | IVIRTSDP-13 | 21.92 | 2 | 1 | 23.91 | 6 | 0 | 17.51 | 12 | 0 | 22.38 | 18 | 1 | 21.4 | 5 | 0 |
| RD 2715 (c) | IVIRTSDP-16 | 14.41 | 19 | 0 | 17.66 | 10 | 0 | 10.45 | 17 | 0 | 23.16 | 13 | 1 | 16.4 | 17 | 0 |
| G.M. | | 17.88 | | | 20.15 | | | 18.04 | | | 23.44 | | | 19.9 | | |
| S.E.(M) | | 0.43 | | | 1.05 | | | 0.85 | | | 1.75 | | | 0.56 | | |
| C.D. | | 1.23 | | | 2.97 | | | 2.42 | | | 4.96 | | | 1.56 | | |
| C.V. | | 4.85 | | | 10.38 | | | 9.48 | | | 14.92 | | | | | |

IVT-Dual-IR-TS

Location wise and Zonal means (Forage Yield in q/ha)

| Varieties | Code | Varanasi | | | Kanpur | | | Faizabad | | | Rewa | | | NEPZ | | |
|-------------|----------|----------|--------|----------|--------|-------|----------|----------|-------|---------|-------|-------|-------|-------|-------|----|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| | | BH 980 | 221.01 | 10 | 0 | 91.85 | 17 | 0 | 65.22 | 17 | 0 | 26.47 | 3 | 1 | 101.1 | 15 |
| BH 983 | 214.98 | 12 | 0 | 90.35 | 18 | 0 | 50.72 | 19 | 0 | 21.98 | 16 | 0 | 94.5 | 19 | 0 | |
| HUB 238 | 251.21 | 2 | 1 | 95.79 | 16 | 0 | 134.06 | 4 | 0 | 25.99 | 5 | 1 | 126.8 | 5 | 0 | |
| HUB 239 | 198.67 | 17 | 0 | 125.54 | 3 | 0 | 71.56 | 15 | 0 | 25.95 | 6 | 1 | 105.4 | 14 | 0 | |
| KB 1347 | 226.45 | 9 | 0 | 116.44 | 4 | 0 | 117.45 | 7 | 0 | 25.40 | 7 | 1 | 121.4 | 6 | 0 | |
| KB 1369 | 208.94 | 15 | 0 | 115.63 | 5 | 0 | 160.63 | 2 | 1 | 24.08 | 14 | 1 | 127.3 | 4 | 0 | |
| NDB 1584 | 214.98 | 12 | 0 | 96.47 | 15 | 0 | 128.62 | 5 | 0 | 25.37 | 8 | 1 | 116.4 | 9 | 0 | |
| NDB 1585 | 209.54 | 14 | 0 | 88.86 | 19 | 0 | 74.88 | 14 | 0 | 26.93 | 1 | 1 | 100.1 | 16 | 0 | |
| RD 2878 | 241.55 | 6 | 1 | 102.45 | 12 | 0 | 79.71 | 13 | 0 | 24.17 | 13 | 1 | 112.0 | 12 | 0 | |
| RD 2879 | 216.18 | 11 | 0 | 106.11 | 9 | 0 | 101.15 | 10 | 0 | 26.66 | 2 | 1 | 112.5 | 11 | 0 | |
| RD 2880 | 227.66 | 8 | 0 | 103.13 | 11 | 0 | 115.94 | 8 | 0 | 26.32 | 4 | 1 | 118.3 | 7 | 0 | |
| RD 2881 | 241.55 | 7 | 1 | 103.67 | 10 | 0 | 100.85 | 11 | 0 | 23.41 | 15 | 0 | 117.4 | 8 | 0 | |
| UPB 1040 | 205.31 | 16 | 0 | 108.70 | 8 | 0 | 65.82 | 16 | 0 | 20.20 | 19 | 0 | 100.0 | 17 | 0 | |
| UPB 1041 | 167.27 | 18 | 0 | 97.83 | 14 | 0 | 139.79 | 3 | 0 | 20.55 | 17 | 0 | 106.4 | 13 | 0 | |
| UPB 1042 | 147.95 | 19 | 0 | 150.41 | 1 | 1 | 65.22 | 17 | 0 | 20.24 | 18 | 0 | 96.0 | 18 | 0 | |
| AZAD (c) | 248.79 | 3 | 1 | 112.50 | 6 | 0 | 163.89 | 1 | 1 | 24.58 | 11 | 1 | 137.4 | 1 | 1 | |
| RD 2035 (c) | 261.47 | 1 | 1 | 112.36 | 7 | 0 | 112.32 | 9 | 0 | 24.70 | 9 | 1 | 127.7 | 3 | 0 | |
| RD 2552 (c) | 247.58 | 4 | 1 | 130.16 | 2 | 0 | 127.11 | 6 | 0 | 24.66 | 10 | 1 | 132.4 | 2 | 1 | |
| RD 2715 (c) | 242.75 | 5 | 1 | 99.59 | 13 | 0 | 93.30 | 12 | 0 | 24.36 | 12 | 1 | 115.0 | 10 | 0 | |
| G.M. | 220.73 | | | 107.78 | | | 103.59 | | | 24.32 | | | 114.1 | | | |
| S.E.(M) | 8.49 | | | 2.64 | | | 2.15 | | | 1.16 | | | 2.31 | | | |
| C.D. | 24.08 | | | 7.48 | | | 6.09 | | | 3.30 | | | 6.39 | | | |
| C.V. | 7.69 | | | 4.89 | | | 4.15 | | | 9.58 | | | | | | |
| D.O.S. | 19-11-13 | | | 19-11-13 | | | 16-11-13 | | | 9-11-13 | | | | | | |

IVT-Dual-IR-TS
Location wise and Zonal means (Grain Yield in q/ha)

| Varieties | Udaipur | | Jabalpur | | CZ | | Overall | |
|-------------|---------|----|----------|----|-------|----|---------|----|
| | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk |
| BH 980 | 19.02 | 15 | 26.69 | 6 | 22.9 | 10 | 28.5 | 4 |
| BH 983 | 20.33 | 12 | 23.55 | 13 | 21.9 | 14 | 27.0 | 9 |
| HUB 238 | 18.75 | 17 | 32.00 | 1 | 25.4 | 3 | 25.1 | 13 |
| HUB 239 | 27.36 | 1 | 26.27 | 7 | 26.8 | 1 | 27.1 | 8 |
| KB 1347 | 21.90 | 9 | 23.70 | 11 | 22.8 | 11 | 22.9 | 16 |
| KB 1369 | 23.42 | 4 | 23.34 | 15 | 23.4 | 8 | 30.1 | 1 |
| NDB 1584 | 16.36 | 19 | 28.23 | 4 | 22.3 | 13 | 26.4 | 10 |
| NDB 1585 | 20.65 | 10 | 21.14 | 17 | 20.9 | 17 | 27.2 | 7 |
| RD 2878 | 18.29 | 18 | 23.55 | 13 | 20.9 | 16 | 23.7 | 15 |
| RD 2879 | 22.91 | 6 | 25.06 | 9 | 24.0 | 6 | 24.7 | 14 |
| RD 2880 | 19.81 | 13 | 11.50 | 19 | 15.7 | 19 | 22.5 | 17 |
| RD 2881 | 22.31 | 8 | 17.36 | 18 | 19.8 | 18 | 22.2 | 19 |
| UPB 1040 | 19.13 | 14 | 28.68 | 2 | 23.9 | 7 | 28.3 | 5 |
| UPB 1041 | 18.86 | 16 | 23.61 | 12 | 21.2 | 15 | 26.4 | 11 |
| UPB 1042 | 24.13 | 2 | 21.74 | 16 | 22.9 | 9 | 27.4 | 6 |
| AZAD (c) | 23.72 | 3 | 25.57 | 8 | 24.6 | 5 | 25.9 | 12 |
| RD 2035 (c) | 22.69 | 7 | 28.38 | 3 | 25.5 | 2 | 29.7 | 2 |
| RD 2552 (c) | 23.18 | 5 | 27.48 | 5 | 25.3 | 4 | 28.5 | 3 |
| RD 2715 (c) | 20.60 | 11 | 24.61 | 10 | 22.6 | 12 | 22.4 | 18 |
| G.M. | 21.23 | | 24.34 | | 22.8 | | 26.1 | |
| S.E.(M) | 1.37 | | 2.33 | | 1.35 | | 0.46 | |
| C.D. | 3.88 | | 6.60 | | 3.78 | | 1.28 | |
| C.V. | 12.88 | | 19.11 | | | | | |

IVT-Dual-IR-TS

Location wise and Zonal means (Forage Yield in q/ha)

| Varieties | Codes | Udaipur | | | Jabalpur | | | CZ | | | Overall | | |
|-------------|--------------|----------|----|---|----------|----|---|--------|----|---|---------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| BH 980 | IVTIRTSDP-4 | 214.67 | 7 | 0 | 102.05 | 17 | 0 | 158.36 | 15 | 0 | 151.02 | 13 | 0 |
| BH 983 | IVTIRTSDP-6 | 198.37 | 12 | 0 | 117.15 | 15 | 0 | 157.76 | 16 | 0 | 151.85 | 12 | 0 |
| HUB 238 | IVTIRTSDP-3 | 255.43 | 1 | 1 | 169.69 | 6 | 0 | 212.56 | 4 | 0 | 173.82 | 4 | 0 |
| HUB 239 | IVTIRTSDP-19 | 133.15 | 18 | 0 | 109.30 | 16 | 0 | 121.23 | 17 | 0 | 121.98 | 17 | 0 |
| KB 1347 | IVTIRTSDP-14 | 230.98 | 5 | 1 | 148.55 | 10 | 0 | 189.76 | 7 | 0 | 156.79 | 10 | 0 |
| KB 1369 | IVTIRTSDP-9 | 192.93 | 13 | 0 | 158.21 | 9 | 0 | 175.57 | 9 | 0 | 164.44 | 7 | 0 |
| NDB 1584 | IVTIRTSDP-10 | 206.52 | 10 | 0 | 125.00 | 14 | 0 | 165.76 | 14 | 0 | 149.44 | 14 | 0 |
| NDB 1585 | IVTIRTSDP-2 | 179.35 | 16 | 0 | 226.45 | 2 | 0 | 202.90 | 5 | 0 | 147.15 | 15 | 0 |
| RD 2878 | IVTIRTSDP-18 | 250.00 | 2 | 1 | 207.85 | 4 | 0 | 228.93 | 3 | 0 | 176.84 | 2 | 1 |
| RD 2879 | IVTIRTSDP-15 | 209.24 | 8 | 0 | 129.47 | 13 | 0 | 169.35 | 12 | 0 | 157.65 | 9 | 0 |
| RD 2880 | IVTIRTSDP-11 | 239.13 | 4 | 1 | 275.36 | 1 | 1 | 257.25 | 1 | 1 | 181.89 | 1 | 1 |
| RD 2881 | IVTIRTSDP-12 | 230.98 | 6 | 1 | 165.46 | 7 | 0 | 198.22 | 6 | 0 | 170.25 | 5 | 0 |
| UPB 1040 | IVTIRTSDP-1 | 125.00 | 19 | 0 | 89.98 | 18 | 0 | 107.49 | 19 | 0 | 119.48 | 18 | 0 |
| UPB 1041 | IVTIRTSDP-5 | 138.59 | 17 | 0 | 85.14 | 19 | 0 | 111.87 | 18 | 0 | 117.70 | 19 | 0 |
| UPB 1042 | IVTIRTSDP-7 | 179.35 | 14 | 0 | 163.04 | 8 | 0 | 171.20 | 11 | 0 | 130.54 | 16 | 0 |
| AZAD (c) | IVTIRTSDP-8 | 179.35 | 14 | 0 | 175.72 | 5 | 0 | 177.54 | 8 | 0 | 166.04 | 6 | 0 |
| RD 2035 (c) | IVTIRTSDP-17 | 209.24 | 8 | 0 | 135.27 | 11 | 0 | 172.25 | 10 | 0 | 161.14 | 8 | 0 |
| RD 2552 (c) | IVTIRTSDP-13 | 203.80 | 11 | 0 | 134.66 | 12 | 0 | 169.23 | 13 | 0 | 156.26 | 11 | 0 |
| RD 2715 (c) | IVTIRTSDP-16 | 244.57 | 3 | 1 | 219.20 | 3 | 0 | 231.88 | 2 | 0 | 173.84 | 3 | 0 |
| G.M. | | 201.09 | | | 154.61 | | | 177.85 | | | 154.11 | | |
| S.E.(M) | | 8.98 | | | 10.54 | | | 6.92 | | | 2.34 | | |
| C.D. | | 25.47 | | | 29.88 | | | 19.41 | | | 6.48 | | |
| C.V. | | 8.94 | | | 13.63 | | | | | | | | |
| D.O.S | | 13-11-13 | | | 23-11-13 | | | | | | | | |

| Sr. No | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | | | DISEASE / PEST REACTION | | | | | |
|--------|----------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|-------------|-----------------------|-----------------------|-----|----|----|----|-------------------------|-------|-----------|-----|-------------|--|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/Six row | Grain Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Spot Leaf | CCN | Aphid (1-5) | |
| 1 | BH 980 | 91 (82-101) | 133 (121-146) | 85 (55-106) | 95 (78-106) | 1 | 6 | Y | 38 (34-41) | H | | | | | | | | | |
| 2 | BH 983 | 96 (90-101) | 136 (129-144) | 84 (53-106) | 103 (96-114) | 3 (1-5) | 6 | Y | 37 (35-40) | H | | | | | | | | | |
| 3 | HUB 238 | 92 (84-105) | 132 (119-146) | 80 (49-104) | 104 (100-107) | 2 (1-3) | 6 | Y | 35 (29-41) | H | | | | | | | | | |
| 4 | HUB 239 | 94 (84-107) | 134 (120-148) | 74 (50-102) | 105 (92-116) | 1 | 6 | Y | 39 (33-45) | H | | | | | | | | | |
| 5 | KB 1347 | 98 (86-111) | 135 (126-150) | 76 (50-86) | 111 (95-124) | 1 | 6 | Y | 38 (37-40) | H | | | | | | | | | |
| 6 | KB 1369 | 91 (80-107) | 133 (115-148) | 82 (58-102) | 103 (89-116) | 1 | 6 | Y | 39 (34-43) | H | | | | | | | | | |
| 7 | NDB 1584 | 95 (82-110) | 131 (112-148) | 80 (40-94) | 121 (78-178) | 2 (1-3) | 6 | Y | 34 (33-35) | H | | | | | | | | | |
| 8 | NDB 1585 | 92 (83-109) | 134 (117-150) | 84 (55-98) | 96 (85-110) | 2 (1-2) | 6 | Y | 37 (33-41) | H | | | | | | | | | |
| 9 | RD 2878 | 91 (81-102) | 132 (114-142) | 80 (52-97) | 100 (92-109) | 2 (1-2) | 6 | Y | 44 (42-46) | H | | | | | | | | | |
| 10 | RD 2879 | 92 (85-100) | 130 (113-142) | 81 (50-110) | 88 (72-118) | 3 (2-3) | 6 | Y | 42 (36-49) | H | | | | | | | | | |
| 11 | RD 2880 | 98 (92-109) | 134 (122-148) | 80 (50-110) | 103 (90-110) | 2 (1-2) | 6 | Y | 39 (39-39) | H | | | | | | | | | |

INITIAL VARIETAL TRIAL (DUAL) PLAINS
Summary of ancillary and disease data

ZONE : NWPZ
RABI – 2013-14

| Sr. No | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | DISEASE / PEST REACTION | | | | | | |
|--------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|-----------------------|-----------------------|-----|-------------------------|----|----|-------|-------|-----------|-----|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. stn. Mean & Range | Two/ Six row | Grain Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Spot leaf | CCN |
| 12 | RD 2881 | 90 (82-101) | 132 (113-144) | 80 (45-102) | 98 (88-104) | 3 (1-4) | 6 | Y | 42 (39-46) | H | | | | | | | |
| 13 | UPB 1040 | 98 (85-113) | 135 (125-146) | 84 (48-105) | 121 (75-153) | 3 (2-3) | 2 | Y | 43 (42-43) | H | | | | | | | |
| 14 | UPB 1041 | 100 (83-123) | 134 (114-150) | 82 (55-103) | 108 (75-145) | 3 (1-4) | 2 | Y | 47 (47-48) | H | | | | | | | |
| 15 | UPB 1042 | 98 (88-113) | 134 (122-146) | 81 (50-105) | 102 (80-140) | 2 (2-2) | 2 | Y | 40 (40-41) | H | | | | | | | |
| 16 | AZAD (c) | 90 (81-100) | 133 (118-142) | 91 (51-110) | 86 (72-101) | 3 (3-3) | 6 | Y | 34 (29-40) | H | | | | | | | |
| 17 | RD 2035 (c) | 93 (87-99) | 131 (118-146) | 84 (50-101) | 88 (84-90) | 3 (1-4) | 6 | Y | 30 (26-34) | H | | | | | | | |
| 18 | RD 2552 (c) | 95 (89-103) | 132 (115-144) | 77 (55-91) | 91 (80-104) | 4 (2-5) | 6 | Y | 37 (33-41) | H | | | | | | | |
| 19 | RD 2715 (c) | 92 (85-101) | 132 (117-144) | 84 (52-99) | 90 (74-101) | 2 (1-3) | 6 | Y | 40 (34-47) | H | | | | | | | |

INITIAL VARIETAL TRIAL (DUAL) PLAINS
Summary of ancillary and disease data

| Sr. No | ENTRY | AGRONOMIC CHARACTERS | | | | | | | GRAIN CHARACTERISTICS | | | | | DISEASE / PEST REACTION | | | | |
|--------|----------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|--------------|-----------------------|-----|----|----|----|-------------------------|-------|-------|-----------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Grain Colour | 1000 g/w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | SMUTS | Spot leaf | Leaf Blight |
| 1 | BH 980 | 95 (91-104) | 126 (117-135) | 86 (72-101) | 105 (67-141) | 2 (1-3) | 6 | LY | 32 (24-39) | H | | | | | | 67 | 36 | |
| 2 | BH 983 | 93 (86-101) | 127 (117-136) | 84 (70-97) | 105 (75-129) | 3 (2-5) | 6 | LY | 30 (25-36) | H | | | | | | 78 | 78 | |
| 3 | HUB 238 | 89 (82-94) | 121 (112-132) | 79 (69-90) | 102 (68-138) | 4 (3-4) | 6 | Y | 34 (21-40) | H | | | | | | 58 | 78 | |
| 4 | HUB 239 | 92 (88-96) | 123 (116-125) | 79 (65-90) | 107 (71-147) | 3 (1-5) | 6 | LY | 29 (21-37) | H | | | | | | 99 | 67 | |
| 5 | KB 1347 | 90 (88-94) | 124 (115-128) | 80 (70-90) | 96 (58-151) | 3 (1-5) | 6 | Y | 30 (22-38) | H | | | | | | 99 | 45 | |
| 6 | KB 1369 | 92 (86-100) | 124 (115-136) | 84 (80-90) | 103 (75-128) | 3 (1-5) | 6 | Y | 28 (20-39) | H | | | | | | 99 | 68 | |
| 7 | NDB 1584 | 91 (88-95) | 126 (117-132) | 82 (69-91) | 103 (63-140) | 3 (3-4) | 6 | Y | 34 (23-43) | H | | | | | | 58 | 89 | |
| 8 | NDB 1585 | 92 (87-102) | 125 (116-132) | 88 (79-93) | 115 (79-152) | 3 (3-4) | 6 | Y | 28 (21-37) | H | | | | | | 99 | 56 | |
| 9 | RD 2878 | 91 (87-93) | 127 (114-136) | 77 (51-104) | 96 (50-141) | 3 (2-4) | 6 | LY | 33 (12-43) | H | | | | | | 99 | 99 | |
| 10 | RD 2879 | 93 (87-101) | 127 (116-136) | 80 (66-94) | 108 (65-154) | 3 (1-4) | 6 | LY | 29 (15-38) | H | | | | | | 89 | 89 | |
| 11 | RD 2880 | 93 (88-101) | 125 (115-134) | 78 (59-92) | 91 (51-146) | 2 (1-3) | 6 | LY | 28 (11-38) | H | | | | | | 99 | 89 | |

INITIAL VARIETAL TRIAL (DUAL) PLAINS
Summary of ancillary and disease data

ZONE: NEPZ
RABI – 2013-14

| Sr. No | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE / PEST REACTION | | | | | | |
|--------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|-----------------------|-----------------------|-----|----|-------------------------|----|-------|-------|-----------|-------------|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stn. Mean & Range | Two/ Six row | Grain Colour | 1000 g-w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Spot Leaf | Leaf Blight | Aphid (1-5) |
| 12 | RD 2881 | 90 (88-93) | 123 (115-126) | 74 (58-92) | 107 (66-155) | 3 (3-4) | 6 | Y | 27 (13-39) | H | | | | | | 99 | 79 | |
| 13 | UPB 1040 | 97 (89-104) | 128 (119-135) | 91 (83-97) | 109 (81-147) | 3 (2-3) | 2 | LY | 31 (23-39) | H | | | | | | 47 | 67 | |
| 14 | UPB 1041 | 94 (89-100) | 127 (117-135) | 91 (81-97) | 111 (98-137) | 2 (1-2) | 2 | LY | 31 (22-37) | H | | | | | | 58 | 78 | |
| 15 | UPB 1042 | 95 (88-104) | 127 (119-139) | 89 (82-104) | 107 (85-133) | 3 (2-5) | 2 | LY | 29 (21-38) | H | | | | | | 99 | 35 | |
| 16 | AZAD (c) | 92 (87-96) | 126 (115-133) | 91 (76-104) | 107 (92-125) | 3 (2-4) | 6 | LY | 33 (24-37) | H | | | | | | 89 | 67 | |
| 17 | RD 2035 (c) | 91 (87-85) | 124 (117-127) | 81 (75-87) | 103 (61-150) | 4 (2-5) | 6 | LY | 33 (19-42) | H | | | | | | 99 | 45 | |
| 18 | RD 2552 (c) | 95 (89-105) | 128 (117-140) | 87 (80-93) | 110 (71-149) | 2 (1-3) | 6 | LY | 30 (21-39) | H | | | | | | 99 | 46 | |
| 19 | RD 2715 (c) | 92 (88-97) | 126 (115-135) | 79 (64-101) | 111 (76-148) | 2 (1-3) | 6 | LY | 27 (11-37) | H | | | | | | 99 | 89 | |

INITIAL VARIETAL TRIAL (DUAL) PLAINS

Summary of ancillary and disease data

ZONE: CZ
RABI - 2013-14

| Sr. No | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | | DISEASE / PEST REACTION | | | | | |
|--------|----------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|-----------------------|-----------------------|-----|----|-----|-------------------------|-------|-------|--------|-----|-------------|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Sin. Mean & Range | Two/ Six row | Grain Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Blight | CCN | Aphid (1-5) |
| 1 | BH 980 | 95 (87-103) | 123 (112-135) | 62 (36-81) | 69 (58-89) | - | 6 | Y | 43 (40-51) | H | | 5S | | | | | | |
| 2 | BH 983 | 101 (91-112) | 125 (104-138) | 59 (39-75) | 62 (58-70) | - | 6 | Y | 40 (35-50) | H | | 0 | | | | | | |
| 3 | HUB 238 | 97 (89-109) | 124 (114-134) | 65 (45-88) | 65 (44-86) | - | 6 | Y | 37 (32-41) | H | | 10S | | | | | | |
| 4 | HUB 239 | 95 (84-105) | 124 (114-137) | 57 (43-68) | 70 (56-87) | - | 6 | Y | 36 (27-41) | H | | 5S | | | | | | |
| 5 | KB 1347 | 98 (89-107) | 126 (118-139) | 59 (40-76) | 75 (59-101) | - | 6 | Y | 36 (26-41) | H | | 5S | | | | | | |
| 6 | KB 1369 | 98 (87-110) | 128 (116-141) | 62 (43-79) | 81 (66-103) | - | 6 | Y | 37 (33-39) | H | | 5S | | | | | | |
| 7 | NDB 1584 | 98 (86-112) | 126 (111-137) | 69 (44-99) | 82 (61-107) | - | 6 | Y | 39 (37-41) | H | | 10S | | | | | | |
| 8 | NDB 1585 | 97 (86-107) | 123 (111-136) | 59 (36-74) | 71 (58-86) | - | 6 | Y | 33 (31-34) | H | | 5S | | | | | | |
| 9 | RD 2878 | 96 (89-105) | 125 (114-140) | 61 (47-78) | 60 (51-105) | - | 6 | Y | 37 (30-42) | H | | 10S | | | | | | |
| 10 | RD 2879 | 97 (89-107) | 124 (109-137) | 63 (51-77) | 59 (20-87) | - | 6 | Y | 35 (30-42) | H | | 10S | | | | | | |
| 11 | RD 2880 | 96 (81-110) | 125 (112-135) | 56 (43-72) | 61 (12-106) | - | 6 | Y | 38 (32-43) | H | | 5S | | | | | | |

INITIAL VARIETAL TRIAL (DUAL) PLAINS
Summary of ancillary and disease data

ZONE: CZ
RABI – 2013-14

| Sr. No | ENTRY | AGRONOMIC CHARACTERS | | | | | | GRAIN CHARACTERISTICS | | | | DISEASE / PEST REACTION | | | | | |
|--------|-------------|----------------------|----------------------|--------------------------|----------------------------------|------------------------|--------------|-----------------------|-----------------------|-----|----|-------------------------|----|-------|-------|--------|-----|
| | | H. days Mean & Range | M. days Mean & Range | Height Mean & Range (cm) | Tillering per meter Mean & Range | Str. Stm. Mean & Range | Two/ Six row | Grain Colour | 1000 g.w Mean & Range | H/N | YL | BR | BL | L (%) | C (%) | Blight | CCN |
| 12 | RD 2881 | 98 (88-110) | 124 (111-135) | 59 (41-77) | 54 (14-79) | - | 6 | Y | 34 (28-40) | H | | 10S | | | | | |
| 13 | UPB 1040 | 96 (85-107) | 124 (112-133) | 58 (33-69) | 83 (61-97) | - | 2 | Y | 41 (39-44) | H | | 5S | | | | | |
| 14 | UPB 1041 | 97 (84-108) | 124 (112-137) | 64 (35-87) | 85 (67-105) | - | 2 | Y | 40 (35-49) | H | | 0 | | | | | |
| 15 | UPB 1042 | 98 (89-109) | 126 (111-138) | 57 (25-81) | 88 (65-108) | - | 2 | Y | 43 (41-45) | H | | 0 | | | | | |
| 16 | AZAD (c) | 95 (86-106) | 127 (113-140) | 72 (52-97) | 77 (65-101) | - | 6 | Y | 41 (37-45) | H | | 10S | | | | | |
| 17 | RD 2035 (c) | 95 (84-105) | 122 (109-134) | 61 (40-73) | 73 (61-93) | - | 6 | Y | 38 (33-41) | H | | 5S | | | | | |
| 18 | RD 2552 (c) | 96 (85-107) | 125 (111-139) | 65 (52-81) | 83 (60-97) | - | 6 | Y | 37 (32-41) | H | | 5S | | | | | |
| 19 | RD 2715 (c) | 97 (85-104) | 123 (112-135) | 63 (45-81) | 57 (18-97) | - | 6 | Y | 37 (30-45) | H | | 10S | | | | | |

