



प्रगति प्रतिवेदन
Progress Report
2017-18

अखिल भारतीय समन्वित गेहूँ एवं जौ अनुसंधान परियोजना
AICRP on Wheat and Barley

उन्नत तकनीकियों द्वारा किसानों की अधिक आय
Improved Technologies for Higher Income of Farmers

गुणवत्ता
QUALITY

भा.कृ.अनु.प. - भारतीय गेहूँ एवं जौ अनुसंधान संस्थान, करनाल
ICAR – Indian Institute of Wheat and Barley Research, Karnal

For official use only

All India Coordinated Research Project on Wheat and Barley

**PROGRESS REPORT
2017-18**

Vol. IV

WHEAT QUALITY

**Sewa Ram
Sneh Narwal
O.P. Gupta
Vanita Pandey
G.P. Singh**



**ICAR- INDIAN INSTITUTE OF WHEAT & BARLEY RESEARCH
P.O. BOX - 158, AGRASAIN MARG, KARNAL - 132001**



Correct Citation:

Anonymous 2018. Progress Report of All India Coordinated Research Project on Wheat and Barley 2017-18, Vol. IV, Wheat Quality. Eds: Sewa Ram, Sneh Narwal, O.P. Gupta, Vanita Pandey and G.P Singh. Indian Institute of Wheat and Barley Research Karnal, India. P-.

**NO PART OF THIS REPORT SHOULD BE REPRODUCED
WITHOUT PRIOR PERMISSION OF THE PROJECT DIRECTOR**

Issued on the occasion of 57th All India Wheat & Barley Research Workers' Meet held at BAU, Ranchi during August 24-26, 2018.

ACKNOWLEDGEMENTS

I wish to express my deep sense of gratitude to Dr. G.P. Singh, Director, ICAR-IIWBR, Karnal for his encouragement, support and guidance in coordinating wheat quality research under AICRP on Wheat and Barley and developing the report.

The Indian Institute of Wheat & Barley Research, Karnal is highly thankful to all the cooperators who supplied the grain samples of AICRP trials in time. All concerned scientist at AICRP centres who were involved in analysing NIVT and special trial on Dicoccum, are acknowledged.

Thanks are due to Dr. Sneh Narwal, Dr. O.P. Gupta and Dr. Vanita Pandey for handling grain samples of AVTs and QCSN and; generating and analysis of data on various quality traits, HMW glutenin profile and baking tests for bread, biscuit and chapati. Thanks are due to Dr. R. Chatrath for estimating the micronutrient (Fe and Zn) content.

The help rendered by Ms. Jamna Devi, T-4 in samples preparation, recording data on protein content, hectolitre weight and chapati & biscuit preparation is greatly appreciated.

Help rendered by Sh. Deshraj (SSS) for assisting in grain handling, sample preparation and milling is appreciated.

Help rendered by SRFs Dr. Vipin Kumar Malik, Tushar Khandale and Ritu Saini for grain handling, recording data, typing and checking data is highly appreciated.

Thanks are also due to the officers and staff of the Administration, Finance, and Farm Section, particularly Sh. Madan Lal for their cooperation and support to the Wheat Quality Programme.

The help extended for reproduction of adequate number of copies and binding of this report by Dr. Ajay Verma and his team consisting of Drs. R. Sendhil, Poonam Jasrotia, Vikas Gupta, Sh. Bhim Sain, Sh. Ronak Ram is duly acknowledged.

(Sewa Ram)
PI, Quality

Number of entries tested under Advance Varietal Trials

Station	Zone	Condition	No. of entries	
			<i>T. aestivum</i>	<i>T. durum</i>
Almora	NHZ	IRTS, RILS, ESRF, TSRF	36	-
Shimla	NHZ	IRTS, RILS, ESRF, TSRF	36	-
Malan	NHZ	IRTS, RILS, ESRF, TSRF	36	-
Ludhiana	NWPZ	ITS, ILS, RITS	34	-
Hisar	NWPZ	ITS, ILS, RITS	34	-
Delhi	NWPZ	ITS, ILS, RITS	34	-
Pantnagar	NWPZ	ITS, ILS, RITS	34	-
Durgapura	NWPZ	ITS, ILS	24	-
Kanpur	NEPZ	ITS, RITS,	24	-
Pusa	NEPZ	ITS, RITS,	24	-
Sabour	NEPZ	ITS, RITS,	24	-
Vijapur	CZ	ITS, RITS	8	8
Junagarh	CZ	ITS, RITS	8	8
Powerkheda	CZ	ITS, RITS	8	8
Indore	CZ	ITS, RITS	8	8
Pune	PZ	ITS, RITS	19	11
Dharwad	PZ	ITS, RITS	19	11
Niphad	PZ	ITS, RITS	19	11

Number of entries tested in National Initial Varietal Trials

Trial	Condition	No. of entries	Zone	Station
NIVT 1A	ITS	36	NWPZ	Ludhiana, Delhi, Hisar, Pantnagar, Durgapura
			NEPZ	Pusa, Sabour, Varanasi, Kanpur
NIVT 1B	ITS	36	NWPZ	Ludhiana, Delhi, Hisar, Durgapura, Pantnagar
			NEPZ	Sabour, Pusa, Kanpur
NIVT 2	ITS	36	CZ	Indore, Vijapur, Junagarh, Powarkheda
			PZ	Pune, Dharwad, Niphad, Nippani, Ugar
NIVT 3A	ILS	36	NWPZ	Ludhiana, Hisar, Pantanagar, Delhi, Durgapura
			NEPZ	Samastipur, Sabour, Kanpur
NIVT 3B	ILS	25	CZ	Indore, Vijapur, Junagarh, Powarkheda
			PZ	Pune, Dharwad, Niphad
NIVT 4	ITS	25	CZ	Indore, Vijapur, Junagarh, Powarkheda
			PZ	Dharwad, Niphad, Pune, Nippani
NIVT 5A	RITS	25	NWPZ	Ludhiana, Delhi, Hisar
			NEPZ	Kanpur, Pusa
NIVT 5B	RITS	25	CZ	P ^o Kheda, Indore, Vijapur
			PZ	Dharwad, Niphad, Pune, Bagolkot
IVT	RFTS	16	NHZ	Almora, Shimla, Malan

Number of entries tested in Special Trials

<i>T.dicoccum</i>	ITS	6	PZ	Arabhazi, Dharwad, Pune, Ugar, Kalloli, Mudhol
<i>Very Late Sown</i>		22	NWPZ	Ludhiana, Delhi, Hisar, Pantnagar
			NEPZ	Pusa, Sabour

Number of entries tested in Nurseries

QCSN	ITS	52	NWPZ	Ludhiana, Durgapura, Delhi, Pantnagar, Karnal, Hisar
			NEPZ	Kanpur, Sabour
			CZ	Junagarh, Vijapur, Indore, P ^o Kheda
			PZ	Pune, Dharwad, Niphad

CONTENTS

Page
No.

SECTION A

ADVANCE VARIETAL TRIALS

1

Sewa Ram, Sneh Narwal, O.P. Gupta, Vanita Pandey and G.P. Singh

HMW glutenin subunits

Vanita Pandey, Sneh Narwal, O.P. Gupta and Sewa Ram

SECTION B

NATIONAL INITIAL VARIETAL TRIALS

48

- | | |
|-------------------|--|
| i. NIVT 1A | : Harinderjeet Kaur |
| ii. NIVT 1B | : Nitin Garg, and Hoshiar Singh |
| iii. NIVT 2 | : Dr. A.K. Patel |
| iv. NIVT 3A | : Anil Kumar and J.P. Jaiswal |
| v. NIVT 3B | : Anil Kumar and J.P. Jaiswal |
| vi. NIVT 4 | : R.S. Gaikwad |
| vii. NIVT 5A | : I.S. Panwar |
| viii. NIVT 5B | : Suma Biradar |
| ix. IVTs from NHZ | : O.P. Gupta, Sneh Narwal, Vanita Pandey Sewa Ram, |

SECTION C

SPECIAL TRIALS

95

- | | |
|-----------------------|--|
| i. <i>T. dicoccum</i> | : Suma Biradar |
| ii. Very Late Sown | : Sneh Narwal, O.P. Gupta, Vanita Pandey Sewa Ram, |

SECTION D

NURSERIES

103

Quality Component Screening Nursery

Sneh Narwal, Vanita Pandey , O.P. Gupta, Gopalareddy K.. and Sewa Ram

SECTION E

Wheat Product Evaluation

117

Chapati, Bread, Biscuit and Gluten (AVT)

Sneh Narwal, O.P. Gupta, Vanita Pandey and Sewa Ram

RESEARCH HIGHLIGHTS

126

SECTION A

ADVANCE VARIETAL TRIALS

- i. Grain Appearance**
- ii. Hectolitre Weight**
- iii. Protein Content**
- iv. Grain Hardness Index**
- v. Sedimentation Value**
- vi. Yellow Pigment Content**
- vii. Fe and Zn content**
- viii. High Molecular Weight Glutenin Subunits**

ADVANCE VARIETAL TRIALS

The traits recorded were Grain Appearance Score, Hectolitre Weight, Grain Protein Content (on 14 % moisture basis), Grain Hardness Index, Sedimentation Value, phenol test and Fe and Zn content in both bread wheat and durum wheat and yellow pigment and yellow berry were additional traits in durum wheat.

The *Triticum aestivum* entries were tested under Irrigated Timely Sown, Rainfed Timely Sown, Rainfed Early sown (RES) and Restricted Irrigation Late Sown (RILS) conditions of Northern Hill Zone (NHZ) and data is given in tables 1-8.

In North Western Plains Zone (NWPZ), the entries were tested under Irrigated Timely Sown (ITS), Irrigated Late Sown (ILS) and Restricted Irrigated Timely Sown (RITS) conditions and data is given in table 9-16.

The trial was conducted under two conditions namely Irrigated Timely Sown (ITS) and Restricted Irrigated Timely Sown (RITS) of North Eastern Plains Zone (NEPZ) (Tables 17-24).

The entries were tested under ITS and RITS conditions of Central Zone (Tables 25-33) and Peninsular Zone (Tables 34-42) under both CZ and PZ both bread and durum wheat entries were tested.

Remark: Durgapura, Sabour and Dharwad provided poor quality samples.
Grain hardness was measured from one centre of each zone.

High Molecular Weight Glutenin subunits (HMWGS) of *T. aestivum* (Table 43-49)

One thirty nine (139) AVT and IVT entries including checks representing all zones were evaluated for HMWS composition. Subunit 5+10 was present in 70.5 % of the total entries whereas 2+12 in 29.49 % entries, indicating greater frequency of 5+10 subunits in all the zones. Subunits 1, 2* and N were present in 20.86 %, 38.84 % and 40.28 % of the total entries, respectively. The subunits 7, 7+8, 7+9, 17+18, 20 and 13+16 were present in 35.25 %, 9.35 %, 12.9 %, 40.28 %, 0.71 % and 1.43 %, respectively. Subunit 17+18 was present in greater frequency across all zones. The percent entries having Glu-1 score 4, 5, 6, 7, 8, 9 and 10 were 4.31, 1.43, 23.02, 7.91, 20.86, 5.03 and 23.02, respectively.

Table 1: Grain appearance score (Max-10) of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Almora	Shimla	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	6.0	5.5	6.0	5.8
2	HS 562 (C)	1707	6.0	5.0	5.0	5.3
3	HPW 349 (C)	1701	5.5	5.0	4.5	5.0
4	VL 907 (C)	1703	4.5	5.0	4.5	4.7
5	HS 634	1702	5.0	5.0	4.5	4.8
6	HPW 441	1705	5.5	5.0	4.5	5.0
7	HPW 442	1706	5.5	4.5	5.0	5.0
	Mean		5.4	5.0	4.9	5.1
Rainfed, Timely Sown						
1	HS 507 (C)	1704	5.0	4.0	5.0	4.7
2	HS 562 (C)	1707	5.5	4.5	5.5	5.2
3	HPW 349 (C)	1701	4.5	4.0	4.5	4.3
4	VL 907 (C)	1703	5.0	4.0	4.5	4.5
5	HS 634	1702	5.0	4.0	4.0	4.3
6	HPW 441	1705	5.5	4.0	5.0	4.8
7	HPW 442	1706	5.0	4.5	5.0	4.8
	Mean		5.1	4.1	4.8	4.7
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	4.5	5.0	4.5	4.7
2	VL 892 (C)	1706	5.0	5.5	6.0	5.5
3	HS 660	1708	5.5	5.5	5.0	5.3
4	HS 661	1707	3.5	5.0	4.5	4.3
5	HS 662	1704	6.0	5.5	6.0	5.8
6	HPW 459	1710	6.5	5.0	5.5	5.7
7	VL 3016	1703	5.0	5.0	6.0	5.3
8	VL 3017	1701	6.5	5.5	5.5	5.8
9	VL 3018	1709	5.0	5.0	5.0	5.0
10	UP 3017	1702	6.0	6.0	5.5	5.8
	Mean		5.4	5.3	5.4	5.3
Rainfed, Early Sown						
1	HS 542 (C)	1701	5.0	5.0	4.5	4.8
2	VL 829 (C)	1711	4.0	3.5	5.0	4.2
3	HPW 251 (C)	1712	5.0	4.5	5.5	5.0
4	HS 664	1706	4.5	3.5	5.5	4.5
5	HS 665	1703	4.5	4.5	5.5	4.8
6	HS 666	1702	4.0	4.0	6.0	4.7
7	HPW 450	1705	4.0	3.5	4.5	4.0
8	HPW 451	1707	5.0	5.0	4.5	4.8
9	VL 1014	1710	4.5	4.5	4.5	4.5
10	VL 1015	1704	5.0	4.0	6.5	5.2
11	VL 1016	1708	5.5	4.0	5.5	5.0
12	UP 3016	1709	5.5	4.0	5.5	5.0
	Mean		4.7	4.2	5.3	4.7

Table 2: Hectolitre weight (Kg/hl) of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Almora	Shimla	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	81.1	81.1	82.4	81.5
2	HS 562 (C)	1707	81.2	82.2	82.7	82.0
3	HPW 349 (C)	1701	81.7	82.8	82.0	82.2
4	VL 907 (C)	1703	80.1	80.0	81.4	80.5
5	HS 634	1702	79.5	78.5	78.7	78.9
6	HPW 441	1705	81.3	81.4	81.6	81.4
7	HPW 442	1706	81.6	81.2	81.6	81.5
	Mean		80.9	81.0	81.5	81.1
Rainfed, Timely Sown						
1	HS 507 (C)	1704	78.4	72.0	81.8	77.4
2	HS 562 (C)	1707	79.4	75.0	80.9	78.4
3	HPW 349 (C)	1701	79.4	72.7	79.9	77.3
4	VL 907 (C)	1703	77.1	72.0	79.1	76.1
5	HS 634	1702	76.5	68.4	76.5	73.8
6	HPW 441	1705	78.9	72.0	81.0	77.3
7	HPW 442	1706	78.4	76.0	79.3	77.9
	Mean		78.3	72.6	79.8	76.9
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	75.1	76.8	78.6	76.8
2	VL 892 (C)	1706	74.6	79.2	80.6	78.1
3	HS 660	1708	77.8	79.5	77.4	78.2
4	HS 661	1707	66.5	76.0	76.1	72.9
5	HS 662	1704	78.6	79.6	80.1	79.4
6	HPW 459	1710	76.8	80.0	78.3	78.4
7	VL 3016	1703	75.1	76.0	79.2	76.8
8	VL 3017	1701	77.3	78.2	81.3	78.9
9	VL 3018	1709	76.2	77.0	79.5	77.6
10	UP 3017	1702	80.4	80.3	80.8	80.5
	Mean		75.8	78.3	79.2	77.8
Rainfed, Early Sown						
1	HS 542 (C)	1701	82.3	76.7	82.5	80.5
2	VL 829 (C)	1711	77.1	74.6	82.3	78.0
3	HPW 251 (C)	1712	80.0	75.7	80.3	78.7
4	HS 664	1706	76.4	70.6	79.5	75.5
5	HS 665	1703	75.8	74.8	81.7	77.4
6	HS 666	1702	74.8	71.7	79.7	75.4
7	HPW 450	1705	76.8	71.5	82.0	76.8
8	HPW 451	1707	78.8	77.0	79.9	78.6
9	VL 1014	1710	78.5	74.5	82.3	78.4
10	VL 1015	1704	76.8	73.4	80.9	77.0
11	VL 1016	1708	77.4	73.6	81.0	77.3
12	UP 3016	1709	79.0	73.0	81.2	77.7
	Mean		77.8	73.9	81.1	77.6

Table 3: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Almora	Shimla	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	9.54	10.60	9.18	9.78
2	HS 562 (C)	1707	10.01	10.26	9.59	9.95
3	HPW 349 (C)	1701	9.72	10.60	9.35	9.89
4	VL 907 (C)	1703	9.52	10.90	9.19	9.87
5	HS 634	1702	9.36	10.97	9.04	9.79
6	HPW 441	1705	9.44	10.52	9.07	9.67
7	HPW 442	1706	9.27	10.75	8.93	9.65
	Mean		9.55	10.66	9.19	9.80
Rainfed, Timely Sown						
1	HS 507 (C)	1704	8.92	14.89	8.73	10.85
2	HS 562 (C)	1707	8.99	13.99	9.95	10.98
3	HPW 349 (C)	1701	9.24	14.74	10.19	11.39
4	VL 907 (C)	1703	9.53	14.37	9.86	11.25
5	HS 634	1702	9.16	14.47	9.67	11.10
6	HPW 441	1705	9.61	13.85	9.57	11.01
7	HPW 442	1706	10.34	14.17	10.36	11.62
	Mean		9.40	14.36	9.76	11.17
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	9.91	12.64	12.37	11.64
2	VL 892 (C)	1706	10.73	13.04	12.20	11.99
3	HS 660	1708	10.51	12.60	14.11	12.41
4	HS 661	1707	11.72	12.67	11.19	11.86
5	HS 662	1704	11.57	13.47	11.76	12.27
6	HPW 459	1710	11.27	13.49	13.94	12.90
7	VL 3016	1703	11.22	13.21	11.88	12.10
8	VL 3017	1701	11.05	12.96	12.40	12.14
9	VL 3018	1709	10.37	14.07	10.70	11.72
10	UP 3017	1702	11.88	14.79	13.21	13.29
	Mean		11.02	13.29	12.38	12.23
Rainfed, Early Sown						
1	HS 542 (C)	1701	9.21	13.58	8.69	10.49
2	VL 829 (C)	1711	8.09	14.95	8.43	10.49
3	HPW 251 (C)	1712	7.73	14.92	10.50	11.05
4	HS 664	1706	7.85	15.20	8.47	10.51
5	HS 665	1703	9.17	15.39	9.47	11.34
6	HS 666	1702	7.87	14.26	9.76	10.63
7	HPW 450	1705	8.07	14.90	7.31	10.09
8	HPW 451	1707	9.91	15.87	9.16	11.65
9	VL 1014	1710	8.33	13.82	9.35	10.50
10	VL 1015	1704	8.97	15.57	9.47	11.34
11	VL 1016	1708	9.27	15.82	10.20	11.77
12	UP 3016	1709	8.10	15.94	11.49	11.84
	Mean		8.55	15.02	9.36	10.97