AVT-RF-DUAL-NHZ
Location wise and Zonal means (Grain yield in q/ha)

| Varieties | Codes | Majhera | | Shimla | | Almora | | Palampur | | Bajaura | | NHZ | | | | | | | |
|-----------------|----------|------------|----|------------|-------|------------|---|------------|----|------------|-------|-----|---|-------|----|---|-------------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | | | | | | |
| BHS 428 | NHDBZ-14 | 23.29 | 3 | 1 | 20.65 | 8 | 0 | 15.96 | 16 | 0 | 39.40 | 8 | 0 | 38.79 | 1 | 1 | 27.6 | 6 | 1 |
| BHS 429 | NHDBZ-5 | 26.01 | 1 | 1 | 25.60 | 2 | 1 | 29.23 | 2 | 1 | 34.42 | 14 | 0 | 30.03 | 10 | 0 | 29.1 | 1 | 1 |
| BHS 430 | NHDBZ-1 | 18.25 | 11 | 0 | 18.48 | 13 | 0 | 20.37 | 12 | 0 | 49.12 | 1 | 1 | 35.12 | 5 | 0 | 28.3 | 4 | 1 |
| BHS 431 | NHDBZ-15 | 19.80 | 9 | 0 | 22.83 | 3 | 0 | 22.43 | 8 | 0 | 35.55 | 10 | 0 | 29.62 | 11 | 0 | 26 | 8 | 0 |
| BHS 432 | NHDBZ-17 | 25.62 | 2 | 1 | 22.10 | 6 | 0 | 20.29 | 14 | 0 | 44.38 | 3 | 0 | 30.37 | 9 | 0 | 28.6 | 2 | 1 |
| HBL 717 | NHDBZ-10 | 16.69 | 13 | 0 | 20.53 | 9 | 0 | 22.02 | 11 | 0 | 39.86 | 7 | 0 | 21.54 | 18 | 0 | 24.1 | 16 | 0 |
| HBL 718 | NHDBZ-9 | 13.59 | 18 | 0 | 16.18 | 19 | 0 | 20.33 | 13 | 0 | 29.89 | 17 | 0 | 20.11 | 19 | 0 | 20 | 19 | 0 |
| HBL 719 | NHDBZ-16 | 14.75 | 16 | 0 | 18.24 | 15 | 0 | 15.67 | 18 | 0 | 33.51 | 15 | 0 | 24.73 | 16 | 0 | 21.4 | 18 | 0 |
| HBL 731 | NHDBZ-8 | 22.90 | 5 | 1 | 19.08 | 12 | 0 | 22.36 | 9 | 0 | 33.06 | 16 | 0 | 28.87 | 12 | 0 | 25.3 | 13 | 0 |
| UPB 1037 | NHDBZ-11 | 19.80 | 9 | 0 | 20.41 | 10 | 0 | 22.92 | 7 | 0 | 29.44 | 18 | 0 | 35.19 | 4 | 0 | 25.6 | 11 | 0 |
| UPB 1038 | NHDBZ-18 | 16.30 | 14 | 0 | 16.67 | 18 | 0 | 15.80 | 17 | 0 | 37.00 | 9 | 0 | 35.26 | 3 | 0 | 24.2 | 15 | 0 |
| UPB 1039 | NHDBZ-6 | 21.74 | 7 | 1 | 22.83 | 4 | 0 | 25.42 | 4 | 1 | 28.53 | 19 | 0 | 25.82 | 15 | 0 | 24.9 | 14 | 0 |
| VLB 130* | NHDBZ-19 | 17.47 | 12 | 0 | 19.20 | 11 | 0 | 24.54 | 5 | 1 | 34.87 | 13 | 0 | 33.83 | 6 | 0 | 26 | 9 | 0 |
| VLB 137 | NHDBZ-13 | 22.52 | 6 | 1 | 18.36 | 14 | 0 | 18.11 | 15 | 0 | 42.03 | 5 | 0 | 37.02 | 2 | 1 | 27.6 | 7 | 1 |
| VLB 138 | NHDBZ-3 | 14.75 | 16 | 0 | 27.05 | 1 | 1 | 30.58 | 1 | 1 | 41.92 | 6 | 0 | 28.26 | 13 | 0 | 28.5 | 3 | 1 |
| VLB 139 | NHDBZ-12 | 20.19 | 8 | 0 | 17.75 | 16 | 0 | 27.27 | 3 | 1 | 43.48 | 4 | 0 | 32.27 | 8 | 0 | 28.2 | 5 | 1 |
| VLB 140 | NHDBZ-2 | 22.90 | 4 | 1 | 22.34 | 5 | 0 | 13.49 | 19 | 0 | 35.21 | 12 | 0 | 33.36 | 7 | 0 | 25.5 | 12 | 0 |
| BHS 380 © | NHDBZ-7 | 10.48 | 19 | 0 | 22.10 | 6 | 0 | 24.23 | 6 | 1 | 48.01 | 2 | 1 | 23.57 | 17 | 0 | 25.7 | 10 | 0 |
| HBL 276 © | NHDBZ-4 | 16.30 | 14 | 0 | 17.63 | 17 | 0 | 22.17 | 10 | 0 | 35.33 | 11 | 0 | 27.45 | 14 | 0 | 23.8 | 17 | 0 |
| G.M. | | 19.12 | | | 20.42 | | | 21.75 | | | 37.63 | | | 30.06 | | | 25.8 | | |
| S.E.(M) | | 1.76 | | | 1.41 | | | 2.27 | | | 1.35 | | | 0.87 | | | 0.72 | | |
| C.D. | | 4.98 | | | 4.00 | | | 6.44 | | | 3.84 | | | 2.47 | | | 1.99 | | |
| C.V. | | 18.35 | | | 13.80 | | | 20.90 | | | 7.20 | | | 5.79 | | | | | |
| DOS | | 31-10-2013 | | 26-10-2013 | | 07-11-2013 | | 25-10-2013 | | 08-11-2013 | | | | | | | | | |

AVT-RF-Dual-NHZ

Location wise and Zonal means (Forage yield in q/ha)

| Varieties | Codes | Majhera | | Shimla | | Almora | | Palampur | | Bajaura | | NHZ | |
|-----------------|----------|------------|------------|------------|------------|------------|----|----------|----|---------|----|-------------|----|
| | | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk | Yield | Rk |
| BHS 428 | NHDBZ-14 | 15.14 | 3 | 17.87 | 9 | 15.49 | 16 | 25.43 | 14 | 35.80 | 5 | 21.9 | 8 |
| BHS 429 | NHDBZ-5 | 8.93 | 17 | 17.75 | 10 | 20.49 | 2 | 45.27 | 1 | 29.35 | 12 | 24.4 | 4 |
| BHS 430 | NHDBZ-1 | 9.94 | 16 | 16.00 | 16 | 17.85 | 8 | 26.25 | 13 | 19.84 | 17 | 18 | 17 |
| BHS 431 | NHDBZ-15 | 12.89 | 6 | 25.79 | 1 | 19.38 | 4 | 31.39 | 6 | 33.70 | 8 | 24.6 | 3 |
| BHS 432 | NHDBZ-17 | 8.15 | 19 | 16.03 | 15 | 16.66 | 12 | 33.45 | 4 | 29.28 | 13 | 20.7 | 12 |
| HBL 717 | NHDBZ-10 | 13.20 | 4 | 18.42 | 7 | 20.38 | 3 | 25.27 | 15 | 30.64 | 10 | 21.6 | 9 |
| HBL 718 | NHDBZ-9 | 12.42 | 9 | 18.48 | 5 | 16.79 | 10 | 34.14 | 2 | 22.62 | 16 | 20.9 | 11 |
| HBL 719 | NHDBZ-16 | 19.41 | 1 | 18.18 | 8 | 18.72 | 6 | 27.92 | 10 | 44.09 | 2 | 25.7 | 2 |
| HBL 731 | NHDBZ-8 | 12.03 | 10 | 19.14 | 3 | 19.13 | 5 | 21.85 | 17 | 30.50 | 11 | 20.5 | 13 |
| UPB 1037 | NHDBZ-11 | 10.87 | 12 | 18.78 | 4 | 16.74 | 11 | 32.36 | 5 | 35.26 | 7 | 22.8 | 6 |
| UPB 1038 | NHDBZ-18 | 10.48 | 13 | 16.67 | 12 | 16.06 | 14 | 23.94 | 16 | 32.40 | 9 | 19.9 | 15 |
| UPB 1039 | NHDBZ-6 | 10.09 | 15 | 16.33 | 14 | 15.63 | 15 | 20.56 | 19 | 27.31 | 14 | 18 | 16 |
| VLB 130* | NHDBZ-19 | 10.09 | 14 | 18.48 | 5 | 11.74 | 19 | 33.83 | 3 | 35.67 | 6 | 22 | 7 |
| VLB 137 | NHDBZ-13 | 18.63 | 2 | 19.44 | 2 | 18.10 | 7 | 28.51 | 9 | 49.93 | 1 | 26.9 | 1 |
| VLB 138 | NHDBZ-3 | 8.93 | 18 | 10.57 | 19 | 16.14 | 13 | 27.15 | 11 | 18.75 | 18 | 16.3 | 19 |
| VLB 139 | NHDBZ-12 | 12.66 | 8 | 14.64 | 18 | 15.16 | 18 | 28.53 | 8 | 18.41 | 19 | 17.9 | 18 |
| VLB 140 | NHDBZ-2 | 13.20 | 4 | 16.61 | 13 | 17.80 | 9 | 26.81 | 12 | 39.61 | 3 | 22.8 | 5 |
| BHS 380 (c) | NHDBZ-7 | 11.57 | 11 | 14.70 | 17 | 20.79 | 1 | 28.76 | 7 | 25.75 | 15 | 20.3 | 14 |
| HBL 276 (c) | NHDBZ-4 | 12.81 | 7 | 17.75 | 10 | 15.43 | 17 | 21.11 | 18 | 39.47 | 4 | 21.3 | 10 |
| G.M. | | 12.18 | | 17.45 | | 17.29 | | 28.55 | | 31.49 | | 21.4 | |
| S.E.(M) | | 1.53 | | 1.28 | | 1.24 | | 2.90 | | 2.22 | | 0.87 | |
| C.D. | | 4.35 | | 3.63 | | 3.51 | | 8.22 | | 6.30 | | 2.41 | |
| C.V. | | 25.19 | | 14.65 | | 14.31 | | 20.32 | | 14.11 | | | |
| DOS | | 31-10-2013 | 26-10-2013 | 07-11-2013 | 25-10-2013 | 08-11-2013 | | | | | | | |

**Trials Not
Reported**

AVT-IR-TS-MB

| Varieties | Codes | Mathura | | | Bhatinda | | |
|-----------|-------------|--------------|----|---|--------------|----|---|
| | | Yield (q/ha) | Rk | G | Yield (q/ha) | Rk | G |
| BH 976 | AVTIRMBTS-3 | 23.15 | 5 | 0 | 48.01 | 6 | 0 |
| DWRB 101* | AVTIRMBTS-1 | 21.99 | 7 | 0 | 57.18 | 3 | 0 |
| PL 874 | AVTIRMBTS-2 | 21.76 | 8 | 0 | 72.08 | 1 | 1 |
| RD 2849* | AVTIRMBTS-5 | 23.61 | 4 | 0 | 57.94 | 2 | 0 |
| BH 902@ | AVTIRMBTS-7 | 25.93 | 2 | 0 | 45.14 | 7 | 0 |
| DWRB 92@ | AVTIRMBTS-6 | 24.31 | 3 | 0 | 54.97 | 4 | 0 |
| DWRUB 52@ | AVTIRMBTS-8 | 31.25 | 1 | 1 | 52.85 | 5 | 0 |
| K 551@ | AVTIRMBTS-4 | 22.69 | 6 | 0 | 44.76 | 8 | 0 |
| G.M. | | 24.33 | | | 54.12 | | |
| S.E.(M) | | 1.13 | | | 1.84 | | |
| C.D. | | 3.33 | | | 5.41 | | |
| C.V. | | 9.31 | | | 6.80 | | |
| DOS | | 12-11-2013 | | | 18-11-2013 | | |
| Reason | | LSM | | | UR | | |

IVT-MB-TS- Yield (Q/ha)

| Varieties | Codes | Mathura | | |
|-----------|--------------|------------|----|---|
| | | Yield | Rk | G |
| BH 987 | IVT-MB-TS-1 | 80.09 | 11 | 0 |
| BH 988 | IVT-MB-TS-19 | 76.39 | 14 | 0 |
| BH 989 | IVT-MB-TS-2 | 70.37 | 18 | 0 |
| DWRB 122 | IVT-MB-TS-6 | 87.50 | 7 | 0 |
| DWRB 123 | IVT-MB-TS-9 | 79.63 | 12 | 0 |
| DWRB 124 | IVT-MB-TS-11 | 89.35 | 6 | 0 |
| DWRB 126 | IVT-MB-TS-10 | 81.02 | 10 | 0 |
| DWRB 127 | IVT-MB-TS-17 | 124.54 | 1 | 1 |
| DWRB 128 | IVT-MB-TS-14 | 98.15 | 3 | 0 |
| KB 1349 | IVT-MB-TS-8 | 74.54 | 16 | 0 |
| KB 1354 | IVT-MB-TS-3 | 69.44 | 19 | 0 |
| KB 1363 | IVT-MB-TS-7 | 76.39 | 14 | 0 |
| RD 2891 | IVT-MB-TS-4 | 78.70 | 13 | 0 |
| RD 2892 | IVT-MB-TS-18 | 84.72 | 8 | 0 |
| RD 2893 | IVT-MB-TS-5 | 74.07 | 17 | 0 |
| RD 2894 | IVT-MB-TS-12 | 96.30 | 4 | 0 |
| BH 902@ | IVT-MB-TS-13 | 82.87 | 9 | 0 |
| DWRB 92@ | IVT-MB-TS-16 | 93.52 | 5 | 0 |
| DWRUB 52@ | IVT-MB-TS-15 | 117.13 | 2 | 0 |
| G.M. | | 86.04 | | |
| S.E.(M) | | 1.48 | | |
| C.D. | | 4.16 | | |
| C.V. | | 3.43 | | |
| DOS | | 12-11-2013 | | |
| Reason | | UR | | |

AVT-IR-CZ

| Varieties | Codes | Banswara | | |
|-----------|-------------|--------------|----|---|
| | | Yield (q/ha) | Rk | G |
| RD 2786 | AVTIRFBCZ-1 | 27.70 | 1 | 1 |
| BH 959* | AVTIRFBCZ-2 | 15.78 | 3 | 0 |
| RD 2833* | AVTIRFBCZ-3 | 22.71 | 2 | 0 |
| PL 751 | AVTIRFBCZ-4 | 14.49 | 4 | 0 |
| G.M. | | 20.17 | | |
| S.E.(M) | | 1.34 | | |
| C.D. | | 4.03 | | |
| C.V. | | 16.24 | | |
| DOS | | 25-11-13 | | |
| Reason | | LSM | | |

AVT-IR-FB-NWPZ

| Varieties | Codes | Durgapura | | |
|-----------|--------------|--------------|----|---|
| | | Yield (q/ha) | Rk | G |
| RD 2832* | AVTIRFBNWP-1 | 48.31 | 3 | 0 |
| RD 2552 | AVTIRFBNWP-2 | 40.58 | 4 | 0 |
| BH 902 | AVTIRFBNWP-3 | 48.31 | 2 | 0 |
| BH 946 | AVTIRFBNWP-4 | 62.80 | 1 | 1 |
| RD 2035 | AVTIRFBNWP-5 | 7.73 | 5 | 0 |
| G.M. | | 41.55 | | |
| S.E.(M) | | 2.16 | | |
| C.D. | | 6.67 | | |
| C.V. | | 10.42 | | |
| DOS | | 12-11-13 | | |
| Reason | | UR | | |

IVT-IR-FB- Yield (Q/ha)

| Varieties | Codes | Tabiji | | | Pantnagar | | | Pusa | | |
|-----------|------------|----------|----|---|-----------|----|---|---------|----|---|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| HUB 236 | IVTIRFB-1 | 25.54 | 15 | 0 | 19.86 | 19 | 0 | 22.32 | 18 | 0 |
| KB 1353 | IVTIRFB-2 | 33.33 | 3 | 1 | 30.45 | 3 | 1 | 32.36 | 11 | 0 |
| NDB 1580 | IVTIRFB-3 | 24.64 | 17 | 0 | 14.47 | 27 | 0 | 33.19 | 8 | 0 |
| BH 981 | IVTIRFB-4 | 28.80 | 7 | 0 | 22.13 | 12 | 0 | 32.86 | 9 | 0 |
| KB 1369 | IVTIRFB-5 | 28.44 | 8 | 0 | 22.02 | 13 | 0 | 34.20 | 6 | 0 |
| HUB 237 | IVTIRFB-6 | 23.37 | 21 | 0 | 17.72 | 21 | 0 | 25.72 | 16 | 0 |
| BH 982 | IVTIRFB-7 | 26.99 | 11 | 0 | 15.76 | 24 | 0 | 8.33 | 24 | 0 |
| BH 980 | IVTIRFB-8 | 25.72 | 14 | 0 | 26.62 | 6 | 0 | 38.12 | 2 | 1 |
| RD 2875 | IVTIRFB-9 | 33.33 | 3 | 1 | 14.65 | 26 | 0 | 1.85 | 26 | 0 |
| RD 2876 | IVTIRFB-10 | 31.70 | 6 | 0 | 16.21 | 22 | 0 | 2.07 | 25 | 0 |
| UPB 1040 | IVTIRFB-11 | 28.26 | 9 | 0 | 18.32 | 20 | 0 | 18.15 | 22 | 0 |
| UPB 1042 | IVTIRFB-12 | 21.74 | 22 | 0 | 16.09 | 23 | 0 | 22.17 | 19 | 0 |
| JB 291 | IVTIRFB-13 | 31.88 | 5 | 0 | 20.66 | 17 | 0 | 29.13 | 12 | 0 |
| PL 880 | IVTIRFB-14 | 26.99 | 11 | 0 | 30.71 | 2 | 1 | 35.83 | 3 | 0 |
| BH 902 | IVTIRFB-15 | 26.81 | 13 | 0 | 31.64 | 1 | 1 | 27.79 | 13 | 0 |
| PL 881 | IVTIRFB-16 | 25.18 | 16 | 0 | 20.76 | 16 | 0 | 25.94 | 15 | 0 |
| JYOTI | IVTIRFB-17 | 21.20 | 25 | 0 | 27.20 | 5 | 0 | 40.36 | 1 | 1 |
| PL 751 | IVTIRFB-18 | 35.87 | 2 | 1 | 29.59 | 4 | 1 | 35.72 | 4 | 0 |
| RD 2552 | IVTIRFB-19 | 27.72 | 10 | 0 | 21.08 | 15 | 0 | 22.43 | 17 | 0 |
| BH 946 | IVTIRFB-20 | 21.38 | 24 | 0 | 25.12 | 9 | 0 | 21.81 | 21 | 0 |
| HUB 113 | IVTIRFB-21 | 24.28 | 18 | 0 | 26.22 | 7 | 0 | 22.14 | 20 | 0 |
| RD 2786 | IVTIRFB-22 | 24.09 | 19 | 0 | 15.46 | 25 | 0 | 1.52 | 27 | 0 |
| JB 290 | IVTIRFB-23 | 20.47 | 27 | 0 | 22.16 | 11 | 0 | 32.79 | 10 | 0 |
| RD 2877 | IVTIRFB-24 | 36.59 | 1 | 1 | 12.48 | 28 | 0 | 1.05 | 28 | 0 |
| UPB 1041 | IVTIRFB-25 | 19.57 | 28 | 0 | 20.46 | 18 | 0 | 15.58 | 23 | 0 |
| RD 2874 | IVTIRFB-26 | 21.74 | 22 | 0 | 21.88 | 14 | 0 | 27.36 | 14 | 0 |
| NDB 1758 | IVTIRFB-27 | 21.20 | 25 | 0 | 23.64 | 10 | 0 | 34.93 | 5 | 0 |
| KB 1367 | IVTIRFB-28 | 24.09 | 20 | 0 | 25.45 | 8 | 0 | 33.41 | 7 | 0 |
| G.M. | | 26.46 | | | 21.74 | | | 24.25 | | |
| S.E.(M) | | 1.24 | | | 0.88 | | | 1.23 | | |
| C.D. | | 3.49 | | | 2.48 | | | 3.46 | | |
| C.V. | | 9.38 | | | 8.11 | | | 10.15 | | |
| DOS | | 19-11-13 | | | 25-11-13 | | | 6-11-13 | | |
| Reason | | LSM | | | LSM | | | LSM | | |

IVT-RF-NEPZ

| Varieties | Codes | Sabour | | |
|-----------|-------------|--------------|----|---|
| | | Yield (g/ha) | Rk | G |
| KB 1347 | IVTRFNEP-1 | 16.00 | 5 | 0 |
| HUB 232 | IVTRFNEP-2 | 7.91 | 14 | 0 |
| HUB 235 | IVTRFNEP-3 | 16.49 | 4 | 0 |
| KB 1351 | IVTRFNEP-4 | 4.89 | 19 | 0 |
| HUB 231 | IVTRFNEP-5 | 14.55 | 8 | 0 |
| NDB 1577 | IVTRFNEP-6 | 14.92 | 7 | 0 |
| JB 292 | IVTRFNEP-7 | 15.46 | 6 | 0 |
| PL 882 | IVTRFNEP-8 | 19.63 | 2 | 1 |
| K 603 | IVTRFNEP-9 | 14.55 | 9 | 0 |
| HUB 233 | IVTRFNEP-10 | 16.79 | 3 | 0 |
| RD 2884 | IVTRFNEP-11 | 7.37 | 16 | 0 |
| HUB 234 | IVTRFNEP-12 | 9.12 | 12 | 0 |
| DWRB 129 | IVTRFNEP-13 | 14.19 | 10 | 0 |
| PL 881 | IVTRFNEP-14 | 7.43 | 15 | 0 |
| LAKHAN | IVTRFNEP-15 | 21.32 | 1 | 1 |
| JB 293 | IVTRFNEP-16 | 8.88 | 13 | 0 |
| RD 2885 | IVTRFNEP-17 | 6.16 | 17 | 0 |
| RD 2883 | IVTRFNEP-18 | 5.80 | 18 | 0 |
| RD 2882 | IVTRFNEP-19 | 4.17 | 20 | 0 |
| KB 1360 | IVTRFNEP-20 | 10.75 | 11 | 0 |
| G.M. | | 11.82 | | |
| S.E.(M) | | 0.71 | | |
| C.D. | | 2.03 | | |
| C.V. | | 12.10 | | |
| DOS | | 10-11-13 | | |
| Reason | | LSM | | |

IVT-DP-Plains -Yield (Q/ha)

| Varieties | Codes | Jhansi | | | Anand | | | Vijapur | | |
|-----------|--------------|----------|----|---|----------|----|---|----------|----|---|
| | | Grain | | | Grain | | | Grain | | |
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| UPB 1040 | IVTIRTSDP-1 | 15.1 | 10 | 0 | 2.97 | 16 | 0 | 8.69 | 2 | 0 |
| NDB 1585 | IVTIRTSDP-2 | 16.0 | 9 | 0 | 4.96 | 11 | 0 | 1.46 | 14 | 0 |
| HUB 238 | IVTIRTSDP-3 | 14.5 | 11 | 0 | 6.34 | 7 | 0 | 0.98 | 17 | 0 |
| BH 980 | IVTIRTSDP-4 | 21.3 | 5 | 1 | 6.09 | 10 | 0 | 6.04 | 3 | 0 |
| UPB 1041 | IVTIRTSDP-5 | 11.1 | 14 | 0 | 1.20 | 19 | 0 | 1.93 | 10 | 0 |
| BH 983 | IVTIRTSDP-6 | 20.5 | 7 | 1 | 4.52 | 13 | 0 | 1.67 | 12 | 0 |
| UPB 1042 | IVTIRTSDP-7 | 12.2 | 13 | 0 | 4.48 | 14 | 0 | 3.24 | 7 | 0 |
| AZAD | IVTIRTSDP-8 | 19.5 | 8 | 1 | 15.96 | 2 | 1 | 13.93 | 1 | 1 |
| KB 1369 | IVTIRTSDP-9 | 22.5 | 1 | 1 | 4.25 | 15 | 0 | 1.15 | 16 | 0 |
| NDB 1584 | IVTIRTSDP-10 | 22.2 | 4 | 1 | 6.17 | 9 | 0 | 4.72 | 5 | 0 |
| RD 2880 | IVTIRTSDP-11 | 1.57 | 18 | 0 | 9.47 | 4 | 0 | 0.70 | 19 | 0 |
| RD 2881 | IVTIRTSDP-12 | 1.81 | 17 | 0 | 6.83 | 6 | 0 | 1.56 | 13 | 0 |
| RD 2552 | IVTIRTSDP-13 | 22.5 | 1 | 1 | 4.94 | 12 | 0 | 4.28 | 6 | 0 |
| KB 1347 | IVTIRTSDP-14 | 21.3 | 6 | 1 | 2.19 | 18 | 0 | 1.22 | 15 | 0 |
| RD 2879 | IVTIRTSDP-15 | 6.64 | | 0 | 9.58 | 3 | 0 | 2.09 | 8 | 0 |
| RD 2715 | IVTIRTSDP-16 | 2.23 | 16 | 0 | 6.29 | 8 | 0 | 0.91 | 18 | 0 |
| RD 2035 | IVTIRTSDP-17 | 22.4 | 3 | 1 | 16.38 | 1 | 1 | 5.25 | 4 | 0 |
| RD 2878 | IVTIRTSDP-18 | 1.45 | 19 | 0 | 8.42 | 5 | 0 | 1.71 | 11 | 0 |
| HUB 239 | IVTIRTSDP-19 | 12.4 | 12 | 0 | 2.83 | 17 | 0 | 1.98 | 9 | 0 |
| G.M. | | 14.10 | | | 6.52 | | | 3.34 | | |
| S.E.(M) | | 1.32 | | | 0.90 | | | 0.75 | | |
| C.D. | | 3.74 | | | 2.55 | | | 2.12 | | |
| C.V. | | 18.70 | | | 27.55 | | | 44.71 | | |
| DOS | | 20-11-13 | | | 18-11-13 | | | 19-11-13 | | |
| Reason | | LSM | | | LSM | | | LSM | | |

**Data from Kota and Banswara (both RMT) and Jalore (yield not reported) were also not included*

**International
Nurseries/Trials
2012-13**

International trials and nurseries (2012-13)

Exchange of genetic resources has played an important role in broadening the genetic base of plant breeding. International Centre for Agricultural Research in Dryland Areas (ICARDA), Aleppo, Syria is pioneer institute in the area of barley germplasm improvement and exchange along with wheat and pulse with India. Plant breeders need more diverse germplasm to be utilized in the breeding programme having tolerance/resistance abiotic and biotic stresses apart for high yield to improve the productivity of the crop. To facilitate the availability of new diversity in the national barley programme during the year 2012-13, the following yield trials and observation nurseries were received from ICARDA, Aleppo, Syria which include 310 genotypes for different production conditions. One set of these trials/nurseries was sown at DWR, Karnal and few nurseries were conducted at other network centres under All India Coordinated Wheat and Barley Improvement Project (AICWBIP). The Indian barley program has utilized the trials/nurseries to enhance the genetic base of our collection.

Table 1: International trials/nurseries conducted during crop season 2013-14.

| Sr. No. | Trial Name | Origin | No of Entries | No. of Sets | Evaluation Centres |
|---------|----------------------|--------|---------------|-------------|------------------------------------|
| 1 | IBYT-HI | ICARDA | 25 | 4 | Hisar, Durgapura, Kanpur, Karnal |
| 2 | INBYT-HI | ICARDA | 25 | 3 | Bajaura, Durgapura, Karnal |
| 3 | 1 st GBYT | ICARDA | 30 | 3 | Karnal, Rewa, Faizabad |
| 4 | IBYT-W | ICARDA | 25 | 1 | Karnal |
| 5 | IBON-HI | ICARDA | 106 | 4 | Hisar, Durgapura, Faizabad, Karnal |
| 6 | 1 st GBON | ICARDA | 292 | 3 | Karnal, Hisar, Durgapura |
| 7 | IBCB-WT | ICARDA | 124 | 1 | Karnal |

The significant findings of different trials/ nurseries including the promising entries are given below-

International Barley Yield Trial- High Input (IBYT-HI)

The IBYT-HI consisted of 25 entries with 2 replications including national check (BH 902) were sown at Hisar, Durgapura, Kanpur and Karnal under favourable conditions with recommended doses of irrigation and fertilizer. The yield data (Table 1) reveal that entry IBYT-12-13-16 ranks first followed by IBYT-12-13-3 among all the test entries as well check BH 902 at national level and was in the non-significant group. There are number of entries which fall into the first non significant group at the individual location as well. Out of 25 entries , 4 entries at Hisar, 4 entries at Durgapura, 10 entries including check at Kanpur and 9 entries at Karnal which fall into the first non significant group at the individual location as well. Based on mean yield, grain type and ancillary data (Table 1 & Table 2) entries IBYT-HI-12-13-16 and IBYT-HI-12-13-3 showed the superiority over the check were selected for future utilization in the national programme. Based on field performance and plant type, the entries 8, 15, 17, 20 and 14 were also selected by breeder during field day at DWR for use in their breeding programme. These selected entries will be evaluated further in next crop season as elite international barley germplasm nursery (EIBGN) at all barley network centres under AICW&BIP.

Table 1: IBYT-HI: Grain yield and rank of entries from different locations

| S. No. | Varieties | Hisar | | | Durgapura | | | Kanpur | | | Karnal | | | Overall mean | | |
|-----------|------------------|--------------|-----------|----------|--------------|-----------|----------|--------------|----------|----------|--------------|-----------|----------|--------------|-----------|----------|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| 1 | IBYT-HI-12-13-1 | 18.85 | 12 | 0 | 50.83 | 6 | 0 | 30.00 | 12 | 0 | 39.67 | 20 | 0 | 34.84 | 15 | 0 |
| 2 | IBYT-HI-12-13-2 | 9.30 | 23 | 0 | 56.67 | 2 | 1 | 33.33 | 4 | 1 | 54.70 | 9 | 1 | 38.50 | 4 | 0 |
| 3 | IBYT-HI-12-13-3 | 22.28 | 8 | 0 | 50.83 | 6 | 0 | 33.33 | 4 | 1 | 56.82 | 7 | 1 | 40.82 | 2 | 1 |
| 4 | IBYT-HI-12-13-4 | 27.67 | 3 | 1 | 40.83 | 15 | 0 | 34.17 | 3 | 1 | 43.56 | 19 | 0 | 36.56 | 8 | 0 |
| 5 | IBYT-HI-12-13-5 | 32.68 | 1 | 1 | 34.17 | 24 | 0 | 20.00 | 24 | 0 | 56.49 | 8 | 1 | 35.84 | 13 | 0 |
| 6 | IBYT-HI-12-13-6 | 17.45 | 13 | 0 | 42.50 | 12 | 0 | 33.33 | 4 | 1 | 37.09 | 22 | 0 | 32.59 | 23 | 0 |
| 7 | IBYT-HI-12-13-7 | 9.72 | 21 | 0 | 49.17 | 8 | 0 | 29.17 | 17 | 0 | 43.70 | 18 | 0 | 32.94 | 22 | 0 |
| 8 | IBYT-HI-12-13-8 | 16.77 | 15 | 0 | 34.50 | 22 | 0 | 33.33 | 4 | 1 | 51.41 | 13 | 0 | 34.00 | 19 | 0 |
| 9 | IBYT-HI-12-13-9 | 20.23 | 10 | 0 | 49.17 | 8 | 0 | 30.83 | 11 | 0 | 44.86 | 17 | 0 | 36.27 | 10 | 0 |
| 10 | IBYT-HI-12-13-10 | 17.10 | 14 | 0 | 40.83 | 15 | 0 | 30.00 | 12 | 0 | 56.90 | 6 | 1 | 36.21 | 11 | 0 |
| 11 | IBYT-HI-12-13-11 | 28.38 | 2 | 1 | 42.50 | 12 | 0 | 25.00 | 19 | 0 | 30.71 | 25 | 0 | 31.65 | 24 | 0 |
| 12 | IBYT-HI-12-13-12 | 20.53 | 9 | 0 | 56.67 | 2 | 1 | 30.00 | 12 | 0 | 46.47 | 16 | 0 | 38.42 | 5 | 0 |
| 13 | IBYT-HI-12-13-13 | 20.03 | 11 | 0 | 42.50 | 12 | 0 | 25.00 | 19 | 0 | 50.98 | 14 | 0 | 34.63 | 16 | 0 |
| 14 | IBYT-HI-12-13-14 | 26.93 | 4 | 1 | 55.83 | 5 | 1 | 25.00 | 19 | 0 | 37.83 | 21 | 0 | 36.40 | 9 | 0 |
| 15 | IBYT-HI-12-13-15 | 14.75 | 16 | 0 | 40.00 | 18 | 0 | 30.00 | 12 | 0 | 52.93 | 10 | 0 | 34.42 | 18 | 0 |
| 16 | IBYT-HI-12-13-16 | 23.97 | 6 | 0 | 37.50 | 19 | 0 | 33.33 | 10 | 1 | 74.86 | 1 | 1 | 42.42 | 1 | 1 |
| 17 | IBYT-HI-12-13-17 | 10.55 | 19 | 0 | 56.67 | 2 | 1 | 33.33 | 4 | 1 | 57.77 | 5 | 1 | 39.58 | 3 | 0 |
| 18 | IBYT-HI-12-13-18 | 9.43 | 22 | 0 | 37.50 | 19 | 0 | 26.67 | 18 | 0 | 64.57 | 4 | 1 | 34.54 | 17 | 0 |
| 19 | IBYT-HI-12-13-19 | 26.68 | 5 | 0 | 44.17 | 10 | 0 | 16.67 | 25 | 0 | 52.15 | 12 | 0 | 34.92 | 14 | 0 |
| 20 | IBYT-HI-12-13-20 | 9.83 | 20 | 0 | 40.83 | 15 | 0 | 29.58 | 16 | 0 | 69.10 | 2 | 1 | 37.34 | 7 | 0 |
| 21 | IBYT-HI-12-13-21 | 8.42 | 24 | 0 | 30.83 | 25 | 0 | 25.00 | 19 | 0 | 68.26 | 3 | 1 | 33.13 | 20 | 0 |
| 22 | IBYT-HI-12-13-22 | 13.42 | 18 | 0 | 36.67 | 21 | 0 | 41.67 | 1 | 1 | 52.39 | 11 | 0 | 36.04 | 12 | 0 |
| 23 | IBYT-HI-12-13-23 | 6.73 | 25 | 0 | 43.00 | 11 | 0 | 33.33 | 4 | 1 | 48.89 | 15 | 0 | 32.99 | 21 | 0 |
| 24 | IBYT-HI-12-13-24 | 23.68 | 7 | 0 | 65.83 | 1 | 1 | 25.00 | 19 | 0 | 36.44 | 23 | 0 | 37.74 | 6 | 0 |
| 25 | BH 902 | 13.98 | 17 | 0 | 34.50 | 22 | 0 | 37.50 | 2 | 1 | 33.91 | 24 | 0 | 29.97 | 25 | 0 |
| G.M. | | 17.98 | | | 44.58 | | | 29.78 | | | 50.50 | | | 35.71 | | |
| S.E.(M) | | 2.04 | | | 0.66 | | | 1.08 | | | 0.84 | | | 0.64 | | |
| C.D. | | 5.96 | | | 1.92 | | | 3.16 | | | 2.45 | | | 1.78 | | |
| C.V. | | 16.05 | | | 2.08 | | | 5.14 | | | 2.36 | | | | | |

Table 2: Summary of ancillary data of IBYT-HI from different locations

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) |
|-----------|------------------|------------------------------|--------------------------------|-------------------------------|
| 1 | IBYT-HI-12-13-1 | 90 (82-102) | 131 (124-141) | 92 (75-104) |
| 2 | IBYT-HI-12-13-2 | 88 (74-100) | 129 (120-139) | 105 (95-121) |
| 3 | IBYT-HI-12-13-3 | 92 (81-100) | 129 (123-136) | 109 (95-128) |
| 4 | IBYT-HI-12-13-4 | 89 (78-95) | 129 (123-137) | 104 (90-117) |
| 5 | IBYT-HI-12-13-5 | 92 (81-102) | 130 (122-139) | 102 (90-113) |
| 6 | IBYT-HI-12-13-6 | 91 (80-100) | 130 (123-141) | 107 (80-130) |
| 7 | IBYT-HI-12-13-7 | 89 (76-98) | 130 (122-139) | 105 (85-127) |
| 8 | IBYT-HI-12-13-8 | 85 (78-97) | 130 (121-141) | 103 (99-116) |
| 9 | IBYT-HI-12-13-9 | 88 (80-97) | 130 (123-140) | 108 (100-117) |
| 10 | IBYT-HI-12-13-10 | 91 (76-102) | 132 (122-141) | 106 (92-131) |
| 11 | IBYT-HI-12-13-11 | 80 (71-94) | 128 (121-140) | 103 (93-113) |
| 12 | IBYT-HI-12-13-12 | 80 (68-101) | 128 (119-141) | 100 (88-114) |
| 13 | IBYT-HI-12-13-13 | 94 (81-102) | 131 (123-139) | 106 (88-119) |
| 14 | IBYT-HI-12-13-14 | 86 (74-96) | 128 (121-139) | 97 (88-112) |
| 15 | IBYT-HI-12-13-15 | 92 (81-102) | 130 (122-140) | 102 (80-124) |
| 16 | IBYT-HI-12-13-16 | 89 (76-101) | 130 (125-137) | 99 (87-113) |
| 17 | IBYT-HI-12-13-17 | 86 (70-103) | 127 (120-137) | 101 (90-116) |
| 18 | IBYT-HI-12-13-18 | 81 (72-90) | 128 (119-139) | 103 (90-118) |
| 19 | IBYT-HI-12-13-19 | 86 (74-101) | 128 (121-136) | 105 (94-115) |
| 20 | IBYT-HI-12-13-20 | 87 (78-98) | 130 (123-138) | 98 (83-129) |
| 21 | IBYT-HI-12-13-21 | 89 (79-100) | 129 (122-137) | 104 (93-118) |
| 22 | IBYT-HI-12-13-22 | 88 (75-104) | 129 (122-137) | 111 (95-130) |
| 23 | IBYT-HI-12-13-23 | 85 (72-98) | 130 (121-141) | 92 (80-106) |
| 24 | IBYT-HI-12-13-24 | 94 (80-104) | 131 (123-141) | 107 (99-122) |
| 25 | BH 902 | 89 (72-102) | 134 (120-143) | 97 (78-116) |

International Naked Barley Yield Trial (INBYT-HI)

The huskless barley trial consisted of 25 entries including national check (BHS 352) was conducted at three locations namely Bajaura, Durgapura and Karnal. Observations were recorded on yield and ancillary characters. The results showed that check BHS 352 ranked 4 among all entries, where there were only 7 entries (including check) are in first non significant group (Table 3). Based on grain yield and plant type entries 2, 3, 7, 8, 9, 22, 23 and 24 were selected for further evaluation as EIBGN in different centres under barley network.

Table 3: INBYT-HI: Grain yield and rank of entries from different locations

| S.No. | Varieties | Bajaura | | | Durgapura | | | Karnal | | | Over all | | |
|-----------|-------------------|--------------|-----------|----------|--------------|----------|----------|--------------|-----------|----------|--------------|----------|----------|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Mean | | |
| 1 | INBYT-HI-12-13-1 | 29.17 | 20 | 1 | 50.83 | 6 | 0 | 32.72 | 4 | 0 | 37.57 | 8 | 0 |
| 2 | INBYT-HI-12-13-2 | 38.17 | 6 | 1 | 54.17 | 5 | 0 | 37.20 | 2 | 1 | 43.18 | 1 | 1 |
| 3 | INBYT-HI-12-13-3 | 21.00 | 24 | 0 | 37.50 | 21 | 0 | 18.04 | 22 | 0 | 25.51 | 24 | 0 |
| 4 | INBYT-HI-12-13-4 | 30.00 | 17 | 1 | 39.17 | 20 | 0 | 24.59 | 13 | 0 | 31.25 | 18 | 0 |
| 5 | INBYT-HI-12-13-5 | 33.33 | 13 | 1 | 30.83 | 25 | 0 | 25.92 | 11 | 0 | 30.03 | 21 | 0 |
| 6 | INBYT-HI-12-13-6 | 33.67 | 12 | 1 | 41.67 | 14 | 0 | 12.83 | 24 | 0 | 29.39 | 22 | 0 |
| 7 | INBYT-HI-12-13-7 | 39.33 | 4 | 1 | 50.00 | 7 | 0 | 29.48 | 6 | 0 | 39.61 | 6 | 1 |
| 8 | INBYT-HI-12-13-8 | 40.83 | 2 | 1 | 57.50 | 2 | 1 | 29.32 | 8 | 0 | 42.55 | 2 | 1 |
| 9 | INBYT-HI-12-13-9 | 36.17 | 9 | 1 | 50.00 | 7 | 0 | 28.42 | 10 | 0 | 38.20 | 7 | 1 |
| 10 | INBYT-HI-12-13-10 | 37.17 | 8 | 1 | 42.50 | 11 | 0 | 22.66 | 17 | 0 | 34.11 | 13 | 0 |
| 11 | INBYT-HI-12-13-11 | 26.17 | 22 | 0 | 46.67 | 9 | 0 | 19.29 | 20 | 0 | 30.71 | 19 | 0 |
| 12 | INBYT-HI-12-13-12 | 19.67 | 25 | 0 | 37.50 | 21 | 0 | 8.86 | 25 | 0 | 22.01 | 25 | 0 |
| 13 | INBYT-HI-12-13-13 | 32.00 | 14 | 1 | 36.67 | 24 | 0 | 29.35 | 7 | 0 | 32.67 | 16 | 0 |
| 14 | INBYT-HI-12-13-14 | 41.17 | 1 | 1 | 43.33 | 10 | 0 | 42.26 | 1 | 1 | 42.25 | 3 | 1 |
| 15 | INBYT-HI-12-13-15 | 34.83 | 10 | 1 | 40.83 | 16 | 0 | 18.23 | 21 | 0 | 31.30 | 17 | 0 |
| 16 | INBYT-HI-12-13-16 | 29.17 | 20 | 1 | 42.50 | 11 | 0 | 28.89 | 9 | 0 | 33.52 | 14 | 0 |
| 17 | INBYT-HI-12-13-17 | 24.67 | 23 | 0 | 40.83 | 16 | 0 | 13.94 | 23 | 0 | 26.48 | 23 | 0 |
| 18 | INBYT-HI-12-13-18 | 30.17 | 16 | 1 | 41.67 | 14 | 0 | 19.97 | 19 | 0 | 30.60 | 20 | 0 |
| 19 | INBYT-HI-12-13-19 | 40.83 | 3 | 1 | 40.83 | 16 | 0 | 22.09 | 18 | 0 | 34.59 | 12 | 0 |
| 20 | INBYT-HI-12-13-20 | 39.00 | 5 | 1 | 40.83 | 16 | 0 | 25.60 | 12 | 0 | 35.14 | 11 | 0 |
| 21 | INBYT-HI-12-13-21 | 38.17 | 6 | 1 | 37.50 | 21 | 0 | 30.92 | 5 | 0 | 35.53 | 10 | 0 |
| 22 | INBYT-HI-12-13-22 | 29.67 | 19 | 1 | 57.50 | 2 | 1 | 22.72 | 16 | 0 | 36.63 | 9 | 0 |
| 23 | INBYT-HI-12-13-23 | 32.00 | 14 | 1 | 57.50 | 2 | 1 | 34.62 | 3 | 1 | 41.37 | 5 | 1 |
| 24 | INBYT-HI-12-13-24 | 34.17 | 11 | 1 | 42.00 | 13 | 0 | 23.18 | 15 | 0 | 33.12 | 15 | 0 |
| 25 | BHS 352 | 30.00 | 17 | 1 | 72.50 | 1 | 1 | 24.10 | 14 | 0 | 42.20 | 4 | 1 |
| G.M. | | 32.82 | | | 45.31 | | | 25.01 | | | 110.79 | | |
| S.E.(M) | | 4.74 | | | 0.66 | | | 2.74 | | | 1.84 | | |
| C.D. | | 13.82 | | | 1.92 | | | 8.00 | | | 5.17 | | |
| C.V. | | 20.40 | | | 2.05 | | | 15.50 | | | | | |

Table 4: Summary of ancillary data of INBYT-HI from different locations

| S.no. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) |
|-------|-------------------|---------------------------|--------------------------|-------------------------------|
| 1 | INBYT-HI-12-13-1 | 106 (78-145) | 147 (120-184) | 103 (94-117) |
| 2 | INBYT-HI-12-13-2 | 104 (78-137) | 146 (120-178) | 101 (95-110) |
| 3 | INBYT-HI-12-13-3 | 109 (82-145) | 149 (123-182) | 89 (80-98) |
| 4 | INBYT-HI-12-13-4 | 102 (77-135) | 146 (119-176) | 104 (95-113) |
| 5 | INBYT-HI-12-13-5 | 106 (81-140) | 150 (125-184) | 98 (88-111) |
| 6 | INBYT-HI-12-13-6 | 93 (68-128) | 141 (120-170) | 63 (45-82) |
| 7 | INBYT-HI-12-13-7 | 104 (76-134) | 146 (119-178) | 96 (80-117) |
| 8 | INBYT-HI-12-13-8 | 97 (70-141) | 145 (123-179) | 102 (95-113) |
| 9 | INBYT-HI-12-13-9 | 103 (76-135) | 147 (119-180) | 98 (85-115) |
| 10 | INBYT-HI-12-13-10 | 99 (69-131) | 148 (123-182) | 102 (93-108) |
| 11 | INBYT-HI-12-13-11 | 96 (69-169) | 145 (121-172) | 63 (50-74) |
| 12 | INBYT-HI-12-13-12 | 99 (74-130) | 146 (124-178) | 61 (50-79) |
| 13 | INBYT-HI-12-13-13 | 94 (68-124) | 142 (118-170) | 60 (50-80) |
| 14 | INBYT-HI-12-13-14 | 108 (81-444) | 147 (120-180) | 106 (100-113) |
| 15 | INBYT-HI-12-13-15 | 107 (81-137) | 147 (120-180) | 96 (85-108) |
| 16 | INBYT-HI-12-13-16 | 108 (81-144) | 149 (123-184) | 100 (88-113) |
| 17 | INBYT-HI-12-13-17 | 108 (78-142) | 148 (119-184) | 98 (90-109) |
| 18 | INBYT-HI-12-13-18 | 105 (74-139) | 145 (122-175) | 87 (78-108) |
| 19 | INBYT-HI-12-13-19 | 107 (82-136) | 148 (123-180) | 110 (105-116) |
| 20 | INBYT-HI-12-13-20 | 105 (82-139) | 147 (119-181) | 107 (100-116) |
| 21 | INBYT-HI-12-13-21 | 105 (73-142) | 147 (120-184) | 98 (80-115) |
| 22 | INBYT-HI-12-13-22 | 105 (74-144) | 148 (122-185) | 89 (73-108) |
| 23 | INBYT-HI-12-13-23 | 98 (74-128) | 146 (121-177) | 103 (80-113) |
| 24 | INBYT-HI-12-13-24 | 103 (73-138) | 149 (122-183) | 105 (99-113) |
| 25 | BHS 352 | 105 (80-137) | 147 (122-176) | 100 (80-113) |

First Global Barley Yield Trial (1st GBYT)

First global barley yield trial consisted of 30 entries including national check (RD 2552) was sown at Karnal, Faizabad and Rewa locations. The yield and ancillary data of this trial is given in table 5 and 6. The results based on yield at national level revealed that 16 entries including check fall into the first non significant group, while national check RD 2552 ranks second among all entries tested and 1st GBYT- 12-13-21 ranks first. Based on grain yield and plant type entries 4, 5, 9, 15 and 24 were selected for further evaluation as EIBGN in different centres under barley network

Table 5: 1st GBYT: Grain yield and rank of entries from different locations

| S.No. | Varieties | Karnal | | | Faizabad | | | Rewa | | | Overall | | |
|-----------|-------------------|--------------|----------|----------|--------------|----------|----------|--------------|-----------|----------|--------------|----------|----------|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| 1 | 1st GBYT-12-13-1 | 31.09 | 6 | 0 | 26.67 | 20 | 1 | 14.20 | 19 | 0 | 23.98 | 12 | 1 |
| 2 | 1st GBYT-12-13-2 | 34.57 | 4 | 1 | 26.17 | 23 | 1 | 12.18 | 29 | 0 | 24.31 | 9 | 1 |
| 3 | 1st GBYT-12-13-3 | 11.96 | 29 | 0 | 34.17 | 6 | 1 | 12.68 | 21 | 0 | 19.60 | 24 | 0 |
| 4 | 1st GBYT-12-13-4 | 18.70 | 22 | 0 | 35.83 | 3 | 1 | 12.33 | 27 | 0 | 22.29 | 17 | 0 |
| 5 | 1st GBYT-12-13-5 | 27.85 | 12 | 0 | 30.83 | 10 | 1 | 12.38 | 25 | 0 | 23.69 | 14 | 1 |
| 6 | 1st GBYT-12-13-6 | 17.50 | 23 | 0 | 30.50 | 11 | 1 | 12.28 | 28 | 0 | 20.09 | 22 | 0 |
| 7 | 1st GBYT-12-13-7 | 23.40 | 17 | 0 | 20.17 | 27 | 0 | 12.40 | 24 | 0 | 18.65 | 27 | 0 |
| 8 | 1st GBYT-12-13-8 | 14.38 | 28 | 0 | 40.42 | 1 | 1 | 12.53 | 23 | 0 | 22.44 | 16 | 1 |
| 9 | 1st GBYT-12-13-9 | 23.18 | 18 | 0 | 26.67 | 22 | 1 | 15.98 | 3 | 1 | 21.94 | 21 | 0 |
| 10 | 1st GBYT-12-13-10 | 14.54 | 27 | 0 | 32.08 | 9 | 1 | 12.37 | 26 | 0 | 19.66 | 23 | 0 |
| 11 | 1st GBYT-12-13-11 | 28.21 | 11 | 0 | 35.00 | 4 | 1 | 15.92 | 4 | 1 | 26.37 | 3 | 1 |
| 12 | 1st GBYT-12-13-12 | 21.22 | 21 | 0 | 15.00 | 30 | 0 | 12.12 | 30 | 0 | 16.11 | 30 | 0 |
| 13 | 1st GBYT-12-13-13 | 15.57 | 25 | 0 | 23.17 | 26 | 1 | 12.55 | 22 | 0 | 17.10 | 28 | 0 |
| 14 | 1st GBYT-12-13-14 | 21.60 | 20 | 0 | 29.17 | 17 | 1 | 15.15 | 15 | 0 | 21.97 | 20 | 0 |
| 15 | 1st GBYT-12-13-15 | 22.93 | 19 | 0 | 32.17 | 8 | 1 | 15.78 | 5 | 1 | 23.63 | 15 | 1 |
| 16 | 1st GBYT-12-13-16 | 28.67 | 10 | 0 | 35.00 | 4 | 1 | 15.25 | 13 | 0 | 26.31 | 4 | 1 |
| 17 | 1st GBYT-12-13-17 | 26.22 | 13 | 0 | 30.00 | 14 | 1 | 15.77 | 6 | 1 | 24.00 | 11 | 1 |
| 18 | 1st GBYT-12-13-18 | 15.98 | 24 | 0 | 25.58 | 24 | 1 | 16.00 | 2 | 1 | 19.19 | 25 | 0 |
| 19 | 1st GBYT-12-13-19 | 35.54 | 3 | 1 | 15.83 | 29 | 0 | 15.30 | 12 | 1 | 22.23 | 18 | 0 |
| 20 | 1st GBYT-12-13-20 | 41.96 | 1 | 1 | 20.00 | 28 | 0 | 12.75 | 20 | 0 | 24.90 | 6 | 1 |
| 21 | 1st GBYT-12-13-21 | 40.11 | 2 | 1 | 29.25 | 16 | 1 | 15.12 | 16 | 0 | 28.16 | 1 | 1 |
| 22 | 1st GBYT-12-13-22 | 30.63 | 7 | 0 | 32.92 | 7 | 1 | 15.25 | 13 | 0 | 26.26 | 5 | 1 |
| 23 | 1st GBYT-12-13-23 | 9.92 | 30 | 0 | 24.50 | 25 | 1 | 15.50 | 8 | 1 | 16.64 | 29 | 0 |
| 24 | 1st GBYT-12-13-24 | 14.62 | 26 | 0 | 28.33 | 18 | 1 | 14.58 | 17 | 0 | 19.18 | 26 | 0 |
| 25 | 1st GBYT-12-13-25 | 23.99 | 16 | 0 | 26.67 | 20 | 1 | 15.43 | 9 | 1 | 22.03 | 19 | 0 |
| 26 | 1st GBYT-12-13-26 | 25.92 | 14 | 0 | 29.67 | 15 | 1 | 15.72 | 7 | 1 | 23.77 | 13 | 1 |
| 27 | 1st GBYT-12-13-27 | 31.39 | 5 | 0 | 27.17 | 19 | 1 | 15.42 | 10 | 1 | 24.66 | 7 | 1 |
| 28 | 1st GBYT-12-13-28 | 25.57 | 15 | 0 | 30.33 | 13 | 1 | 16.13 | 1 | 1 | 24.01 | 10 | 1 |
| 29 | 1st GBYT-12-13-29 | 28.94 | 8 | 0 | 30.50 | 11 | 1 | 14.40 | 18 | 0 | 24.61 | 8 | 1 |
| 30 | RD 2552 | 28.75 | 9 | 0 | 38.00 | 2 | 1 | 15.37 | 11 | 1 | 27.37 | 2 | 1 |
| G.M. | | 24.50 | | | 28.73 | | | 14.30 | | | 22.51 | | |
| S.E.(M) | | 0.70 | | | 6.16 | | | 0.25 | | | 2.07 | | |
| C.D. | | 2.02 | | | 17.83 | | | 0.72 | | | 5.80 | | |
| C.V. | | 4.03 | | | 30.35 | | | 2.48 | | | | | |

Table 6: Summary of ancillary data of 1st GBYT from different locations

| S. No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) |
|-----------|-------------------|------------------------------|--------------------------------|------------------------------|
| 1 | 1st GBYT-12-13-1 | 93 (73-109) | 133 (123-147) | 99 (93-112) |
| 2 | 1st GBYT-12-13-2 | 82 (72-95) | 125 (109-140) | 92 (83-110) |
| 3 | 1st GBYT-12-13-3 | 86 (70-105) | 127 (116-145) | 94 (86-103) |
| 4 | 1st GBYT-12-13-4 | 82 (71-101) | 125 (111-143) | 97 (79-109) |
| 5 | 1st GBYT-12-13-5 | 87 (74-105) | 128 (113-143) | 100 (91-112) |
| 6 | 1st GBYT-12-13-6 | 83 (70-99) | 127 (115-143) | 97 (85-112) |
| 7 | 1st GBYT-12-13-7 | 86 (72-100) | 130 (118-142) | 96 (79-113) |
| 8 | 1st GBYT-12-13-8 | 83 (70-99) | 127 (114-142) | 96 (91-103) |
| 9 | 1st GBYT-12-13-9 | 81 (72-94) | 127 (112-146) | 97 (85-110) |
| 10 | 1st GBYT-12-13-10 | 90 (71-105) | 131 (122-142) | 88 (68-110) |
| 11 | 1st GBYT-12-13-11 | 81 (67-99) | 123 (105-139) | 97 (88-111) |
| 12 | 1st GBYT-12-13-12 | 87 (73-103) | 130 (116-145) | 91 (73-108) |
| 13 | 1st GBYT-12-13-13 | 83 (73-99) | 127 (114-142) | 95 (80-107) |
| 14 | 1st GBYT-12-13-14 | 85 (72-100) | 127 (112-114) | 94 (76-109) |
| 15 | 1st GBYT-12-13-15 | 85 (71-104) | 127 (116-143) | 101 (88-118) |
| 16 | 1st GBYT-12-13-16 | 86 (73-105) | 127 (115-144) | 96 (84-112) |
| 17 | 1st GBYT-12-13-17 | 87 (72-105) | 129 (113-146) | 96 (81-115) |
| 18 | 1st GBYT-12-13-18 | 88 (73-106) | 131 (122-147) | 95 (84-108) |
| 19 | 1st GBYT-12-13-19 | 91 (72-105) | 132 (121-145) | 88 (43-111) |
| 20 | 1st GBYT-12-13-20 | 86 (70-104) | 128 (115-143) | 96 (79-114) |
| 21 | 1st GBYT-12-13-21 | 87 (73-104) | 130 (116-145) | 94 (80-112) |
| 22 | 1st GBYT-12-13-22 | 86 (73-105) | 128 (115-143) | 95 (77-108) |
| 23 | 1st GBYT-12-13-23 | 86 (72-103) | 129 (120-141) | 99 (88-114) |
| 24 | 1st GBYT-12-13-24 | 86 (70-103) | 127 (114-141) | 98 (92-108) |
| 25 | 1st GBYT-12-13-25 | 84 (70-104) | 127 (113-143) | 101 (87-122) |
| 26 | 1st GBYT-12-13-26 | 83 (70-102) | 125 (110-141) | 98 (81-115) |
| 27 | 1st GBYT-12-13-27 | 84 (73-99) | 126 (116-141) | 98 (84-110) |
| 28 | 1st GBYT-12-13-28 | 90 (72-107) | 129 (121-143) | 98 (79-110) |
| 29 | 1st GBYT-12-13-29 | 87 (71-105) | 128 (118-145) | 98 (83-112) |
| 30 | RD 2552 | 83 (72-103) | 125 (110-142) | 94 (86-105) |

International Barley Yield Trial (IBYT-W)

The IBYT-WT consisted of 25 entries including national check (RD 2035) was sown at DWR, Karnal. The yield data and ancillary data of this trial are given in table 7. The results revealed 25 entries including national check (RD 2035) was conducted at Karnal location. Observations were recorded yield and ancillary characters. The results showed that check RD 2035 ranked 25 among all entries where there were 12 entries are in first non significant.

Table 7: Summary of yield and ancillary data of (IBYT-W) from Karnal Location

| S.No. | Varieties | H days Mean & range | M days Mean &range | Height Mean & range (cm) | Karnal | | |
|-----------|-----------------|---------------------------|--------------------------|-----------------------------------|--------------|-----------|----------|
| | | | | | Yield | Rk | G |
| 1 | IBYT-W-12-13-1 | 109 | 143 | 116 | 30.39 | 7 | 1 |
| 2 | IBYT-W-12-13-2 | 105 | 142 | 102 | 26.92 | 12 | 1 |
| 3 | IBYT-W-12-13-3 | 100 | 145 | 106 | 25.00 | 15 | 0 |
| 4 | IBYT-W-12-13-4 | 105 | 142 | 112 | 26.05 | 13 | 0 |
| 5 | IBYT-W-12-13-5 | 105 | 145 | 123 | 23.62 | 18 | 0 |
| 6 | IBYT-W-12-13-6 | 102 | 144 | 116 | 20.58 | 22 | 0 |
| 7 | IBYT-W-12-13-7 | 101 | 143 | 117 | 35.98 | 2 | 1 |
| 8 | IBYT-W-12-13-8 | 108 | 143 | 127 | 20.25 | 23 | 0 |
| 9 | IBYT-W-12-13-9 | 107 | 140 | 112 | 32.60 | 4 | 1 |
| 10 | IBYT-W-12-13-10 | 99 | 145 | 97 | 22.43 | 19 | 0 |
| 11 | IBYT-W-12-13-11 | 98 | 143 | 108 | 28.29 | 10 | 1 |
| 12 | IBYT-W-12-13-12 | 102 | 144 | 112 | 29.96 | 8 | 1 |
| 13 | IBYT-W-12-13-13 | 103 | 142 | 106 | 25.47 | 14 | 0 |
| 14 | IBYT-W-12-13-14 | 104 | 143 | 119 | 24.64 | 16 | 0 |
| 15 | IBYT-W-12-13-15 | 103 | 144 | 118 | 27.54 | 11 | 1 |
| 16 | IBYT-W-12-13-16 | 105 | 145 | 117 | 30.97 | 6 | 1 |
| 17 | IBYT-W-12-13-17 | 100 | 139 | 119 | 35.65 | 3 | 1 |
| 18 | IBYT-W-12-13-18 | 102 | 144 | 124 | 23.80 | 17 | 0 |
| 19 | IBYT-W-12-13-19 | 105 | 142 | 137 | 39.09 | 1 | 1 |
| 20 | IBYT-W-12-13-20 | 93 | 139 | 114 | 18.22 | 24 | 0 |
| 21 | IBYT-W-12-13-21 | 108 | 142 | 120 | 20.61 | 21 | 0 |
| 22 | IBYT-W-12-13-22 | 103 | 145 | 116 | 31.49 | 5 | 1 |
| 23 | IBYT-W-12-13-23 | 114 | 143 | 108 | 28.80 | 9 | 1 |
| 24 | IBYT-W-12-13-24 | 97 | 141 | 120 | 20.91 | 20 | 0 |
| 25 | RD 2035 | 109 | 144 | 110 | 11.34 | 25 | 0 |
| G.M. | | | | | 26.43 | | |
| S.E.(M) | | | | | 3.38 | | |
| C.D. | | | | | 9.87 | | |
| C.V. | | | | | 18.11 | | |

International Barley Observation Nursery- High Input (IBON-HI)

The nursery consisting of 106 entries including national check RD 2552 was conducted at four locations (Hisar, Durgapur, Faizabad and Karnal). This nursery is more suited to Indian conditions under optimum management and also fits better in the maturity group. The mean grain yield & range and ancillary data are given below in table 8. Based on field performance and plant type, the entries 66, 96, 100 and 104 were selected by breeders during field day at DWR for use in their breeding programs. These selected entries will be evaluated in the next crop season as EIBGN at all barley network centres.