Table 4: Sedimentation value (ml) of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Almora	Shimla	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	49.0	52.5	48.0	49.8
2	HS 562 (C)	1707	55.4	61.1	56.6	57.7
3	HPW 349 (C)	1701	58.0	59.8	53.3	57.1
4	VL 907 (C)	1703	46.8	47.2	41.1	45.0
5	HS 634	1702	49.2	54.5	50.9	51.5
6	HPW 441	1705	59.2	63.1	57.4	59.9
7	HPW 442	1706	64.7	67.2	54.9	62.3
	Mean		54.63	57.92	51.74	54.8
Rainfed, Timely Sown						
1	HS 507 (C)	1704	47.4	59.4	46.8	51.2
2	HS 562 (C)	1707	60.7	67.2	60.7	62.8
3	HPW 349 (C)	1701	61.1	69.7	55.4	62.0
4	VL 907 (C)	1703	47.4	57.4	45.1	50.0
5	HS 634	1702	50.7	57.8	52.1	53.5
6	HPW 441	1705	62.5	67.2	57.4	62.4
7	HPW 442	1706	68.4	66.4	56.2	63.7
	Mean		56.87	63.58	53.37	57.94
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	43.5	52.5	48.0	48.0
2	VL 892 (C)	1706	52.5	55.8	53.3	53.9
3	HS 660	1708	64.1	61.5	58.6	61.4
4	HS 661	1707	48.8	48.8	38.6	45.4
5	HS 662	1704	51.7	53.3	46.8	50.6
6	HPW 459	1710	62.9	53.7	51.3	56.0
7	VL 3016	1703	63.7	65.6	57.0	62.1
8	VL 3017	1701	56.2	62.3	60.7	59.7
9	VL 3018	1709	63.7	63.5	57.8	61.7
10	UP 3017	1702	63.3	61.1	61.1	61.8
	Mean		57.05	57.81	53.31	56.06
Rainfed, Early Sown						
1	HS 542 (C)	1701	54.9	61.1	48.4	54.8
2	VL 829 (C)	1711	43.7	51.7	37.8	44.4
3	HPW 251 (C)	1712	43.5	48.0	44.3	45.3
4	HS 664	1706	50.9	63.7	46.4	53.6
5	HS 665	1703	61.5	63.1	63.5	62.7
6	HS 666	1702	54.1	63.5	59.4	59.0
7	HPW 450	1705	51.1	65.2	49.2	55.2
8	HPW 451	1707	65.6	63.4	61.8	63.6
9	VL 1014	1710	45.6	61.1	45.1	50.6
10	VL 1015	1704	53.3	54.9	46.8	51.7
11	VL 1016	1708	54.7	59.0	51.3	55.0
12	UP 3016	1709	46.6	54.9	52.5	51.3
	Mean		52.12	59.14	50.55	53.94

Table 5: Phenol test (Max-10) of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Almora	Shimla	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	4.5	5.5	4.0	4.7
2	HS 562 (C)	1707	6.0	6.0	6.0	6.0
3	HPW 349 (C)	1701	5.0	6.0	4.5	5.2
4	VL 907 (C)	1703	6.0	5.5	5.5	5.7
5	HS 634	1702	6.0	6.5	6.0	6.2
6	HPW 441	1705	7.0	5.5	4.5	5.7
7	HPW 442	1706	6.0	5.5	5.0	5.5
	Mean		5.8	5.8	5.1	5.5
Rainfed, Timely Sown						
1	HS 507 (C)	1704	4.5	5.5	4.5	4.8
2	HS 562 (C)	1707	5.5	5.5	5.5	5.5
3	HPW 349 (C)	1701	6.0	5.5	5.5	5.7
4	VL 907 (C)	1703	6.0	6.0	5.5	5.8
5	HS 634	1702	6.0	5.5	6.0	5.8
6	HPW 441	1705	5.5	4.5	5.5	5.2
7	HPW 442	1706	6.0	4.0	5.0	5.0
	Mean		5.6	5.2	5.4	5.4
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	5.5	6.0	5.0	5.5
2	VL 892 (C)	1706	5.0	6.0	6.0	5.7
3	HS 660	1708	5.5	5.5	5.5	5.5
4	HS 661	1707	7.0	5.5	5.5	6.0
5	HS 662	1704	6.0	5.5	4.5	5.3
6	HPW 459	1710	6.5	5.5	5.5	5.8
7	VL 3016	1703	5.0	5.5	4.5	5.0
8	VL 3017	1701	6.0	6.0	6.0	6.0
9	VL 3018	1709	5.5	5.5	5.5	5.5
10	UP 3017	1702	7.0	6.0	4.0	5.7
	Mean		5.9	5.7	5.2	5.6
Rainfed, Early Sown						
1	HS 542 (C)	1701	2.0	2.0	2.0	2.0
2	VL 829 (C)	1711	6.0	5.0	5.5	5.5
3	HPW 251 (C)	1712	2.5	2.0	2.5	2.3
4	HS 664	1706	6.0	5.0	5.5	5.5
5	HS 665	1703	2.5	2.5	3.0	2.7
6	HS 666	1702	6.5	6.0	5.5	6.0
7	HPW 450	1705	6.0	5.5	5.0	5.5
8	HPW 451	1707	5.0	5.0	5.5	5.2
9	VL 1014	1710	4.0	4.0	3.0	3.7
10	VL 1015	1704	7.0	6.0	5.5	6.2
11	VL 1016	1708	7.0	5.0	5.5	5.8
12	UP 3016	1709	7.5	6.0	6.0	6.5
	Mean		5.2	4.5	4.5	4.7

Table 6: Hardness index of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Almora	Shimla	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	81.0			81.0
2	HS 562 (C)	1707	85.0			85.0
3	HPW 349 (C)	1701	73.0			73.0
4	VL 907 (C)	1703	75.0			75.0
5	HS 634	1702	61.0			61.0
6	HPW 441	1705	85.0			85.0
7	HPW 442	1706	91.0			91.0
	Mean		78.7			78.7
Rainfed, Timely Sown						
1	HS 507 (C)	1704	77.0			77.0
2	HS 562 (C)	1707	87.0			87.0
3	HPW 349 (C)	1701	64.0			64.0
4	VL 907 (C)	1703	69.0			69.0
5	HS 634	1702	50.0			50.0
6	HPW 441	1705	85.0			85.0
7	HPW 442	1706	85.0			85.0
	Mean		73.86			73.86
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	29.0			29.0
2	VL 892 (C)	1706	72.0			72.0
3	HS 660	1708	83.0			83.0
4	HS 661	1707	84.0			84.0
5	HS 662	1704	82.0			82.0
6	HPW 459	1710	69.0			69.0
7	VL 3016	1703	51.0			51.0
8	VL 3017	1701	81.0			81.0
9	VL 3018	1709	68.0			68.0
10	UP 3017	1702	83.0			83.0
	Mean		70.20			70.20
Rainfed, Early Sown						
1	HS 542 (C)	1701	72.0			72.0
2	VL 829 (C)	1711	78.0			78.0
3	HPW 251 (C)	1712	77.0			77.0
4	HS 664	1706	60.0			60.0
5	HS 665	1703	67.0			67.0
6	HS 666	1702	74.0			74.0
7	HPW 450	1705	70.0			70.0
8	HPW 451	1707	80.0			80.0
9	VL 1014	1710	61.0			61.0
10	VL 1015	1704	73.0			73.0
11	VL 1016	1708	59.0			59.0
12	UP 3016	1709	87.0			87.0
	Mean		71.50			71.50

Table 7: Grain Fe content (ppm) of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Shimla	Almora	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	36.6	38.8	38.6	38.0
2	HS 562 (C)	1707	39.5	40.7	43.2	41.1
3	HPW 349 (C)	1701	37.9	37.1	37.1	37.4
4	VL 907 (C)	1703	36.8	39.4	42.2	39.5
5	HS 634	1702	46.0	39.8	48.7	44.8
6	HPW 441	1705	38.2	39.3	41.9	39.8
7	HPW 442	1706	40.9	43.6	44.2	42.9
	Mean		39.4	39.8	42.3	40.5
Rainfed, Timely Sown						
1	HS 507 (C)	1704	45.2	42.2	39.4	42.3
2	HS 562 (C)	1707	42.3	45.1	43.2	43.5
3	HPW 349 (C)	1701	41.0	37.4	41.2	39.9
4	VL 907 (C)	1703	46.6	41.3	37.0	41.6
5	HS 634	1702	46.3	43.4	43.6	44.4
6	HPW 441	1705	41.4	42.3	41.4	41.7
7	HPW 442	1706	44.7	40.0	43.1	42.6
	Mean		43.9	41.7	41.3	42.3
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	46.2	40.2	50.2	45.5
2	VL 892 (C)	1706	46.8	50.2	49.9	49.0
3	HS 660	1708	41.9	49.9	48.5	46.8
4	HS 661	1707	43.8	44.2	47.7	45.2
5	HS 662	1704	43.3	42.3	47.5	44.4
6	HPW 459	1710	48.3	51.3	49.6	49.7
7	VL 3016	1703	50.9	49.6	43.8	48.1
8	VL 3017	1701	46.4	46.9	46.0	46.4
9	VL 3018	1709	44.8	35.8	52.4	44.3
10	UP 3017	1702	57.7	45.4	54.1	52.4
	Mean		47.0	45.6	49.0	47.2
Rainfed, Early Sown						
1	HS 542 (C)	1701	36.7	36.4	44.7	39.3
2	VL 829 (C)	1711	32.5	35.4	44.4	37.4
3	HPW 251 (C)	1712	40.7	42.1	47.3	43.4
4	HS 664	1706	31.8	38.5	44.7	38.3
5	HS 665	1703	43.9	41.2	50.2	45.1
6	HS 666	1702	36.3	45.6	46.4	42.8
7	HPW 450	1705	41.4	37.6	43.4	40.8
8	HPW 451	1707	38.1	39.6	57.2	45.0
9	VL 1014	1710	36.0	36.6	47.0	39.9
10	VL 1015	1704	31.0	38.2	49.3	39.5
11	VL 1016	1708	34.9	43.2	51.1	43.1
12	UP 3016	1709	42.2	43.7	49.1	45.0
	Mean		37.1	39.8	47.9	41.6

Table 8: Grain Zn content (ppm) of *T. aestivum* genotypes in North Hill Zone (NHZ) AVTs

S. No.	Variety	Code	Malan	Shimla	Almora	Mean
Irrigated, Timely Sown						
1	HS 507 (C)	1704	22.8	31.1	26.8	26.9
2	HS 562 (C)	1707	20.2	33.7	26.9	26.9
3	HPW 349 (C)	1701	23.4	30.2	25.1	26.2
4	VL 907 (C)	1703	22.9	30.2	30.2	27.8
5	HS 634	1702	25.8	33.5	32.8	30.7
6	HPW 441	1705	18.3	26.5	27.5	24.1
7	HPW 442	1706	24.4	36.5	29.5	30.1
	Mean		22.5	31.7	28.4	27.5
Rainfed, Timely Sown						
1	HS 507 (C)	1704	22.7	32.9	48.8	34.8
2	HS 562 (C)	1707	25.5	34.7	49.6	36.6
3	HPW 349 (C)	1701	24.7	35.8	57.1	39.2
4	VL 907 (C)	1703	25.7	33.4	46.6	35.2
5	HS 634	1702	23.9	41.7	55.5	40.4
6	HPW 441	1705	21.3	32.8	44.1	32.7
7	HPW 442	1706	29.0	34.6	52.8	38.8
	Mean		24.7	35.1	50.6	36.8
Restricted Irrigation, Late Sown						
1	HS 490 (C)	1705	23.9	38.7	43.3	35.3
2	VL 892 (C)	1706	25.9	53.4	40.1	39.8
3	HS 660	1708	18.1	50.2	36.8	35.0
4	HS 661	1707	28.2	40.2	42.8	37.1
5	HS 662	1704	22.0	35.1	46.0	34.4
6	HPW 459	1710	28.2	60.1	56.3	48.2
7	VL 3016	1703	25.2	44.1	35.7	35.0
8	VL 3017	1701	26.9	46.1	38.1	37.0
9	VL 3018	1709	20.8	32.8	41.1	31.6
10	UP 3017	1702	29.4	45.4	43.2	39.3
	Mean		24.9	44.6	42.3	37.3
Rainfed, Early Sown						
1	HS 542 (C)	1701	22.8	30.4	--	26.6
2	VL 829 (C)	1711	16.7	32.6	--	24.7
3	HPW 251 (C)	1712	21.8	35.3	--	28.6
4	HS 664	1706	18.4	37.0	--	27.7
5	HS 665	1703	21.2	35.9	--	28.6
6	HS 666	1702	19.1	39.0	--	29.1
7	HPW 450	1705	20.6	36.5	--	28.6
8	HPW 451	1707	25.5	41.4	--	33.5
9	VL 1014	1710	19.4	37.8	--	28.6
10	VL 1015	1704	19.0	40.6	--	29.8
11	VL 1016	1708	20.1	44.8	--	32.5
12	UP 3016	1709	17.8	54.0	--	35.9
	Mean		20.2	38.8		29.5

Table 9: Grain appearance score (Max-10) of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110	5.5	4.5	6.0	4.5	5.5	5.2
2	HD 2967 (C)	111	5.0	3.5	5.5	4.5	5.0	4.7
3	WH 1105 (C)	115	5.5	5.5	6.0	4.5	5.5	5.4
4	HD 3086 (C)	108	6.0	6.0	6.5	4.5	7.0	6.0
5	DBW 88 (C)	113	5.5	5.5	6.0	4.5	5.0	5.3
6	DPW 621-50 (C)	103	4.0	5.0	5.5	4.0	5.5	4.8
7	PBW 763	106	5.0	4.0	6.0	5.0	5.5	5.1
8	PBW 766	107	4.5	5.5	6.0	4.5	6.0	5.3
9	PBW 800	114	5.0	5.0	5.5	4.5	5.0	5.0
10	PBW 801	112	5.5	6.0	6.0	4.5	5.5	5.5
11	DBW 221	102	4.5	5.0	5.5	4.5	5.0	4.9
12	DBW 222	104	4.0	6.5	5.5	4.5	5.5	5.2
13	DBW 233	109	5.5	5.0	6.0	4.0	5.0	5.1
14	UP 2981	101	3.0	4.5	6.0	4.5	5.5	4.7
15	BRW 3792	105	4.0	4.5	5.0	4.0	4.5	4.4
	Mean		4.8	5.1	5.8	4.4	5.4	5.1
Irrigation, Late Sown								
1	PBW 752	206	6.0	3.5	6.0	5.5	6.0	5.4
2	HD 3059 (C)	204	6.5	4.0	6.0	5.5	6.5	5.7
3	DBW 90 (C)	203	6.0	4.0	6.0	5.0	6.5	5.5
4	WH 1021 (C)	205	5.5	4.5	5.5	5.0	7.0	5.5
5	WH 1124 (C)	202	6.5	4.0	6.0	5.0	7.0	5.7
6	DBW 173 (I) (C)	207	6.0	3.5	6.0	5.5	5.5	5.3
7	PBW 771	201	6.6	4.5	6.5	5.5	6.5	5.9
8	PBW 773	208	5.0	4.0	6.0	5.0	6.0	5.2
9	DBW 237	209	6.0	2.0	5.0	6.0	5.5	4.9
	Mean		6.0	3.8	5.9	5.3	6.3	5.5
Restricted Irrigation, Timely Sown								
1	HD 3237	304	4.0		6.0	4.0	5.0	4.8
2	HI 1620	305	3.0		5.0	4.5	5.0	4.4
3	WH 1080 (C)	303	3.0		5.5	4.0	5.5	4.5
4	PBW 644 (C)	306	4.5		5.5	5.0	5.5	5.1
5	HD 3043 (C)	307	4.0		5.0	4.0	5.0	4.5
6	WH 1142 (C)	301	3.0		5.0	4.5	5.5	4.5
7	HI 1628	309	4.5		5.0	4.5	5.5	4.9
8	DBW 252	308	4.5		4.5	4.5	5.0	4.6
9	BRW 3806	302	4.0		5.5	4.5	6.0	5.0
10	NIAW 3170	310	4.0		4.0	4.5	5.0	4.4
	Mean		3.9		5.1	4.4	5.3	4.7

Table 10: Hectolitre weight (Kg/hl) of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110	75.0	74.0	78.3	75.6	79.0	76.4
2	HD 2967 (C)	111	73.3	73.3	78.0	77.7	79.0	76.3
3	WH 1105 (C)	115	76.0	76.0	77.5	76.5	78.0	76.8
4	HD 3086 (C)	108	78.0	74.3	78.3	75.6	78.5	76.9
5	DBW 88 (C)	113	75.0	77.0	77.0	76.8	78.0	76.8
6	DPW 621-50 (C)	103	71.6	73.0	79.0	74.5	76.5	74.9
7	PBW 763	106	74.0	73.5	78.0	76.3	76.0	75.6
8	PBW 766	107	75.6	76.5	77.0	75.5	77.0	76.3
9	PBW 800	114	72.5	70.5	79.0	74.0	73.0	73.8
10	PBW 801	112	74.5	77.3	79.4	76.0	78.0	77.0
11	DBW 221	102	80.0	79.0	77.6	77.0	82.0	79.1
12	DBW 222	104	74.0	79.0	77.0	76.6	78.5	77.0
13	DBW 233	109	73.6	79.0	76.6	72.6	75.0	75.4
14	UP 2981	101	72.7	72.3	76.0	75.0	75.5	74.3
15	BRW 3792	105	75.0	72.0	76.5	74.7	77.5	75.1
	Mean		74.7	75.1	77.7	75.6	77.4	76.1
Irrigation, Late Sown								
1	PBW 752	206	81.3		74.3	77.6	82.0	78.8
2	HD 3059 (C)	204	80.0		78.2	80.0	82.5	80.2
3	DBW 90 (C)	203	77.5		77.0	76.8	82.0	78.3
4	WH 1021 (C)	205	77.5		78.4	80.0	82.5	79.6
5	WH 1124 (C)	202	79.0		73.0	78.0	82.5	78.1
6	DBW 173 (I) (C)	207	78.7		77.0	78.6	81.5	79.0
7	PBW 771	201	78.7		81.0	77.7	81.0	79.6
8	PBW 773	208	77.3		79.0	79.2	81.0	79.1
9	DBW 237	209	79.0		75.4	76.7	80.0	77.8
	Mean		78.8		77.0	78.3	81.7	78.9
Restricted Irrigation, Timely Sown								
1	HD 3237	304	72.5		76.6	76.3	79.0	76.1
2	HI 1620	305	69.0		74.3	77.5	81.0	75.5
3	WH 1080 (C)	303	72.5		72.3	74.5	79.5	74.7
4	PBW 644 (C)	306	72.5		74.5	77.6	81.0	76.4
5	HD 3043 (C)	307	70.0		75.0	77.5	79.5	75.5
6	WH 1142 (C)	301	68.0		76.0	77.7	82.5	76.1
7	HI 1628	309	68.7		74.0	77.0	80.5	75.1
8	DBW 252	308	69.2		73.5	78.0	81.5	75.6
9	BRW 3806	302	71.5		72.0	74.0	78.5	74.0
10	NIAW 3170	310	71.2		73.7	74.5	80.0	74.9
	Mean		70.5		74.2	76.5	80.3	75.4

ILS Durgapura grain quality was very poor with average hectolitre weight of 66.8. So, data of Durgapura is not reported here.