Table 8: Summary of ancillary data of IBON-HI-12-13 from different locations

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) | Yield (Q/ha) |
|-------|-------------------|---------------------------|--------------------------|----------------------------------|-----------------|
| 1 | IBON-HI-12-13-2 | 84 (74-93) | 130 (118-142) | 105 (83-120) | 23.60 |
| 2 | IBON-HI-12-13-3 | 87 (75-95) | 128 (118-138) | 103 (80-122) | 25.80 |
| 3 | IBON-HI-12-13-10 | 88 (74-101) | 130 (118-140) | 100 (75-120) | 27.87 |
| 4 | IBON-HI-12-13-15 | 88 (77-94) | 132 (125-138) | 105 (78-121) | 24.00 |
| 5 | IBON-HI-12-13-19 | 86 (75-94) | 132 (123-142) | 102 (69-125) | 28.93 |
| 6 | IBON-HI-12-13-20 | 92 (82-107) | 138 (128-142) | 93 (61-112) | 35.20 |
| 7 | IBON-HI-12-13-22 | 87 (77-92) | 132 (123-142) | 102 (76-120) | 20.00 |
| 8 | IBON-HI-12-13-48 | 83 (71-92) | 153 (123-213) | 92 (73-109) | 27.27 |
| 9 | IBON-HI-12-13-53 | 86 (74-94) | 132 (123-141) | 107 (69-135) | 27.67 |
| 10 | IBON-HI-12-13-75 | 96 (81-103) | 134 (121-141) | 102 (75-119) | 28.27 |
| 11 | IBON-HI-12-13-76 | 86 (70-102) | 132 (118-141) | 96 (75-110) | 29.00 |
| 12 | IBON-HI-12-13-86 | 96 (82-105) | 134 (121-143) | 100 (81-114) | 26.33 |
| 13 | IBON-HI-12-13-96 | 91 (74-106) | 129 (118-136) | 95 (72-106) | 19.20 |
| 14 | IBON-HI-12-13-100 | 88 (77-94) | 129 (120-139) | 98 (74-110) | 20.20 |
| 15 | IBON-HI-12-13-101 | 95 (81-105) | 135 (123-144) | 104 (80-125) | 27.73 |
| 16 | IBON-HI-12-13-103 | 74 (68-81) | 125 (113-136) | 88 (75-97) | 26.33 |
| 17 | IBON-HI-12-13-104 | 74 (70-79) | 125 (115-137) | 96 (73-110) | 25.20 |

1st Global Barley Observation Nursery (1st GBON)

This nursery comprising of 292 entries including local check DWRUB 52 was conducted at three locations Karnal, Hisar and Durgapura. The nursery was conducted to the high input under optimum management conditions. The mean grain yield and range and ancillary data are given below in table 9. Based on field performance and plant type, the entries 9, 12, 49, 60, 65, 99, 101, 120, 150, 160, 163, 195, 230, 231, 232, 235, 237, 240, 259, 263, 282 and 290 were selected by breeders for use in their breeding programs.

Table 9: Summary of ancillary data of 1st GBON 12-13 from different locations

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) | Yield (Q/ha) |
|-------|--------------------------------|---------------------------|--------------------------|-------------------------------|-----------------|
| 1 | 1st GBON-12-13-1 | 95 (81-102) | 133 (126-143) | 100 (92-112) | 21.33 |
| 2 | 1 st GBON-12-13-2 | 87 (77-92) | 130 (123-140) | 97 (93-100) | 21.67 |
| 3 | 1 st GBON-12-13-7 | 90 (80-96) | 128 (121-141) | 102 (93-110) | 16.53 |
| 4 | 1st GBON-12-13-65 | 90 (82-97) | 131 (120-140) | 102 (92-110) | 25.73 |
| 5 | 1st GBON-12-13-99 | 91 (84-97) | 132 (125-139) | 98 (86-105) | 19.87 |
| 6 | 1 st GBON-12-13-101 | 94 (83-102) | 129 (120-140) | 109 (86-128) | 22.07 |
| 7 | 1 st GBON-12-13-120 | 91 (80-99) | 132 (126-139) | 93 (75-107) | 21.87 |
| 8 | 1 st GBON-12-13-150 | 92 (82-100) | 130 (123-142) | 111 (98-135) | 19.40 |
| 9 | 1 st GBON-12-13-160 | 89 (80-96) | 132 (127-139) | 98 (80-115) | 28.20 |
| 10 | 1 st GBON-12-13-163 | 92 (79-102) | 130 (125-140) | 102 (102-103) | 20.87 |
| 11 | 1 st GBON-12-13-195 | 93 (82-100) | 128 (119-141) | 108 (100-122) | 31.60 |
| 12 | 1 st GBON-12-13-230 | 93 (81-104) | 134 (128-142) | 108 (90-120) | 20.93 |
| 13 | 1 st GBON-12-13-232 | 92 (79-99) | 130 (120-142) | 104 (92-117) | 22.33 |
| 14 | 1 st GBON-12-13-235 | 93 (80-100) | 132 (125-142) | 114 (95-127) | 23.67 |
| 15 | 1 st GBON-12-13-237 | 93 (84-101) | 128 (121-141) | 110 (92-130) | 28.93 |
| 16 | 1 st GBON-12-13-240 | 90 (80-99) | 132 (125-144) | 97 (80-110) | 21.47 |
| 17 | 1 st GBON-12-13-256 | 94 (81-100) | 132 (127-143) | 108 (101-120) | 24.53 |
| 18 | 1 st GBON-12-13-260 | 92 (80-100) | 132 (125-144) | 92 (82-100) | 15.67 |
| 19 | 1 st GBON-12-13-282 | 89 (82-97) | 129 (122-141) | 90 (70-105) | 18.80 |
| 20 | 1st GBON-12-13-290 | 92 (82-104) | 132 (125-141) | 106 (98-110) | 18.20 |

INTER NATIONAL BARLEY CROSSING BLOCK WINTER TYPE (IBCB-W)

The nursery which is part of ICARDA Winter barley crossing block of 124 test entries was sown at Karnal location. The yield and ancillary data of better performing lines are given in table 10. Based on yield and ancillary data total number of entries 19 were selected for future utilization in national programme.

Table 10: Summary of ancillary data of IBCB-W from different locations

| S.No. | Varieties | H days Mean & range | Height Mean &range (cm) | 2/6 Row | Yield (Q/ha) |
|-------|------------------|---------------------------|----------------------------------|------------|--------------|
| 1 | IBCB-W-12-13-4 | 82 | 111 | 2 | 25.93 |
| 2 | IBCB-W-12-13-11 | 87 | 111 | 2 | 25.73 |
| 3 | IBCB-W-12-13-20 | 94 | 97 | 2 | 25.47 |
| 4 | IBCB-W-12-13-24 | 92 | 110 | 2 | 25.53 |
| 5 | IBCB-W-12-13-32 | 92 | 114 | 2 | 22.40 |
| 6 | IBCB-W-12-13-36 | 92 | 107 | 2 | 35.33 |
| 7 | IBCB-W-12-13-38 | 100 | 112 | 2 | 26.60 |
| 8 | IBCB-W-12-13-48 | 97 | 95 | 2 | 16.13 |
| 9 | IBCB-W-12-13-50 | 102 | 103 | 2 | 26.73 |
| 10 | IBCB-W-12-13-53 | 105 | 105 | 6 | 23.60 |
| 11 | IBCB-W-12-13-57 | 109 | 114 | 2 | 24.60 |
| 12 | IBCB-W-12-13-93 | 99 | 106 | 2 | 26.00 |
| 13 | IBCB-W-12-13-96 | 99 | 107 | 2 | 30.80 |
| 14 | IBCB-W-12-13-106 | 99 | 110 | 2 | 25.40 |
| 15 | IBCB-W-12-13-111 | 100 | 104 | 2 | 23.20 |
| 16 | IBCB-W-12-13-113 | 97 | 114 | 2 | 21.67 |
| 17 | IBCB-W-12-13-117 | 107 | 104 | 2 | 21.60 |
| 18 | IBCB-W-12-13-121 | 100 | 121 | 2 | 31.40 |
| 19 | IBCB-W-12-13-123 | 94 | 113 | 2 | 26.20 |

**International
Nurseries/Trials
2013-14**

International Trials and Nurseries (2013-14)

Exchange of genetic resources has played an important role in broadening the genetic base of plant breeding. International Centre for Agricultural Research in Dry Areas (ICARDA), Rabat, Morocco is pioneer institute in the area of barley germplasm improvement and exchange along with wheat and pulses with India. Plant Breeders need more diverse germplasm to be utilized in the breeding programs having tolerance/resistance abiotic and biotic stresses apart from high yield improve the productivity of the crop. To facilitate the availability of new diversity in the barley program, during 2013-14 the following yield trials and observation nurseries were received from ICARDA, Rabat, Morocco.

| Sr No | Trial Name | Origin | No of Entries | No of Sets | Evaluation Centres |
|-------|-----------------------|--------|---------------|------------|---------------------------------|
| 1 | IBYT-HI | ICARDA | 25 | 4 | Hisar,Durgapura,Ludhiana,Karnal |
| 2 | INBYT-HI | ICARDA | 25 | 1 | Karnal |
| 3 | 1 ST GSBYT | ICARDA | 25 | 4 | Kanpur,Varansi.Hisar,Karnal |
| 4 | IBON-HI | ICARDA | 146 | 4 | Hisar,Durgapura,Ludhiana,Karnal |
| 5 | INBON-HI | ICARDA | 70 | 1 | Karnal |
| 6 | INBON-14-WB | ICARDA | 90 | 2 | Karnal,Hisar |
| 7 | 1 ST GSBSN | ICARDA | 150 | 3 | Rewa,Faizabad,Karnal |

International Barley Yield Trial – High Input (IBYT-HI)

The IBYT–HI consisted of 25 entries with two replications including national check (DWRUB 64) were sown at Hisar, Durgapura, Ludhiana and Karnal under favourable conditions with recommended doses of irrigation and fertilizer. The yield data (Table 1) revealed that test entry IBYT-HI-13-14-6 (49.78 q/ha) ranks first and was in first non significant group. It was significantly superior over the national check DWRUB- 64 (39.66 q/ha) while test entry IBYT-HI-13-14-11 (46.04 q/ha) showed rank second in the first NSG and was nearly significant over national check while 5 entries out of 25 tested comes into the first non-significant group. There are number of entries which fall into the first non significant group at the individual location as well. Based on mean yield and ancillary data (Table 1 & Table 2) entries IBYT-HI-13-14-6, IBYT-13-14-11, IBYT-HI-13-14-13, IBYT-HI-13-14-10 and IBYT-HI-13-14-5 which gave better yield to check, were selected for future utilization in the national programme. Based on field performance and plant type, some of the entries were also selected by breeders during field day at DWR for use their breeding programme. These selected entries will be evaluated further in the next crop season as elite international barley germplasm nursery (EIBGN) at all barley network centres under AICW & BIP.

Table 1: IBYT-HI: Grain yield and rank of entries from different locations

| S.No. | Varieties | Hisar | | | Durgapura | | | Ludhiana | | | Karnal | | | Overall mean | | |
|-----------|------------------|--------------|-----------|----------|--------------|-----------|----------|--------------|----------|----------|--------------|-----------|----------|--------------|-----------|----------|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| 1 | IBYT-HI-13-14-1 | 28.67 | 3 | 1 | 58.33 | 3 | 1 | 55.00 | 19 | 0 | 25.54 | 25 | 1 | 41.89 | 7 | 0 |
| 2 | IBYT-HI-13-14-2 | 15.25 | 18 | 0 | 40.00 | 23 | 0 | 51.67 | 24 | 0 | 26.74 | 22 | 1 | 33.41 | 25 | 0 |
| 3 | IBYT-HI-13-14-3 | 13.68 | 20 | 0 | 42.50 | 19 | 0 | 58.33 | 13 | 0 | 34.57 | 5 | 1 | 37.27 | 18 | 0 |
| 4 | IBYT-HI-13-14-4 | 30.70 | 2 | 1 | 40.00 | 23 | 0 | 58.33 | 14 | 0 | 29.27 | 17 | 1 | 39.57 | 13 | 0 |
| 5 | IBYT-HI-13-14-5 | 21.07 | 10 | 0 | 50.00 | 6 | 1 | 75.00 | 2 | 1 | 33.70 | 8 | 1 | 44.94 | 5 | 1 |
| 6 | IBYT-HI-13-14-6 | 21.62 | 9 | 0 | 62.50 | 1 | 1 | 76.67 | 1 | 1 | 38.34 | 1 | 1 | 49.78 | 1 | 1 |
| 7 | IBYT-HI-13-14-7 | 11.63 | 22 | 0 | 41.67 | 22 | 0 | 55.00 | 19 | 0 | 26.68 | 23 | 1 | 33.75 | 24 | 0 |
| 8 | IBYT-HI-13-14-8 | 10.63 | 23 | 0 | 50.00 | 6 | 1 | 58.33 | 14 | 0 | 34.65 | 4 | 1 | 38.40 | 17 | 0 |
| 9 | IBYT-HI-13-14-9 | 12.43 | 21 | 0 | 49.17 | 8 | 1 | 58.33 | 14 | 0 | 26.96 | 21 | 1 | 36.72 | 21 | 0 |
| 10 | IBYT-HI-13-14-10 | 23.03 | 8 | 0 | 60.00 | 2 | 1 | 63.33 | 12 | 0 | 33.64 | 9 | 1 | 45.00 | 4 | 1 |
| 11 | IBYT-HI-13-14-11 | 30.85 | 1 | 1 | 47.50 | 10 | 1 | 71.67 | 5 | 1 | 34.13 | 7 | 1 | 46.04 | 2 | 1 |
| 12 | IBYT-HI-13-14-12 | 20.73 | 12 | 0 | 44.17 | 17 | 1 | 71.67 | 5 | 1 | 31.85 | 11 | 1 | 42.10 | 6 | 0 |
| 13 | IBYT-HI-13-14-13 | 24.58 | 6 | 0 | 55.00 | 5 | 1 | 66.67 | 8 | 1 | 34.32 | 6 | 1 | 45.14 | 3 | 1 |
| 14 | IBYT-HI-13-14-14 | 17.02 | 16 | 0 | 45.83 | 12 | 1 | 53.33 | 23 | 0 | 31.33 | 12 | 1 | 36.88 | 20 | 0 |
| 15 | IBYT-HI-13-14-15 | 9.08 | 24 | 0 | 44.17 | 17 | 1 | 65.00 | 10 | 1 | 29.65 | 14 | 1 | 36.97 | 19 | 0 |
| 16 | IBYT-HI-13-14-16 | 13.97 | 19 | 0 | 45.00 | 14 | 1 | 65.00 | 10 | 1 | 37.55 | 2 | 1 | 40.38 | 9 | 0 |
| 17 | IBYT-HI-13-14-17 | 7.00 | 25 | 0 | 45.83 | 12 | 1 | 71.67 | 3 | 1 | 34.89 | 3 | 1 | 39.85 | 10 | 0 |
| 18 | IBYT-HI-13-14-18 | 20.92 | 11 | 0 | 35.83 | 25 | 0 | 71.67 | 3 | 1 | 28.83 | 19 | 1 | 39.31 | 15 | 0 |
| 19 | IBYT-HI-13-14-19 | 18.55 | 14 | 0 | 45.00 | 14 | 1 | 51.67 | 24 | 0 | 29.13 | 18 | 1 | 36.09 | 23 | 0 |
| 20 | IBYT-HI-13-14-20 | 26.72 | 5 | 0 | 42.50 | 19 | 0 | 68.33 | 7 | 1 | 29.62 | 15 | 1 | 41.79 | 8 | 0 |
| 21 | IBYT-HI-13-14-21 | 27.70 | 4 | 1 | 46.83 | 11 | 1 | 55.00 | 19 | 0 | 29.76 | 13 | 1 | 39.82 | 11 | 0 |
| 22 | IBYT-HI-13-14-22 | 23.05 | 7 | 0 | 48.33 | 9 | 1 | 56.67 | 17 | 0 | 27.28 | 20 | 1 | 38.83 | 16 | 0 |
| 23 | IBYT-HI-13-14-23 | 16.17 | 17 | 0 | 56.67 | 4 | 1 | 55.00 | 19 | 0 | 29.51 | 16 | 1 | 39.34 | 14 | 0 |
| 24 | IBYT-HI-13-14-24 | 18.75 | 13 | 0 | 44.17 | 16 | 1 | 56.67 | 17 | 0 | 25.87 | 24 | 1 | 36.36 | 22 | 0 |
| 25 | DWRUB 64 | 17.58 | 15 | 0 | 42.50 | 19 | 0 | 66.67 | 8 | 1 | 31.88 | 10 | 1 | 39.66 | 12 | 0 |
| G.M. | | 19.26 | | | 47.34 | | | 62.27 | | | 31.03 | | | 39.97 | | |
| S.E.(M) | | 1.13 | | | 6.44 | | | 4.28 | | | 4.98 | | | 2.32 | | |
| C.D. | | 3.29 | | | 18.79 | | | 12.48 | | | 14.54 | | | 6.49 | | |
| C.V. | | 8.27 | | | 19.23 | | | 9.71 | | | 22.70 | | | | | |

Table 2: Summary of ancillary data of IBYT-HI from different locations

| S. No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) |
|-----------|----------------------|---------------------------|--------------------------|----------------------------|
| 1 | IBYT-HI-13-14-1 | 97 (70-111) | 133 (120-142) | 97 (79-105) |
| 2 | IBYT-HI-13-14-2 | 92 (77-105) | 130 (118-142) | 98 (62-112) |
| 3 | IBYT-HI-13-14-3 | 97 (81-106) | 131 (121-142) | 100 (85-113) |
| 4 | IBYT-HI-13-14-4 | 99 (78-100) | 132 (117-142) | 106 (78-118) |
| 5 | IBYT-HI-13-14-5 | 94 (79-106) | 128 (117-140) | 101 (92-106) |
| 6 | IBYT-HI-13-14-6 | 93 (76-102) | 129 (119-141) | 105 (95-117) |
| 7 | IBYT-HI-13-14-7 | 90 (66-98) | 126 (118-138) | 101 (85-112) |
| 8 | IBYT-HI-13-14-8 | 93 (79-99) | 129 (120-140) | 105 (99-117) |
| 9 | IBYT-HI-13-14-9 | 96 (79-105) | 141 (121-213) | 103 (97-117) |
| 10 | IBYT-HI-13-14-10 | 92 (77-99) | 128 (120-139) | 108 (105-112) |
| 11 | IBYT-HI-13-14-11 | 95 (74-106) | 132 (120-139) | 98 (87-108) |
| 12 | IBYT-HI-13-14-12 | 91 (76-98) | 128 (121-140) | 106 (70-119) |
| 13 | IBYT-HI-13-14-13 | 91 (75-98) | 130 (116-141) | 101 (90-110) |
| 14 | IBYT-HI-13-14-14 | 96 (81-106) | 131 (120-141) | 109 (105-113) |
| 15 | IBYT-HI-13-14-15 | 93 (80-99) | 140 (117-212) | 100 (85-109) |
| 16 | IBYT-HI-13-14-16 | 93 (82-101) | 130 (124-140) | 104 (93-112) |
| 17 | IBYT-HI-13-14-17 | 100 (82-107) | 133 (123-142) | 97 (68-114) |
| 18 | IBYT-HI-13-14-18 | 101 (81-110) | 134 (118-142) | 100 (88-113) |
| 19 | IBYT-HI-13-14-19 | 91 (70-101) | 131 (120-142) | 100 (70-112) |
| 20 | IBYT-HI-13-14-20 | 96 (77-109) | 132 (118-141) | 105 (95-110) |
| 21 | IBYT-HI-13-14-21 | 91 (77-97) | 128 (118-139) | 105 (92-118) |
| 22 | IBYT-HI-13-14-22 | 96 (80-110) | 130 (123-140) | 100 (88-108) |
| 23 | IBYT-HI-13-14-23 | 98 (82-106) | 131 (115-141) | 102 (87-109) |
| 24 | IBYT-HI-13-14-24 | 92 (80-99) | 130 (118-141) | 98 (80-122) |
| 25 | DWRUB 64 (NC) | 86 (66-104) | 128 (118-142) | 97 (85-113) |

International Naked Barley Yield Trial (INBYT)

The huskless barley trial consisted of 25 entries including national check (BHS 352) was conducted at Karnal location. Data were recorded on yield and ancillary characters. The result showed that BHS 352 ranked 6 among all genotypes where there were 16 entries are in first non significant group (Table 3). Based on grain yield and plant type entries INBYT-HI-13-14-22, INBYT-HI-13-14-14, INBYT-HI-13-14-12 AND INBYT-HI-13-14-13 were selected for further evaluation as EIBGN at different centres under barley network.

Table 3: INBYT-HI Grain Yield & rank of entries from Karnal location

| S.No. | Entries | Yield | Rk | G |
|---------|-------------------|--------------|----------|----------|
| 1 | INBYT-HI-13-14-1 | 22.61 | 8 | 1 |
| 2 | INBYT-HI-13-14-2 | 16.14 | 20 | 0 |
| 3 | INBYT-HI-13-14-3 | 22.58 | 9 | 1 |
| 4 | INBYT-HI-13-14-4 | 21.22 | 11 | 1 |
| 5 | INBYT-HI-13-14-5 | 17.09 | 19 | 0 |
| 6 | INBYT-HI-13-14-6 | 20.79 | 13 | 1 |
| 7 | INBYT-HI-13-14-7 | 15.57 | 22 | 0 |
| 8 | INBYT-HI-13-14-8 | 21.49 | 10 | 1 |
| 9 | INBYT-HI-13-14-9 | 14.54 | 24 | 0 |
| 10 | INBYT-HI-13-14-10 | 15.60 | 21 | 0 |
| 11 | INBYT-HI-13-14-11 | 17.36 | 18 | 0 |
| 12 | INBYT-HI-13-14-12 | 29.05 | 3 | 1 |
| 13 | INBYT-HI-13-14-13 | 28.40 | 4 | 1 |
| 14 | INBYT-HI-13-14-14 | 29.29 | 2 | 1 |
| 15 | INBYT-HI-13-14-15 | 17.96 | 16 | 1 |
| 16 | INBYT-HI-13-14-16 | 23.23 | 7 | 1 |
| 17 | INBYT-HI-13-14-17 | 20.30 | 14 | 1 |
| 18 | INBYT-HI-13-14-18 | 17.69 | 17 | 1 |
| 19 | INBYT-HI-13-14-19 | 18.40 | 15 | 1 |
| 20 | INBYT-HI-13-14-20 | 26.03 | 5 | 1 |
| 21 | INBYT-HI-13-14-21 | 9.59 | 25 | 0 |
| 22 | INBYT-HI-13-14-22 | 31.30 | 1 | 1 |
| 23 | INBYT-HI-13-14-23 | 21.22 | 11 | 1 |
| 24 | INBYT-HI-13-14-24 | 14.76 | 23 | 0 |
| 25 | BHS 352 | 25.35 | 6 | 1 |
| G.M. | | 20.70 | | |
| S.E.(M) | | 4.01 | | |
| C.D. | | 11.70 | | |
| C.V. | | 27.38 | | |

Table 4: Summary of ancillary data of INBYT-HI from Karnal location

| S.No. | Entries | H days (Mean) | M days (Mean) | Height (Mean) |
|-------|-------------------|---------------|---------------|---------------|
| 1 | INBYT-HI-13-14-1 | 102 | 141 | 110 |
| 2 | INBYT-HI-13-14-2 | 98 | 141 | 107 |
| 3 | INBYT-HI-13-14-3 | 105 | 140 | 113 |
| 4 | INBYT-HI-13-14-4 | 99 | 142 | 103 |
| 5 | INBYT-HI-13-14-5 | 101 | 140 | 100 |
| 6 | INBYT-HI-13-14-6 | 93 | 140 | 112 |
| 7 | INBYT-HI-13-14-7 | 93 | 138 | 109 |
| 8 | INBYT-HI-13-14-8 | 100 | 140 | 104 |
| 9 | INBYT-HI-13-14-9 | 94 | 140 | 96 |
| 10 | INBYT-HI-13-14-10 | 100 | 140 | 107 |
| 11 | INBYT-HI-13-14-11 | 103 | 140 | 110 |
| 12 | INBYT-HI-13-14-12 | 102 | 140 | 109 |
| 13 | INBYT-HI-13-14-13 | 95 | 140 | 110 |
| 14 | INBYT-HI-13-14-14 | 95 | 142 | 112 |
| 15 | INBYT-HI-13-14-15 | 95 | 141 | 111 |
| 16 | INBYT-HI-13-14-16 | 100 | 140 | 114 |
| 17 | INBYT-HI-13-14-17 | 103 | 141 | 111 |
| 18 | INBYT-HI-13-14-18 | 101 | 141 | 114 |
| 19 | INBYT-HI-13-14-19 | 105 | 141 | 115 |
| 20 | INBYT-HI-13-14-20 | 97 | 138 | 113 |
| 21 | INBYT-HI-13-14-21 | 103 | 139 | 107 |
| 22 | INBYT-HI-13-14-22 | 97 | 140 | 93 |
| 23 | INBYT-HI-13-14-23 | 102 | 140 | 104 |
| 24 | INBYT-HI-13-14-24 | 94 | 140 | 113 |
| 25 | INBYT-HI-13-14-25 | 103 | 142 | 107 |

First Global Spring Barley Yield Trial (1stGSBYT)

1st GSBYT consisted of 25 entries including national check (BH 902) was sown at three locations viz., Karnal, Kanpur and Varansi. The yield data and ancillary data of this trial are given table 5&6. The result revealed that 1st GSBYT -13-14-11 ranks first followed by 12 and 1 in the first non significant group while national check ranks 14. Based on field performance and plant type, some entries were also selected by different breeders during field day at DWR for use in their breeding programmes. These selected entries will be evaluated in the next crop season as EIBGN at all barley network centres.

Table 5: 1st GSBYT Grain Yield & rank of entries from different locations

| S. No. | Varieties | Kanpur | | | Varanasi | | | Karnal | | | Overall | | |
|-----------|--------------------|--------------|----------|----------|-------------|-----------|----------|--------------|----------|----------|--------------|-----------|----------|
| | | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| 1 | 1st GSBYT-13-14-1 | 21.25 | 19 | 0 | 22.33 | 3 | 0 | 52.80 | 1 | 1 | 32.13 | 3 | 1 |
| 2 | 1st GSBYT-13-14-2 | 43.33 | 3 | 0 | 11.83 | 11 | 0 | 24.40 | 25 | 0 | 26.52 | 7 | 0 |
| 3 | 1st GSBYT-13-14-3 | 38.33 | 4 | 0 | 9.67 | 17 | 0 | 33.97 | 7 | 0 | 27.32 | 6 | 0 |
| 4 | 1st GSBYT-13-14-4 | 21.67 | 18 | 0 | 9.78 | 16 | 0 | 35.30 | 6 | 0 | 22.25 | 18 | 0 |
| 5 | 1st GSBYT-13-14-5 | 28.33 | 11 | 0 | 5.33 | 24 | 0 | 38.80 | 4 | 0 | 24.16 | 11 | 0 |
| 6 | 1st GSBYT-13-14-6 | 23.33 | 17 | 0 | 7.83 | 19 | 0 | 38.83 | 3 | 0 | 23.33 | 15 | 0 |
| 7 | 1st GSBYT-13-14-7 | 33.33 | 6 | 0 | 10.05 | 15 | 0 | 27.77 | 19 | 0 | 23.72 | 13 | 0 |
| 8 | 1st GSBYT-13-14-8 | 29.17 | 9 | 0 | 4.37 | 25 | 0 | 27.09 | 20 | 0 | 20.21 | 22 | 0 |
| 9 | 1st GSBYT-13-14-9 | 27.50 | 13 | 0 | 15.93 | 5 | 0 | 33.61 | 9 | 0 | 25.68 | 9 | 0 |
| 10 | 1st GSBYT-13-14-10 | 20.83 | 20 | 0 | 15.08 | 8 | 0 | 31.52 | 14 | 0 | 22.48 | 17 | 0 |
| 11 | 1st GSBYT-13-14-11 | 35.83 | 5 | 0 | 29.63 | 1 | 1 | 38.42 | 5 | 0 | 34.63 | 1 | 1 |
| 12 | 1st GSBYT-13-14-12 | 52.08 | 1 | 1 | 15.03 | 9 | 0 | 33.07 | 11 | 0 | 33.40 | 2 | 1 |
| 13 | 1st GSBYT-13-14-13 | 19.58 | 23 | 0 | 23.17 | 2 | 0 | 33.40 | 10 | 0 | 25.38 | 10 | 0 |
| 14 | 1st GSBYT-13-14-14 | 25.00 | 14 | 0 | 11.50 | 12 | 0 | 25.60 | 23 | 0 | 20.70 | 20 | 0 |
| 15 | 1st GSBYT-13-14-15 | 18.33 | 24 | 0 | 5.92 | 23 | 0 | 25.16 | 24 | 0 | 16.47 | 25 | 0 |
| 16 | 1st GSBYT-13-14-16 | 32.50 | 7 | 0 | 7.67 | 20 | 0 | 27.83 | 18 | 0 | 22.66 | 16 | 0 |
| 17 | 1st GSBYT-13-14-17 | 18.33 | 24 | 0 | 6.47 | 22 | 0 | 32.34 | 13 | 0 | 19.05 | 23 | 0 |
| 18 | 1st GSBYT-13-14-18 | 20.00 | 22 | 0 | 9.58 | 18 | 0 | 26.79 | 22 | 0 | 18.79 | 24 | 0 |
| 19 | 1st GSBYT-13-14-19 | 45.00 | 2 | 0 | 15.50 | 6 | 0 | 28.70 | 17 | 0 | 29.73 | 4 | 0 |
| 20 | 1st GSBYT-13-14-20 | 25.00 | 14 | 0 | 10.50 | 14 | 0 | 26.88 | 21 | 0 | 20.79 | 19 | 0 |
| 21 | 1st GSBYT-13-14-21 | 28.33 | 11 | 0 | 15.25 | 7 | 0 | 40.27 | 2 | 1 | 27.95 | 5 | 0 |
| 22 | 1st GSBYT-13-14-22 | 28.75 | 10 | 0 | 12.17 | 10 | 0 | 30.30 | 16 | 0 | 23.74 | 12 | 0 |
| 23 | 1st GSBYT-13-14-23 | 25.00 | 14 | 0 | 21.28 | 4 | 0 | 32.93 | 12 | 0 | 26.41 | 8 | 0 |
| 24 | 1st GSBYT-13-14-24 | 20.83 | 20 | 0 | 10.67 | 13 | 0 | 30.41 | 15 | 0 | 20.64 | 21 | 0 |
| 25 | BH 902 | 29.58 | 8 | 0 | 7.40 | 21 | 0 | 33.89 | 8 | 0 | 23.62 | 14 | 0 |
| G.M. | | 28.45 | | | 12.56 | | | 32.40 | | | 150.35 | | |
| S.E.(M) | | 1.60 | | | 1.74 | | | 4.43 | | | 1.67 | | |
| C.D. | | 4.68 | | | 5.07 | | | 12.93 | | | 4.71 | | |
| C.V. | | 7.98 | | | 19.57 | | | 19.34 | | | | | |

Table 6: Summary of ancillary data of 1st GSBYT from different Locations

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) |
|-------|--------------------|---------------------------|-----------------------|-------------------------------|
| 1 | 1st GSBYT-13-14-1 | 90 (80-100) | 127 (106-142) | 108 (93-116) |
| 2 | 1st GSBYT-13-14-2 | 89 (79-102) | 125 (103-141) | 112 (102-122) |
| 3 | 1st GSBYT-13-14-3 | 94 (82-102) | 127 (104-142) | 110 (100-120) |
| 4 | 1st GSBYT-13-14-4 | 93 (80-104) | 128 (106-142) | 114 (103-125) |
| 5 | 1st GSBYT-13-14-5 | 92 (80-104) | 126 (104-141) | 110 (102-122) |
| 6 | 1st GSBYT-13-14-6 | 96 (84-103) | 128 (102-143) | 107 (93-117) |
| 7 | 1st GSBYT-13-14-7 | 95 (80-104) | 127 (106-143) | 111 (102-116) |
| 8 | 1st GSBYT-13-14-8 | 92 (80-102) | 127 (106-141) | 116 (107-135) |
| 9 | 1st GSBYT-13-14-9 | 89 (72-99) | 126 (101-146) | 105 (90-114) |
| 10 | 1st GSBYT-13-14-10 | 91 (78-101) | 124 (102-138) | 97 (85-109) |
| 11 | 1st GSBYT-13-14-11 | 85 (71-101) | 125 (101-141) | 109 (99-119) |
| 12 | 1st GSBYT-13-14-12 | 87 (72-101) | 125 (101-139) | 113 (106-125) |
| 13 | 1st GSBYT-13-14-13 | 85 (70-98) | 122 (96-140) | 92 (88-103) |
| 14 | 1st GSBYT-13-14-14 | 85 (72-101) | 126 (98-141) | 115 (104-128) |
| 15 | 1st GSBYT-13-14-15 | 99 (79-110) | 129 (106-143) | 109 (100-122) |
| 16 | 1st GSBYT-13-14-16 | 97 (84-103) | 128 (103-142) | 114 (103-125) |
| 17 | 1st GSBYT-13-14-17 | 95 (81-102) | 125 (104-141) | 100 (87-110) |
| 18 | 1st GSBYT-13-14-18 | 96 (83-103) | 127 (106-142) | 95 (78-105) |
| 19 | 1st GSBYT-13-14-19 | 91 (73-101) | 125 (100-146) | 98 (81-111) |
| 20 | 1st GSBYT-13-14-20 | 95 (82-104) | 125 (105-141) | 104 (94-112) |
| 21 | 1st GSBYT-13-14-21 | 93 (76-102) | 125 (102-140) | 103 (91-118) |
| 22 | 1st GSBYT-13-14-22 | 92 (75-103) | 124 (101-140) | 110 (106-113) |
| 23 | 1st GSBYT-13-14-23 | 94 (73-104) | 126 (100-143) | 110 (99-120) |
| 24 | 1st GSBYT-13-14-24 | 92 (70-103) | 124 (96-140) | 108 (98-122) |
| 25 | BH 902 | 93 (82-103) | 128 (106-142) | 110 (101-120) |

International Barley Observation Nursery –High Input (IBON-HI)

The nursery consisting of 146 entries including national check (DWRUB 52) was conducted at four locations namely Hisar, Durgapura, Karnal and Ludhiana. This nursery is more suited to Indian condition under optimum management and also fits better in maturity group. The mean grain yield & range and ancillary data is depicted in table 7 for entries giving comparable yield to the national and international check. Based on plant types, yield and ancillary data few entries were selected by breeders at the field day organised at DWR during end of March, 2014 for further utilization in breeding programme.

Table 7: Summary of yield and ancillary data of IBON-HI from different Locations

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) | Yield(q/ha) |
|-------|------------------|---------------------------|-----------------------|-------------------------------|-------------|
| 1 | IBON-HI-13-14-3 | 92 (79-99) | 130 (120-139) | 107 (90-115) | 35.55 |
| 2 | IBON-HI-13-14-7 | 91 (78-97) | 130 (125-139) | 100 (79-115) | 27.77 |
| 3 | IBON-HI-13-14-9 | 90 (76-97) | 131 (125-141) | 110 (102-117) | 29.28 |
| 4 | IBON-HI-13-14-10 | 89 (73-97) | 130 (124-141) | 101 (90-109) | 38.18 |
| 5 | IBON-HI-13-14-13 | 89 (75-95) | 131 (125-143) | 102 (85-116) | 25.13 |
| 6 | IBON-HI-13-14-14 | 90 (77-95) | 131 (127-141) | 107 (88-118) | 28.53 |
| 7 | IBON-HI-13-14-15 | 90 (78-96) | 130 (123-139) | 105 (95-115) | 31.70 |
| 8 | IBON-HI-13-14-16 | 90 (75-98) | 154 (131-212) | 100 (88-111) | 36.67 |
| 9 | IBON-HI-13-14-18 | 99 (82-111) | 133 (125-143) | 96 (74-112) | 26.80 |
| 10 | IBON-HI-13-14-19 | 93 (80-101) | 131 (123-142) | 100 (90-107) | 35.42 |
| 11 | IBON-HI-13-14-20 | 86 (74-93) | 131 (123-141) | 97 (80-106) | 35.17 |
| 12 | IBON-HI-13-14-22 | 91 (77-98) | 130 (119-142) | 103 (95-111) | 28.55 |
| 13 | IBON-HI-13-14-25 | 92 (77-98) | 130 (118-139) | 105 (87-121) | 30.42 |
| 14 | IBON-HI-13-14-26 | 85 (72-92) | 127 (118-139) | 101 (88-108) | 36.03 |
| 15 | IBON-HI-13-14-27 | 91 (75-100) | 131 (123-139) | 103 (81-121) | 24.25 |
| 16 | IBON-HI-13-14-29 | 91 (81-95) | 125 (108-139) | 104 (101-111) | 25.98 |
| 17 | IBON-HI-13-14-34 | 94 (82-100) | 130 (119-139) | 105 (98-110) | 29.19 |
| 18 | IBON-HI-13-14-35 | 89 (74-96) | 128 (118-138) | 108 (98-116) | 23.62 |

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) | Yield(q/ha) |
|-------|------------------|---------------------------|-----------------------|-------------------------------|-------------|
| 19 | IBON-HI-13-14-36 | 91 (76-98) | 128 (118-138) | 95 (85-110) | 25.97 |
| 20 | IBON-HI-13-14-37 | 89 (75-94) | 127 (118-138) | 102 (98-105) | 22.15 |
| 21 | IBON-HI-13-14-38 | 90 (75-96) | 127 (117-137) | 103 (96-112) | 24.38 |
| 22 | IBON-HI-13-14-40 | 90 (76-96) | 152 (125-213) | 100 (90-105) | 29.00 |
| 23 | IBON-HI-13-14-46 | 90 (78-96) | 130 (122-142) | 102 (88-107) | 31.68 |
| 24 | IBON-HI-13-14-47 | 92 (80-97) | 130 (122-141) | 108 (98-114) | 23.25 |
| 25 | IBON-HI-13-14-50 | 89 (77-95) | 131 (124-141) | 99 (80-110) | 27.88 |
| 26 | IBON-HI-13-14-51 | 87 (81-90) | 129 (125-138) | 104 (100-105) | 30.52 |
| 27 | IBON-HI-13-14-55 | 91 (79-95) | 131 (124-140) | 99 (87-108) | 35.25 |
| 28 | IBON-HI-13-14-56 | 87 (75-93) | 129 (123-141) | 100 (88-108) | 27.35 |
| 29 | IBON-HI-13-14-58 | 90 (72-97) | 130 (123-139) | 96 (80-103) | 24.95 |
| 30 | IBON-HI-13-14-59 | 91 (75-98) | 130 (120-139) | 108 (102-116) | 36.30 |
| 31 | IBON-HI-13-14-62 | 91 (81-96) | 129 (120-140) | 100 (98-103) | 36.17 |
| 32 | IBON-HI-13-14-63 | 90 (80-97) | 129 (118-139) | 100 (96-107) | 32.75 |
| 33 | IBON-HI-13-14-64 | 92 (79-98) | 126 (118-139) | 105 (104-107) | 34.78 |
| 34 | IBON-HI-13-14-66 | 92 (81-97) | 132 (124-139) | 107 (90-116) | 33.82 |
| 35 | IBON-HI-13-14-68 | 92 (76-98) | 131 (124-141) | 110 (92-118) | 35.08 |
| 36 | IBON-HI-13-14-71 | 89 (74-94) | 129 (120-138) | 104 (100-109) | 26.52 |
| 37 | IBON-HI-13-14-73 | 92 (79-99) | 131 (123-141) | 113 (101-118) | 28.63 |
| 38 | IBON-HI-13-14-74 | 87 (70-95) | 130 (123-141) | 102 (90-114) | 27.05 |
| 39 | IBON-HI-13-14-75 | 92 (76-99) | 130 (124-139) | 106 (92-120) | 31.05 |
| 40 | IBON-HI-13-14-76 | 92 (79-97) | 131 (126-140) | 106 (95-116) | 27.68 |
| 41 | IBON-HI-13-14-78 | 86 (74-91) | 131 (127-140) | 107 (97-113) | 26.12 |
| 42 | IBON-HI-13-14-84 | 93 (82-98) | 132 (126-141) | 100 (90-110) | 27.02 |
| 43 | IBON-HI-13-14-86 | 86 (74-93) | 131 (123-139) | 110 (101-122) | 34.37 |
| 44 | IBON-HI-13-14-91 | 93 (80-99) | 132 (126-141) | 105 (98-113) | 37.48 |

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) | Yield(q/ha) |
|-------|-------------------|---------------------------|-----------------------|-------------------------------|-------------|
| 45 | IBON-HI-13-14-93 | 94 (74-109) | 129 (118-141) | 97 (88-107) | 33.20 |
| 46 | IBON-HI-13-14-96 | 91 (75-97) | 133 (126-141) | 108 (105-111) | 37.83 |
| 47 | IBON-HI-13-14-99 | 90 (78-95) | 132 (123-141) | 108 (95-115) | 26.53 |
| 48 | IBON-HI-13-14-107 | 88 (79-94) | 129 (118-142) | 106 (90-117) | 19.22 |
| 49 | IBON-HI-13-14-109 | 90 (75-97) | 130 (124-139) | 109 (100-118) | 34.75 |
| 50 | IBON-HI-13-14-113 | 92 (79-98) | 130 (123-141) | 105 (98-115) | 29.82 |
| 51 | IBON-HI-13-14-116 | 91 (82-94) | 129 (124-141) | 105 (90-118) | 29.67 |
| 52 | IBON-HI-13-14-119 | 87 (74-95) | 129 (123-139) | 93 (90-102) | 32.27 |
| 53 | IBON-HI-13-14-125 | 91 (79-96) | 129 (120-139) | 104 (101-110) | 29.77 |
| 54 | IBON-HI-13-14-129 | 88 (82-93) | 129 (124-139) | 96 (82-101) | 30.20 |
| 55 | IBON-HI-13-14-131 | 93 (82-102) | 128 (122-141) | 99 (89-112) | 24.93 |
| 56 | IBON-HI-13-14-135 | 92 (81-98) | 129 (124-141) | 99 (87-107) | 28.01 |
| 57 | IBON-HI-13-14-136 | 89 (72-101) | 127 (119-140) | 104 (100-106) | 28.58 |
| 58 | IBON-HI-13-14-141 | 93 (79-109) | 129 (123-143) | 102 (95-108) | 32.23 |
| 59 | IBON-HI-13-14-145 | 86 (74-99) | 127 (120-141) | 108 (99-112) | 30.38 |

International Naked Barley Observation Nursery (INBON-HI)

The nursery consisted of 70 entries including national check (BHS 352) was grown at DWR, Karnal. There are number of entries which were higher yielder than checks. Based on grained yield and ancillary data the entries, 2, 3, 4, 17, 19, 25, 38, 42, 49, 57 and 64 were selected for utilization in breeding programme.

Table 8: Summary of yield and ancillary data of INBON-HI from Karnal location.

| Entry | H. days | M. days | Plant Height (cm) | Yield (Q/ha) |
|-----------------|---------|---------|-------------------|--------------|
| INBON-HI -14-2 | 115 | 140 | 105 | 43.5 |
| INBON-HI -14-3 | 108 | 141 | 125 | 47.0 |
| INBON-HI -14-6 | 110 | 143 | 112 | 45.1 |
| INBON-HI -14-15 | 107 | 141 | 112 | 37.3 |
| INBON-HI -14-16 | 112 | 141 | 114 | 42.9 |
| INBON-HI -14-17 | 108 | 142 | 113 | 43.4 |
| INBON-HI -14-19 | 96 | 139 | 110 | 35.5 |
| INBON-HI -14-25 | 110 | 141 | 116 | 47.3 |
| INBON-HI -14-31 | 111 | 141 | 120 | 32.4 |
| INBON-HI -14-35 | 92 | 139 | 115 | 33.5 |
| INBON-HI -14-38 | 92 | 141 | 125 | 40.9 |
| INBON-HI -14-42 | 120 | 140 | 125 | 56.0 |
| INBON-HI -14-49 | 118 | 140 | 120 | 59.7 |
| INBON-HI -14-57 | 118 | 141 | 125 | 54.7 |
| INBON-HI -14-60 | 100 | 142 | 110 | 44.2 |
| INBON-HI -14-61 | 107 | 141 | 115 | 42.9 |
| INBON-HI -14-64 | 110 | 141 | 122 | 45.3 |
| BHS 352(NC) | 109 | 140 | 122 | 32.5 |

1st Global Spring Barley Screening Nursery (1st GSBSN)

This nursery comprising of 190 entries including national check BH 902 was conducted at Karnal, Faizabad and Rewa centres. The yield and ancillary data are given in table 9-

Table 9: Summary of yield and ancillary data of 1st GSBSN from Karnal location.

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) | Yield |
|-------|---------------------|---------------------------|-----------------------|----------------------------|-------|
| 1 | 1st GSBSN-13-14-4 | 82 (74-92) | 125 (112-139) | 96 (75-125) | 30.40 |
| 2 | 1st GSBSN-13-14-7 | 93 (73-103) | 133 (123-139) | 98 (70-120) | 32.33 |
| 3 | 1st GSBSN-13-14-9 | 96 (74-107) | 136 (125-143) | 96 (73-125) | 30.20 |
| 4 | 1st GSBSN-13-14-16 | 92 (72-103) | 132 (122-140) | 94 (69-112) | 28.47 |
| 5 | 1st GSBSN-13-14-21 | 93 (74-107) | 133 (123-141) | 100 (76-135) | 30.53 |
| 6 | 1st GSBSN-13-14-22 | 92 (72-103) | 133 (121-143) | 104 (83-133) | 32.47 |
| 7 | 1st GSBSN-13-14-24 | 84 (74-96) | 128 (112-148) | 89 (62-112) | 26.27 |
| 8 | 1st GSBSN-13-14-35 | 94 (70-108) | 132 (121-140) | 89 (71-107) | 25.73 |
| 9 | 1st GSBSN-13-14-42 | 81 (74-92) | 124 (108-141) | 104 (85-135) | 34.27 |
| 10 | 1st GSBSN-13-14-43 | 87 (70-108) | 127 (115-143) | 92 (74-110) | 30.80 |
| 11 | 1st GSBSN-13-14-47 | 87 (75-103) | 127 (115-141) | 96 (81-116) | 31.53 |
| 12 | 1st GSBSN-13-14-48 | 86 (71-103) | 128 (121-139) | 95 (78-114) | 31.20 |
| 13 | 1st GSBSN-13-14-55 | 86 (74-103) | 125 (112-138) | 97 (81-122) | 32.93 |
| 14 | 1st GSBSN-13-14-60 | 92 (73-103) | 132 (122-141) | 105 (88-125) | 34.87 |
| 15 | 1st GSBSN-13-14-65 | 84 (74-101) | 125 (112-140) | 101 (88-120) | 26.73 |
| 16 | 1st GSBSN-13-14-80 | 87 (72-104) | 129 (122-143) | 95 (75-115) | 34.27 |
| 17 | 1st GSBSN-13-14-84 | 94 (71-106) | 133 (121-140) | 102 (75-128) | 24.60 |
| 18 | 1st GSBSN-13-14-85 | 95 (74-106) | 134 (122-141) | 104 (87-130) | 29.33 |
| 19 | 1st GSBSN-13-14-86 | 92 (72-105) | 133 (122-141) | 101 (89-120) | 30.47 |
| 20 | 1st GSBSN-13-14-90 | 96 (73-108) | 134 (121-141) | 97 (89-110) | 27.87 |
| 21 | 1st GSBSN-13-14-104 | 81 (71-92) | 124 (112-139) | 91 (69-105) | 29.80 |
| 22 | 1st GSBSN-13-14-105 | 86 (74-103) | 125 (112-141) | 93 (71-112) | 29.53 |
| 23 | 1st GSBSN-13-14-106 | 82 (72-93) | 124 (112-140) | 89 (66-108) | 29.87 |
| 24 | 1st GSBSN-13-14-108 | 92 (78-105) | 165 (139-218) | 99 (77-122) | 38.53 |
| 25 | 1st GSBSN-13-14-119 | 94 (73-106) | 114 (79-140) | 95 (79-115) | 26.93 |
| 26 | 1st GSBSN-13-14-127 | 93 (70-108) | 111 (72-140) | 97 (72-118) | 29.80 |
| 27 | 1st GSBSN-13-14-130 | 97 (74-110) | 111 (69-140) | 93 (69-122) | 29.60 |
| 28 | 1st GSBSN-13-14-136 | 85 (71-99) | 116 (88-141) | 106 (88-135) | 34.13 |
| 29 | 1st GSBSN-13-14-144 | 94 (71-108) | 112 (75-141) | 89 (75-105) | 29.47 |

International Barley Observation Nursery 14-Winter Barley (IBON14_WB)

The nursery was conducted at Hisar and Karnal locations and included 90 entries including national check DWRUB 52. The yield and ancillary data are given in table 10. Based on plant type, yield and other ancillary traits some entries were selected for further utilization for EIBGN in the Next crop.

Table 10 Summary of ancillary data of IBON-WB

| S.No. | Entries | H days Mean & range | M days Mean &range | Height Mean &range (cm) |
|-------|---------------|---------------------------|-----------------------|----------------------------|
| 1 | IBON-14-WB-1 | 107 | 142 | 102 |
| 2 | IBON-14-WB-2 | 100 | 138 | 114 |
| 3 | IBON-14-WB-3 | 99 | 139 | 107 |
| 4 | IBON-14-WB-4 | 104 | 138 | 101 |
| 5 | IBON-14-WB-5 | 108 | 137 | 107 |
| 6 | IBON-14-WB-6 | 97 | 138 | 112 |
| 7 | IBON-14-WB-7 | 89 | 138 | 110 |
| 8 | IBON-14-WB-8 | 89 | 138 | 112 |
| 9 | IBON-14-WB-9 | 92 | 140 | 115 |
| 10 | IBON-14-WB-10 | 108 | 145 | 105 |
| 11 | IBON-14-WB-11 | 100 | 139 | 109 |
| 12 | IBON-14-WB-12 | 101 | 139 | 114 |
| 13 | IBON-14-WB-13 | 103 | 146 | 114 |
| 14 | IBON-14-WB-14 | 102 | 138 | 114 |
| 15 | IBON-14-WB-15 | 105 | 137 | 107 |
| 16 | IBON-14-WB-16 | 104 | 138 | 112 |
| 17 | IBON-14-WB-17 | 106 | 136 | 107 |
| 18 | IBON-14-WB-18 | 106 | 137 | 108 |
| 19 | IBON-14-WB-19 | 101 | 138 | 103 |
| 20 | IBON-14-WB-20 | 107 | 136 | 101 |
| 21 | IBON-14-WB-21 | 98 | 139 | 108 |
| 22 | IBON-14-WB-22 | 90 | 139 | 110 |
| 23 | IBON-14-WB-23 | 102 | 140 | 119 |
| 24 | IBON-14-WB-24 | 105 | 140 | 113 |
| 25 | IBON-14-WB-25 | 105 | 140 | 105 |
| 26 | IBON-14-WB-26 | 106 | 141 | 103 |
| 27 | IBON-14-WB-27 | 106 | 141 | 107 |
| 28 | IBON-14-WB-28 | 104 | 140 | 108 |
| 29 | IBON-14-WB-29 | 99 | 141 | 119 |
| 30 | IBON-14-WB-30 | 88 | 139 | 108 |
| 31 | IBON-14-WB-31 | 105 | 146 | 125 |
| 32 | IBON-14-WB-32 | 104 | 143 | 115 |
| 33 | IBON-14-WB-33 | 87 | 140 | 107 |
| 34 | IBON-14-WB-34 | 105 | 140 | 110 |
| 35 | IBON-14-WB-35 | 97 | 140 | 102 |
| 36 | IBON-14-WB-36 | 93 | 136 | 103 |
| 37 | IBON-14-WB-37 | 90 | 136 | 113 |
| 38 | IBON-14-WB-38 | 106 | 136 | 114 |
| 39 | IBON-14-WB-39 | 103 | 136 | 106 |
| 40 | IBON-14-WB-40 | 97 | 139 | 113 |
| 41 | IBON-14-WB-41 | 107 | 138 | 106 |
| 42 | IBON-14-WB-42 | 99 | 136 | 98 |

| | | | | |
|----|---------------|-----|-----|-----|
| 43 | IBON-14-WB-43 | 105 | 138 | 102 |
| 44 | IBON-14-WB-44 | 100 | 134 | 108 |
| 45 | IBON-14-WB-45 | 102 | 136 | 111 |
| 46 | IBON-14-WB-46 | 99 | 135 | 115 |
| 47 | IBON-14-WB-47 | 103 | 136 | 105 |
| 48 | IBON-14-WB-48 | 104 | 139 | 94 |
| 49 | IBON-14-WB-49 | 104 | 139 | 105 |
| 50 | IBON-14-WB-50 | 97 | 137 | 102 |
| 51 | IBON-14-WB-51 | 105 | 140 | 98 |
| 52 | IBON-14-WB-52 | 100 | 136 | 102 |
| 53 | IBON-14-WB-53 | 100 | 137 | 108 |
| 54 | IBON-14-WB-54 | 94 | 134 | 113 |
| 55 | IBON-14-WB-55 | 99 | 135 | 101 |
| 56 | IBON-14-WB-56 | 95 | 133 | 108 |
| 57 | IBON-14-WB-57 | 101 | 135 | 98 |
| 58 | IBON-14-WB-58 | 99 | 135 | 108 |
| 59 | IBON-14-WB-59 | 98 | 136 | 110 |
| 60 | IBON-14-WB-60 | 119 | 145 | 104 |
| 61 | IBON-14-WB-61 | 104 | 136 | 109 |
| 62 | IBON-14-WB-62 | 103 | 136 | 104 |
| 63 | IBON-14-WB-63 | 104 | 135 | 102 |
| 64 | IBON-14-WB-64 | 101 | 138 | 106 |
| 65 | IBON-14-WB-65 | 107 | 137 | 106 |
| 66 | IBON-14-WB-66 | 105 | 136 | 104 |
| 67 | IBON-14-WB-67 | 104 | 137 | 104 |
| 68 | IBON-14-WB-68 | 106 | 137 | 106 |
| 69 | IBON-14-WB-69 | 104 | 138 | 108 |
| 70 | IBON-14-WB-70 | 95 | 132 | 98 |
| 71 | IBON-14-WB-71 | 101 | 136 | 94 |
| 72 | IBON-14-WB-72 | 101 | 137 | 101 |
| 73 | IBON-14-WB-73 | 105 | 137 | 94 |
| 74 | IBON-14-WB-74 | 105 | 140 | 105 |
| 75 | IBON-14-WB-75 | 103 | 138 | 88 |
| 76 | IBON-14-WB-76 | 104 | 136 | 90 |
| 77 | IBON-14-WB-77 | 103 | 137 | 101 |
| 78 | IBON-14-WB-78 | 100 | 143 | 100 |
| 79 | IBON-14-WB-79 | 99 | 141 | 96 |
| 80 | IBON-14-WB-80 | 96 | 137 | 111 |
| 81 | IBON-14-WB-81 | 102 | 138 | 104 |
| 82 | IBON-14-WB-82 | 102 | 137 | 98 |
| 83 | IBON-14-WB-83 | 102 | 138 | 98 |
| 84 | IBON-14-WB-84 | 103 | 138 | 105 |
| 85 | IBON-14-WB-85 | 102 | 138 | 108 |
| 86 | IBON-14-WB-86 | 103 | 139 | 101 |
| 87 | IBON-14-WB-87 | 107 | 138 | 103 |
| 88 | IBON-14-WB-88 | 106 | 138 | 107 |
| 89 | IBON-14-WB-89 | 107 | 138 | 100 |
| 90 | IBON-14-WB-90 | 107 | 148 | 96 |

National Nurseries Evaluation

National BARLEY Genetic Stock Nursery (NBGSN)

A regular activity of barley network, every year this nursery is constituted with promising entries from network centres which include released varieties and advanced breeding materials from national programme. This year the nursery was constituted with 23 entries which were donor for different traits along with better yielding ability. The nursery was supplied to all 11 centres under barley network and data were received from Almora, Bajaura, Durgapura, Faizabad, Hisar, Karnal, Kanpur, Ludhiana, Pantnagar, Varansi and Rewa. The ancillary data and their range are given in table 1. Most of the entries were utilized by centres in their hybridization.