Table 11: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110	10.4	15.7	13.9	10.7	11.8	12.5
2	HD 2967 (C)	111	11.9	15.4	13.0	9.2	10.7	12.0
3	WH 1105 (C)	115	11.0	14.2	12.9	9.7	11.8	11.9
4	HD 3086 (C)	108	10.5	13.7	11.8	10.3	11.1	11.5
5	DBW 88 (C)	113	10.2	14.9	13.0	10.0	11.3	11.9
6	DPW 621-50 (C)	103	11.3	14.8	13.1	10.0	11.9	12.2
7	PBW 763	106	11.6	13.4	12.7	9.1	11.9	11.7
8	PBW 766	107	11.2	14.4	13.1	9.4	10.9	11.8
9	PBW 800	114	11.7	13.9	12.7	9.5	12.6	12.1
10	PBW 801	112	11.8	15.2	13.4	9.7	11.6	12.3
11	DBW 221	102	9.9	13.7	13.2	10.2	10.7	11.5
12	DBW 222	104	10.4	12.5	12.7	8.6	10.0	10.8
13	DBW 233	109	10.7	13.4	12.0	9.8	10.2	11.2
14	UP 2981	101	10.6	14.2	12.0	8.5	10.7	11.2
15	BRW 3792	105	11.1	13.8	12.5	9.1	10.1	11.3
	Mean		11.0	14.2	12.8	9.6	11.1	11.7
Irrigation, Late Sown								
1	PBW 752	206	10.15		13.89	13.52	13.30	12.72
2	HD 3059 (C)	204	11.53		13.29	10.50	12.69	12.00
3	DBW 90 (C)	203	10.91		12.66	11.08	11.95	11.65
4	WH 1021 (C)	205	10.76		13.61	10.85	11.67	11.72
5	WH 1124 (C)	202	9.80		12.91	10.56	11.39	11.16
6	DBW 173 (D) (C)	207	10.78		13.09	11.14	9.93	11.24
7	PBW 771	201	9.48		12.07	11.81	11.67	11.26
8	PBW 773	208	9.91		12.35	10.49	10.96	10.93
9	DBW 237	209	10.71		13.19	13.04	11.06	12.00
	Mean		10.45		13.01	11.44	11.63	11.63
Restricted Irrigation, Timely Sown								
1	HD 3237	304	11.98		11.36	8.81	8.35	10.13
2	HI 1620	305	13.56		12.64	9.16	8.97	11.09
3	WH 1080 (C)	303	13.01		13.40	9.40	8.71	11.13
4	PBW 644 (C)	306	12.52		13.05	9.32	10.09	11.24
5	HD 3043 (C)	307	13.57		13.76	9.00	8.63	11.24
6	WH 1142 (C)	301	13.31		12.63	8.55	9.03	10.88
7	HI 1628	309	12.35		12.09	8.90	9.36	10.68
8	DBW 252	308	13.35		13.67	9.57	9.95	11.63
9	BRW 3806	302	10.56		11.89	8.12	9.27	9.96
10	NIAW 3170	310	12.27		13.22	8.47	11.73	11.42
	Mean		12.65		12.77	8.93	9.41	10.94

Because of very poor grain quality (Shrivelled), protein of Durgapura centre of ILS condition is not reported here.

Table 12: Sedimentation value (ml) of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110	65.6	66.4	59.0	57.8	66.8	63.1
2	HD 2967 (C)	111	62.3	61.9	59.4	52.9	57.4	58.8
3	WH 1105 (C)	115	61.9	72.1	62.7	54.1	59.4	62.1
4	HD 3086 (C)	108	54.9	63.5	52.9	53.3	49.2	54.8
5	DBW 88 (C)	113	59.0	68.4	59.0	54.9	56.6	59.6
6	DPW 621-50 (C)	103	62.3	71.3	57.0	54.9	56.6	60.4
7	PBW 763	106	54.5	61.9	50.5	50.0	50.9	53.6
8	PBW 766	107	64.7	73.3	63.1	56.2	56.6	62.8
9	PBW 800	114	53.3	63.5	56.6	49.2	51.3	54.8
10	PBW 801	112	60.7	66.4	59.0	55.4	54.9	59.3
11	DBW 221	102	57.8	68.4	58.6	57.4	50.0	58.5
12	DBW 222	104	57.8	60.3	57.4	57.8	53.3	57.3
13	DBW 233	109	57.0	68.4	54.5	52.9	51.3	56.8
14	UP 2981	101	55.4	68.8	54.9	50.9	54.9	57.0
15	BRW 3792	105	50.0	70.5	53.7	49.2	50.5	54.8
	Mean		58.5	67.0	57.2	53.8	54.6	58.2
Irrigation, Late Sown								
1	PBW 752	206	70.06	68.83	68.83	71.73	66.79	69.25
2	HD 3059 (C)	204	70.47	62.30	69.65	66.79	67.20	67.28
3	DBW 90 (C)	203	66.79	63.12	67.61	71.28	55.36	64.83
4	WH 1021 (C)	205	45.15	47.19	46.78	46.37	45.96	46.29
5	WH 1124 (C)	202	60.67	62.30	62.71	65.98	59.03	62.14
6	DBW 173 (I) (C)	207	67.20	64.34	67.61	68.43	64.75	66.47
7	PBW 771	201	45.15	46.37	50.05	46.78	46.78	47.02
8	PBW 773	208	54.13	60.67	61.48	72.92	58.62	61.56
9	DBW 237	209	68.43	71.69	70.88	54.13	65.57	66.14
	Mean		60.89	60.76	62.84	62.71	58.90	61.22
Restricted Irrigation, Timely Sown								
1	HD 3237	304	50.5		63.1	50.9	47.2	52.9
2	HI 1620	305	68.0		67.6	59.0	59.8	63.6
3	WH 1080 (C)	303	66.8		68.0	62.3	54.5	62.9
4	PBW 644 (C)	306	46.8		62.7	46.8	50.0	51.6
5	HD 3043 (C)	307	54.5		60.3	46.8	46.0	51.9
6	WH 1142 (C)	301	61.1		59.8	47.6	54.9	55.9
7	HI 1628	309	63.9		67.2	56.2	54.9	60.6
8	DBW 252	308	64.3		68.8	59.4	56.2	62.2
9	BRW 3806	302	66.4		67.6	54.9	59.0	62.0
10	NIAW 3170	310	55.4		58.2	46.8	55.4	53.9
	Mean		59.8		64.3	53.1	53.8	57.7

Table 13: Phenol test (Max-10) of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110	6.5	6.0	6.0	7.0	6.0	6.3
2	HD 2967 (C)	111	6.0	7.0	6.0	5.0	5.5	5.9
3	WH 1105 (C)	115	9.5	7.5	7.5	7.0	6.5	7.6
4	HD 3086 (C)	108	8.5	6.0	4.5	6.0	7.0	6.4
5	DBW 88 (C)	113	9.0	7.5	6.5	6.0	7.5	7.3
6	DPW 621-50 (C)	103	8.5	8.0	7.0	5.0	6.0	6.9
7	PBW 763	106	7.0	7.0	5.5	5.0	5.0	5.9
8	PBW 766	107	9.0	6.5	7.0	6.0	6.0	6.9
9	PBW 800	114	8.0	7.0	6.0	8.0	6.0	7.0
10	PBW 801	112	8.0	8.0	6.5	6.0	7.0	7.1
11	DBW 221	102	8.5	6.0	5.7	5.0	5.5	6.1
12	DBW 222	104	8.5	6.1	5.0	4.0	5.5	5.8
13	DBW 233	109	4.0	5.5	5.5	5.4	4.5	5.0
14	UP 2981	101	8.5	7.5	4.0	6.0	5.0	6.2
15	BRW 3792	105	3.5	6.0	4.0	5.6	3.0	4.4
	Mean		7.5	6.8	5.8	5.8	5.7	6.3
Irrigation, Late Sown								
1	PBW 752	206	9.0	7.5	8.5	6.5	7.5	7.8
2	HD 3059 (C)	204	8.0	6.0	7.5	6.0	7.0	6.9
3	DBW 90 (C)	203	8.0	7.5	6.0	5.5	5.0	6.4
4	WH 1021 (C)	205	9.0	6.0	5.5	4.0	6.0	6.1
5	WH 1124 (C)	202	8.5	6.0	7.0	5.0	4.5	6.2
6	DBW 173 (I) (C)	207	9.5	6.5	8.5	6.5	6.5	7.5
7	PBW 771	201	7.5	6.0	6.0	5.0	4.5	5.8
8	PBW 773	208	7.5	5.0	7.0	6.5	5.0	6.2
9	DBW 237	209	9.0	7.5	8.5	7.0	8.0	8.0
	Mean		8.4	6.4	7.2	5.8	6.0	6.8
Restricted Irrigation, Timely Sown								
1	HD 3237	304	8.5		7.5	6.0	4.5	6.6
2	HI 1620	305	8.5		7.5	7.0	6.0	7.3
3	WH 1080 (C)	303	8.0		7.0	6.5	6.0	6.9
4	PBW 644 (C)	306	6.0		6.0	4.5	4.5	5.3
5	HD 3043 (C)	307	6.0		5.5	5.5	4.5	5.4
6	WH 1142 (C)	301	6.0		6.0	5.5	4.0	5.4
7	HI 1628	309	9.0		5.5	6.5	4.5	6.4
8	DBW 252	308	6.0		6.5	4.5	4.0	5.3
9	BRW 3806	302	7.5		5.5	6.0	4.0	5.8
10	NIAW 3170	310	7.5		5.5	5.0	4.5	5.6
	Mean		7.3		6.3	5.7	4.7	6.0

Table 14: Hardness index of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110			75			75
2	HD 2967 (C)	111			76			76
3	WH 1105 (C)	115			77			77
4	HD 3086 (C)	108			86			86
5	DBW 88 (C)	113			76			76
6	DPW 621-50 (C)	103			83			83
7	PBW 763	106			72			72
8	PBW 766	107			69			69
9	PBW 800	114			75			75
10	PBW 801	112			83			83
11	DBW 221	102			98			98
12	DBW 222	104			74			74
13	DBW 233	109			61			61
14	UP 2981	101			78			78
15	BRW 3792	105			34			34
	Mean				75			75
Irrigation, Late Sown								
1	PBW 752	206			84			84
2	HD 3059 (C)	204			92			92
3	DBW 90 (C)	203			96			96
4	WH 1021 (C)	205			91			91
5	WH 1124 (C)	202			88			88
6	DBW 173 (I) (C)	207			89			89
7	PBW 771	201			89			89
8	PBW 773	208			86			86
9	DBW 237	209			87			87
	Mean				89.1			89.1
Restricted Irrigation, Timely Sown								
1	HD 3237	304			79			79
2	HI 1620	305			91			91
3	WH 1080 (C)	303			77			77
4	PBW 644 (C)	306			81			81
5	HD 3043 (C)	307			80			80
6	WH 1142 (C)	301			91			91
7	HI 1628	309			79			79
8	DBW 252	308			88			88
9	BRW 3806	302			77			77
10	NIAW 3170	310			30			30
	Mean				77.3			77.3

Table 15: Grain Fe content (ppm) of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110	35.8	46.1	47.5	37.8	35.8	40.6
2	HD 2967 (C)	111	34.2	46.7	38.5	39.3	34.0	38.5
3	WH 1105 (C)	115	38.3	45.2	43.5	42.7	35.8	41.1
4	HD 3086 (C)	108	33.4	46.0	45.9	48.1	40.9	42.9
5	DBW 88 (C)	113	32.4	44.3	41.9	44.6	33.4	39.3
6	DPW 621-50 (C)	103	31.5	43.9	41.5	44.4	37.0	39.7
7	PBW 763	106	32.5	42.6	44.8	45.8	34.8	40.1
8	PBW 766	107	34.3	43.8	49.3	45.8	40.0	42.6
9	PBW 800	114	34.2	42.6	41.5	40.4	29.3	37.6
10	PBW 801	112	33.4	46.5	47.3	49.9	34.5	42.3
11	DBW 221	102	33.2	40.0	46.8	43.6	36.3	40.0
12	DBW 222	104	35.1	40.6	38.4	52.2	31.0	39.5
13	DBW 233	109	31.8	42.0	46.3	50.4	44.3	43.0
14	UP 2981	101	35.0	41.9	44.2	52.6	35.2	41.8
15	BRW 3792	105	34.0	39.9	46.1	46.5	35.1	40.3
	Mean		33.9	43.5	44.2	45.6	35.8	40.6
Irrigation, Late Sown								
1	PBW 752	206	27.9	39.5	44.6	37.4	36.3	37.1
2	HD 3059 (C)	204	32.3	39.7	41.6	37.3	33.3	36.8
3	DBW 90 (C)	203	35.5	39.4	41.4	37.7	38.3	38.5
4	WH 1021 (C)	205	29.7	37.8	43.2	38.7	37.0	37.3
5	WH 1124 (C)	202	29.4	40.3	45.0	37.0	47.3	39.8
6	DBW 173 (I) (C)	207	28.2	41.9	46.3	35.4	35.5	37.5
7	PBW 771	201	25.8	40.7	43.0	40.2	39.2	37.8
8	PBW 773	208	26.1	36.6	43.9	36.8	31.2	34.9
9	DBW 237	209	30.9	36.8	46.7	29.7	34.7	35.8
	Mean		29.5	39.2	44.0	36.7	37.0	37.3
Restricted Irrigation, Timely Sown								
1	HD 3237	304	36.1		44.7	32.8	36.2	37.5
2	HI 1620	305	31.6		39.9	31.8	31.1	33.6
3	WH 1080 (C)	303	32.3		40.5	30	33.7	34.1
4	PBW 644 (C)	306	33.9		42.5	33.3	30.7	35.1
5	HD 3043 (C)	307	35.8		41.2	34.1	36.3	36.9
6	WH 1142 (C)	301	38.3		43.4	38	33.7	38.4
7	HI 1628	309	33.5		42.6	31.9	34	35.5
8	DBW 252	308	40.2		49.1	42.8	33.7	41.5
9	BRW 3806	302	33.3		39.9	34	29.7	34.2
10	NIAW 3170	310	35.2		44.8	32.7	36.1	37.2
	Mean		35.0		42.9	34.1	33.5	36.4

Table 16: Grain Zn content (ppm) of *T. aestivum* genotypes in North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown								
1	HD 3226	110	37.2	44.0	39.7	23.1	38.5	36.5
2	HD 2967 (C)	111	34.6	42.5	39.8	25.8	39.5	36.4
3	WH 1105 (C)	115	38.8	36.9	44.7	23.1	37.5	36.2
4	HD 3086 (C)	108	28.7	38.4	38.8	22.9	38.7	33.5
5	DBW 88 (C)	113	33.4	34.1	36.6	25.6	35.4	33.0
6	DPW 621-50 (C)	103	28.1	36.9	35.0	22.0	31.7	30.7
7	PBW 763	106	34.4	37.0	39.1	28.0	34.5	34.6
8	PBW 766	107	29.6	34.0	36.2	20.2	34.1	30.8
9	PBW 800	114	37.0	34.4	36.3	25.6	27.6	32.2
10	PBW 801	112	34.5	42.8	44.1	25.7	37.8	37.0
11	DBW 221	102	31.7	36.9	41.3	22.0	45.2	35.4
12	DBW 222	104	35.8	31.6	31.7	21.3	29.3	29.9
13	DBW 233	109	33.3	36.0	43.1	22.8	37.1	34.5
14	UP 2981	101	36.0	45.8	41.8	23.2	39.1	37.2
15	BRW 3792	105	32.4	27.0	38.9	20.6	27.7	29.3
	Mean		33.7	37.2	39.1	23.5	35.6	33.8
Irrigation, Late Sown								
1	PBW 752	206	39.8	34.9	52.3	21.8	44.5	38.7
2	HD 3059 (C)	204	41.5	31	44.8	22.7	34.6	34.9
3	DBW 90 (C)	203	45.7	31	50.7	22	39.4	37.8
4	WH 1021 (C)	205	42.6	29.9	55.8	28.3	35.6	38.4
5	WH 1124 (C)	202	42.3	28.5	53	24	40.7	37.7
6	DBW 173 (I) (C)	207	39.3	30.5	45.1	21.5	32.3	33.7
7	PBW 771	201	44.6	36.6	50.7	22.2	39.2	38.7
8	PBW 773	208	39.3	25.7	54.7	16.4	34.3	34.1
9	DBW 237	209	38.5	24.2	42.4	21.6	32.9	31.9
	Mean		41.5	30.3	49.9	22.3	37.1	36.2
Restricted Irrigation, Timely Sown								
1	HD 3237	304	24.2		38.1	29.8	27.5	29.9
2	HI 1620	305	19.8		40.3	31.8	28.3	30.1
3	WH 1080 (C)	303	25.0		37.7	25.9	29.4	29.5
4	PBW 644 (C)	306	22.2		46.2	30.5	31.7	32.7
5	HD 3043 (C)	307	24.9		46.2	34.9	35.2	35.3
6	WH 1142 (C)	301	27.3		40.2	26.9	30.2	31.2
7	HI 1628	309	24.5		43.4	32.5	30.7	32.8
8	DBW 252	308	24.9		46.7	34.9	33.2	34.9
9	BRW 3806	302	21.9		38.3	28.3	30.4	29.7
10	NIAW 3170	310	24.2		43.6	29.7	32.9	32.6
	Mean		23.9		42.1	30.5	31.0	31.9

Table 17: Grain appearance score (Max-10) of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	6.0	4.5	3.5	4.7
2	HD 2733 (C)	105	6.0	4.5	4.0	4.8
3	K 0307 (C)	111	7.0	4.5	4.5	5.3
4	DBW 39 (C)	109	4.0	4.5	4.0	4.2
5	K 1006 (C)	104	6.5	4.5	4.5	5.2
6	HD 2967 (C)	110	6.5	4.5	3.5	4.8
7	DBW 221	106	6.5	4.5	4.0	5.0
8	DBW 223	113	5.5	4.0	4.0	4.5
9	DBW 233	101	6.0	4.0	4.0	4.7
10	PBW 762	114	6.5	4.5	4.0	5.0
11	PBW 769	108	5.0	4.0	4.0	4.3
12	HD 3249	102	6.0	4.5	3.5	4.7
13	HD 3254	103	6.5	4.0	3.5	4.7
14	WH 1218	115	7.0	5.0	4.5	5.5
15	K 1601	107	4.0	5.0	4.5	4.5
	Mean		5.9	4.4	4.0	4.8
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	8.0	5.5	6.5	6.7
2	K 8027 (C)	307	8.0	5.0	6.5	6.5
3	HD 3171 (C)	308	5.5	4.5	6.0	5.3
4	K 1317 (C)	305	7.5	5.0	5.5	6.0
5	HI 1612 (I) (C)	302	7.0	5.0	5.0	5.7
6	BRW 3806	304	6.0	4.5	5.0	5.2
7	DBW 252	306	6.5	4.5	4.5	5.2
8	WH 1235	303	6.5	4.5	5.5	5.5
9	HI 1628	309	5.5	4.5	4.5	4.8
	Mean		6.7	4.8	5.4	5.6

Table 18: Hectolitre weight (Kg/hl) of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	80.0	76.8	71.4	76.1
2	HD 2733 (C)	105	79.7	77.0	73.5	76.7
3	K 0307 (C)	111	80.0	79.0	74.7	77.9
4	DBW 39 (C)	109	78.6	76.0	72.7	75.8
5	K 1006 (C)	104	80.0	76.8	73.4	76.7
6	HD 2967 (C)	110	81.5	77.0	74.9	77.8
7	DBW 221	106	83.0	77.5	74.6	78.4
8	DBW 223	113	80.0	77.3	74.0	77.1
9	DBW 233	101	79.0	74.0	70.9	74.6
10	PBW 762	114	80.6	76.5	72.1	76.4
11	PBW 769	108	79.0	74.0	71.0	74.7
12	HD 3249	102	81.0	77.6	70.6	76.4
13	HD 3254	103	81.0	77.2	73.4	77.2
14	WH 1218	115	82.0	76.5	73.3	77.3
15	K 1601	107	80.0	75.5	72.6	76.0
	Mean		80.4	76.6	72.9	76.6
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	82.5	80.0	79.2	80.6
2	K 8027 (C)	307	82.7	79.5	78.4	80.2
3	HD 3171 (C)	308	79.2	77.5	76.0	77.6
4	K 1317 (C)	305	82.6	78.6	75.9	79.0
5	HI 1612 (I) (C)	302	79.5	77.4	75.2	77.4
6	BRW 3806	304	79.2	75.0	71.8	75.3
7	DBW 252	306	80.0	75.3	73.8	76.4
8	WH 1235	303	80.3	76.0	75.5	77.3
9	HI 1628	309	77.6	76.0	71.0	74.9
	Mean		80.4	77.3	75.2	77.6

Table 19: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	10.9	11.0	12.1	11.3
2	HD 2733 (C)	105	10.8	10.9	10.4	10.7
3	K 0307 (C)	111	10.8	10.5	11.7	11.0
4	DBW 39 (C)	109	9.5	11.4	10.7	10.6
5	K 1006 (C)	104	11.2	9.9	10.5	10.5
6	HD 2967 (C)	110	10.0	12.4	11.3	11.2
7	DBW 221	106	11.2	10.7	11.4	11.1
8	DBW 223	113	11.1	11.9	10.5	11.2
9	DBW 233	101	10.0	10.6	10.1	10.2
10	PBW 762	114	10.5	10.8	10.5	10.6
11	PBW 769	108	9.9	10.1	10.6	10.2
12	HD 3249	102	9.9	10.4	12.6	11.0
13	HD 3254	103	10.7	11.7	12.2	11.5
14	WH 1218	115	10.5	11.7	11.2	11.1
15	K 1601	107	10.9	11.4	10.6	11.0
	Mean		10.5	11.0	11.1	10.9
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	11.79	12.01	10.58	11.46
2	K 8027 (C)	307	10.25	12.30	9.70	10.75
3	HD 3171 (C)	308	10.56	11.79	10.54	10.96
4	K 1317 (C)	305	10.22	12.62	11.63	11.49
5	HI 1612 (I) (C)	302	11.64	11.32	10.20	11.06
6	BRW 3806	304	10.10	10.86	10.24	10.40
7	DBW 252	306	10.54	11.60	10.66	10.93
8	WH 1235	303	9.82	11.80	10.96	10.86
9	HI 1628	309	11.24	11.42	11.29	11.32
	Mean		10.68	11.75	10.64	11.03

Table 20: Sedimentation value (ml) of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	63.9	66.8	64.3	65.0
2	HD 2733 (C)	105	46.8	50.0	49.2	48.7
3	K 0307 (C)	111	43.5	42.7	40.7	42.3
4	DBW 39 (C)	109	47.6	52.1	52.1	50.6
5	K 1006 (C)	104	41.5	42.7	42.7	42.3
6	HD 2967 (C)	110	59.0	61.1	61.1	60.4
7	DBW 221	106	59.4	57.8	64.3	60.5
8	DBW 223	113	54.9	52.9	55.4	54.4
9	DBW 233	101	59.0	62.3	64.7	62.0
10	PBW 762	114	59.0	53.7	50.9	54.5
11	PBW 769	108	44.3	48.4	48.4	47.1
12	HD 3249	102	65.2	63.5	66.8	65.2
13	HD 3254	103	46.8	48.8	51.3	49.0
14	WH 1218	115	52.9	52.1	56.6	53.9
15	K 1601	107	54.9	54.1	56.6	55.2
	Mean		53.3	53.9	55.0	54.1
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	46.8	45.1	48.8	46.9
2	K 8027 (C)	307	47.6	46.4	48.4	47.5
3	HD 3171 (C)	308	60.7	59.0	66.4	62.0
4	K 1317 (C)	305	52.5	49.2	54.1	52.0
5	HI 1612 (I) (C)	302	66.0	59.0	66.4	63.8
6	BRW 3806	304	68.0	57.4	64.7	63.4
7	DBW 252	306	68.8	59.0	68.0	65.3
8	WH 1235	303	63.1	54.9	65.6	61.2
9	HI 1628	309	68.0	53.3	66.8	62.7
	Mean		60.2	53.7	61.0	58.3

Table 21: Phenol test (Max-10) of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	9.0	6.5	7.0	7.5
2	HD 2733 (C)	105	6.5	5.0	4.0	5.2
3	K 0307 (C)	111	8.0	6.5	3.5	6.0
4	DBW 39 (C)	109	3.0	2.0	1.5	2.2
5	K 1006 (C)	104	7.5	5.0	4.5	5.7
6	HD 2967 (C)	110	6.5	6.5	4.5	5.8
7	DBW 221	106	7.5	5.0	5.0	5.8
8	DBW 223	113	8.0	6.0	5.0	6.3
9	DBW 233	101	6.0	4.0	3.0	4.3
10	PBW 762	114	8.0	6.0	6.0	6.7
11	PBW 769	108	8.0	5.5	4.0	5.8
12	HD 3249	102	9.0	6.0	4.5	6.5
13	HD 3254	103	9.5	5.5	4.5	6.5
14	WH 1218	115	8.5	6.5	5.0	6.7
15	K 1601	107	7.5	5.5	3.0	5.3
	Mean		7.5	5.4	4.3	5.8
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	4.0	2.5	2.0	2.8
2	K 8027 (C)	307	4.0	3.0	2.5	3.2
3	HD 3171 (C)	308	6.0	5.0	4.0	5.0
4	K 1317 (C)	305	2.0	2.5	1.5	2.0
5	HI 1612 (I) (C)	302	9.0	6.0	4.5	6.5
6	BRW 3806	304	6.0	6.0	5.0	5.7
7	DBW 252	306	7.5	5.5	3.5	5.5
8	WH 1235	303	9.0	6.5	4.5	6.7
9	HI 1628	309	7.5	7.0	4.5	6.3
	Mean		6.1	4.9	3.6	4.9

Table 22: Hardness index of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	78			78
2	HD 2733 (C)	105	76			76
3	K 0307 (C)	111	87			87
4	DBW 39 (C)	109	75			75
5	K 1006 (C)	104	88			88
6	HD 2967 (C)	110	82			82
7	DBW 221	106	74			74
8	DBW 223	113	75			75
9	DBW 233	101	76			76
10	PBW 762	114	77			77
11	PBW 769	108	61			61
12	HD 3249	102	73			73
13	HD 3254	103	85			85
14	WH 1218	115	72			72
15	K 1601	107	44			44
	Mean		74.9			74.9
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	85			85
2	K 8027 (C)	307	84			84
3	HD 3171 (C)	308	85			85
4	K 1317 (C)	305	80			80
5	HI 1612 (I) (C)	302	81			81
6	BRW 3806	304	68			68
7	DBW 252	306	82			82
8	WH 1235	303	75			75
9	HI 1628	309	73			73
	Mean		79.2			79.2

Table 23: Grain Fe content (ppm) of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Sabour	Pusa	Mean
Irrigated, Timely Sown						
1	DBW 187	112	39.1	49.1	41.2	43.1
2	HD 2733 (C)	105	40.3	41.2	35.4	39.0
3	K 0307 (C)	111	42.3	45.0	38.3	41.9
4	DBW 39 (C)	109	39.3	43.3	45.3	42.6
5	K 1006 (C)	104	41.7	48.0	41.4	43.7
6	HD 2967 (C)	110	38.1	49.7	37.1	41.6
7	DBW 221	106	43.8	41.5	34.5	39.9
8	DBW 223	113	39.4	39.1	34.9	37.8
9	DBW 233	101	36.3	41.9	33.6	37.3
10	PBW 762	114	42.0	42.7	38.5	41.1
11	PBW 769	108	34.5	42.9	31.8	36.4
12	HD 3249	102	38.2	47.3	34.7	40.1
13	HD 3254	103	37.3	38.5	37.1	37.6
14	WH 1218	115	35.8	46.1	35.9	39.3
15	K 1601	107	35.6	45.8	36.5	39.3
	Mean		38.9	44.1	37.1	40.0
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	39.7	38.5	34.4	37.5
2	K 8027 (C)	307	45.5	33.3	43.2	40.7
3	HD 3171 (C)	308	38.7	40.1	41.6	40.1
4	K 1317 (C)	305	36.0	33.3	44.0	37.8
5	HI 1612 (I) (C)	302	42.2	34.6	36.5	37.8
6	BRW 3806	304	33.0	33.9	48.9	38.6
7	DBW 252	306	38.7	38.6	45.9	41.1
8	WH 1235	303	37.9	33.8	37.9	36.5
9	HI 1628	309	38.2	32.9	40.0	37.0
	Mean		38.9	35.4	41.4	38.6

Table 24: Grain Zn content (ppm) of *T. aestivum* genotypes in North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Sabour	Pusa	Mean
Irrigated, Timely Sown						
1	DBW 187	112	31.9	18.2	29.1	26.4
2	HD 2733 (C)	105	38.9	23.5	32.4	31.6
3	K 0307 (C)	111	37.3	23.2	30.7	30.4
4	DBW 39 (C)	109	40.2	25.2	34.7	33.4
5	K 1006 (C)	104	35.9	24.5	32.7	31.0
6	HD 2967 (C)	110	38.8	25.8	35.3	33.3
7	DBW 221	106	32.1	25.2	32.2	29.8
8	DBW 223	113	33.3	20.9	35.8	30.0
9	DBW 233	101	28.2	21.1	29.3	26.2
10	PBW 762	114	38.3	22.2	38.0	32.8
11	PBW 769	108	26.5	23.5	25.6	25.2
12	HD 3249	102	27.4	19.8	27.2	24.8
13	HD 3254	103	30.3	21.8	36.5	29.5
14	WH 1218	115	34.5	20.6	33.2	29.4
15	K 1601	107	32.6	22.1	33.1	29.3
	Mean		33.7	22.5	32.4	29.5
Restricted Irrigated, Timely Sown						
1	HD 2888 (C)	301	35.0	28.8	32.4	32.1
2	K 8027 (C)	307	33.3	25.2	40.7	33.1
3	HD 3171 (C)	308	26.7	22.8	30.2	26.6
4	K 1317 (C)	305	31.3	21.5	29.0	27.3
5	HI 1612 (I) (C)	302	30.4	28.2	34.2	30.9
6	BRW 3806	304	25.1	31.0	32.7	29.6
7	DBW 252	306	22.8	25.5	33.2	27.2
8	WH 1235	303	32.3	25.6	37.3	31.7
9	HI 1628	309	27.5	26.6	32.8	29.0
	Mean		29.4	26.1	33.6	29.7

Table 25: Grain appearance score (Max-10) of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Indore	Junagarh	Vijapur	PawerKheda	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	6.0	6.5	6.0	7.0	6.4
2	HI 1544 (C)	106	6.5	7.0	7.0	7.0	6.9
3	AKAW 4924	102	6.5	7.5	6.0	6.5	6.6
4	GW 495	107	6.5	7.0	7.0	6.5	6.8
	Mean		6.4	7.0	6.5	6.8	6.7
<i>T. durum</i>							
1	HI 8713 (C)	104	6.0	7.5	6.0	6.5	6.5
2	HI 8737 (C)	105	7.5	8.0	7.0	7.5	7.5
3	GW 1339	101	6.5	8.0	7.5	8.0	7.5
4	UAS 465	108	6.0	6.5	7.0	6.5	6.5
5	MPO 1343	109	7.0	6.5	7.5	7.5	7.1
	Mean		6.6	7.3	7.0	7.2	7.0
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	6.5	6.5	7.0	6.5	6.6
2	MP 3288 (C)	304	6.5	6.5	7.0	6.5	6.6
3	MP 1331	303	6.0	6.0	6.0	6.0	6.0
4	NIAW 3170	307	6.0	6.0	6.0	5.0	5.8
	Mean		6.3	6.3	6.5	6.0	6.3
<i>T. durum</i>							
1	HI 8627 (C)	305	7.5	6.5	7.5	7.5	7.3
2	DDW 47	302	7.0	6.5	6.5	7.5	6.9
3	UAS 466	306	7.5	6.5	7.5	7.5	7.3
	Mean		7.3	6.5	7.2	7.5	7.1

Table 26: Hectolitre weight (Kg/hl) of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Indore	Junagarh	Vijapur	PawerKheda	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	77.7	79.0	79.0	80.2	79.0
2	HI 1544 (C)	106	83.0	83.0	83.0	83.5	83.1
3	AKAW 4924	102	82.5	83.0	83.0	83.6	83.0
4	GW 495	107	82.2	81.8	81.8	83.0	82.2
	Mean		81.4	81.7	81.7	82.6	81.8
<i>T. durum</i>							
1	HI 8713 (C)	104	81.0	84.0	84.0	82.4	82.9
2	HI 8737 (C)	105	84.8	84.2	84.2	84.6	84.5
3	GW 1339	101	83.6	83.0	83.0	84.0	83.4
4	UAS 465	108	79.7	79.7	79.7	81.0	80.0
5	MPO 1343	109	84.5	84.3	84.3	85.2	84.6
	Mean		82.7	83.0	83.0	83.4	83.1
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	81.0	80.4	81.6	80.7	80.9
2	MP 3288 (C)	304	83.0	82.6	82.2	83.0	82.7
3	MP 1331	303	79.5	77.3	77.2	80.2	78.6
4	NIAW 3170	307	83.2	79.0	80.8	80.3	80.8
	Mean		81.7	79.8	80.5	81.1	80.8
<i>T. durum</i>							
1	HI 8627 (C)	305	85.0	83.0	82.4	84.0	83.6
2	DDW 47	302	83.0	79.6	79.6	82.3	81.1
3	UAS 466	306	85.7	80.3	82.4	83.5	83.0
	Mean		84.6	81.0	81.5	83.3	82.6

Table 27: Protein content (%) at 14% moisture basis of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Indore	Junagarh	Vijapur	PawerKheda	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	10.00	11.65	11.60	11.59	11.21
2	HI 1544 (C)	106	10.02	12.39	11.40	11.31	11.28
3	AKAW 4924	102	11.02	12.84	12.91	12.82	12.40
4	GW 495	107	10.37	11.98	11.35	11.18	11.22
	Mean		10.35	12.22	11.81	11.73	11.53
<i>T. durum</i>							
1	HI 8713 (C)	104	10.92	12.21	12.98	11.69	11.95
2	HI 8737 (C)	105	10.81	12.42	12.48	12.01	11.93
3	GW 1339	101	10.21	12.08	11.45	11.66	11.35
4	UAS 465	108	10.26	12.06	12.45	11.96	11.68
5	MPO 1343	109	11.41	12.41	12.03	12.26	12.03
	Mean		10.72	12.24	12.28	11.91	11.79
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	10.78	14.09	12.52	12.26	12.41
2	MP 3288 (C)	304	11.31	13.69	13.61	12.56	12.79
3	MP 1331	303	11.15	14.29	13.60	12.01	12.76
4	NIAW 3170	307	11.69	14.86	13.37	12.27	13.05
	Mean		11.23	14.23	13.28	12.27	12.75
<i>T. durum</i>							
1	HI 8627 (C)	305	11.29	14.94	13.59	12.24	13.01
2	DDW 47	302	11.69	14.59	14.14	12.13	13.14
3	UAS 466	306	10.36	16.79	13.49	11.69	13.08
	Mean		11.11	15.44	13.74	12.02	13.08