TABLE 1: Summary of ancillary data of NBGSN from different locations

| S.No. | Name | Sources for | 2/6 Row | D Heading Maen& range | M days Mean& range | Height Mean& range | Spike Length (cm) | 1000g W Mean& range |
|-------|---------|---|---------|-----------------------|--------------------|--------------------|-------------------|---------------------|
| 1 | BH946 | Yield and yield components | 6 | 93.9 | 136.00 | 93.917 | 8.46 | 38.53 |
| 2 | BH965 | Resistant to brown and black rust | 2 | 89.7 | 131.2 | 102.317 | 9.42 | 46.88 |
| 3 | BH959 | Yield and yield components | 6 | 89.8 | 133.5 | 99.425 | 9.27 | 39.41 |
| 4 | BH962 | Resistant to brown and black rust | 2 | 88.7 | 131.3 | 97.603 | 9.11 | 48.43 |
| 5 | BH972 | Salinity tolerance | 6 | 86.8 | 130.8 | 94.95 | 9.22 | 42.65 |
| 6 | BH976 | Overall quality | 2 | 89.2 | 132.6 | 93.49 | 8.86 | 46.65 |
| 7 | BHS400 | High grain yield & Resistant to leaf rust | 6 | 96.5 | 137.3 | 103.443 | 8.93 | 36.83 |
| 8 | BHS414 | Resistance to stripe rust | 2 | 96.5 | 135.7 | 97.9 | 9.79 | 41.74 |
| 9 | BHS415 | Earliness | 6 | 90.3 | 134.9 | 96.203 | 9.37 | 41.43 |
| 10 | BHS416 | - | 2 | 96.8 | 136.9 | 96.423 | 9.07 | 44.68 |
| 11 | BHS419 | Grain & Forage Yield | 2 | 98.9 | 136.2 | 101.61 | 10.28 | 38.08 |
| 12 | HUB113 | Resistant to brown and black rust | 6 | 90.6 | 134 | 93.41 | 9.32 | 42.16 |
| 13 | HBL711 | Brown & Yellow Rust | 2 | 100.6 | 139.1 | 90.783 | 9.60 | 33.52 |
| 14 | HBL712 | Yield and yield components | 2 | 100.6 | 138.8 | 91.24 | 10.03 | 32.92 |
| 15 | HBL713 | Yield and yield components | 6 | 92.9 | 132.7 | 84.42 | 10.03 | 35.44 |
| 16 | VLB130 | Resistant to all Rusts | 2 | 88.2 | 130.6 | 95.653 | 8.87 | 42.13 |
| 17 | VLB132 | Resistant to brown and black rust | 2 | 88 | 131.2 | 101.99 | 9.62 | 47.37 |
| 18 | RD2784 | Resistant to brown and black rust | 6 | 89.4 | 131.4 | 100.813 | 9.38 | 40.30 |
| 19 | RD2832 | Resistant to brown and Yellow rust | 6 | 87.9 | 132.3 | 88.797 | 9.02 | 36.12 |
| 20 | RD2833 | Resistant to all Rusts | 6 | 88.3 | 131.6 | 88.633 | 9.15 | 38.49 |
| 21 | RD2870 | Overall Quality, Timely sown | 2 | 88.5 | 131.3 | 90.747 | 8.76 | 47.89 |
| 22 | DWRB92 | Yield and yield components & Malt Quality | 2 | 90.6 | 134.5 | 93.56 | 8.34 | 50.09 |
| 23 | UPB1031 | Yield and yield components | 6 | 92.8 | 134.2 | 92.013 | 8.47 | 41.35 |

Elite International Barley Germplasm Nursery (EIBGN)

An elite international barley germplasm nursery was constituted with 45 genotypes selected from various international trials and nurseries and six national checks viz., BH 902, DWRB 73, DWRUB 52, DWRUB 64, RD 2035 and RD 2552. The nursery was supplied to all 11 cooperating centres and was also grown at DWR, Karnal during *rabi*, 2013-14. The nursery was sown in augmented block design along with national checks. This nursery included 6 entries each from IBYT-LRA-C and IBYT-LRA-M, 5 entries each of IBYT-HI, INBON and IBYT-MRA, 4 entries each from IBON- HI, IBON-LRA-M and IBON-MRA, 3 entries from ISEBON, 2 entries from INBYT and 1 entry from IBON-LRA-C, respectively. The data received from different locations were analysed (Table 2) and mean & range of ancillary data is given in table 3. Among the checks the highest yield was given by DWRUB 52. Entry IBYT-HI-1 ranked first in the first non significant group and showed superiority over all the checks while IBYT-HI-6 revealed second rank and was grouped in first NSG. Out of 45 entries, 7 entries showed ranks in the non significant group. The result showed in general yield levels of varansi, Faizabad and rewa location were lower in comparison to other locations.

Table 2: EIBGN: Grain yield data of different locations and national average with their ranks

| Varieties | Durgapura | | | Karnal | | | Ludhiana | | | Kanpur | | | Faizabad | | |
|---------------|-----------|----|---|--------|----|---|----------|----|---|--------|----|---|----------|----|---|
| | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| IBYT-LRA-C-5 | 1215.8 | 25 | 0 | 365.6 | 33 | 1 | 813.3 | 5 | 1 | 566.7 | 38 | 0 | 178.2 | 25 | 1 |
| IBYT-LRA-C-8 | 1315.8 | 6 | 1 | 247.6 | 40 | 0 | 683.3 | 9 | 1 | 741.7 | 26 | 0 | 168.2 | 30 | 1 |
| IBYT-LRA-C-10 | 1265.8 | 16 | 0 | 149.6 | 43 | 0 | 833.3 | 4 | 1 | 616.7 | 35 | 0 | 163.2 | 32 | 1 |
| IBYT-LRA-C-11 | 1240.8 | 22 | 0 | 821.6 | 9 | 1 | 663.3 | 13 | 1 | 516.7 | 42 | 0 | 178.2 | 25 | 1 |
| IBYT-LRA-C-12 | 1215.8 | 25 | 0 | 712.6 | 11 | 1 | 1013.3 | 1 | 1 | 916.7 | 17 | 0 | 183.2 | 22 | 1 |
| IBYT-LRA-C-13 | 1115.8 | 37 | 0 | 329.6 | 36 | 1 | 663.3 | 13 | 1 | 766.7 | 25 | 0 | 168.2 | 30 | 1 |
| IBYT-HI-1 | 1140.8 | 33 | 0 | 755.6 | 10 | 1 | 663.3 | 13 | 1 | 2016.7 | 1 | 1 | 268.2 | 11 | 1 |
| IBYT-HI-6 | 1140.8 | 33 | 0 | 686.6 | 12 | 1 | 613.3 | 20 | 1 | 1216.7 | 5 | 1 | 388.2 | 2 | 1 |
| IBYT-HI-11 | 1265.8 | 16 | 0 | 686.6 | 12 | 1 | 463.3 | 31 | 0 | 1416.7 | 3 | 1 | 538.2 | 1 | 1 |
| IBYT-HI-12 | 1315.8 | 6 | 1 | 944.3 | 3 | 1 | 516.7 | 30 | 0 | 1150.0 | 8 | 1 | 287.3 | 9 | 1 |
| IBYT-HI-14 | 1365.8 | 4 | 1 | 958.3 | 2 | 1 | 736.7 | 7 | 1 | 1025.0 | 13 | 0 | 307.3 | 7 | 1 |
| IBYT-LRA-M-5 | 1265.8 | 16 | 0 | 844.3 | 8 | 1 | 566.7 | 26 | 1 | 400.0 | 44 | 0 | 237.3 | 15 | 1 |
| IBYT-LRA-M-8 | 1215.8 | 25 | 0 | 497.3 | 27 | 1 | 586.7 | 23 | 1 | 475.0 | 43 | 0 | 187.3 | 21 | 1 |
| IBYT-LRA-M-11 | 1315.8 | 6 | 1 | 516.3 | 25 | 1 | 416.7 | 38 | 0 | 1850.0 | 2 | 1 | 207.3 | 18 | 1 |
| IBYT-LRA-M-12 | 1415.8 | 2 | 1 | 303.3 | 38 | 1 | 666.7 | 11 | 1 | 1200.0 | 6 | 1 | 217.3 | 17 | 1 |
| IBYT-LRA-M-19 | 1065.8 | 42 | 0 | 527.3 | 24 | 1 | 666.7 | 11 | 1 | 600.0 | 36 | 0 | 177.3 | 27 | 1 |
| IBYT-LRA-M-24 | 1290.8 | 11 | 1 | 1043.3 | 1 | 1 | 586.7 | 23 | 1 | 725.0 | 28 | 0 | 277.3 | 10 | 1 |
| INBYT-11 | 1140.8 | 33 | 0 | 391.3 | 31 | 1 | 346.7 | 43 | 0 | 550.0 | 39 | 0 | 267.3 | 12 | 1 |
| INBYT-17 | 990.8 | 44 | 0 | 484.3 | 28 | 1 | 430.0 | 34 | 0 | 1020.8 | 14 | 0 | 116.5 | 38 | 1 |
| IBYT-MRA-I | 1090.8 | 41 | 0 | 622.3 | 17 | 1 | 450.0 | 32 | 0 | 920.8 | 16 | 0 | 126.5 | 36 | 1 |
| IBYT-MRA-4 | 1040.8 | 43 | 0 | 277.3 | 39 | 0 | 330.0 | 44 | 0 | 295.8 | 45 | 0 | 86.5 | 39 | 0 |
| IBYT-MRA-I0 | 1190.8 | 28 | 0 | 582.3 | 19 | 1 | 550.0 | 28 | 1 | 645.8 | 31 | 0 | 206.5 | 19 | 1 |
| IBYT-MRA-I2 | 1190.8 | 28 | 0 | 528.3 | 23 | 1 | 900.0 | 3 | 1 | 670.8 | 30 | 0 | 156.5 | 33 | 1 |
| IBYT-MRA-I3 | 990.8 | 44 | 0 | 502.3 | 26 | 1 | 620.0 | 18 | 1 | 820.8 | 20 | 0 | 226.5 | 16 | 1 |
| IBON-LRA-C-76 | 1140.8 | 33 | 0 | 469.3 | 29 | 1 | 600.0 | 21 | 1 | 520.8 | 41 | 0 | 56.5 | 41 | 0 |
| IBON-HI-5 | 1240.8 | 22 | 0 | 638.3 | 16 | 1 | 370.0 | 42 | 0 | 1170.8 | 7 | 1 | 296.5 | 8 | 1 |
| IBON-HI-33 | 1390.8 | 3 | 1 | 559.3 | 21 | 1 | 990.0 | 2 | 1 | 1320.8 | 4 | 1 | 336.5 | 5 | 1 |
| IBON-HI-65 | 1178.3 | 30 | 0 | 923.8 | 4 | 1 | 695.0 | 8 | 1 | 1083.3 | 9 | 1 | 343.2 | 4 | 1 |
| IBON-HI-78 | 1278.3 | 12 | 0 | 646.8 | 15 | 1 | 375.0 | 39 | 0 | 983.3 | 15 | 0 | 383.2 | 3 | 1 |
| IBON-LRA-M-9 | 1278.3 | 12 | 0 | 601.8 | 18 | 1 | 615.0 | 19 | 1 | 808.3 | 21 | 0 | 313.2 | 6 | 1 |
| IBON-LRA-M-16 | 1228.3 | 24 | 0 | 879.8 | 6 | 1 | 645.0 | 16 | 1 | 708.3 | 29 | 0 | 198.2 | 20 | 1 |
| IBON-LRA-M-52 | 1278.3 | 12 | 0 | 668.8 | 14 | 1 | 645.0 | 16 | 1 | 833.3 | 18 | 0 | 173.2 | 28 | 1 |

| Varieties | Durgapura | | | Karnal | | | Ludhiana | | | Kanpur | | | Faizabad | | |
|---------------|------------|----|---|------------|----|---|------------|----|---|------------|----|---|-----------|----|---|
| | | | | | | | | | | | | | | | |
| IBON-LRA-M-94 | 1253.3 | 19 | 0 | 920.8 | 5 | 1 | 745.0 | 6 | 1 | 783.3 | 23 | 0 | 183.2 | 22 | 1 |
| IBON-MRA-18 | 1253.3 | 19 | 0 | 571.8 | 20 | 1 | 565.0 | 27 | 1 | 733.3 | 27 | 0 | 253.2 | 14 | 1 |
| IBON-MRA-34 | 1278.3 | 12 | 0 | 539.8 | 22 | 1 | 595.0 | 22 | 1 | 808.3 | 21 | 0 | 173.2 | 28 | 1 |
| IBON-MRA-43 | 1328.3 | 5 | 1 | 860.8 | 7 | 1 | 675.0 | 10 | 1 | 583.3 | 37 | 0 | 183.2 | 22 | 1 |
| IBON-MRA-44 | 1249.2 | 21 | 0 | 432.0 | 30 | 1 | 545.0 | 29 | 0 | 629.2 | 32 | 0 | 34.8 | 43 | 0 |
| INBON-35 | 1299.2 | 9 | 1 | 334.0 | 35 | 1 | 375.0 | 39 | 0 | 829.2 | 19 | 0 | 64.8 | 40 | 0 |
| INBON-36 | 1474.2 | 1 | 1 | 377.0 | 32 | 1 | 425.0 | 35 | 0 | 1029.2 | 10 | 0 | 264.8 | 13 | 1 |
| INBON-39 | 1149.2 | 31 | 0 | 132.0 | 44 | 0 | 245.0 | 45 | 0 | 629.2 | 32 | 0 | 44.8 | 42 | 0 |
| INBON-51 | 1099.2 | 38 | 0 | -64.0 | 45 | 0 | 375.0 | 39 | 0 | 1029.2 | 10 | 0 | -45.2 | 44 | 0 |
| INBON-109 | 1299.2 | 9 | 1 | 335.0 | 34 | 1 | 425.0 | 35 | 0 | 1029.2 | 10 | 0 | 124.8 | 37 | 1 |
| ISEBON-27 | 1099.2 | 38 | 0 | 172.0 | 42 | 0 | 425.0 | 35 | 0 | 779.2 | 24 | 0 | -55.2 | 45 | 0 |
| ISEBON-33 | 1149.2 | 31 | 0 | 184.0 | 41 | 0 | 575.0 | 25 | 1 | 629.2 | 32 | 0 | 144.8 | 34 | 1 |
| ISEBON-40 | 1099.2 | 38 | 0 | 322.0 | 37 | 1 | 445.0 | 33 | 0 | 529.2 | 40 | 0 | 134.8 | 35 | 1 |
| BH902 | 1475.0 | | | 491.8 | | | 650.0 | | | 1180.0 | | | 347.0 | | |
| DWRB73 | 1290.0 | | | 686.0 | | | 1004.0 | | | 825.0 | | | 330.0 | | |
| DWRUB52 | 1245.0 | | | 807.2 | | | 980.0 | | | 1100.0 | | | 332.0 | | |
| DWRUB64 | 1515.0 | | | 619.0 | | | 700.0 | | | 1050.0 | | | 276.0 | | |
| RD2035 | 850.0 | | | 579.0 | | | 596.0 | | | 970.0 | | | 440.0 | | |
| RD2552 | 1170.0 | | | 446.8 | | | 620.0 | | | 750.0 | | | 454.0 | | |
| CD at 5% | 187.2 | | | 762.5 | | | 466.2 | | | 936.2 | | | 426.8 | | |
| DOS | 18.11.2013 | | | 22.11.2013 | | | 11.11.2013 | | | 20.11.2013 | | | 8.11.2013 | | |

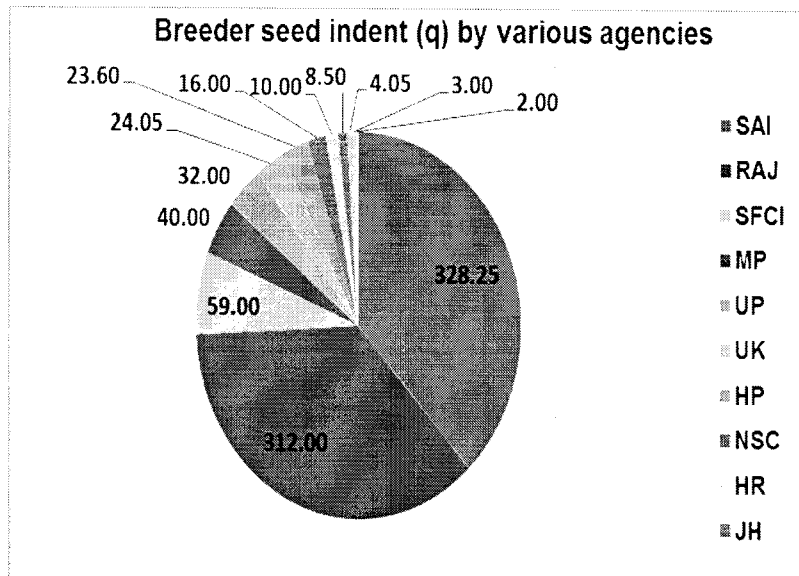
Table 3: EIBGN: Grain yield data of different locations and national average with their ranks

| Varieties | Hisar | | | Varanasi | | | Rewa | | | Bajaura | | | Pooled | | |
|---------------|-----------|----|---|------------|----|---|------------|----|---|------------|----|---|--------|----|---|
| | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G | Yield | Rk | G |
| IBYT-LRA-C-5 | 555.6 | 22 | 0 | 411.1 | 15 | 0 | 381.1 | 1 | 1 | 1019.7 | 19 | 0 | 611.9 | 23 | 0 |
| IBYT-LRA-C-8 | 570.6 | 19 | 0 | 321.1 | 26 | 0 | 323.1 | 20 | 1 | 999.7 | 21 | 0 | 596.8 | 28 | 0 |
| IBYT-LRA-C-10 | 584.6 | 16 | 0 | 461.1 | 14 | 0 | 311.1 | 25 | 1 | 1119.7 | 14 | 0 | 611.7 | 24 | 0 |
| IBYT-LRA-C-11 | 369.6 | 39 | 0 | 411.1 | 15 | 0 | 336.1 | 15 | 1 | 1029.7 | 18 | 0 | 618.6 | 21 | 0 |
| IBYT-LRA-C-12 | 330.6 | 44 | 0 | 326.1 | 25 | 0 | 273.1 | 30 | 1 | 1139.7 | 12 | 0 | 679.0 | 11 | 0 |
| IBYT-LRA-C-13 | 360.6 | 41 | 0 | 99.1 | 44 | 0 | 272.1 | 31 | 1 | 1069.7 | 17 | 0 | 538.4 | 38 | 0 |
| IBYT-HI-1 | 773.6 | 6 | 0 | 389.1 | 19 | 0 | 230.1 | 40 | 0 | 1849.7 | 1 | 1 | 898.6 | 1 | 1 |
| IBYT-HI-6 | 1086.6 | 1 | 1 | 603.1 | 7 | 1 | 264.1 | 33 | 1 | 1219.7 | 8 | 0 | 802.1 | 2 | 1 |
| IBYT-HI-11 | 345.6 | 43 | 0 | 539.1 | 12 | 0 | 281.1 | 29 | 1 | 1239.7 | 5 | 0 | 752.9 | 5 | 1 |
| IBYT-HI-12 | 458.1 | 30 | 0 | 547.3 | 11 | 0 | 201.8 | 45 | 0 | 854.7 | 32 | 0 | 697.3 | 10 | 0 |
| IBYT-HI-14 | 562.1 | 20 | 0 | 553.3 | 9 | 0 | 311.8 | 24 | 1 | 864.7 | 29 | 0 | 742.8 | 6 | 1 |
| IBYT-LRA-M-5 | 367.1 | 40 | 0 | 237.3 | 33 | 0 | 242.8 | 36 | 0 | 1394.7 | 2 | 0 | 617.3 | 22 | 0 |
| IBYT-LRA-M-8 | 458.1 | 30 | 0 | 259.3 | 31 | 0 | 224.8 | 41 | 0 | 1144.7 | 11 | 0 | 561.0 | 34 | 0 |
| IBYT-LRA-M-11 | 561.1 | 21 | 0 | 625.3 | 6 | 1 | 378.8 | 2 | 1 | 1234.7 | 6 | 0 | 789.6 | 3 | 1 |
| IBYT-LRA-M-12 | 350.1 | 42 | 0 | 401.3 | 17 | 0 | 220.8 | 43 | 0 | 1204.7 | 9 | 0 | 664.4 | 14 | 0 |
| IBYT-LRA-M-19 | 438.1 | 33 | 0 | 147.3 | 41 | 0 | 363.8 | 7 | 1 | 1324.7 | 3 | 0 | 590.1 | 30 | 0 |
| IBYT-LRA-M-24 | 427.1 | 35 | 0 | 177.3 | 38 | 0 | 374.8 | 5 | 1 | 1174.7 | 10 | 0 | 675.2 | 13 | 0 |
| INBYT-11 | 661.1 | 11 | 0 | 169.3 | 39 | 0 | 326.8 | 19 | 1 | 874.7 | 28 | 0 | 525.3 | 42 | 0 |
| INBYT-17 | 437.0 | 34 | 0 | 384.8 | 21 | 0 | 347.8 | 11 | 1 | 538.0 | 42 | 0 | 527.8 | 40 | 0 |
| IBYT-MRA-I | 424.0 | 36 | 0 | 240.8 | 32 | 0 | 318.8 | 22 | 1 | 898.0 | 27 | 0 | 565.8 | 32 | 0 |
| IBYT-MRA-4 | 395.0 | 38 | 0 | 86.8 | 45 | 0 | 223.8 | 42 | 0 | 648.0 | 39 | 0 | 376.0 | 45 | 0 |
| IBYT-MRA-10 | 295.0 | 45 | 0 | 268.8 | 30 | 0 | 328.8 | 18 | 1 | 958.0 | 23 | 0 | 558.4 | 36 | 0 |
| IBYT-MRA-12 | 737.0 | 7 | 0 | 168.8 | 40 | 0 | 297.8 | 26 | 1 | 988.0 | 22 | 0 | 626.4 | 18 | 0 |
| IBYT-MRA-13 | 479.0 | 27 | 0 | 104.8 | 43 | 0 | 350.8 | 9 | 1 | 1268.0 | 4 | 0 | 595.9 | 29 | 0 |
| IBON-LRA-C-76 | 613.0 | 13 | 0 | 202.8 | 37 | 0 | 331.8 | 16 | 1 | 938.0 | 24 | 0 | 541.4 | 37 | 0 |
| IBON-HI-5 | 533.0 | 23 | 0 | 794.8 | 3 | 1 | 345.8 | 13 | 1 | 918.0 | 26 | 0 | 700.9 | 9 | 0 |
| IBON-HI-33 | 410.0 | 37 | 0 | 502.8 | 13 | 0 | 312.8 | 23 | 1 | 1108.0 | 16 | 0 | 770.1 | 4 | 1 |
| IBON-HI-65 | 654.0 | 12 | 0 | 778.6 | 4 | 1 | 253.8 | 34 | 1 | 623.0 | 40 | 0 | 725.9 | 7 | 1 |
| IBON-HI-78 | 483.0 | 26 | 0 | 843.6 | 1 | 1 | 268.8 | 32 | 1 | 423.0 | 44 | 0 | 631.7 | 17 | 0 |
| IBON-LRA-M-9 | 579.0 | 18 | 0 | 312.6 | 27 | 0 | 322.8 | 21 | 1 | 1013.0 | 20 | 0 | 649.3 | 16 | 0 |
| IBON-LRA-M-16 | 452.0 | 32 | 0 | 298.6 | 28 | 0 | 364.8 | 6 | 1 | 863.0 | 31 | 0 | 626.4 | 18 | 0 |
| IBON-LRA-M-52 | 505.0 | 25 | 0 | 270.6 | 29 | 0 | 375.8 | 4 | 1 | 743.0 | 38 | 0 | 610.3 | 25 | 0 |
| IBON-LRA-M-94 | 667.0 | 9 | 0 | 216.6 | 35 | 0 | 348.8 | 10 | 1 | 773.0 | 37 | 0 | 654.6 | 15 | 0 |
| IBON-MRA-18 | 472.0 | 28 | 0 | 228.6 | 34 | 0 | 296.8 | 27 | 1 | 453.0 | 43 | 0 | 536.3 | 39 | 0 |
| IBON-MRA-34 | 662.0 | 10 | 0 | 380.6 | 22 | 0 | 329.8 | 17 | 1 | 813.0 | 34 | 0 | 620.0 | 20 | 0 |
| IBON-MRA-43 | 867.0 | 2 | 1 | 364.6 | 23 | 0 | 289.8 | 28 | 1 | 933.0 | 25 | 0 | 676.1 | 12 | 0 |
| IBON-MRA-44 | 797.3 | 5 | 0 | 584.1 | 8 | 1 | 240.5 | 37 | 0 | 864.7 | 29 | 0 | 597.4 | 27 | 0 |
| INBON-35 | 831.3 | 3 | 1 | 552.1 | 10 | 0 | 359.5 | 8 | 1 | 784.7 | 36 | 0 | 603.3 | 26 | 0 |
| INBON-36 | 605.3 | 14 | 0 | 824.1 | 2 | 1 | 248.5 | 35 | 1 | 1234.7 | 6 | 0 | 720.3 | 8 | 0 |
| INBON-39 | 521.3 | 24 | 0 | 208.1 | 36 | 0 | 338.5 | 14 | 1 | 544.7 | 41 | 0 | 423.6 | 43 | 0 |
| INBON-51 | 591.3 | 15 | 0 | 114.1 | 42 | 0 | 376.5 | 3 | 1 | 264.7 | 45 | 0 | 415.6 | 44 | 0 |
| INBON-109 | 461.3 | 29 | 0 | 389.1 | 19 | 0 | 347.5 | 12 | 1 | 854.7 | 32 | 0 | 585.1 | 31 | 0 |
| ISEBON-27 | 581.3 | 17 | 0 | 394.1 | 18 | 0 | 237.5 | 38 | 0 | 1114.7 | 15 | 0 | 527.5 | 41 | 0 |
| ISEBON-33 | 669.3 | 8 | 0 | 664.1 | 5 | 1 | 217.5 | 44 | 0 | 804.7 | 35 | 0 | 559.7 | 35 | 0 |
| ISEBON-40 | 827.3 | 4 | 1 | 338.1 | 24 | 0 | 233.5 | 39 | 0 | 1124.7 | 13 | 0 | 561.5 | 33 | 0 |
| BH902 | 518.0 | | | 658.4 | | | 247.2 | | | 1360.0 | | | 769.7 | | |
| DWRB73 | 657.0 | | | 517.6 | | | 287.6 | | | 1260.0 | | | 761.9 | | |
| DWRUB52 | 779.6 | | | 702.6 | | | 272.4 | | | 1262.0 | | | 831.2 | | |
| DWRUB64 | 481.8 | | | 718.4 | | | 292.2 | | | 1092.0 | | | 749.4 | | |
| RD2035 | 442.8 | | | 548.0 | | | 237.4 | | | 818.0 | | | 609.0 | | |
| RD2552 | 436.6 | | | 408.8 | | | 282.0 | | | 1076.0 | | | 627.1 | | |
| CD at 5% | 276.4 | | | 270.1 | | | 133.1 | | | 153.7 | | | 176.4 | | |
| DOS | 6.12.2013 | | | 10.12.2013 | | | 19.11.2013 | | | 13.11.2013 | | | | | |

Breeder Seed Production

BARLEY BREEDER AND NUCLEUS SEED PRODUCTION AND TEST STOCK MULTIPLICATION RABI, 2013-14

A consolidated indent of 862.45q breeder seed of 42 varieties was received from Deputy Commissioner (Seeds), DAC, MoA, Govt. of India. The indent included requirement of ten states (Rajasthan,



Uttar Pradesh, Uttarakhand, Haryana, Madhya Pradesh, Punjab, J&K, Sikkim, Jharkhand and Himachal Pradesh), two public sector corporations (State Farm Corporation of India and National Seeds Corporation) and private agencies for the season Rabi 2013-14. The major proportion of the breeder seed indent was for SAI (328.25q) followed by Rajasthan state (312q), State Farm Corporation of India, New Delhi (59q), Madhya Pradesh (40q) etc. National Seeds Corporation Ltd, New Delhi indented for 16q of breeder seed.

Breeder Seed Production

A total breeder seed for production of 843.10q for 38 varieties was allocated for production at 10 seed producing centres over seven states in the 52nd All India Wheat and Barley Workers' meet organised at CSAUA&T, Kanpur. In view of availability of high yielding and resistant varieties, breeder seed indent for very old varieties viz. BH 75 (1985) and PL 172 (1987) was not accepted unanimously, while due to unavailability of the nucleus seed the indent for varieties Dolma and DL 88 could not be honoured. The quality of breeder seed production was monitored by conducting 'Grow Out Test' at DWR, Karnal and various centres.

A net production of 1782.64q breeder seed against allocated varieties was reported, which was surplus (939.54q) in comparison to the allocated quantity. However, breeder seed of the varieties namely HBL 316, HBL 391, K 508, NDB 209, NDB 1020, PRB 502 and UPB 1008 was not produced at their originating centres as per allocation. The maximum production was observed for variety RD 2552 (370 q) followed by RD 2035 (307 q), RD 2715 (224 q), RD 2660 (180 q), RD 2592 (100 q), PL 426 (81 q), RD 2052 (80 q), BH 393 (60 q), DWRUB 52 (59.67 q) etc. In most of the varieties sufficient breeder seed was produced to meet the DAC requirement, however, a deficit seed production was reported for varieties DWRUB 64 (-9.40), VL 85 (-8.82), RD 2786 (-8.00), RD 2668 (-7.00) etc. at different production centres.

Test Stock multiplication and Nucleus Seed Production

As per the nucleus seed production programme Rabi 2013-14, 48.40 q nucleus seed production programme for 42 varieties was allocated for production at all the cooperating seed production centres. In response to this, a total 67.28 q nucleus seed production of 37 varieties was reported. The maximum nucleus seed production was observed for variety PL 426 (7.50q) followed by RD 2552 (5.23 q), RD 2715 (4.52 q), RD 2794 (4.30 q), RD 2592 (3.77 q), RD 2035 (3.32 q), DWRUB 52 (3.00 q), RD 2786 (3.00 q) etc. However, the nucleus seed for the varieties viz. HBL 316, HBL 391, K 508, NDB 209, NDB 1020 and PRB 502 was not produced at allocated centres.

In addition, test stock multiplications (2013-14) for the varieties viz. DWRB 92 (141.60q), HUB 113 (17q), BH 946 (77q), BHS 400 (52.80q) and carried over of 2012-13 of VLB 118 (49q) and RD 2786 (19.80q), respectively were also reported from State Farms Corporation of India Ltd.

Barley Breeder Seed Production Report of Rabi, 2013-14

Variety-wise Breeder Seed Production

| Sr. No | Varieties | Year of Release & Notification | Breeder seed Production (q) | | | Nucleus seed Production (q) | | | |
|--------|-----------|--------------------------------|-----------------------------|------------|--|-----------------------------|--------------------------------------|-------------------|--|
| | | | DAC Indent | Production | Production Surplus(+)/ Deficit (-) over BSP-I target | Carried over seed (2012-13) | Actual Allotment as per BNS-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BNS-I target |
| 1. | BH 393 | 2002 | 57.40 | 60.00 | 2.60 | - | 2.00 | 2.50 | 0.50 |
| 2. | BH 885 | 2012 | 1.00 | 1.00 | - | - | 0.40 | 0.50 | 0.10 |
| 3. | BH 902 | 2010 | 26.30 | 27.00 | 0.70 | - | 2.00 | 2.50 | 0.50 |
| 4. | BH 946 | 2014 | - | - | - | - | 0.40 | 1.00 | 0.60 |
| 5. | BHS 400 | 2014 | - | - | - | - | 0.40 | 0.10 | -0.30 |
| 6. | DWRUB 52 | 2007 | 55.00 | 59.67 | 4.67 | 10.53 | 3.00 | 3.00 | - |
| 7. | DWRB 73 | 2011 | 4.00 | 4.98 | 0.98 | 7.52 | 0.80 | 0.80 | - |
| 8. | DWRUB 64 | 2012 | 16.20 | 6.80 | -9.40 | - | 0.80 | 0.50 | -0.30 |
| 9. | DWRB 91 | 2013 | 6.35 | 7.90 | 1.55 | - | 1.00 | 1.00 | - |
| 10. | DWRB 92 | 2013 | - | - | - | 2.40 | 0.40 | 0.40 | - |
| 11. | HBL 316 | 1995 | 0.80 | - | -0.80 | - | 0.20 | - | -0.20 |
| 12. | HBL 391 | 2010 | 0.50 | - | -0.50 | - | 0.20 | - | -0.20 |
| 13. | HUB 113 | 2014 | - | - | - | - | 0.40 | 0.50 | 0.10 |
| 14. | JB 58 | 2005 | 17.00 | 56.24 | 39.24 | - | 0.80 | 1.86 | 1.06 |
| 15. | JB 110 | 2010 | 5.00 | 44.35 | 39.35 | - | 0.40 | 2.52 | 2.12 |
| 16. | K 409 | 2001 | 2.00 | 2.00 | - | - | 0.40 | 0.50 | 0.10 |
| 17. | K 508 | 1998 | 4.00 | - | -4.00 | - | 0.40 | 2.00 | 1.60 |
| 18. | K 551 | 1998 | 25.50 | 25.50 | - | - | 1.00 | 1.00 | - |
| 19. | K 560 | 1998 | 4.00 | 4.00 | - | - | 0.40 | 0.50 | 0.10 |
| 20. | NDB 209 | 2001 | 1.00 | - | -1.00 | - | 0.40 | - | -0.40 |

| Sr. No | Varieties | Year of Release & Notification | Breeder seed Production (q) | | | | Nucleus seed Production (q) | | | |
|--------|--------------|--------------------------------|-----------------------------|----------------|--|-----------------------------|--------------------------------------|-------------------|--|--|
| | | | DAC Indent | Production | Production Surplus(+)/ Deficit (-) over BSP-I target | Carried over seed (2012-13) | Actual Allotment as per BNS-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BNS-I target | |
| 21. | NDB 940 | 2001 | 10.20 | 11.20 | 1.00 | - | 0.40 | 0.60 | 0.20 | |
| 22. | NDB 943 | 2009 | 11.70 | 12.00 | 0.30 | - | 0.40 | 0.70 | 0.30 | |
| 23. | NDB 1020 | 2002 | 2.20 | - | -2.20 | - | 0.40 | - | -0.40 | |
| 24. | NDB 1173 | 2005 | 7.20 | 22.00 | 14.80 | - | 0.40 | 0.80 | 0.40 | |
| 25. | PL 426 | 1996 | 80.75 | 81.00 | 0.25 | - | 3.40 | 7.50 | 4.10 | |
| 26. | PL 751 | 2007 | 7.00 | 7.00 | - | - | 0.40 | 1.00 | 0.60 | |
| 27. | PL 807 | 2012 | 0.35 | 4.00 | 3.65 | - | 0.40 | 1.30 | 0.90 | |
| 28. | PRB 502 | 2010 | 3.20 | - | -3.20 | - | 0.40 | - | -0.40 | |
| 29. | RD 2035 | 1994 | 76.90 | 307.00 | 230.10 | - | 4.00 | 3.32 | -0.68 | |
| 30. | RD 2052 | 1991 | 32.90 | 80.00 | 47.10 | - | 2.00 | 1.72 | -0.28 | |
| 31. | RD 2552 | 2000 | 8.80 | 370.00 | 361.20 | - | 3.00 | 5.23 | 2.23 | |
| 32. | RD 2592 | 2004 | 10.00 | 100.00 | 90.00 | - | 2.00 | 3.77 | 1.77 | |
| 33. | RD 2624 | 2005 | 1.30 | 46.00 | 44.70 | - | 0.80 | 0.86 | 0.06 | |
| 34. | RD 2660 | 2006 | 110.00 | 180.00 | 70.00 | - | 3.00 | 2.38 | -0.62 | |
| 35. | RD 2668 | 2007 | 17.00 | 10.00 | -7.00 | - | 2.00 | 2.70 | 0.70 | |
| 36. | RD 2715 | 2009 | 192.50 | 224.00 | 31.50 | - | 6.00 | 4.52 | -1.48 | |
| 37. | RD 2786 | 2013 | 11.00 | 3.00 | -8.00 | - | 1.00 | 3.00 | 2.00 | |
| 38. | RD 2794 | 2013 | 2.00 | 5.00 | 3.00 | - | 1.00 | 4.30 | 3.30 | |
| 39. | UPB 1008 | 2011 | 2.30 | - | -2.30 | - | 0.40 | 0.40 | - | |
| 40. | VL 56 | 2005 | 7.93 | 8.00 | 0.07 | 6.50 | 0.40 | 0.50 | 0.10 | |
| 41. | VL 85* | 2007 | 10.82 | 2.00 | -8.82 | - | 0.40 | 0.50 | 0.10 | |
| 42. | VLB 118 | 2012 | 11.00 | 11.00 | - | 0.50 | 0.40 | 1.00 | 0.60 | |
| | Total | | 843.10 | 1782.64 | 939.54 | 27.45 | 48.40 | 67.28 | 18.88 | |

*In lack of nucleus seed availability indent was accepted for 1.30q

Breeder Seed Production Report of Rabi 2013-14

Centre-wise Breeder Seed Production

| S. No. | Name of the Producing Centre/State | Name of variety | Breeder seed Production (q) | | | | Nucleus seed Production (q) | | | |
|----------------|------------------------------------|-----------------|-----------------------------|--------------------------------------|-------------------|--|--------------------------------------|-------------------|--|--|
| | | | DAC Indent | Actual Allotment as per BSP-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BSP-I target | Actual Allotment as per BNS-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BNS-I target | |
| Haryana | | | | | | | | | | |
| 1 | DWR, Karnal | DWRUB 52 | 55.00 | 55.00 | 59.67 | 4.67 | 3.00 | 3.00 | - | |
| | | DWRB 73 | 4.00 | 4.00 | 4.98 | 0.98 | 0.80 | 0.80 | - | |
| | | DWRUB 64 | 16.20 | 16.20 | 6.80 | -9.40 | 0.80 | 0.50 | -0.30 | |
| | | DWRB 91 | 6.35 | 6.35 | 7.90 | 1.55 | 1.00 | 1.00 | - | |
| | | DWRB 92 | - | - | - | - | 0.40 | 0.40 | - | |
| | | | 81.55 | 81.55 | 79.35 | -2.20 | 6.00 | 5.70 | -0.30 | |
| 2 | CCSHAU, Hisar | BH 393 | 57.40 | 57.40 | 60.00 | 2.60 | 2.00 | 2.50 | 0.50 | |
| | | BH 885 | 1.00 | 1.00 | 1.00 | - | 0.40 | 0.50 | 0.10 | |
| | | BH 902 | 26.30 | 26.30 | 27.00 | 0.70 | 2.00 | 2.50 | 0.50 | |
| | | BH 946 | - | - | - | - | 0.40 | 1.00 | 0.60 | |
| | | | 84.70 | | 88.00 | 3.30 | 4.80 | 6.50 | 1.70 | |
| H.P. | | | | | | | | | | |
| 3. | CSKHPKV, Palampur | HBL 316 | 0.80 | 0.80 | - | -0.80 | 0.20 | - | -0.20 | |
| | | HBL 391 | 0.50 | 0.50 | - | -0.50 | 0.20 | - | -0.20 | |
| | | | 1.30 | 1.30 | | -1.30 | 0.40 | - | -0.40 | |
| 4. | IARI, Shimla | BHS 400 | - | - | - | - | 0.40 | 0.10 | -0.30 | |
| | | | | | | | 0.40 | 0.10 | -0.30 | |
| M.P. | | | | | | | | | | |
| 5. | JNKVV, Jabalpur | JB 58 | 17.00 | 17.00 | 56.24 | 39.24 | 0.80 | 1.86 | 1.06 | |
| | | JB 110 | 5.00 | 5.00 | 44.35 | 39.35 | 0.40 | 2.52 | 2.12 | |
| | | | 22.00 | 22.00 | 100.59 | 78.59 | 1.20 | 4.38 | 3.18 | |
| Punjab | | | | | | | | | | |
| 6 | PAU, Ludhiana | PL 426 | 80.75 | 80.75 | 81.00 | 0.25 | 3.40 | 7.50 | 4.10 | |
| | | PL 751 | 7.00 | 7.00 | 7.00 | - | 0.40 | 1.00 | 0.60 | |
| | | PL 807 | 0.35 | 0.35 | 4.00 | 3.65 | 0.40 | 1.30 | 0.90 | |
| | | | 88.10 | 88.10 | 92.00 | 3.90 | 4.20 | 9.80 | 5.60 | |

| S. No. | Name of the Producing Centre/State | Name of variety | Breeder seed Production (q) | | | Nucleus seed Production (q) | | | |
|------------------|------------------------------------|------------------------|-----------------------------|--------------------------------------|-------------------|--|--------------------------------------|-------------------|--|
| | | | DAC Indent | Actual Allotment as per BSP-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BSP-I target | Actual Allotment as per BNS-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BNS-I target |
| Rajasthan | | | | | | | | | |
| 7 | RAU, Bikaner | RD 2035 | 76.90 | 76.90 | 307.00 | 230.10 | 4.00 | 3.32 | -0.68 |
| | | RD 2052 | 32.90 | 32.90 | 80.00 | 47.10 | 2.00 | 1.72 | -0.28 |
| | | RD 2552 | 8.80 | 8.80 | 370.00 | 361.20 | 3.00 | 5.23 | 2.23 |
| | | RD 2592 | 10.00 | 10.00 | 100.00 | 90.00 | 2.00 | 3.77 | 1.77 |
| | | RD 2624 | 1.30 | 1.30 | 46.00 | 44.70 | 0.80 | 0.86 | 0.06 |
| | | RD 2660 | 110.00 | 110.00 | 180.00 | 70.00 | 3.00 | 2.38 | -0.62 |
| | | RD 2668 | 17.00 | 17.00 | 10.00 | -7.00 | 2.00 | 2.70 | 0.70 |
| | | RD 2715 | 192.50 | 192.50 | 224.00 | 31.50 | 6.00 | 4.52 | -1.48 |
| | | RD 2786 | 11.00 | 11.00 | 3.00 | -8.00 | 1.00 | 3.00 | 2.00 |
| | | RD 2794 | 2.00 | 2.00 | 5.00 | 3.00 | 1.00 | 4.30 | 3.30 |
| | | | 462.40 | 462.40 | 1325.00 | 862.60 | 24.80 | 31.80 | 7.00 |
| U.P. | | | | | | | | | |
| 8 | BHU, Varanasi | HUB 113 | - | - | - | - | 0.40 | 0.50 | 0.10 |
| | | | | | | | 0.40 | 0.50 | 0.10 |
| 9 | CSAUAT, Kanpur | K 409 (Priti) | 2.00 | 2.00 | 2.00 | - | 0.40 | 0.50 | 0.10 |
| | | K 508 (Pragati) | 4.00 | 4.00 | - | -4.00 | 0.40 | 2.00 | 1.60 |
| | | K 551 (Ritambhra) | 25.50 | 25.50 | 25.50 | - | 1.00 | 1.00 | - |
| | | K 560 (Haritima) | 4.00 | 4.00 | 4.00 | - | 0.40 | 0.50 | 0.10 |
| | | | 35.50 | 35.50 | 31.50 | -4.00 | 2.20 | 4.00 | 1.80 |
| 10 | NDUAT, Faizabad | NDB 209 (N.Barley -1) | 1.00 | 1.00 | - | -1.00 | 0.40 | - | -0.40 |
| | | NDB 940 (N.Barley -2) | 10.20 | 10.20 | 11.20 | 1.00 | 0.40 | 0.60 | 0.20 |
| | | NDB 943 (N.Barley-5) | 11.70 | 11.70 | 12.00 | 0.30 | 0.40 | 0.70 | 0.30 |
| | | NDB 1020 (N.Barley -3) | 2.20 | 2.20 | - | -2.20 | 0.40 | - | -0.40 |
| | | NDB 1173 | 7.20 | 7.20 | 22.00 | 14.80 | 0.40 | 0.80 | 0.40 |
| | | | 32.30 | 32.30 | 45.20 | 12.90 | 2.00 | 2.10 | 0.10 |

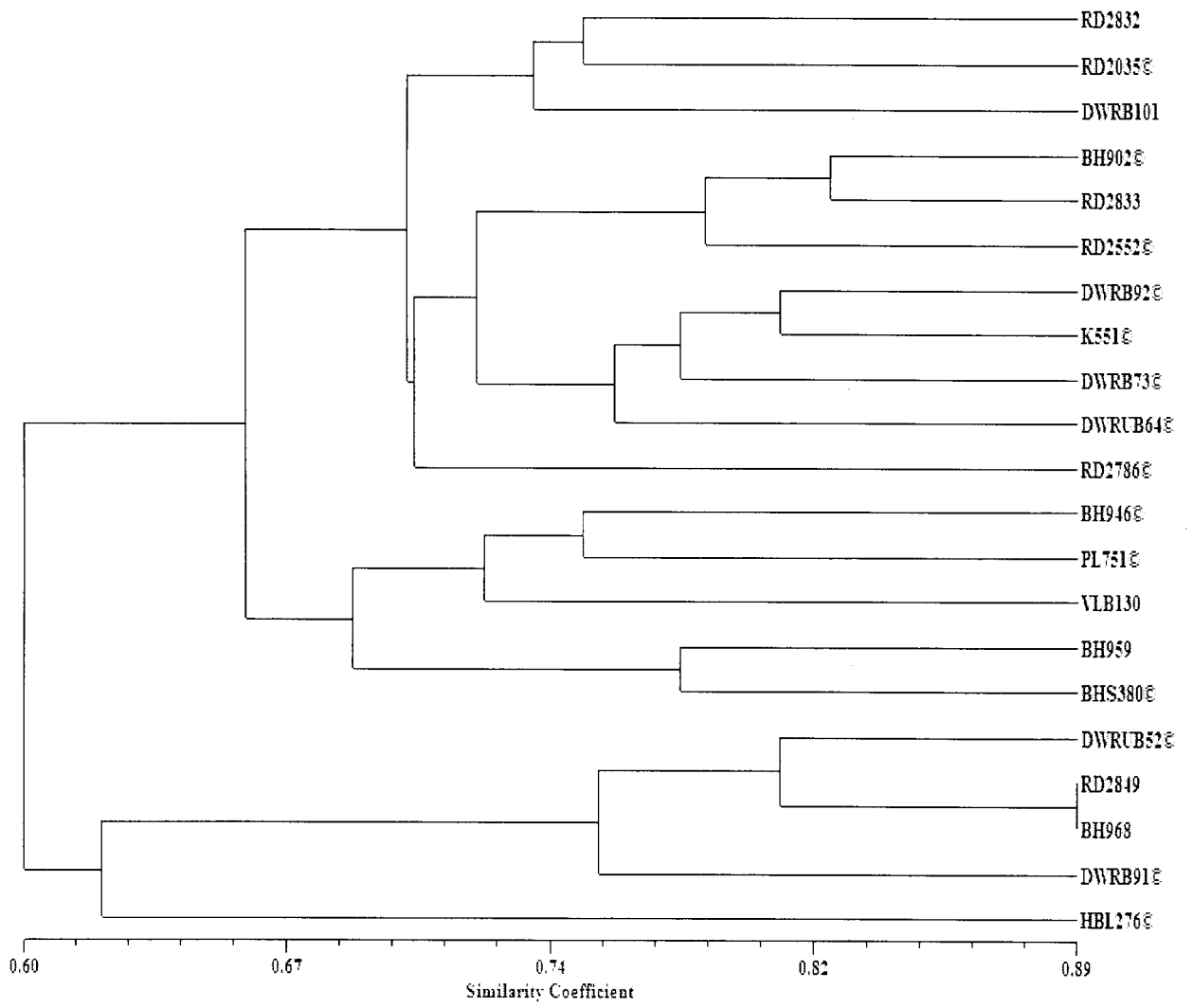
| S. No. | Name of the Producing Centre/State | Name of variety | Breeder seed Production (q) | | | Nucleus seed Production (q) | | | |
|---------------------|------------------------------------|-----------------|-----------------------------|--------------------------------------|-------------------|--|--------------------------------------|-------------------|--|
| | | | DAC Indent | Actual Allotment as per BSP-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BSP-I target | Actual Allotment as per BNS-I target | Actual Production | Production Surplus (+)/ Deficit(-) over BNS-I target |
| Uttara khand | | | | | | | | | |
| 11 | GBPUA&T, Pantnagar | PRB 502 | 3.20 | 3.20 | - | -3.20 | 0.40 | 0.40 | - |
| | | UPB 1008 | 2.30 | 2.30 | - | -2.20 | 0.40 | - | -0.40 |
| 12 | VPKAS, Almora | VL 56 | 7.93 | 7.93 | 8.00 | 0.07 | 0.40 | 0.50 | 0.10 |
| | | VL85 | 10.82 | 10.82 | 2.00 | -8.82 | 0.40 | 0.50 | 0.10 |
| | | VLB 118 | 11.00 | 11.00 | 11.00 | - | 0.40 | 1.00 | 0.60 |
| | | | 29.75 | 29.75 | 21.00 | -8.75 | 1.20 | 2.00 | 0.80 |

Molecular Report of AVT 2nd Trial (2013-2014)

Advanced Varietal Trials entries for three zones viz. North-Western Plains, Central Zone and Hill Zone, were used to characterize at molecular level and understand the genetic variability in Indian barley lines. A set of twenty two genotypes including test entries and checks were screened using barley specific microsatellite markers. Total 40 SSR markers covering all the seven chromosomes of barley were screened with seven final year test entries (RD2832, DWRB101, RD2849, BH968, RD2833, BH959 and VLB130) and fourteen check varieties (BH902, RD2035, RD2552, BH946, DWRUB52, BH902, DWRB92, K551, DWRB73, DWRUB64, DWRB91, PL751, RD2786, HBL276 and BHS380) to develop molecular profiles. Molecular weights for microsatellite products, in base pairs, were estimated and the summary statistics including the number of alleles per locus and polymorphism information content (PIC) values were determined. In total 73 alleles were scored in selected genotypes and 1533 data points were generated for PCR based amplification profiles of AVT 2nd year entries. The number of alleles ranged from 1 to 4 with an average of 1.82 alleles per locus. The band fragment size varied from 106 bp to 800 bp with PIC values ranging from 0 to 0.501. Out of 40 molecular markers screened, 24 were found polymorphic for the entries and checks for 2013-14. Interestingly, molecular statistics were observed more variable as compared to last two crop seasons (2010-12) AVT 2nd year trial entries. This suggested that genetic variability of barley genotypes has increased for major barley sowing regions of India. This increased variability may also be due to use of new SSR markers this year to comprehensively cover barley genome.

Allele molecular weight data of amplified profiles were converted to develop binary format (allele presence = "1" and allele absence = "0") for analysis with NTSYS-PC version 2.1. The 0/1 matrix was used to calculate genetic similarity as DICE coefficient using SIMQUAL subprogram and the resultant similarity matrix was employed to construct dendrograms using Sequential Agglomerative Hierarchical Nesting (SAHN) based Unweighted Pair Group Method of Arithmetic Means (UPGMA) to infer genetic relationships. For estimating the similarity matrix, null alleles were treated as missing data to reduce the biased genetic or similarity measures. The dendrogram generated clearly indicates that the final year test entries do not cluster at one place and are quite diverse with an exception for RD2849 and BH968. These two genotypes grouped together at single. Rest of the genotypes grouped within similarity coefficient (GS) value from 0.60 to 0.89 and showed sufficient genetic variability at molecular level.

The cluster tree for twenty one genotypes divided into two sub-clusters at GS= 0.60. The major cluster I grouped sixteen genotypes including five test entries.. Group II comprised two test entries viz. RD2849 and BH968 that has been developed for different sowing zone and similar end use i.e. malt barley. Cluster I further subdivided into two sub cluster at GS=0.65. All the genotypes under study could be distinguished using these markers. The eventual intend of this effort is to develop molecular markers based amplification profiles for varietal characterization and to assess the level of genetic diversity in Indian barley.



Zonal Monitoring Reports

Barley Network (AICW&BIP)

Monitoring Report of NWP Zone Team I

Duration: 03-04, March, 2014

Locations: Bawal, Durgapura and Navgaon

The zonal meeting of the barley workers of NWP Zone (Team I) was held during March 03-04, 2014. The group comprising of following barley workers assembled at Bawal and monitored trials at Bawal, Durgapura and Navgaon. Dr. SR Verma joined the team at Bawal and monitored the trials at the Bawal centre only. The Project Director, DWR Karnal also joined the team and monitored the trials at Bawal centre.

| | |
|---------------|---|
| DWR, Karnal | Drs. AS Kharub, Dinesh Kumar and Vishnu Kumar |
| CCSHAU, Hisar | Dr. SR Verma |

In general, crop condition was very good at all the places the team visited. The trial wise observations of the team are summarized below.

AVT-IR-NWPZ: The trial was monitored at all the three locations namely Bawal, Durgapura and Navgaon. No rust incidence was recorded at Bawal and Navgaon locations, while at Durgapura centre high yellow rust incidences were observed *i.e.* AVT-IR-FB-NWP-4 (40S), AVT-IR-FB-NWP-1&3 (60S) and AVT-IR-FB-NWP-5 (80S). Crop conditions were very good at all three locations and trials were properly layout.

IVT-IR-FB: The trial was monitored at two locations, Durgapura and Navgaon. Mixture was observed in entries IVTIRFB- 3,4, 6, 11, 14, 16, 22, 23, 25 and 28, while the entries viz. IVTIRFB- 2, 5, 8, 12, 15 and 18 needs purification. Leaf blight was observed at Navgaon location in the entries namely IVTIRFB-2, 9, 10 and 24 and yellow rust at Durgapura centre was noticed in entries viz. IVTIRFB- 1, 2, 6, 8, 13, 16, 18, 25, 27&28 (40S), 21& 24 (60S) and 100S reactions were recorded in entries 3&17.

IVT-IR (Dual purpose): The trial was monitored at Durgapura centre. The experiment was properly laid out. Mixture was observed in entries IVTIRTSDP- 4, 10, 11 and 15, while the entries IVTIRTSDP- 14 and 16 need purification. Yellow rust was recorded in the entries IVTIRTSDP- 1, 6&12 (20S), 2, 4, 5, 9, 14& 19 (40S), while the entries 3, 10& 17 were totally susceptible to yellow rust (100S).

AVT-Sal/alk.: The trial was monitored at Bawal centre. The trial was conducted properly. Mixture was observed in the entries AVTSST- 1, 10, 16 and 17 while the entry AVTSST- 19 needs purification. No incidence of yellow rust and leaf blights was observed for any entry.

AVT-TS-MB: The trial was monitored at all the three locations namely Bawal, Durgapura and Navgaon. The entries viz. AVTIRTSMB-2, 3 & 8 needs purification. Yellow rust reaction upto 30S was recorded in the entry no. 4 at Durgapura centre.

AVT-LS-MB: The trial was monitored at Durgapura centre. The experiment was properly laid out. The entry AVTIRLSMB- 3 needs purification. Yellow rust was recorded in the entries AVTIRLSMB- 2 & 5 (30S).

IVT-TS-MB: The trial was monitored at all the three locations namely Bawal, Durgapura and Navgaon. The entries viz. IVTMBTS-2, 3, 18 & 19 were observed as segregation/mixture, while the entries IVTMBTS- 8, 11, 12, 14&15 need purification. Yellow rust reaction upto 30S was recorded in the entries no. 3, 8, 12& 19 at Durgapura centre.

IVT-LS-MB: The trial was monitored at Durgapura centre. The experiment was properly laid out. The entries viz. IVTMBLS-3, 4, 8, 17 & 18 were observed as segregation/mixture, while the entries IVTMBLS- 1, 2, 13 need purification. Yellow rust reaction upto 30S was recorded in the entries no. 1, 14 & 18 at Durgapura centre.

Agronomy, Pathology and entomology experiments: The agronomy, pathology and entomology experiments were monitored at Durgapura centre. The experiments were conducted as per technical programme.

Following entries were showing the segregation and mixtures, and needs purification.

| Trial | Segregation/mixture | Off types |
|--------------|---|-------------------------------|
| AVT-MB-TS | - | AVTIRTSMB-2, 3 & 8 |
| AVT-MB-LS | - | AVTIRLSMB- 3 |
| AVT-SST | AVTSST- 1, 10, 16 and 17 | AVTSST- 19 |
| IVT-MB-TS | IVTMBTS-2, 3, 18 & 19 | IVTMBTS-8, 11, 12, 14 & 15 |
| IVT-MB-LS | IVTMBS-3, 4, 8, 17 & 18 | IVTMBS-1, 2, 13 |
| IVT(IR-FB) | IVTIRFB- 3, 4, 6, 11, 14, 16, 22, 23, 25 & 28 | IVTIRFB- 2, 5, 8, 12, 15 & 18 |
| IVT-IR-DP | IVTIRTSDP- 4, 10, 11 and 15 | IVTIRTSDP- 14&16 |

Sd/-
AS Kharub
PI, Barley Network
DWR, Karnal

Sd/-
Dinesh Kumar
Barley Network
DWR, Karnal

Sd/-
Vishnu Kumar
Barley Network
DWR, Karnal

**Barley Network (AICW&BIP)
Monitoring Report of NWPZ**

Duration: 6th – 7th March 2014

Locations visited: Hisar, SG Nagar, Bathinda and Ludhiana

Team Members :

Dr. AS Shekhawat, Barley Breeder, ARS, Durgapura, Jaipur
 Dr. Dinesh Kumar, Pr. Scientist (Biochemistry) Barley Network, DWR, Karnal
 Dr. R. Selvakumar, Sr. Scientist (Pathology) Barley Network, DWR, Karnal
 Dr. Anil Khippal, Sr. Scientist (Agronomy) Barley Network, DWR, Karnal

The team constituted by the Project Director, DWR, Karnal for monitoring of Barley Network Trials & Nurseries in NWPZ, assembled at Hisar on 6th March, 2013 and visited the different locations. Dr. Chemma and Dr. Verma could not join the team.

A: Location wise observations

Hisar

On 6th March, the team visited the barley trials at HAU, Hisar. There were seven agronomy and eight breeding trials conducted at the centre. All the trials were in very good condition; hence no trial was rejected by the team. No disease incidence was observed except covered smut on few entries.

Sriganganagar

The team visited 3 AVT trials on malt and feed barley conducted at SG Nagar on 6th March, 2014. Both the malt and feed barley trials under timely sown conditions were sown on 24th November, 2013 and crop stand was good, while late sown AVT trial on malt was sown on 12th December, 2013 which was in vegetative stage.

Bathinda

The team visited five coordinated yield trials (3 AVT & 2 IVT) at this location on 7th March, 2014. All the trials were in good condition.

Ludhiana

The team visited at the centre on 7th March in the afternoon. All the six allotted trials (AVT & IVT) were conducted at the centre. Trials were in good condition and the crop expression was very good. All allotted IBDSN / NBDSN/ EBDSN disease/ pest screening nurseries along with chemical control trials were conducted with good incidence of the disease/pests on the infector lines. Eight agronomic trials were also conducted at the centre, those were in good conditions.

B: Disease / pest incidence.

During the season incidence of yellow rust was not observed in Hisar, Sriganganagar and Bathinda. Trials. In Ludhiana, few entries were having stripe rust incidence in breeding trials. In all the centres, the team observed the covered smut incidence in many of the entries. The team strongly recommends the PI (Barley Network) to send a message to all the barley breeders to keep their entries free from the covered smut in their station and rogue out the diseased ear heads to maintain purity of crop and reduce further spread the covered smut.

C: Trials rejected: Nil

D: Entries observed as segregating/off types/mixtures:

The following entries were noticed to have segregation/ off types/mixture in various trials

| Trial Name | Entries with | |
|-------------------------|---|--|
| | Off types /Segregation / mixtures | |
| IVT (IR-FB) | IVTIRFB-28 | |
| AVT (MB) NWPZ-IR-TS | AVTMBTS-3 | |
| IVT (MB) TS NWPZ | IVT-MB-TS-3, IVT-MB-TS-9, IVT-MB-TS-19, | |
| IVT (MB) Late Sown NWPZ | IVTIRMBLS-8 | |

E. Disease / pest screening

All the IBDSN / NBDSN/ EBDSN disease/ pest screening nurseries along with chemical control trials were conducted with good incidence of the disease/pests on the infector lines.