Table 28: Sedimentation value (ml) of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Indore	Junagarh	Vijapur	PawerKheda	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	48.8	48.8	50.5	42.3	47.6
2	HI 1544 (C)	106	45.6	51.3	46.8	46.0	47.4
3	AKAW 4924	102	41.9	51.7	47.6	43.9	46.3
4	GW 495	107	48.4	52.9	48.0	46.4	48.9
	Mean		46.2	51.2	48.2	44.6	47.5
<i>T. durum</i>							
1	HI 8713 (C)	104	37.0	38.6	34.1	38.6	37.1
2	HI 8737 (C)	105	38.6	44.7	41.1	42.7	41.8
3	GW 1339	101	29.2	32.5	26.4	30.4	29.6
4	UAS 465	108	32.9	34.1	34.1	34.1	33.8
5	MPO 1343	109	36.6	42.3	38.2	41.1	39.5
	Mean		34.9	38.4	34.8	37.4	36.4
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	64.3	68.4	64.7	64.7	65.6
2	MP 3288 (C)	304	60.3	69.2	61.1	65.6	64.0
3	MP 1331	303	48.4	57.0	51.3	52.9	52.4
4	NIAW 3170	307	59.4	65.6	58.6	61.5	61.3
	Mean		58.1	65.1	58.9	61.2	60.8
<i>T. durum</i>							
1	HI 8627 (C)	305	36.6	38.6	36.2	40.2	37.9
2	DDW 47	302	44.3	44.7	37.0	42.3	42.1
3	UAS 466	306	38.2	38.6	37.4	46.8	40.2
	Mean		39.7	40.7	36.8	43.1	40.1

Table 29: Phenol test (Max-10) of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Indore	Junagarh	Vijapur	PawerKheda	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	5.0	5.0	6.5	6.0	5.6
2	HI 1544 (C)	106	5.5	5.0	5.0	6.5	5.5
3	AKAW 4924	102	5.5	5.0	6.5	6.0	5.8
4	GW 495	107	5.5	6.0	6.0	6.0	5.9
	Mean		5.4	5.3	6.0	6.1	5.7
<i>T. durum</i>							
1	HI 8713 (C)	104	0.0	0.0	0.0	0.0	0.0
2	HI 8737 (C)	105	0.0	0.0	0.0	0.0	0.0
3	GW 1339	101	0.0	0.0	0.0	0.0	0.0
4	UAS 465	108	0.0	0.0	0.0	0.0	0.0
5	MPO 1343	109	0.0	0.0	0.0	0.0	0.0
	Mean		0.0	0.0	0.0	0.0	0.0
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	5.5	7.0	7.5	6.0	6.5
2	MP 3288 (C)	304	7.0	7.0	6.5	5.0	6.4
3	MP 1331	303	6.0	5.5	6.5	7.0	6.3
4	NIAW 3170	307	5.0	6.0	5.0	5.0	5.3
	Mean		5.9	6.4	6.4	5.8	6.1
<i>T. durum</i>							
1	HI 8627 (C)	305	0.0	0.0	0.0	0.0	0.0
2	DDW 47	302	0.0	0.0	0.0	0.0	0.0
3	UAS 466	306	0.0	0.0	0.0	0.0	0.0
	Mean		0.0	0.0	0.0	0.0	0.0

Table 30: Yellow pigment (ppm) of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Indore	Junagarh	Vijapur	PawerKheda	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	2.46	2.15	2.53	2.30	2.36
2	HI 1544 (C)	106	2.01	2.46	2.18	2.09	2.18
3	AKAW 4924	102	2.86	2.60	2.81	2.79	2.77
4	GW 495	107	1.92	1.89	2.18	2.30	2.07
	Mean		2.31	2.28	2.42	2.37	2.34
<i>T. durum</i>							
1	HI 8713 (C)	104	6.95	6.93	6.91	6.96	6.94
2	HI 8737 (C)	105	4.79	4.55	4.88	4.58	4.70
3	GW 1339	101	4.46	4.69	4.32	4.18	4.41
4	UAS 465	108	8.53	8.55	7.99	8.42	8.37
5	MPO 1343	109	5.31	5.68	5.40	5.45	5.46
	Mean		6.01	6.08	5.90	5.92	5.98
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	1.99	1.80	1.78	2.06	1.91
2	MP 3288 (C)	304	2.60	2.20	2.53	2.67	2.50
3	MP 1331	303	3.45	3.24	3.07	3.16	3.23
4	NIAW 3170	307	2.08	2.20	2.25	2.39	2.23
	Mean		2.53	2.36	2.41	2.57	2.47
<i>T. durum</i>							
1	HI 8627 (C)	305	5.66	5.85	5.89	6.25	5.91
2	DDW 47	302	7.17	8.11	7.75	7.68	7.68
3	UAS 466	306	5.42	6.20	5.97	6.39	5.99
	Mean		6.08	6.72	6.54	6.77	6.53

Table 31: Hardness index of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Indore	Junagarh	Vijapur	PawerKheda	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103		88			88
2	HI 1544 (C)	106		85			85
3	AKAW 4924	102		75			75
4	GW 495	107		82			82
	Mean			82.5			82.5
<i>T. durum</i>							
1	HI 8713 (C)	104		85			85
2	HI 8737 (C)	105		82			82
3	GW 1339	101		91			91
4	UAS 465	108		82			82
5	MPO 1343	109		84			84
	Mean			84.8			84.8
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301		79			79
2	MP 3288 (C)	304		70			70
3	MP 1331	303		88			88
4	NIAW 3170	307		34			34
	Mean			67.8			67.8
<i>T. durum</i>							
1	HI 8627 (C)	305		86			86
2	DDW 47	302		83			83
3	UAS 466	306		93			93
	Mean			87.3			87.3

Table 32: Grain Fe content (ppm) of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Vijapur	Junagarh	P.Kheda	Indore	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	34.8	34.2	33	37.7	34.9
2	HI 1544 (C)	106	31.3	35.9	35.4	36.3	34.7
3	AKAW 4924	102	33.9	30.1	34.8	33.7	33.1
4	GW 495	107	38.8	38.4	37.1	36.8	37.8
	Mean		34.7	34.7	35.1	36.1	35.1
<i>T. durum</i>							
1	HI 8713 (C)	104	39.3	40.0	41	40.3	40.2
2	HI 8737 (C)	105	38.1	41.0	34	46.9	40.0
3	GW 1339	101	41.7	37.7	34.5	42.6	39.1
4	UAS 465	108	37.5	33.2	35.2	35.1	35.3
5	MPO 1343	109	35.2	32.7	39.5	37.9	36.3
	Mean		38.4	36.9	36.8	40.6	38.2
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	43.1	36.1	38.8	40.4	39.6
2	MP 3288 (C)	304	41.2	38.2	44.3	41.8	41.4
3	MP 1331	303	40.4	39.4	38.8	44.6	40.8
4	NIAW 3170	307	40.9	42.8	38.3	39.9	40.5
	Mean		41.4	39.1	40.1	41.7	40.6
<i>T. durum</i>							
1	HI 8627 (C)	305	38.2	40.5	38.8	39.7	39.3
2	DDW 47	302	38.7	37.4	38.0	41.7	39.0
3	UAS 466	306	42.1	42.9	39.7	43.0	41.9
	Mean		39.7	40.3	38.8	41.5	40.1

Table 33: Grain Zn content (ppm) of *T. aestivum* and *T. durum* genotypes in Central Zone (CZ) AVTs

S. No.	Variety	Code	Vijapur	Junagarh	P.Kheda	Indore	Mean
Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	GW 322 (C)	103	38.0	25.7	41.3	30.0	33.8
2	HI 1544 (C)	106	34.2	27.1	37.8	36.9	34.0
3	AKAW 4924	102	38.7	30.2	43.0	33.5	36.4
4	GW 495	107	42.2	26.8	32.5	35.6	34.3
	Mean		38.3	27.5	38.7	34.0	34.6
<i>T. durum</i>							
1	HI 8713 (C)	104	39.2	32.1	29.8	32.6	33.4
2	HI 8737 (C)	105	45.2	33.0	42.5	40.1	40.2
3	GW 1339	101	36.9	26.6	42.7	34.7	35.2
4	UAS 465	108	36.7	26.2	35.9	30.1	32.2
5	MPO 1343	109	39.6	33.3	43.4	36.0	38.1
	Mean		39.5	30.2	38.9	34.7	35.8
Restricted Irrigated, Timely Sown							
<i>T. aestivum</i>							
1	DBW 110 (C)	301	37.4	34.0	32.0	48.4	38.0
2	MP 3288 (C)	304	34.3	37.4	30.2	47.2	37.3
3	MP 1331	303	32.4	43.2	31.5	48.0	38.8
4	NIAW 3170	307	37.6	40.2	31.5	49.7	39.8
	Mean		35.4	38.7	31.3	48.3	38.4
<i>T. durum</i>							
1	HI 8627 (C)	305	36.8	41.6	35.3	48.1	40.5
2	DDW 47	302	39.9	36.2	35.7	51.3	40.8
3	UAS 466	306	36.3	38.3	24.7	43.8	35.8
	Mean		37.7	38.7	31.9	47.7	39.0

Table 34: Grain appearance score (Max-10) of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	6.5	4.0	6.5	5.7
2	MACS 6478 (C)	112	7.0	4.0	6.5	5.8
3	DBW 168 (I) (C)	107	6.0	4.5	5.0	5.2
4	GW 491	102	6.5	4.5	6.5	5.8
5	GW 492	117	6.5	4.0	6.5	5.7
6	GW 493	103	6.5	4.0	6.1	5.5
7	GW 495	108	6.5	4.5	7.0	6.0
8	MP 1338	109	6.5	4.5	7.0	6.0
9	MACS 6709	113	6.5	4.5	6.5	5.8
10	DBW 235	104	6.5	4.0	6.5	5.7
11	HI 1624	105	6.5	4.5	6.5	5.8
12	HI1625	114	6.0	4.0	6.0	5.3
13	AKAW 4924	101	6.0	4.0	6.5	5.5
14	PBW 770	116	6.5	4.0	6.5	5.7
	Mean		6.4	4.2	6.4	5.7
<i>T. durum</i>						
1	MACS 3949 (C)	110	7.0	4.0	7.0	6.0
2	UAS 428 (C)	115	7.0	4.5	7.0	6.2
3	HI 8800	111	7.0	5.0	7.0	6.3
	Mean		7.0	4.5	7.0	6.2
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	6.5	7.0	6.1	6.5
2	DBW 93 (c)	311	6.0	6.0	6.5	6.2
3	NIAW 3170	310	5.0	5.0	5.0	5.0
4	MACS 6696	308	6.5	6.5	6.1	6.4
5	MACS 6695	312	6.5	6.5	6.1	6.4
	Mean		6.1	6.2	5.9	6.1
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	7.0	6.5	7.0	6.8
2	UAS 446 (c)	305	7.0	6.5	7.0	6.8
3	HI 8805	306	7.5	7.0	7.5	7.3
4	HI 8802	313	7.0	7.0	7.0	7.0
5	GW 1346	301	6.5	7.0	6.1	6.5
6	MPO 1336	304	7.0	7.5	7.5	7.3
7	MACS 4058	307	7.5	7.0	7.0	7.2
8	MACS 4059	309	6.5	6.5	7.1	6.7
	Mean		7.0	6.9	7.0	7.0

Table 35: Hectolitre weight (Kg/hl) of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	83.0	76.3	83.0	80.8
2	MACS 6478 (C)	112	79.4	74.5	79.0	77.6
3	DBW 168 (I) (C)	107	80.0	72.0	78.0	76.7
4	GW 491	102	82.0	75.6	83.3	80.3
5	GW 492	117	83.0	76.6	84.0	81.2
6	GW 493	103	80.3	75.0	82.4	79.2
7	GW 495	108	81.0	77.0	83.0	80.3
8	MP 1338	109	80.4	74.6	82.5	79.2
9	MACS 6709	113	81.5	75.0	82.4	79.6
10	DBW 235	104	80.6	76.0	84.5	80.4
11	HI 1624	105	83.0	77.0	84.5	81.5
12	HI1625	114	82.0	76.6	82.2	80.3
13	AKAW 4924	101	81.6	76.5	83.3	80.5
14	PBW 770	116	82.0	74.5	82.4	79.6
	Mean		81.4	75.5	82.5	79.8
<i>T. durum</i>						
1	MACS 3949 (C)	110	83.8	80.0	85.0	82.9
2	UAS 428 (C)	115	82.0	77.5	82.7	80.7
3	HI 8800	111	85.3	79.2	85.9	83.5
	Mean		83.7	78.9	84.5	82.4
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	81.1	80.7	84.4	82.1
2	DBW 93 (c)	311	82.0	80.5	83.2	81.9
3	NIAW 3170	310	79.5	78.8	81.5	79.9
4	MACS 6696	308	82.3	81.6	83.2	82.4
5	MACS 6695	312	82.0	81.8	83.3	82.4
	Mean		81.4	80.7	83.1	81.7
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	79.6	80.0	82.6	80.7
2	UAS 446 (c)	305	81.0	82.0	80.6	81.2
3	HI 8805	306	83.0	82.4	83.7	83.0
4	HI 8802	313	81.6	83.4	84.8	83.3
5	GW 1346	301	75.7	77.0	80.3	77.7
6	MPO 1336	304	82.7	83.0	83.0	82.9
7	MACS 4058	307	82.6	81.8	84.4	82.9
8	MACS 4059	309	83.5	83.3	84.6	83.8
	Mean		81.2	81.6	83.0	81.9

Table 36: Protein content (%) at 14% moisture basis of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	10.41	12.28	10.75	11.15
2	MACS 6478 (C)	112	11.74	11.79	11.62	11.72
3	DBW 168 (I) (C)	107	10.74	12.08	11.31	11.38
4	GW 491	102	10.47	12.82	10.71	11.34
5	GW 492	117	10.74	12.36	10.51	11.20
6	GW 493	103	10.80	11.10	10.62	10.84
7	GW 495	108	10.80	12.11	10.57	11.16
8	MP 1338	109	10.81	11.07	11.16	11.01
9	MACS 6709	113	10.71	12.63	10.86	11.40
10	DBW 235	104	10.82	11.68	10.86	11.12
11	HI 1624	105	10.53	12.59	10.28	11.14
12	HI1625	114	10.98	12.88	10.73	11.53
13	AKAW 4924	101	10.97	13.18	11.28	11.81
14	PBW 770	116	11.04	13.29	10.89	11.74
	Mean		10.83	12.28	10.87	11.32
<i>T. durum</i>						
1	MACS 3949 (C)	110	11.05	11.82	10.93	11.27
2	UAS 428 (C)	115	11.23	11.99	10.79	11.34
3	HI 8800	111	11.02	11.60	10.52	11.05
	Mean		11.10	11.80	10.75	11.22
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	11.56	13.07	10.87	11.83
2	DBW 93 (c)	311	10.85	13.36	10.10	11.44
3	NIAW 3170	310	11.01	12.63	9.59	11.08
4	MACS 6696	308	11.39	12.62	10.34	11.45
5	MACS 6695	312	11.38	12.78	10.29	11.48
	Mean		11.24	12.89	10.24	11.46
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	11.27	11.75	11.20	11.41
2	UAS 446 (c)	305	11.25	11.88	10.85	11.32
3	HI 8805	306	10.98	11.68	11.10	11.25
4	HI 8802	313	11.38	12.52	10.97	11.62
5	GW 1346	301	11.04	12.66	11.17	11.62
6	MPO 1336	304	11.47	12.35	11.42	11.75
7	MACS 4058	307	11.38	12.43	11.14	11.65
8	MACS 4059	309	11.94	14.02	11.72	12.56
	Mean		11.34	12.41	11.19	11.65

Table 37: Sedimentation value (ml) of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	43.1	48.0	45.1	45.4
2	MACS 6478 (C)	112	51.3	50.9	54.5	52.2
3	DBW 168 (I) (C)	107	42.7	50.9	45.6	46.4
4	GW 491	102	52.9	54.5	50.9	52.8
5	GW 492	117	55.8	50.5	47.6	51.3
6	GW 493	103	46.8	46.8	45.1	46.2
7	GW 495	108	47.6	52.5	50.9	50.3
8	MP 1338	109	54.5	57.8	58.2	56.9
9	MACS 6709	113	54.9	66.8	54.1	58.6
10	DBW 235	104	57.8	56.2	57.8	57.3
11	HI 1624	105	46.8	57.0	48.8	50.9
12	HI1625	114	54.5	57.4	54.5	55.5
13	AKAW 4924	101	48.0	48.8	44.7	47.2
14	PBW 770	116	52.9	64.3	51.7	56.3
	Mean		50.7	54.5	50.7	51.9
<i>T. durum</i>						
1	MACS 3949 (C)	110	48.8	48.8	49.6	49.1
2	UAS 428 (C)	115	43.5	46.0	44.7	44.7
3	HI 8800	111	39.0	45.1	53.3	45.8
	Mean		43.8	46.6	49.2	46.6
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	65.2	66.4	55.8	62.4
2	DBW 93 (c)	311	47.6	57.4	45.1	50.0
3	NIAW 3170	310	56.2	65.6	50.5	57.4
4	MACS 6696	308	58.6	66.4	52.9	59.3
5	MACS 6695	312	57.0	66.4	49.6	57.7
	Mean		56.9	64.4	50.8	57.4
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	44.7	47.6	44.7	45.7
2	UAS 446 (c)	305	51.3	52.9	46.8	50.3
3	HI 8805	306	48.8	52.9	46.4	49.4
4	HI 8802	313	44.7	48.4	42.7	45.3
5	GW 1346	301	35.8	38.2	35.8	36.6
6	MPO 1336	304	35.8	38.6	34.5	36.3
7	MACS 4058	307	44.3	49.6	41.9	45.3
8	MACS 4059	309	47.2	50.9	48.4	48.8
	Mean		44.1	47.4	42.6	44.7

Table 38: Phenol test (Max-10) of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	8.0	8.0	9.0	8.3
2	MACS 6478 (C)	112	2.5	3.0	2.0	2.5
3	DBW 168 (I) (C)	107	2.0	2.0	2.0	2.0
4	GW 491	102	6.0	8.0	8.5	7.5
5	GW 492	117	5.5	6.0	5.0	5.5
6	GW 493	103	7.5	8.0	8.5	8.0
7	GW 495	108	6.0	8.0	7.0	7.0
8	MP 1338	109	7.0	8.0	7.0	7.3
9	MACS 6709	113	5.0	5.0	4.0	4.7
10	DBW 235	104	7.0	8.0	8.0	7.7
11	HI 1624	105	6.0	8.0	8.0	7.3
12	HI1625	114	8.0	8.5	8.5	8.3
13	AKAW 4924	101	8.0	8.0	8.5	8.2
14	PBW 770	116	8.5	8.0	9.0	8.5
	Mean		6.2	6.9	6.8	6.6
<i>T. durum</i>						
1	MACS 3949 (C)	110	0.0	0.0	0.0	0.0
2	UAS 428 (C)	115	0.0	0.0	0.0	0.0
3	HI 8800	111	0.0	0.0	0.0	0.0
	Mean		0.0	0.0	0.0	0.0
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	2.5	2.5	3.0	2.7
2	DBW 93 (c)	311	9.0	7.0	8.0	8.0
3	NIAW 3170	310	9.0	7.0	8.5	8.2
4	MACS 6696	308	2.0	2.5	2.0	2.2
5	MACS 6695	312	3.0	2.0	2.5	2.5
	Mean		5.1	4.2	4.8	4.7
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	0.0	0.0	0.0	0.0
2	UAS 446 (c)	305	0.0	0.0	0.0	0.0
3	HI 8805	306	0.0	0.0	0.0	0.0
4	HI 8802	313	0.0	0.0	0.0	0.0
5	GW 1346	301	1.0	1.0	1.0	1.0
6	MPO 1336	304	0.0	0.0	0.0	0.0
7	MACS 4058	307	0.0	0.0	0.0	0.0
8	MACS 4059	309	0.0	0.0	0.0	0.0
	Mean		0.0	0.0	0.0	0.0

Table 39: Yellow pigment (ppm) of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	3.02	2.95	3.00	2.99
2	MACS 6478 (C)	112	3.61	2.98	3.33	3.31
3	DBW 168 (I) (C)	107	3.14	3.07	2.79	3.00
4	GW 491	102	2.32	2.27	2.03	2.21
5	GW 492	117	3.19	2.58	2.72	2.83
6	GW 493	103	2.51	2.18	2.39	2.36
7	GW 495	108	2.27	1.99	1.94	2.07
8	MP 1338	109	3.02	2.81	5.31	3.71
9	MACS 6709	113	2.79	2.67	2.41	2.62
10	DBW 235	104	2.32	2.11	2.11	2.18
11	HI 1624	105	2.51	2.25	2.25	2.33
12	HI1625	114	5.59	5.99	2.46	4.68
13	AKAW 4924	101	2.83	2.65	2.53	2.67
14	PBW 770	116	3.14	2.48	2.74	2.79
	Mean		3.02	2.78	2.71	2.84
<i>T. durum</i>						
1	MACS 3949 (C)	110	5.73	5.19	5.59	5.50
2	UAS 428 (C)	115	5.68	4.72	5.33	5.24
3	HI 8800	111	6.37	6.11	6.46	6.31
	Mean		5.93	5.34	5.79	5.69
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	2.53	2.01	2.46	2.33
2	DBW 93 (c)	311	5.14	3.52	3.68	4.11
3	NIAW 3170	310	2.58	2.39	2.72	2.56
4	MACS 6696	308	3.42	2.22	2.48	2.71
5	MACS 6695	312	3.94	2.39	2.62	2.98
	Mean		3.52	2.51	2.79	2.94
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	3.89	3.33	3.59	3.60
2	UAS 446 (c)	305	5.80	5.09	5.89	5.60
3	HI 8805	306	5.57	5.09	5.07	5.24
4	HI 8802	313	5.14	5.78	5.82	5.58
5	GW 1346	301	3.82	2.98	3.19	3.33
6	MPO 1336	304	4.53	4.11	4.22	4.29
7	MACS 4058	307	3.31	2.86	2.93	3.03
8	MACS 4059	309	4.79	4.32	4.48	4.53
	Mean		4.61	4.19	4.40	4.40

Table 40: Hardness index of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106			74	74
2	MACS 6478 (C)	112			74	74
3	DBW 168 (I) (C)	107			35	35
4	GW 491	102			75	75
5	GW 492	117			69	69
6	GW 493	103			65	65
7	GW 495	108			78	78
8	MP 1338	109			71	71
9	MACS 6709	113			75	75
10	DBW 235	104			70	70
11	HI 1624	105			75	75
12	HI1625	114			71	71
13	AKAW 4924	101			72	72
14	PBW 770	116			75	75
	Mean				69.9	69.9
<i>T. durum</i>						
1	MACS 3949 (C)	110			76	76
2	UAS 428 (C)	115			79	79
3	HI 8800	111			83	83
	Mean				79.3	79.3
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302			80	80
2	DBW 93 (c)	311			81	81
3	NIAW 3170	310			45	45
4	MACS 6696	308			76	76
5	MACS 6695	312			75	75
	Mean				71.4	71.4
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303			86	86
2	UAS 446 (c)	305			87	87
3	HI 8805	306			81	81
4	HI 8802	313			81	81
5	GW 1346	301			82	82
6	MPO 1336	304			75	75
7	MACS 4058	307			82	82
8	MACS 4059	309			83	83
	Mean				82.1	82.1

Table 41: Grain Fe content (ppm) of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	39.8	36.5	39.8	38.7
2	MACS 6478 (C)	112	34.1	33.3	39.6	35.7
3	DBW 168 (I) (C)	107	34.0	37.3	37.2	36.2
4	GW 491	102	38.9	35.5	37.3	37.2
5	GW 492	117	37.0	37.8	42.0	38.9
6	GW 493	103	34.9	35.8	37.7	36.1
7	GW 495	108	37.9	39.2	39.9	39.0
8	MP 1338	109	35.7	34.3	41.1	37.0
9	MACS 6709	113	43.7	39.9	37.4	40.3
10	DBW 235	104	38.7	39.0	37.5	38.4
11	HI 1624	105	36.7	39.4	38.2	38.1
12	HI1625	114	41.1	38.6	41.4	40.4
13	AKAW 4924	101	34.9	35.9	41.5	37.4
14	PBW 770	116	39.4	37.4	38.1	38.3
	Mean		37.6	37.1	39.2	38.0
<i>T. durum</i>						
1	MACS 3949 (C)	110	--	33.8	38.4	36.1
2	UAS 428 (C)	115	38.3	35.6	37.0	37.0
3	HI 8800	111	34.7	35.1	38.4	36.1
	Mean		36.5	34.8	37.9	36.4
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	37.8	44.6	43.2	41.9
2	DBW 93 (c)	311	43.1	42.6	37.8	41.2
3	NIAW 3170	310	35.3	40.0	42.2	39.2
4	MACS 6696	308	38.0	43.0	43.6	41.5
5	MACS 6695	312	40.4	42.1	40.3	40.9
	Mean		38.9	42.5	41.4	40.9
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	36.4	43.6	37.2	39.1
2	UAS 446 (c)	305	39.5	42.1	40.5	40.7
3	HI 8805	306	41.2	42.6	40.4	41.4
4	HI 8802	313	35.4	40.8	37.1	37.8
5	GW 1346	301	35.7	36.2	36.7	36.2
6	MPO 1336	304	43.9	43.9	44.6	44.1
7	MACS 4058	307	38.5	39.2	45.9	41.2
8	MACS 4059	309	41.5	41.3	42.1	41.6
	Mean		39.0	41.2	40.6	40.3

Table 42: Grain Zn content (ppm) of *T. aestivum* and *T. durum* genotypes in Peninsular Zone (PZ) AVTs

S. No.	Variety	Code	Pune	Dharwad	Niphad	Mean
Irrigated, Timely Sown						
<i>T. aestivum</i>						
1	MACS 6222 (C)	106	44.3	26.7	28.6	33.2
2	MACS 6478 (C)	112	45.0	27.7	30.8	34.5
3	DBW 168 (I) (C)	107	37.4	29.2	27.7	31.4
4	GW 491	102	37.9	23.9	28.3	30.0
5	GW 492	117	53.0	28.0	28.7	36.6
6	GW 493	103	43.1	27.1	31.2	33.8
7	GW 495	108	38.7	25.4	27.9	30.7
8	MP 1338	109	41.7	25.5	32.3	33.2
9	MACS 6709	113	46.9	27.6	28.3	34.3
10	DBW 235	104	42.9	27.3	29.1	33.1
11	HI 1624	105	48.7	27.6	28.7	35.0
12	HI1625	114	53.1	27.1	28.2	36.1
13	AKAW 4924	101	42.4	26.6	35.1	34.7
14	PBW 770	116	45.6	29.9	33.2	36.2
	Mean		44.3	27.1	29.9	33.8
<i>T. durum</i>						
1	MACS 3949 (C)	110	49.7	28.3	31.7	36.6
2	UAS 428 (C)	115	51.7	29.0	32.9	37.9
3	HI 8800	111	46.2	27.8	32.1	35.4
	Mean		49.2	28.4	32.2	36.6
Restricted Irrigation, Timely Sown						
<i>T. aestivum</i>						
1	HI 1605 (C)	302	34.1	37.6	28.7	33.5
2	DBW 93 (c)	311	39.0	40.8	29.2	36.3
3	NIAW 3170	310	32.9	35.3	25.3	31.2
4	MACS 6696	308	38.6	33.4	25.4	32.5
5	MACS 6695	312	36.0	35.8	25.0	32.3
	Mean		36.1	36.6	26.7	33.1
<i>T. durum</i>						
1	AKDW 2997-16 (C)	303	34.6	41.3	19.3	31.7
2	UAS 446 (c)	305	36.5	37.6	25.5	33.2
3	HI 8805	306	34.9	40.4	24.5	33.3
4	HI 8802	313	35.4	37.1	25.7	32.7
5	GW 1346	301	30.8	37.6	22.5	30.3
6	MPO 1336	304	35.5	41.5	24.6	33.9
7	MACS 4058	307	40.2	42.4	27.1	36.6
8	MACS 4059	309	37.8	43.1	23.1	34.7
	Mean		35.7	40.1	24.0	33.3

Table 43: High Molecular weight Glutenin Subunits of *T. aestivum* genotypes in North Western Plains Zone AVTs

S. No.	Variety	Code	Glu-D1	Glu-A1	Glu-B1	Glu-1 Score
Irrigated, Timely Sown						
1	HD 3226	110	5+10	1	13+16	10
2	HD 2967 (C)	111	5+10	2*	17+18	10
3	WH 1105 (C)	115	5+10	2*	7	8
4	HD 3086 (C)	108	5+10	1	17+18	10
5	DBW 88 (C)	113	5+10	2*	17+18	10
6	DPW 621-50 (C)	103	5+10	2*	17+18	10
7	PBW 763	106	5+10	2*	7	8
8	PBW 766	107	5+10	N	17+18	8
9	PBW 800	114	5+10	N	7	6
10	PBW 801	112	5+10	N	17+18	8
11	DBW 221	102	5+10	1	17+18	10
12	DBW 222	104	5+10	2*	17+18	10
13	DBW 233	109	5+10	N	7	6
14	UP 2981	101	5+10	N	7	6
15	BRW 3792	105	2+12	1	17+18	8
Irrigated, Late Sown						
1	PBW 752*	206	5+10	2*	17+18	10
2	HD 3059 (C)	204	5+10	2*	17+18	10
3	DBW 90 (C)	203	5+10	1	17+18	10
4	WH 1021 (C)	205	2+12	2*	7+8	8
5	WH 1124 (C)	202	5+10	1	17+18	10
6	DBW 173 (I) (C)	207	5+10	2*	17+18	10
7	PBW 771	201	5+10	N	7+9	7
8	PBW 773	208	5+10	2*	7+9	9
9	DBW 237	209	5+10	2*	17+18	10
Restricted Irrigation, Timely Sown						
1	HD 3237*	304	5+10	2*	7	8
2	HI 1620*	305	5+10	2*	17+18	10
3	WH 1080 (C)	303	5+10	1	7	8
4	PBW 644 (C)	306	2+12	1	7+8	8
5	HD 3043 (C)	307	5+10	2*	7	8
6	WH 1142 (C)	301	5+10	1	7	8
7	HI 1628	309	5+10	2*	7	8
8	DBW 252	308	5+10	N	7+8	8
9	BRW 3806	302	5+10	2*	7	8
10	NIAW 3170	310	2+12	N	17+18	7

Table 44: High Molecular Weight Glutenin Subunits of *T. aestivum* genotypes in North Eastern Plains Zone AVTs

S. No.	Variety	Code	Glu-D1	Glu-A1	Glu-B1	Glu-1 Score
Irrigated, Timely Sown						
1	DBW 187	112	5+10	2*	17+18	10
2	HD 2733 (C)	105	5+10	2*	7+9	9
3	K 0307 (C)	111	2+12	2*	17+18	8
4	DBW 39 (C)	109	5+10	2*	7+9	9
5	K 1006 (C)	104	2+12	2*	17+18	8
6	HD 2967 (C)	110	5+10	2*	17+18	10
7	DBW 221	106	5+10	1	17+18	10
8	DBW 223	113	5+10	2*	7	8
9	DBW 233	101	5+10	N	7	6
10	PBW 762	114	5+10	2*	7+9	9
11	PBW 769	108	5+10	2*	7	8
12	HD 3249	102	5+10	N	17+18	8
13	HD 3254	103	2+12	N	17+18	6
14	WH 1218	115	2+12	N	17+18	6
15	K 1601	107	5+10	2*	7	8
Restricted Irrigation, Timely Sown						
1	HD 2888 (C)	301	2+12	N	20	4
2	K 8027 (C)	307	2+12	2*	17+18	8
3	HD 3171 (C)	308	5+10	2*	7	8
4	K 1317 (C)	305	2+12	N	7	4
5	HI 1612 (I) (C)	302	5+10	2*	7	8
6	BRW 3806	304	5+10	N	7	6
7	DBW 252	306	5+10	N	7	6
8	WH 1235	303	5+10	N	7	6
9	HI 1628	309	5+10	N	7	6

Table 45: High Molecular weight Glutenin Subunits of *T. aestivum* genotypes in Central Zone AVTs

S. No.	Variety	Code	Glu-D1	Glu-A1	Glu-B1	Glu-1 Score
Irrigated, Timely Sown						
1	GW 322 (C)	103	2+12	2*	7+8	8
2	HI 1544 (C)	106	2+12	N	7+8	6
3	AKAW 4924	102	5+10	N	7	6
4	GW 495	107	2+12	N	7+8	6
Restricted Irrigation, Timely Sown						
1	DBW 110 (C)	301	5+10	1	7	8
2	MP 3288 (C)	304	2+12	2*	7+9	7
3	MP 1331	303	5+10	N	7	6
4	NIAW 3170	307	2+12	2*	17+18	8

Table 46: High Molecular Weight Glutenin Subunits of *T. aestivum* genotypes in Peninsular Zone AVTs

S. No.	Variety	Code	Glu-D1	Glu-A1	Glu-B1	Glu-1 Score
Irrigated, Timely Sown						
1	MACS 6222 (C)	106	2+12	2*	7+9	7
2	MACS 6478 (C)	112	2+12	1	17+18	8
3	DBW 168 (I) (C)	107	2+12	2*	7	6
4	GW 491	102	2+12	N	7+9	5
5	GW 492	117	2+12	N	7	4
6	GW 493	103	2+12	1	7+9	7
7	GW 495	108	2+12	2*	17+18	8
8	MP 1338	109	5+10	N	17+18	8
9	MACS 6709	113	5+10	2*	7+9	9
10	DBW 235	104	5+10	N	7	6
11	HI 1624	105	5+10	N	7	6
12	HI1625	114	5+10	2*	7	8
13	AKAW 4924	101	2+12	N	17+18	6
14	PBW 770	116	5+10	2*	7	8
Restricted Irrigation, Timely Sown						
1	HI 1605 (C)	302	5+10	2*	7	8
2	DBW 93 (C)	311	5+10	2*	17+18	10
3	NIAW 3170	310	2+12	N	17+18	6
4	MACS 6696	308	2+12	N	17+18	6
5	MACS 6695	312	2+12	N	17+18	6

Table 47: High Molecular Weight Glutenin Subunits of *T. aestivum* genotypes in Northern Hill Zone AVTs

S. No.	Variety	Code	Glu-D1	Glu-A1	Glu-B1	Glu-1 Score
Irrigated, Timely Sown						
1	HS 507 (C)	1704	5+10	1	7+8	10
2	HS 562 (C)	1707	5+10	1	17+18	10
3	HPW 349 (C)	1701	5+10	2*	17+18	10
4	VL 907 (C)	1703	5+10	1	7	8
5	HS 634	1702	5+10	N	7	6
6	HPW 441	1705	5+10	1	17+18	10
7	HPW 442	1706	5+10	2*	17+18	10
Late Sown, Restricted Irrigation						
1	HS 490 (C)	1705	2+12	2*	7+8	8
2	VL 892 (C)	1706	2+12	2*	7+8	8
3	HS 660	1708	5+10	1	13+16	10
4	HS 661	1707	5+10	N	17+18	8
5	HS 662	1704	5+10	N	17+18	8
6	HPW 459	1710	5+10	N	7+9	7
7	VL 3016	1703	5+10	N	7	6
8	VL 3017	1701	5+10	N	7	6
9	VL 3018	1709	5+10	N	7	6
10	UP 3017	1702	5+10	N	17+18	8
Rainfed, Early Sown						
1	HS 542 (C)	1701	5+10	2*	7	8
2	VL 829 (C)	1711	2+12	1	7+9	7
3	HPW 251 (C)	1712	5+10	2*	7+9	9
4	HS 664	1706	2+12	1	17+18	8
5	HS 665	1703	5+10	1	17+18	10
6	HS 666	1702	5+10	N	17+18	8
7	HPW 450	1705	5+10	N	7+9	7
8	HPW 451	1707	5+10	1	17+18	10
9	VL 1014	1710	5+10	1	7	8
10	VL 1015	1704	5+10	1	7+9	9
11	VL 1016	1708	5+10	1	7	8
12	UP 3016	1709	5+10	2*	17+18	10

Table 48: High Molecular weight Glutenin Subunits of *T. aestivum* genotypes in Northern Hill Zone IVTs

S. No.	Variety	Code	Glu-D1	Glu-A1	Glu-B1	Glu-1 Score
Rainfed, Timely Sown						
1	HS 507 (C)	1710	5+10	1	7+8	10
2	HS 562 (C)	1711	5+10	1	17+18	10
3	DBW 279	1712	2+12	2*	7+8	8
4	HS 650	1704	2+12	2*	17+18	8
5	HS 651	1714	5+10	N	7+8	8
6	HS 652	1709	2+12	N	17+18	6
7	HS 653	1715	2+12	2*	7	6
8	HPW 453	1707	2+12	N	7	4
9	HPW 454	1701	2+12	N	7	4
10	HPW 455	1706	5+10	1	17+18	10
11	UP 3014	1708	5+10	N	7	6
12	UP 3015	1716	5+10	N	7+9	7
13	VL 2031	1703	2+12	N	17+18	6
14	VL 2032	1713	5+10	N	7+9	7
15	VL 2033	1705	5+10	N	7	6
16	VL 2034	1702	5+10	1	7	8

Table 49: High Molecular weight Glutenin Subunits of *T. aestivum* genotypes in Special Trial VLS NWPZ

S. No.	Variety	Code	Glu-D1	Glu-A1	Glu-B1	Glu-1 Score
Special Trial, VLs						
1	PBW 757*	105	5+10	2*	17+18	10
2	DBW 71 (C)	103	5+10	2*	17+18	10
3	DBW 14 (C)	108	2+12	2*	7+8	8
4	WR 544 (C)	101				
5	HD 3271	102	5+10	N	17+18	8
6	HD 3298	110	5+10	N	7	6
7	DBW 278	106	2+12	N	7	4
8	HI 1621	107	5+10	N	7	6
9	PBW 777	109	2+12	N	7+9	5
10	PBW 797	104	5+10	N	17+18	8

SECTION B

NATIONAL INITIAL VARIETAL TRIALS

- i. NIVT 1A**
- ii. NIVT 1B**
- iii. NIVT 2**
- iv. NIVT 3A**
- v. NIVT 3B**
- vi. NIVT 4**
- vii. NIVT 5A**
- viii. NIVT 5B**
- ix. IVT-NHZ**

NATIONAL INITIAL VARIETAL TRIALS

All entries received for initial varietal screening in the coordinated trials were examined for some important quality parameters like grain appearance score, grain protein content (on 14 % moisture basis), sedimentation value and test weight. In addition, the durum entries were also evaluated for yellow berry incidence and yellow pigments content. There were eight such multi-zone trials and one IVT trial of NHZ, the results of which are discussed below:

NIVT 1A (Irrigated, Timely Sown) – Table 1-5

Samples of 36 entries were evaluated from 5 locations (Ludhiana, Hisar, Durgapura, Delhi and Pantnagar) in NWPZ and 4 locations (Pusa, Kanpur, Varanasi and Sabour) in NEPZ.