F: Agronomic Trials

All trials were well conducted

G: Barley Quality Screening Nursery

The nursery was well conducted both at Ludhiana and Hisar

Sd/-
 (Dinesh Kumar)
 Principal Scientist,
 Barley Network, DWR Karnal

Barley Network (AICW&BIP) Monitoring Report of NEPZ

Dates: 24-28th, February 2014

Centres visited: Kanpur, Dalipnagar, Kumarganj, Varanasi, Mirzapur, Tisuihi and Rewa, ,

Team Members:

Dr. Jogendra Singh, Sr. Scientist (Plant Breeding), Barley Network Unit, DWR Karnal,

Dr. R. Selva Kumar, Senior Scientist (Pl. Pathology), Barley Network Unit, DWR Karnal

Dr. S. R. Vishwakarma, Barley Breeder, NDU&T, Faizabad.

Dr. PK Gupta, Barley Breeder, CSAUA&T Kanpur.

The monitoring team with above members constituted by the Project Director, DWR, Karnal visited different centres under NEPZ. The team for monitoring of Barley Network Trials & Nurseries in NEPZ assembled at Kanpur on 24th February, 2014 and visited various locations as per programme schedule.

A: Location wise observations

CSAUA & T at Dalipnagar and Kanpur

Four Coordinated yield trials on feed barley (IVT –RF, IVT-IR-FB, IVT-IR- Dual and AVT- SAL/ALK) were conducted by the centre which was monitored on 24th February, 2014. Out of these four trials, AVT-SAL/ALK was sown at Dalipnagar location of the University while remaining trials were conducted at Kalyanpur experimental farm. However, agronomy and pathology programme were conducted at the main campus. All the experiments were properly conducted as per the technical programme and crop stand was good. The team also visited various trials under resource management, international trials/nurseries, pathological nursery, NBGSN and EIBGN at the centre.

Faizabad

The team visited Faizabad trials on morning of 25th February and visited the trials at Kumarganj faizabad. The centre conducted two sets of AVT-SAL/ALK trials under different pH level (Set- I pH 8.5-9.2 and Set-II pH 8.5-8.9) and three other trials namely IVT (RF), IVT (IR-FB) and IVT (IR) Dual purpose for different production conditions. All trials were in good conditions. The team also visited the varietal trials on DUS project funded by PPV&FRA, New Delhi at the centre. The team also visited experiments under resource management programme and barley pathological nurseries.

BHU, Varanasi:

The team visited the barley yield trials, experiments under agronomy, pathology nurseries and international trials/nurseries at BHU, Varanasi on 26th February. The trials were conducted properly and all the trials were in good conditions. There was high incidence of leaf blights disease in susceptible entries both under irrigated and rain fed conditions. The centre conducted three breeding trials ((IVT-RF, IVT (IR-FB) and IVT (IR) Dual purpose and two agronomy trials at the centre, all of which properly conducted at the centre.

Barkachha, Mirzapur

The team visited at south campus of BHU, Barkachha on 27th February, 2014. The centre has conducted one trial IVT-RF-FB which was under very dry and marginal conditions. This trial was not laid out properly and crop growth as well as plant stand was not found satisfactorily. However, few entries showed real potential, were performing well even under this harsh condition.

Tissuhi:

The centre has sown the IVT-RF trial and team visited there. Although due to heavy rain, team could not enter into the field.

JNKVV, Rewa, MP

The team visited at JNKVV, Rewa on 28.2.14. The centre conducted all the allocated trials on feed barley under rainfed, irrigated and dual purposes, agronomy trials and BQSN as per technical programme. Although, team could not be entered in the field due to heavy rain fall and water logging in the field. However, it was found that all the trials and nurseries were conducted properly.

B. Trials rejected:

The team rejected the trial AVT-SAL/ALK of Dalipnagar because out of 20 plots, 9 plots in all replications could not be germinated due to high salinity. Therefore, team rejected the trial at Dalipnagar.

C. Disease/pest screening

Disease scoring was made at different locations viz., Kanpur, Faizabad, Varansi and Mirzapur. At all locations, no rust disease was observed in any fields/trials. However, leaf blight was scored 68 and above in the trial IVT-RF for entries IVTRFNEP 16, IVTRFNEP 17, IVTRFNEP 18 and IVTRFNEP 19. IVT (IR-FB) revealed stripe disease in entry IVTIRFB 18 only while leaf blight was scored 68 and above in the entries IVTIRFB 7, IVTIRFB 9, IVTIRFB 10, IVTIRFB 22 and IVTIRFB 24. Leaf blight incidence was also recorded in IVT (IR) dual purpose for entries IVTIRTSDP 11, IVTIRTSDP 12, IVTIRTSDP 15, IVTIRTSDP 16 and IVTIRTSDP 18.

D. Entries observed as segregating/mixture/off types:

The following entries were noticed to have segregation/mixtures/off types in various trials.

| Trial Name | Segregation/mixtures | Off types |
|---------------|----------------------|-------------------------------------|
| IVT (RF) | ---- | IVTRFNEP 13, |
| IVT (IR-FB) | ----- | IVTIRFB 4, 11,12 and 21 |
| AVT-Sal/Alk | AVTSST 2, | AVTSST 5, 10, 12, 14, 15, 20 and 18 |
| IVT-IR (Dual) | IVTIRSDP 7 | IVTIRSDP 3, 10 |

E. Agronomy Trials

The agronomy trials at Kanpur, Faizabad, BHU Varansi and Rewa were visited. At Kanpur, three agronomic trials (Date of sowing, mulching and weed management), While Faizabad conducted two agronomic trials (Date of sowing and mulching). Similarly, BHU Varansi also conducted two trials (mulching and weed management). At all locations, experiments were conducted in systemic way and crop condition was good except Faizabad, where crop stand was suppressed in the experiment of mulching on water saving but in different treatments real potential was seen.

International nurseries/trials, NBGSN and EIBGN were conducted at all locations as allocated to the locations.

BQSN nurseries were properly conducted at given locations.

Team also visited the varietal trial on DUS project funded by PPV & FRA, New Delhi.


(Jogendra Singh)

Sr. Scientist (Plant Breeding)

Barley Network Unit

DWR, Karnal-132 001

Barley Network (AICW&BIP) Monitoring Report of CEN Zone

Duration: 15-18, February, 2014

Locations: Kota, Banswara and Udaipur

The zonal meeting of the barley workers of Central Zone was held during February 15-18, 2014. The group comprising of following barley workers assembled at Udaipur and monitored trials at Kota, Banswara and Udaipur centres. Dr. PS Shekhawat joined the team at Udaipur and monitored the trials at Udaipur and Banswara centres.

| | |
|----------------|------------------------------------|
| DWR, Karnal | Drs. Vishnu Kumar and Anil Khippal |
| ARS, Durgapura | Dr. PS Shekhawat |
| CCSHAU, Hisar | Dr. SR Verma |

In general, crop condition was very good at all the places the team visited. The trial wise observations of the team are summarized below.

AVT-IR-CZ: The trial was conducted and monitored at all the three locations namely Kota, Banswara and Udaipur. No rust incidence was recorded at any of locations. Leaf blight was observed in AVTIRFBCZ-1(89) and AVTIRFBCZ-2 (48) at Kota location and powdery mildew (1-3) was observed in all the entries at Banswara location. Crop conditions were very good at all three locations and trials were properly layout. The entries were tagged as per key numbers at Banswara and the team suggested to tag by entry no.


IVT-IR-FB: The trial was monitored at two locations, Udaipur and Banswara. Mixture was observed in entries IVTIRFB- 3, 4, 6, 11, 14, 16, 22, 23, 25 and 28, while the entries viz. IVTIRFB- 2, 5, 8, 12, 15 and 18 needs purification. Leaf blight was observed at Banswara location in the entries namely IVTIRFB- 7, 10 and 24.


IVT-IR (Dual purpose): The trial was monitored at all the three locations namely Kota, Banswara and Udaipur. The experiment was properly laid out. **Trials of Banswara and Kota locations were rejected due to no/very less regeneration in the entries.** Mixture was observed in entries IVTIRTSDP- 4, 11 and 15, while the entries IVTIRTSDP- 14 and 16 needs purification. Leaf blight spots were observed in entries 9 and 15.

Agronomy experiments: Date of sowing experiment of final year entries were visited at Udaipur and Kota centres and all the entries were noticed with resilient performance with vigour and vegetative growth.

Following entries were showing the segregation and mixtures, and needs purification.

| Trial | Segregation/mixture | Off types |
|--------------------|---------------------------------------|-------------------------------|
| IVT(IR-FB) | IVTIRFB- 3,4,6,11,14,16,22,23,25 & 28 | IVTIRFB- 2, 5, 8, 12, 15 & 18 |
| IVT (dual purpose) | IVTIRTSDP- 4, 11 & 15 | IVTIRTSDP- 14 & 16 |


SR Verma
Barley Breeder
CCSHAU, Hisar


Vishnu Kumar
Barley Network
DWR, Karnal

Zonal Monitoring Report-NHZ Team-I

Zone: Northern Hills Zone

Name of the team members: Team-I

| |
|--|
| Dr AS Kharub, DWR, Karnal |
| Dr SK Rana, CSKHPKV R&WRC, Malan |
| Dr Dharam Pal, IARI Regional Station, Shimla |

Centres visited

| |
|-------------------------|
| Berthin, Akhrot |
| Palampur, Malan, Kangra |

Breeding trials allocated & monitored

| Centre | Trial | Remark* |
|----------|--|-----------|
| Berthin | AVT-TS-RF-TAS, AVT-RF-Grain (Barley) | Very good |
| Akrot | AVT-TS-RF-TAS | Very good |
| Palampur | AVT-RF-Dual Purpose (Barley) | Very good |
| Malan | AVT-RF-ES-TAS, AVT-RF-TS-TAS, AVT-IR-TS-TAS, AVT-RI-LS-TAS, IVT-RF-TS-TAS, IVT-IR-TS-TAS, AVT-RF-Grain (Barley), SPL-TCL-RF-TS | Very good |
| Kangra | AVT-RF-Grain (Barley) | Very good |

*Evaluated trials as very good, good and average based on conduction

Trials not conducted / Rejected by monitoring team: Nil

Entries showing promising performance in breeding trials

| Centre | Trial | Entry | Remarks |
|------------------------|-----------------------|--|---------|
| Malan | AVT-RF-ES-TAS | NHES-06, NHES-13, NHES-09 | |
| Malan, Berthin, Akhrot | AVT-RF-TS-TAS | NHTS-02, NHTS-04 | |
| Malan | AVT-IR-TS-TAS | NHTS-04 | |
| Malan | AVT-RI-LS-TAS | NHLS-04, NHLS-01 | |
| Malan | IVT-RF/IR-TS-TAS | NHIVT-12, NHIVT-15, NHIVT-14, NHIVT-20 | |
| Malan, Kangra, Berthin | AVT-RF-Grain (Barley) | NHGBZ-02, NHGBZ-05, NHGBZ-19, NHGBZ-01 | |
| Palampur | AVT-RF-Dual (Barley) | NHDBZ-07, NHDBZ-17, NHDBZ-02, NHDBZ-18, NHDBZ-02 | |
| Malan | SPL-TCL-RF-TS | SPL-TCL-02 | |

Entries recommended for purification

| Trial | Entry | Remarks |
|-----------------------|--|---------|
| AVT-RF-ES-TAS | NHES-06 | |
| AVT-RF/IR-TS-TAS | Nil | |
| AVT-RI-LS-TAS | NHLS-11 | |
| IVT-RF/IR-TS-TAS | NHIVT-02, NHIVT-24, | |
| AVT-RF-Grain (Barley) | NHGBZ-10, NHGBZ-03, NHGBZ-20, NHGBZ-08 | |
| AVT-RF-Dual (Barley) | NHDBZ-14, NHDBZ-15, NHDBZ-08, NHDBZ-06 | |
| SPL-TCL-RF-TS | SPL-TCL-01, SPL-TCL-04 | |

Entries recommended to be dropped from further testing

| Trial | Entry | Remarks |
|----------------------|----------|---------------------------------|
| AVT-RF-Dual (Barley) | NHDBZ-05 | Variation for waxy/non waxy ear |

Entries exhibiting higher disease incidence/insect infestation: Stripe rust

| Centre | Trial | Entry | Remarks |
|------------------------|-----------------------|--|---------|
| Malan | AVT-RF-ES-TAS | NHES-01(60S), NHES-12(60S), NHES-03(40S), NHES-04(40S), NHES-13(40S), NHES-02(20S) | |
| Berthin | AVT-RF-TS-TAS | NHTS-03(30S), NHTS-01(40S), NHTS-05(30S) | |
| Ahrot | AVT-RF-TS-TAS | NHTS-01(20S), NHTS-04(20S) | |
| Malan | AVT-RF-TS-TAS | NHTS-01(60S), NHTS-04(30S) | |
| Malan | AVT-IR-TS-TAS | NHTS-01(60S), NHTS-04(30S), NHTS-05(20S) | |
| Malan | AVT-RI-LS-TAS | NHLS-14(60S), NHLS-05(40S), NHLS-07(30S), NHLS-08(20S), NHLS-09(20S), NHLS-11(20S), NHLS-12(20S) | |
| Malan | IVT-RF-TS-TAS | NHIVT-01(40S), NHIVT-05(40S), NHIVT-16(30S), NHIVT-03(20S), NHIVT-06(20S), NHIVT-10(20S), NHIVT-17(20S), NHIVT-19(20S) | |
| Malan | IVT-IR-TS-TAS | NHIVT-05(60S), NHIVT-16(60S), NHIVT-06(20S), NHIVT-21(20S), | |
| Malan, Kangra, Berthin | AVT-RF-Grain (Barley) | NHGBZ-18(10S) at Malan | |
| Palampur | AVT-RF-Dual (Barley) | - | |
| Malan | SPL-TCL-RF-TS | SPL-TCL-02(10S) | |

Report on agronomical trials

| Centre | Trial | Remark |
|--------|-------------------------------------|---|
| Malan | Barley and wheat agronomical trials | All the trials proposed and send to Malan for wheat and barley were conducted very nicely as per the technical programme. Sowing dates were optimum as per the given programme. The entries were comparable with the checks in AVT trials. Treatment effects were observed in special experiments particularly in nutrients related trials. |

Report on pathological nurseries

| Nursery Wheat | Centre | Remark |
|-------------------------|-----------------------|--|
| PPSN, IPPSN, PMSN, HBSN | R.W.R. C. Malan | The pathological nurseries were conducted properly/ nicely at RWRC, Malan and disease pressure was quite high in IPPSN and PPSN as the infector rows and susceptible checks recorded YR severity from 60-80S. In PMSN the disease pressure was good and some of the entries recorded high intensity/ severity of powdery mildew touching '8' on 0-9 scale. Similarly, disease pressure was quite high in HBSN. |

Report on physiology trials MLHT-1&2: NA

Special comments, if any: Data of Palampur Centre for AVT-RF-Dual Purpose (Barley) for replication-1 not to be considered for analysis due to mismatch of entries. **However, data of three replications (R2, R3 &R4) can be considered for analysis.**

SD/-
(Dr AS Kharub)

SD/-
(Dr SK Rana)

SD/-
(Dr Dharam Pal)

Zonal Monitoring Report (Northern Hills Zone)

Team: II

Period of visit: 15.4.2014 to 18.4.2014

Name of team members:

| Name | Centre |
|-----------------------|-----------------------------|
| Dr. Pramod Prasad | DWR, RS, Shimla |
| Dr. Vikas Gupta | DWR, Karnal |
| Dr. Gurudev Singh | CSKHPKV, Palampur (Bajaura) |
| Dr. (Mrs.) Vijay Rana | CSKHPKV, Palampur (Malan) |

Centres visited:

| Centre | Date |
|-------------------|----------|
| HAREC, Dhaulakuan | 15.04.14 |
| IARI, RS, Shimla | 16.04.14 |
| HAREC, Bajaura | 17.04.14 |
| RSS, Katrain | 18.04.14 |

Trials allocated:

| Centre | Trial | Remark |
|-------------------|---|---|
| HAREC, Dhaulakuan | WHEAT AVT-IR-TS-TAS, AVT-RI-LS-TAS, IVT-RF-TS-TAS, IVT-IR-TS-TAS, SPL-TCL-NHZ, AVT-IR-TS-TAS (NWPZ), MABB/NIL-IR-TS(NWPZ) BARLEY AVT-MB-IR-TS (NWPZ) AVT-FB (NWPZ) | All the trials were nicely conducted at all the centres |
| IARI, RS, Shimla | WHEAT AVT-IR-TS-TAS, AVT-RF-TS-TAS, AVT-RI-LS-TAS, AVT-RF-ES-TAS, IVT-RF-TS-TAS, IVT-IR-TS-TAS BARLEY AVT-RF-Dual Purpose, AVT-RF-Grain | |
| HAREC, Bajaura | WHEAT AVT-RF-TS-TAS, AVT-RI-LS-TAS, AVT-RF-ES-TAS, IVT-IR-TS-TAS, SPL-TCL-NHZ BARLEY AVT-RF-Dual Purpose, AVT-RF-Grain | |
| RSS, Katrain | BARLEY AVT-RF-Grain | |

Trials not conducted:

| Centre | Trial | Remark |
|------------------|---------------|---|
| KVK, Sundernagar | AVT-RI-LS-TAS | The Zonal Coordinator was intimated regarding the non-conduct of trial. |

Trials rejected by monitoring team: NIL

Entries showing promising performance in breeding trials:

| Trial | Entry |
|----------------------|-----------------------------------|
| Wheat | |
| AVT-RF-ES-TAS | NH-ES-05, 06 |
| AVT-RF-TS-TAS | NH-TS-04, 06 |
| AVT-IR-TS-TAS | NH-TS-04, 06 |
| AVT-RI-LS-TAS | NH-LS-01, 06, 10 |
| IVT-RF-TS-TAS | NH-IVT-04, 11, 15, 20 |
| IVT-IR-TS-TAS | NH-IVT-02, 08, 09, 15, 20, 21, 23 |
| AVT-IR-TS-TAS (NWPZ) | NW-TS-12, 14 |

| | |
|---------------------|----------------------------|
| Barley | |
| AVT - Grain | NHGBZ-02, 05, 09,13,16, 21 |
| AVT - Dual | NHDBZ-02, 11, 17 |
| AVT-MB-IR-TS (NWPZ) | AVT-MB- 05,06 |
| AVT-FB (NWPZ) | AVT-FB-04 |

Entries exhibiting higher diseases/insect infestation:

| Trial | Entry (Disease Response) |
|----------------------------|--|
| Wheat | |
| AVT-RF-ES -TAS | 01(YR-60S), 03(YR-60S), 12(YR-60S) |
| AVT- RF -TS-TAS | 01(YR-40S) |
| AVT- IR- TS -TAS | 01(YR-30S; BR-100S)* |
| AVT-RI-LS-TAS | 05 (YR-40S), 07 (YR- 40S), 11 (YR- 30S), 12 (YR- 60S), 14 (YR- 80S) |
| IVT -RF -TS-TAS | 02(PM-8; YR-60S), 09(PM-7), 15(PM-7) |
| IVT -IR- TS-TAS | 03 (YR-30S), 05 (YR-40S), 10 (YR-40S) |
| *SPL-MABB/NIL-IR-TS (NWPZ) | 01 (YR-30S), 02 (YR-50S), 06 (YR-60S) |
| Barley | No severe incidence of yellow rust. |

* Data supplied by the cooperator at Dhaulakuan.

Report on Agronomical Trials:

| Trial | Centre | Remarks |
|------------------------------------|------------------|--|
| WHEAT AGRONOMY EXPERIMENT | | |
| RF-ES-TAS-LON & RF-TS-TAS-LON | HAREC, Bajaura | Response of N ₃ (80 kg N /ha) was quite visible in both early and timely sown rainfed trials. |
| RF-ES-TAS-LON & RF-TS-TAS-LON | IARI, RS, Shimla | |
| IR-TS-TAS-DOS | HAREC, Bajaura | The performance of different genotypes under Timely sown conditions was better compared to late sowing (D ₁ & D ₂). |
| IR-TS-TAS-DOS | IARI, RS, Shimla | |
| SPL-1 | HAREC, Bajaura | The response of nitrogen application in Zero Tillage and Conventional Tillage through different precision techniques was almost similar in all the treatments. Zero tillage plots appeared better than conventional tillage. |
| SPL-4 | HAREC, Bajaura | Among the different dates of sowing D ₁ (25 th Oct.) was found to be better than later dates of sowing. |
| BARLEY AGRONOMY EXPERIMENTS | | |
| RF - TS - NHZ (Dual Purpose) | HAREC, Bajaura | Response of N ₃ (80 kg N /ha) was quite visible. |
| RF - TS - NHZ (Dual Purpose) | IARI, RS, Shimla | |
| SPL-2 | HAREC, Bajaura | Among the different dates of sowing the D1 (25 th Oct. to 09 th Nov.) was found to be better compared to later dates of sowings. |
| SPL-8 | HAREC, Bajaura | The response of phosphorus (40 kg/ha) and Potassium (40kg /ha) was visible compared to no application of P & K. |
| SPL-10 | HAREC, Bajaura | The application of Pinoxaden+ Metsulfuron (T4) and Isoproturon+ Metsulfuron (T9) herbicides completely controlled both broad and narrow leaf weeds. |

Report on Pathological Nurseries:

| Nursery | Centre | Remark |
|--|-------------------|--|
| WHEAT IPPSN, PPSN, KBSN, PMSN, MDSN, SAARC , WDMN | HAREC, Dhaulakuan | All nurseries were conducted successfully and disease development was good. However, Powdery Mildew development was negligible at Bajaura. |
| WHEAT PMSN, PPSN, WDMN, HBSN BARLEY IBSN, NBDSN, EBDSN, BCU, RV | HAREC, Bajaura | |

Report on Physiology Trials MLHT-1 & 2: NIL

Entries recommended for purification:

| Trial | Entries | Remark |
|---------------------|---------------------|-----------------------------------|
| Wheat | | |
| AVT-RF-ES –TAS | NH-ES-11 & 13 | Off- type/ mechanical mixture |
| AVT-RI-LS-TAS | NH-LS-11 | Off- type/ mechanical mixture |
| IVT –IR/RF –TS- TAS | NH-IVT- 07, 10 & 16 | Off- type/ mechanical mixture |
| SPL-TCL | SPL-TCL- 06 | Off- type/ mechanical mixture |
| Barley | | |
| AVT – Grain | NHGBZ-10, 12 & 20 | Off- type/ mechanical mixture |
| AVT – Dual | NHDBZ-03, 14 | A few off types/ pigmented spikes |

N.B. In SPL- MABB (NWPZ) trial, entries 02, 03, 05 & 07 showed typical asynchrony in maturity

Entries recommended to be dropped from further testing:

| Trial | Entries | Remark |
|---------------------------|-----------|---|
| IVT- IR –TS-TAS | NH-IVT-16 | Segregation for height, spike colour and attitude |
| AVT- RF- TS- Dual Purpose | NHDBZ-05 | Segregation for spike waxiness |

Special comments, if any

- The crop was already matured at Dhaulakuan at the time of monitoring. Therefore disease data recorded by the cooperator was included in the report. It was felt by the monitoring team that monitoring at Dhaulakuan centre should be done two weeks earlier than the normal NHZ monitoring.

Signature of the monitoring team

Dr Pramod Prasad
DWR, RS, Shimla

Dr. Vikas Gupta
DWR, Karnal

Dr. Gurudev Singh
CSKHPKV, HAREC,
Bajaura

Dr. (Mrs) Vijay Rana,
CSKHPKV, RWRC,
Malan

Proforma for Zonal Monitoring Report

Zone:

Period of visit

Name of team members:

| Name | Centre |
|----------------------|-----------------------------------|
| Dr Lakshmi Kant | VPKAS (ICAR) Almora, Uttarakhand |
| Dr Sanjay Kumar Jain | VPKAS (ICAR), Almora, Uttarakhand |
| Dr Birendra Prasad | GBPUA&T Pantnagar |

Centres visited:

| Centre | Date |
|---|----------|
| GBPUA&T, Regional Research Station, Majhera | 16.04.14 |
| VPKAS (ICAR), Experimental Farm, Hawalbagh | 16.04.14 |

Trials allocated:

| Centre | Trial | Remark |
|---|---------------------------|--|
| Wheat | | |
| GBPUA&T, Regional Research Station, Majhera | AVT-TS-RF | Replications were laid across the gradient so all the replications were having poor as well as good soil. The crop expression was not proper. They were advised to change the site of leave some border area and plan replications along the gradient. |
| | AVT-LS-RI | Trial was very good |
| VPKAS (ICAR), Experimental Farm, Hawalbagh | AVT-ES-RF | Trial was very good |
| | AVT-TS-RF | Trial was very good |
| | AVT-TS-IR | Trial was Excellent |
| | IVT-TS-RF | Trial was very good |
| | IVT-TS-IR | Trial was Excellent |
| AV-LS-RI | | Trial was very good |
| | | |
| Barley | | |
| GBPUA&T, Regional Research Station, Majhera | AVT-TS-RF (Grain purpose) | Trial was very good |
| | AVT-TS-RF (Dual purpose) | Trial was very good |
| VPKAS (ICAR), Experimental Farm, Hawalbagh | AVT-TS-RF (Grain purpose) | Trial was very good |
| | AVT-TS-RF (Dual purpose) | Trial was very good |

Trials not conducted:

| Centre | Trial | Remark |
|--------|-------|--------|
| | NIL | |

Trials rejected by monitoring team:

| Centre | Trial | Remark |
|--------|-------|--------|
| | NIL | |

Entries showing promising performance in breeding trials:

| Trial | Entry |
|--|---|
| Wheat | |
| GBPUA&T, Regional Research Station, Majhera | AVT-LS-RI: NHLSZ 1304, NHLSZ 1306 |
| VPKAS (ICAR), Experimental Farm Hawalbagh | AVT-ES-RF: NHESZ 1304, NHESZ 1306, NHESZ 1307, NHESZ 1308, NHESZ 1310, NHESZ 1311, NHESZ 1312, NHESZ 1313 AVT-TS-RF: NHTSZ 1301, NHTSZ 1306 AVT-TS-IR: NHTSZ 1301, NHTSZ 1303, NHTSZ 1304, NHTSZ 1306 IVT-TS-RF: NHIZ 1301, NHIZ 1303, NHIZ 1304, NHIZ 1306, NHIZ 1307, NHIZ 1308, NHIZ 1313, NHIZ 1314, NHIZ 1315, NHIZ 1320, NHIZ 1322 IVT-TS-IR: NHIZ 1301, NHIZ 1304, NHIZ 1309, NHIZ 1313, NHIZ 1315, NHIZ 1320, NHIZ 1322 AVT-LS-RI: NHLSZ 1301, NHLSZ 1306, NHLSZ 1307, NHLSZ 1309, NHLSZ 1313 |
| Barley | |
| GBPUA&T, Regional Research Station, Majhera | AVT-TS-RF (Grain): NHGBZ 1312, NHGBZ 1314, NHGBZ 1317, NHGBZ 1320, NHGBZ 1321 AVT-TS-RF (Dual): NHDBZ 1303, NHDBZ 1312, NHDBZ 1317 |
| VPKAS (ICAR), Experimental Farm Hawalbagh | AVT-TS-RF (Grain): NHGBZ 1312, NHGBZ 1314, NHGBZ 1320 AVT-TS-RF (Dual): NHDBZ 1305, NHDBZ 1310, NHDBZ 1315 |

Performance of check varieties: Report on off types, mixture, etc.

| Centre | Variety |
|--------|---------|
| | N.A. |

Entries exhibiting higher diseases/insect infestation:

| Wheat | Entry | Disease response |
|------------------|------------|------------------|
| Hawalbagh | | |
| AVT-ES-RF | NHESZ 1301 | YR-20S |
| | NHESZ 1312 | YR-40S |
| IVT-TS-RF | NHIZ 1305 | YR-40S |
| IVT-TS-IR | NHIZ 1305 | YR-40S |
| AVT-LS-RI | NHLSZ 1314 | YR-20S |
| Barley | | |
| AVT-TS-RF (Dual) | NHDBZ 1303 | YR-40S |
| | NHDBZ-1312 | YR-20S |

Report on Agronomical Trials:

| Trial | Centre | Remark |
|-------|--|--------|
| | All Trials were conducted very well at Hawalbagh | |

Entries recommended for purification:

| Trial | Entries | Remark |
|-------------------|------------|--|
| Wheat | | |
| AVT-ES-RF | NHESZ 1301 | Waxy vs non waxy ears, few awnless plants |
| | NHESZ 1305 | Variation for ear shape, Tall vs dwarf plant |
| IVT-TS-RF | NHIZ 1302 | Waxy vs non waxy ears |
| | NHIZ 1324 | Tall vs dwarf plants |
| AVT-LS-RI | NHLSZ 1314 | Tall vs dwarf plants |
| Barley | | |
| AVT-TS-RF (Grain) | NHGBZ 1306 | Early vs Late plants |
| | NHGBZ 1309 | Early vs Late plants |
| | NHGBZ 1312 | Tall vs dwarf plants |
| AVT-TS-RF (Dual) | NHDBZ 1306 | Tall vs dwarf plants |
| | NHDBZ 1308 | Pigmented vs non pigmented ears |

Entries recommended to be dropped from further testing:

| Trial | Entries | Remark |
|-------------------|------------|--|
| Wheat | | |
| IVT-TS-RF | NHIZ 1316 | Mixture of waxy and non-waxy ear plants |
| Barley | | |
| AVT-TS-RF (Grain) | NHGBZ 1303 | Mixture of tall vs dwarf, droopy vs erect |
| AVT-TS-RF (Dual) | NHDBZ 1313 | Mixture of pigmented vs non pigmented plants |

Special comments, if any

NIL

Signature of the monitoring team


(BIRENDRA PRASAD)


(SANJAY KUMAR JAIN)


(LAKSHMI KANT)