NIVT 1B (Irrigated Timely Sown) – Table 6-9

In this trial, 36 genotypes were evaluated and samples were received from 5 centres of NWPZ (Ludhiana, Hisar, Durgapura, Pantnagar and Delhi) and 3 test sites of NEPZ (Kanpur, Pusa and Sabour).

NIVT 2 (Irrigated Timely Sown) – Table 10-14

Grain samples of 36 entries were evaluated from four centres (Indore, Junagarh, Powarkheda and Vijapur) in CZ and five centres (Pune, Dharwad, Ugar, Nippani and Niphad) in PZ.

NIVT 3A (Irrigated Late Sown) – Table 15-19

Grain samples of 36 entries were evaluated from 5 centres in NWPZ (Pantnagar, Ludhiana, Hisar, Delhi & Durgapura) and 3 centres in NEPZ (Kanpur, Samastipur & Sabour).

NIVT 3B (Irrigated Late Sown) – Table 20-24

Grain samples of 36 entries were evaluated from 4 centres in CZ (Indore, Vijapur, Junagarh and Powarkheda) and 3 centres in PZ (Pune, Dharwad and Niphad).

NIVT 4 (Irrigated Timely Sown – *T. Durum*) – Table 25-30

In this trial, 25 entries were evaluated from 4 centres (Indore, Junagarh, Powarkheda and Vijapur) in CZ and 4 centres (Pune, Dharwad, Ugar, Nippani and Niphad) in PZ.

NIVT 5A (Restricted Irrigation Timely Sown) – Table 31-35

In this trial, 25 genotypes were evaluated from 3 centres of NWPZ (Ludhiana, Hisar, & Delhi) and data from Pantnagar was not available. 2 centres of NEPZ (Kanpur and Pusa) were included in the quality evaluation.

NIVT 5B (Restricted Irrigation Timely Sown – *T. aestivum* and *T. durum*) – Table 36-41

In this trial, 25 entries were evaluated from 3 centres (Vijapur Indore, P;Kheda) in CZ and 4 centres (Pune, Dharwad, Bagalkot and Niphad) in PZ.

IVT-NHZ – Table 42-47

These trials were conducted under RTS condition of NHZ (Almora, Shimla, Malan). Fe and Zn content were also measured in this trial.

Remarks; Quality data indicates that quality of samples from Durgapura, Sabour, Varanasi and Samastipur was very poor.

Table 1: Grain appearance score (Max. 10) of *T. aestivum* genotypes in NIVT-1A

S. No.	Entry	Trial Code	NWPZ						NEPZ					Overall Mean
			Ludhiana	Hisar	Durgapura	Delhi	Pantnagar	Mean	Pusa	Kanpur	Varanasi	Sabour	Mean	
1	WH 1240	101	5.5	5.6	5.1	5.5	5.7	5.5	5.6	5.4	5.3	4.3	5.2	5.3
2	PBW 782	102	5.4	5.7	5.1	5.8	5.7	5.5	5.6	5.6	5.5	4.9	5.4	5.5
3	RAJ 4528	103	5.2	5.1	4.8	5.4	5.5	5.2	5.5	5.7	5.1	4.3	5.1	5.2
4	PBW 783	104	5.4	5.5	5.1	5.5	5.4	5.4	5.5	5.8	5.4	4.2	5.2	5.3
5	UP 3002	105	5.5	6.1	5.2	5.7	6.0	5.7	5.7	6.2	5.8	4.9	5.7	5.7
6	HD 3279	106	5.2	5.5	5.0	5.6	5.3	5.3	5.5	5.6	5.2	4.8	5.3	5.3
7	UP 3003	107	5.6	5.6	5.4	5.2	5.7	5.5	5.8	6.0	5.7	5.3	5.7	5.6
8	K 1701	108	5.8	6.5	5.7	6.3	5.6	6.0	5.9	6.8	5.6	5.6	6.0	6.0
9	UP 3004	109	5.7	5.6	5.4	5.6	6.4	5.7	5.6	6.4	5.5	4.8	5.6	5.7
10	DBW 257	110	5.6	5.6	5.0	5.3	5.4	5.4	5.2	6.2	5.5	3.9	5.2	5.3
11	RAJ 4527	111	4.8	5.0	4.6	5.0	5.3	4.9	4.8	5.4	4.8	3.7	4.7	4.8
12	WH 1239	112	4.5	5.5	4.6	5.2	5.6	5.1	5.2	5.4	5.4	3.6	4.9	5.0
13	DBW 88 (C)	113	5.2	5.7	5.9	5.3	5.5	5.5	5.6	5.8	5.7	5.0	5.5	5.5
14	PBW 781	114	5.6	5.8	5.7	5.8	5.8	5.7	5.7	6.0	5.9	4.4	5.5	5.6
15	HUW 826	115	5.8	5.7	6.8	5.9	5.5	5.9	6.1	6.6	5.7	5.6	6.0	6.0
16	DBW 253	116	5.6	5.8	4.8	5.7	5.3	5.4	5.7	5.8	5.5	5.0	5.5	5.4
17	RAJ 4529	117	5.3	5.4	4.9	5.3	5.4	5.2	5.8	5.8	4.6	5.0	5.3	5.3
18	PBW 784	118	6.0	6.3	4.9	5.4	5.8	5.7	6.2	6.0	5.3	5.2	5.7	5.7
19	HD 3280	119	5.4	5.5	5.7	5.6	5.3	5.5	5.5	5.9	5.5	5.2	5.5	5.5
20	HD 3086 (C)	120	6.3	5.9	5.8	5.3	5.8	5.8	5.6	6.0	5.7	4.4	5.4	5.6
21	HD 3281	121	5.4	5.4	4.4	5.2	5.5	5.2	5.0	5.7	5.0	4.7	5.1	5.1
22	K 1702	122	5.6	5.9	5.5	5.8	5.3	5.6	5.6	5.7	5.6	5.2	5.5	5.6
23	DBW 254	123	5.7	5.9	4.9	5.0	5.5	5.4	5.9	6.4	4.7	4.8	5.4	5.4
24	HD 3277	124	5.3	5.8	5.2	5.2	5.7	5.4	5.5	5.7	5.4	4.9	5.4	5.4
25	DBW 255	125	5.4	5.5	5.8	5.6	5.5	5.6	5.6	5.5	5.4	4.8	5.3	5.4
26	HD 3278	126	5.3	5.6	5.2	5.3	5.3	5.3	5.6	5.8	5.5	5.2	5.5	5.4
27	WH 1237	127	6.0	6.7	5.3	5.2	5.8	5.8	6.5	5.8	5.5	5.3	5.8	5.8
28	NW 7041	128	5.7	5.7	5.6	5.6	5.6	5.6	5.9	5.8	5.1	5.6	5.6	5.6
29	DBW 256	129	5.3	5.9	4.0	5.7	5.3	5.2	5.8	5.6	5.5	5.4	5.5	5.4
30	K 1006 (C)	130	5.3	5.6	4.5	5.1	5.1	5.1	5.5	5.8	5.4	5.4	5.5	5.3
31	WH 1238	131	5.8	6.2	5.7	5.4	5.5	5.7	5.8	6.0	5.5	4.5	5.4	5.6
32	UP 3001	132	5.4	5.8	5.5	5.0	5.3	5.4	5.1	5.7	5.4	4.9	5.3	5.3
33	NW 7037	133	5.3	5.4	5.0	5.6	5.3	5.3	5.2	5.8	5.1	4.0	5.0	5.2
34	PBW 785	134	5.3	5.4	5.0	5.2	5.5	5.3	5.5	5.2	5.3	4.8	5.2	5.2
35	HD 2967 (C)	135	5.4	5.6	5.5	5.3	5.4	5.4	5.6	5.5	5.1	5.3	5.4	5.4
36	HD 3276	136	5.3	5.5	5.3	5.0	5.4	5.3	5.0	5.6	4.9	4.8	5.1	5.2
Mean			5.5	5.7	5.2	5.4	5.5	5.5	5.6	5.8	5.3	4.8	5.4	5.4

Table 2: Hectolitre weight (kg/hl) of *T. aestivum* genotypes in NIVT-1A

S. No.	Entry	Trial Code	NWPZ						NEPZ					Overall Mean
			Ludhiana	Hisar	Durgapura	Delhi	Pantnagar	Mean	Pusa	Kanpur	Varanasi	Sabour	Mean	
1	WH 1240	101	75.5	77.0	68.8	74.3	75.5	74.2	75.0	75.0	71.5	65.3	71.7	73.1
2	PBW 782	102	76.0	77.5	69.8	78.8	75.0	75.4	77.3	77.5	74.0	69.5	74.6	75.0
3	RAJ 4528	103	73.0	72.0	62.5	73.3	74.5	71.1	73.8	76.0	69.0	62.5	70.3	70.7
4	PBW 783	104	73.5	76.0	69.3	75.0	74.3	73.6	73.8	78.3	70.3	62.5	71.2	72.5
5	UP 3002	105	73.5	76.5	71.0	75.0	75.5	74.3	75.5	77.8	73.5	65.0	72.9	73.7
6	HD 3279	106	75.0	76.8	69.3	76.0	74.0	74.2	75.3	76.8	70.5	66.0	72.1	73.3
7	UP 3003	107	74.8	74.5	70.3	73.8	75.0	73.7	74.8	77.8	71.3	65.8	72.4	73.1
8	K 1701	108	79.5	78.8	76.8	79.8	75.5	78.1	76.5	81.0	75.0	72.3	76.2	77.2
9	UP 3004	109	76.8	74.5	71.8	75.3	76.5	75.0	74.3	78.3	69.5	66.5	72.1	73.7
10	DBW 257	110	75.5	76.5	69.8	74.3	73.8	74.0	75.8	78.3	70.0	63.8	71.9	73.1
11	RAJ 4527	111	69.0	71.5	70.8	72.0	72.5	71.2	70.8	75.0	68.0	60.0	68.4	69.9
12	WH 1239	112	67.3	73.3	65.5	71.3	74.8	70.4	72.5	73.8	70.3	59.3	68.9	69.8
13	DBW 88 (C)	113	72.8	76.0	77.0	73.0	72.8	74.3	76.8	78.0	73.0	66.8	73.6	74.0
14	PBW 781	114	76.0	77.3	73.3	77.5	75.8	76.0	77.0	79.5	75.0	66.5	74.5	75.3
15	HUW 826	115	77.3	76.8	76.8	76.3	72.0	75.8	74.3	80.0	71.3	68.0	73.4	74.7
16	DBW 253	116	76.0	75.8	67.0	74.5	72.8	73.2	75.5	77.8	71.0	62.8	71.8	72.6
17	RAJ 4529	117	72.3	74.0	68.0	74.3	72.8	72.3	73.8	76.8	69.3	63.8	70.9	71.6
18	PBW 784	118	77.5	77.8	71.3	74.0	76.8	75.5	75.5	79.8	74.3	68.8	74.6	75.1
19	HD 3280	119	75.3	76.0	74.0	75.8	74.3	75.1	76.0	79.0	72.8	65.8	73.4	74.3
20	HD 3086 (C)	120	77.0	77.8	73.3	72.8	74.5	75.1	75.5	78.3	73.8	64.8	73.1	74.2
21	HD 3281	121	77.0	76.5	69.5	73.8	76.3	74.6	76.3	79.5	72.3	66.3	73.6	74.1
22	K 1702	122	74.8	76.8	72.3	76.3	73.5	74.7	73.5	76.3	73.5	69.5	73.2	74.0
23	DBW 254	123	76.3	78.0	69.0	73.8	74.3	74.3	74.5	77.3	69.5	64.8	71.5	73.0
24	HD 3277	124	73.8	76.0	68.8	75.5	75.3	73.9	75.8	77.3	73.0	64.8	72.7	73.3
25	DBW 255	125	73.3	74.3	73.5	73.3	72.3	73.3	73.0	75.3	71.0	60.8	70.0	71.8
26	HD 3278	126	74.3	76.5	70.0	73.8	76.0	74.1	76.0	78.5	69.8	66.3	72.6	73.4
27	WH 1237	127	78.8	78.8	73.3	74.5	76.0	76.3	74.5	79.5	74.3	67.8	74.0	75.3
28	NW 7041	128	75.5	76.3	73.0	74.5	72.5	74.4	75.3	77.8	71.8	68.3	73.3	73.9
29	DBW 256	129	73.8	76.3	65.3	77.0	73.5	73.2	74.3	75.3	70.3	66.0	71.4	72.4
30	K 1006 (C)	130	72.3	75.0	67.3	74.5	72.8	72.4	74.3	78.8	74.8	68.0	73.9	73.1
31	WH 1238	131	76.0	77.3	73.3	76.0	74.0	75.3	76.3	79.3	73.0	65.3	73.4	74.5
32	UP 3001	132	74.0	76.0	71.5	73.8	74.3	73.9	76.3	78.0	71.3	65.0	72.6	73.3
33	NW 7037	133	74.0	76.0	69.3	75.0	73.5	73.6	73.0	78.5	72.5	60.8	71.2	72.5
34	PBW 785	134	72.0	75.5	70.0	71.5	73.3	72.5	74.3	74.0	69.8	62.8	70.2	71.4
35	HD 2967 (C)	135	74.0	77.5	74.3	75.5	75.3	75.3	76.0	78.3	70.5	66.5	72.8	74.2
36	HD 3276	136	73.3	75.5	68.5	72.5	74.0	72.8	73.8	75.5	68.0	66.3	70.9	71.9
Mean			74.6	76.1	70.7	74.7	74.3	74.1	74.9	77.6	71.6	65.4	72.4	73.3

Table 3: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in NIVT-1A

S. No.	Entry	Trial Code	NWPZ						NEPZ					Overall Mean
			Ludhiana	Hisar	Durgapura	Delhi	Pantnagar	Mean	Pusa	Kanpur	Varanasi	Sabour	Mean	
1	WH 1240	101	8.3	10.4	14.6	12.3	8.7	10.9	11.2	11.5	9.1	13.2	11.3	11.0
2	PBW 782	102	9.3	10.7	16.4	12.7	9.0	11.6	10.0	11.9	12.3	12.7	11.7	11.7
3	RAJ 4528	103	8.6	11.1	14.2	12.0	9.2	11.0	9.7	10.3	9.1	12.6	10.4	10.8
4	PBW 783	104	9.7	10.9	14.8	13.3	8.0	11.4	11.1	10.8	9.5	14.0	11.3	11.4
5	UP 3002	105	11.1	10.8	15.7	13.1	9.0	11.9	11.4	11.4	10.4	12.7	11.5	11.7
6	HD 3279	106	9.8	11.3	15.2	12.8	10.4	11.9	9.8	11.0	8.7	12.3	10.4	11.2
7	UP 3003	107	10.2	10.9	15.5	13.0	9.8	11.8	11.2	11.5	9.9	13.2	11.4	11.7
8	K 1701	108	9.3	10.7	15.0	11.8	9.3	11.2	10.3	10.8	9.5	12.6	10.8	11.0
9	UP 3004	109	8.9	11.7	15.7	13.5	8.9	11.7	11.4	11.2	10.6	12.9	11.5	11.6
10	DBW 257	110	9.2	10.9	14.6	12.8	8.0	11.1	11.0	10.7	9.6	12.8	11.0	11.1
11	RAJ 4527	111	11.5	13.9	15.6	14.6	10.8	13.3	11.8	12.5	11.8	13.4	12.4	12.9
12	WH 1239	112	10.4	9.1	14.1	11.3	8.3	10.6	9.9	10.3	8.7	12.9	10.4	10.6
13	DBW 88 (C)	113	11.0	10.8	14.7	13.7	9.9	12.0	10.4	11.7	10.6	12.9	11.4	11.7
14	PBW 781	114	9.9	11.2	15.5	13.6	10.0	12.0	11.8	11.7	9.6	13.7	11.7	11.9
15	HUW 826	115	9.7	10.9	14.4	12.2	8.5	11.2	10.8	10.8	10.5	12.3	11.1	11.1
16	DBW 253	116	8.6	10.4	14.1	11.8	8.6	10.7	9.8	11.1	9.7	13.2	10.9	10.8
17	RAJ 4529	117	9.8	9.9	15.2	12.0	8.4	11.0	9.9	10.9	9.1	12.5	10.6	10.8
18	PBW 784	118	9.1	11.5	14.0	13.8	10.4	11.8	12.0	10.3	9.9	12.7	11.2	11.5
19	HD 3280	119	9.9	10.5	14.3	12.5	8.1	11.0	10.2	10.0	10.2	12.5	10.7	10.9
20	HD 3086 (C)	120	9.3	10.2	15.4	12.9	9.6	11.5	11.0	10.7	9.7	13.9	11.3	11.4
21	HD 3281	121	8.2	11.9	15.3	12.9	8.3	11.3	10.9	11.0	10.2	13.5	11.4	11.3
22	K 1702	122	11.4	11.8	15.6	13.2	10.8	12.6	11.8	11.8	10.4	13.3	11.8	12.2
23	DBW 254	123	9.3	9.8	15.1	12.2	8.6	11.0	9.7	10.1	10.5	11.9	10.6	10.8
24	HD 3277	124	10.3	9.8	14.4	11.8	8.4	10.9	10.5	10.5	9.8	12.8	10.9	10.9
25	DBW 255	125	9.7	9.9	14.9	11.3	8.8	10.9	10.8	10.9	9.5	12.4	10.9	10.9
26	HD 3278	126	9.8	10.8	14.4	12.7	10.3	11.6	11.7	11.2	10.8	12.8	11.6	11.6
27	WH 1237	127	9.2	10.0	15.6	12.4	8.6	11.2	10.2	10.6	9.1	12.3	10.6	10.9
28	NW 7041	128	10.0	12.2	14.7	13.3	10.2	12.1	12.0	11.5	10.2	12.6	11.6	11.8
29	DBW 256	129	9.8	10.8	15.6	12.2	9.2	11.5	10.7	11.6	9.0	12.8	11.0	11.3
30	K 1006 (C)	130	10.7	10.8	14.6	13.9	9.2	11.9	11.6	11.1	8.9	11.6	10.8	11.4
31	WH 1238	131	8.5	11.0	14.1	12.3	9.5	11.1	10.8	10.5	10.5	13.6	11.4	11.2
32	UP 3001	132	9.6	10.2	14.5	13.0	9.7	11.4	10.3	11.4	10.6	12.9	11.3	11.4
33	NW 7037	133	9.9	10.7	14.2	12.2	9.9	11.4	11.5	10.2	9.4	13.4	11.1	11.3
34	PBW 785	134	9.8	10.3	14.2	12.4	9.5	11.2	10.3	12.3	9.4	12.3	11.1	11.2
35	HD 2967 (C)	135	10.1	10.1	15.3	13.8	8.3	11.5	11.3	11.6	9.7	13.2	11.4	11.5
36	HD 3276	136	9.1	10.0	15.4	13.1	9.2	11.3	10.7	11.4	9.4	13.2	11.2	11.3
Mean			9.69	10.77	9.7	10.8	14.9	12.7	9.2	11.5	10.8	11.1	9.9	12.9

Table 4: Sedimentation value (ml) of *T. aestivum* genotypes in NIVT-1A

S. No.	Entry	Trial Code	NWPZ						NEPZ					Overall Mean
			Ludhiana	Hisar	Durgapura	Delhi	Pantnagar	Mean	Pusa	Kanpur	Varanasi	Sabour	Mean	
1	WH 1240	101	33	33	51	49	40	41	49	48	34	43	43	42
2	PBW 782	102	35	39	52	46	46	43	51	46	39	48	46	44
3	RAJ 4528	103	31	31	57	43	36	39	50	40	38	41	42	41
4	PBW 783	104	46	43	61	52	45	49	50	46	35	54	46	48
5	UP 3002	105	33	35	51	41	39	40	49	48	37	40	44	41
6	HD 3279	106	42	45	73	54	53	53	51	50	41	60	50	52
7	UP 3003	107	38	41	62	51	51	48	50	44	41	50	46	47
8	K 1701	108	25	32	43	37	30	33	50	42	44	41	44	38
9	UP 3004	109	41	46	57	58	45	49	47	48	31	49	44	47
10	DBW 257	110	44	43	60	50	41	48	49	38	30	53	42	45
11	RAJ 4527	111	34	33	38	34	50	38	51	41	28	40	40	39
12	WH 1239	112	46	37	62	47	41	47	47	44	32	47	42	45
13	DBW 88 (C)	113	39	43	61	51	44	47	48	43	41	59	48	47
14	PBW 781	114	42	45	59	56	51	51	53	48	37	50	47	49
15	HUW 826	115	32	37	56	49	53	45	53	38	42	47	45	45
16	DBW 253	116	34	34	56	43	37	41	51	47	36	47	45	42
17	RAJ 4529	117	35	39	55	39	35	40	48	49	39	47	46	43
18	PBW 784	118	49	43	64	58	51	53	51	39	44	49	46	50
19	HD 3280	119	39	37	55	40	36	41	51	47	42	43	46	43
20	HD 3086 (C)	120	41	36	55	52	43	45	50	48	39	51	47	46
21	HD 3281	121	44	42	63	44	44	47	50	49	42	49	47	47
22	K 1702	122	50	42	65	56	52	53	49	41	40	60	47	51
23	DBW 254	123	29	41	46	40	39	39	45	46	38	40	42	40
24	HD 3277	124	35	42	57	41	39	43	44	47	40	49	45	44
25	DBW 255	125	31	43	58	46	41	44	40	39	40	48	42	43
26	HD 3278	126	33	38	51	40	37	39	43	41	40	44	42	40
27	WH 1237	127	44	45	67	54	52	52	47	44	38	54	46	49
28	NW 7041	128	39	38	58	50	44	45	48	42	39	45	43	44
29	DBW 256	129	44	42	59	48	49	48	49	47	37	51	46	47
30	K 1006 (C)	130	23	41	40	34	26	33	47	39	39	45	42	37
31	WH 1238	131	36	37	52	41	38	41	50	46	36	49	45	43
32	UP 3001	132	31	39	42	40	38	38	51	39	34	48	43	40
33	NW 7037	133	38	35	57	44	42	43	41	47	45	45	44	44
34	PBW 785	134	41	35	58	50	43	45	46	51	39	41	44	45
35	HD 2967 (C)	135	45	42	64	59	49	52	43	48	41	51	45	49
36	HD 3276	136	46	42	71	59	51	54	41	49	38	52	45	50
Mean			38	39	56	47	43	45	48	45	38	48	45	45

Table 5: Phenol test (Max-10) of *T. aestivum* genotypes in NIVT-1A

S. No.	Entry	Trial Code	NWPZ						NEPZ					Overall Mean
			Ludhiana	Hisar	Durgapura	Delhi	Pantnagar	Mean	Pusa	Kanpur	Varanasi	Sabour	Mean	
1	WH 1240	101	4.4	3.9	4.1	3.8	3.6	4.0	4.0	4.0	7.2	4.3	4.9	4.4
2	PBW 782	102	3.9	4.3	4.0	4.0	4.3	4.1	4.5	4.8	6.9	5.0	5.3	4.6
3	RAJ 4528	103	3.3	4.6	3.9	3.4	3.6	3.8	5.0	4.2	5.4	4.5	4.8	4.2
4	PBW 783	104	3.6	4.0	4.7	3.4	3.2	3.8	4.1	3.5	5.1	6.1	4.7	4.2
5	UP 3002	105	6.4	5.1	3.9	4.1	4.8	4.9	5.4	5.1	6.2	4.4	5.3	5.0
6	HD 3279	106	3.4	3.9	4.1	3.5	3.5	3.6	4.3	3.9	6.0	4.1	4.6	4.1
7	UP 3003	107	3.7	3.7	5.0	4.3	5.4	4.4	3.7	4.6	5.2	4.6	4.5	4.5
8	K 1701	108	2.5	2.8	2.8	2.9	3.0	2.8	2.8	2.8	3.0	3.1	2.9	2.9
9	UP 3004	109	2.7	2.8	2.9	2.9	3.1	2.9	2.6	2.9	2.8	2.7	2.8	2.8
10	DBW 257	110	3.4	3.6	4.3	3.6	3.4	3.7	4.1	4.0	4.6	4.1	4.2	3.9
11	RAJ 4527	111	2.8	2.9	3.0	2.8	3.2	2.9	2.7	3.0	3.2	2.7	2.9	2.9
12	WH 1239	112	4.4	3.7	5.8	5.4	3.3	4.5	3.2	7.0	4.3	4.0	4.6	4.6
13	DBW 88 (C)	113	4.5	3.3	5.5	5.0	4.0	4.5	3.7	4.8	5.0	5.6	4.8	4.6
14	PBW 781	114	3.4	3.7	5.1	5.1	3.7	4.2	3.8	4.2	4.0	6.4	4.6	4.4
15	HUW 826	115	2.8	2.8	2.8	2.8	2.9	2.8	2.3	2.6	2.8	2.8	2.6	2.7
16	DBW 253	116	4.7	3.8	5.4	4.4	4.6	4.6	3.1	5.9	5.9	5.5	5.1	4.8
17	RAJ 4529	117	3.4	4.2	5.2	4.4	5.6	4.5	3.2	6.8	5.5	4.3	4.9	4.7
18	PBW 784	118	3.4	4.2	6.8	3.7	3.0	4.2	3.4	6.3	4.5	4.0	4.5	4.4
19	HD 3280	119	3.0	4.3	4.2	3.6	3.4	3.7	3.6	4.1	4.4	5.0	4.3	3.9
20	HD 3086 (C)	120	3.3	3.6	3.7	4.2	4.5	3.9	3.9	4.8	4.8	4.7	4.6	4.2
21	HD 3281	121	3.5	3.8	3.9	3.4	3.9	3.7	3.0	5.0	4.6	4.5	4.3	4.0
22	K 1702	122	2.7	2.8	2.5	2.9	2.9	2.8	2.5	2.8	2.8	2.7	2.7	2.7
23	DBW 254	123	3.5	4.4	3.8	4.5	4.2	4.1	2.9	3.7	4.6	6.0	4.3	4.2
24	HD 3277	124	3.3	3.7	4.8	4.5	5.8	4.4	3.2	5.9	6.1	5.8	5.2	4.8
25	DBW 255	125	3.7	3.2	4.8	4.1	3.8	3.9	2.9	4.6	5.4	3.5	4.1	4.0
26	HD 3278	126	3.7	3.7	6.9	6.0	3.6	4.8	5.1	6.5	4.6	4.2	5.1	4.9
27	WH 1237	127	3.4	3.6	4.8	6.8	3.5	4.4	5.0	3.9	5.9	4.6	4.9	4.6
28	NW 7041	128	3.4	3.8	4.5	5.7	3.3	4.1	5.6	3.7	5.1	6.5	5.2	4.6
29	DBW 256	129	4.8	3.4	5.8	5.4	3.8	4.6	6.7	3.8	4.6	4.4	4.9	4.7
30	K 1006 (C)	130	3.7	3.4	4.5	4.4	4.8	4.2	4.8	4.0	4.4	4.6	4.4	4.3
31	WH 1238	131	2.8	2.8	2.8	2.9	2.9	2.8	2.7	2.9	2.8	3.2	2.9	2.9
32	UP 3001	132	3.6	3.7	3.8	5.4	3.7	4.0	4.2	3.5	6.0	5.2	4.7	4.3
33	NW 7037	133	3.4	3.5	4.7	4.4	4.0	4.0	5.8	3.8	4.2	4.2	4.5	4.2
34	PBW 785	134	3.5	3.1	3.4	3.6	3.4	3.4	2.8	3.2	4.1	2.9	3.3	3.3
35	HD 2967 (C)	135	4.8	4.2	4.9	4.6	3.7	4.4	4.7	4.8	5.2	4.5	4.8	4.6
36	HD 3276	136	4.3	3.2	4.6	4.1	5.7	4.4	5.1	3.9	5.8	3.8	4.6	4.5
Mean			3.6	3.6	4.4	4.2	3.9	3.9	3.9	4.3	4.8	4.4	4.3	4.1

Table 6: Grain appearance score (Max-10) of *T. aestivum* genotypes in NIVT-1B

S. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean	Kanpur	Pusa	Sabour	Mean	
1	PBW 787	201	8.2	8.0	8.1	7.9	7.6	8.0	7.4	7.0	7.4	7.3	7.6
2	HD 3286	202	7.3	7.6	7.5	7.2	6.9	7.3	6.8	7.1	6.2	6.7	7.0
3	PBW 786	203	7.2	6.9	6.3	7.0	7.1	6.9	7.3	8.1	6.0	7.1	7.0
4	HD 3285	204	7.1	7.1	7.0	6.9	7.1	7.0	8.4	7.3	5.8	7.2	7.1
5	DBW 259	205	7.7	6.8	5.6	7.1	7.2	6.9	7.3	6.9	6.1	6.8	6.8
6	K 1703	206	6.9	7.3	6.8	7.2	7.1	7.1	6.7	7.6	5.6	6.6	6.8
7	PBW 788	207	7.8	7.4	7.0	7.1	8.1	7.5	8.1	6.8	6.3	7.1	7.3
8	K 1006 (C)	208	5.9	7.1	7.0	7.3	7.2	6.9	6.9	7.2	6.1	6.7	6.8
9	K 1704	209	7.4	7.2	7.4	5.9	7.3	7.0	7.1	7.5	6.1	6.9	7.0
10	UP 3005	210	7.3	7.0	6.8	7.2	7.1	7.1	6.7	7.4	5.3	6.5	6.8
11	HD 3282	211	7.0	7.5	6.5	7.0	6.9	7.0	6.3	7.2	4.9	6.1	6.6
12	WH 1243	212	7.1	6.3	6.2	7.5	7.2	6.9	7.2	7.3	5.7	6.7	6.8
13	NW 7028	213	6.9	7.2	6.7	6.8	7.7	7.1	6.8	8.0	5.9	6.9	7.0
14	HUW 828	214	7.5	7.6	6.4	7.2	7.4	7.2	7.9	7.7	6.0	7.2	7.2
15	HUW 827	215	7.0	7.7	6.8	5.8	7.2	6.9	6.5	7.3	6.2	6.7	6.8
16	DBW 258	216	7.1	6.9	7.1	7.2	5.9	6.8	6.7	7.0	5.6	6.4	6.6
17	HD 2967 (C)	217	6.9	6.4	7.3	7.5	7.0	7.0	7.2	7.7	5.9	6.9	7.0
18	UP 3006	218	7.4	6.8	7.5	6.9	7.1	7.1	7.2	7.8	6.3	7.1	7.1
19	UP 3007	219	7.0	8.1	7.6	7.6	6.9	7.4	6.9	7.6	5.5	6.7	7.1
20	BRW 3814	220	8.1	8.0	7.4	7.5	7.0	7.6	7.9	7.5	6.0	7.1	7.4
21	DBW 260	221	7.4	7.2	6.7	7.2	7.1	7.1	7.0	7.5	6.0	6.8	7.0
22	WH 1242	222	7.5	7.8	7.0	7.0	6.9	7.2	7.8	7.7	5.9	7.1	7.2
23	K 1705	223	6.8	5.7	6.0	7.1	7.7	6.7	7.5	6.9	6.1	6.8	6.7
24	HUW 829	224	7.2	7.5	6.6	7.7	7.3	7.3	6.5	6.8	5.8	6.4	6.8
25	HD 3086 (C)	225	7.8	7.8	7.2	7.5	7.3	7.5	7.7	7.5	6.1	7.1	7.3
26	WH 1241	226	7.3	7.9	6.5	7.4	6.9	7.2	7.6	7.4	6.0	7.0	7.1
27	DBW 261	227	7.7	7.9	6.9	7.3	7.1	7.4	7.1	7.3	6.1	6.8	7.1
28	HD 3283	228	6.7	7.7	5.9	7.2	8.1	7.1	6.7	6.9	6.0	6.5	6.8
29	HD 3284	229	5.7	7.1	6.7	7.0	7.4	6.8	5.3	5.9	5.5	5.6	6.2
30	NW 7047	230	7.2	8.2	7.5	6.8	7.5	7.4	6.9	7.0	5.2	6.4	6.9
31	RAJ 4531	231	7.4	6.8	5.4	7.3	6.9	6.8	7.0	7.2	5.3	6.5	6.6
32	DBW 262	232	6.9	7.4	6.0	7.2	6.7	6.8	7.0	6.4	6.1	6.5	6.7
33	RAJ 4536	233	7.1	7.7	6.5	7.0	7.1	7.1	7.0	7.6	5.6	6.7	6.9
34	DBW 88 (C)	234	7.3	7.3	7.4	6.7	7.0	7.1	7.6	7.2	5.7	6.8	7.0
35	RAJ 4530	235	7.9	7.9	7.2	7.5	7.2	7.5	7.4	7.7	4.9	6.7	7.1
36	NW 7049	236	6.8	7.6	8.0	7.0	6.4	7.2	7.8	7.4	7.2	7.5	7.3
Mean			7.2	7.3	6.8	7.1	7.2	7.1	7.1	7.3	5.9	6.8	7.0

Table 7: Hectolitre weight (kg/hl) of *T. aestivum* genotypes in NIVT-1B

S. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean	Kanpur	Pusa	Sabour	Mean	
1	PBW 787	201	76.2	73.3	76.5	74.3	77.3	75.5	80.2	73.2	67.3	73.6	74.5
2	HD 3286	202	75.5	72.6	77.7	73.2	77.0	75.2	78.0	73.8	69.7	73.8	74.5
3	PBW 786	203	76.4	70.3	77.9	75.7	78.6	75.8	79.1	76.6	67.8	74.5	75.1
4	HD 3285	204	74.1	64.2	75.3	74.1	77.5	73.0	76.5	73.9	65.5	72.0	72.5
5	DBW 259	205	76.4	69.8	75.3	74.3	77.4	74.6	78.5	74.8	68.0	73.8	74.2
6	K 1703	206	75.0	65.6	76.8	72.6	77.0	73.4	78.5	75.4	64.1	72.6	73.0
7	PBW 788	207	75.5	72.5	76.6	74.0	77.5	75.2	80.2	73.3	70.0	74.5	74.8
8	K 1006 (C)	208	75.5	72.2	74.7	73.7	75.7	74.3	79.5	74.8	68.3	74.2	74.3
9	K 1704	209	77.7	74.0	76.0	72.0	75.1	74.9	79.0	73.8	68.5	73.7	74.3
10	UP 3005	210	75.0	66.9	74.8	70.5	76.9	72.8	79.9	73.5	61.2	71.5	72.2
11	HD 3282	211	73.2	72.4	75.8	73.8	76.3	74.3	77.3	73.3	61.0	70.5	72.4
12	WH 1243	212	73.3	68.9	74.9	72.5	74.9	72.9	77.7	72.7	66.8	72.4	72.6
13	NW 7028	213	78.1	71.6	75.0	75.0	78.3	75.6	80.2	76.0	67.0	74.4	75.0
14	HUW 828	214	77.0	70.7	75.5	71.5	75.5	74.0	79.2	74.6	66.8	73.5	73.8
15	HUW 827	215	77.7	68.9	75.6	74.5	77.4	74.8	78.7	75.5	69.8	74.7	74.7
16	DBW 258	216	73.2	67.5	74.6	71.0	74.5	72.1	77.2	73.4	63.8	71.5	71.8
17	HD 2967 (C)	217	74.2	62.9	76.6	75.0	78.2	73.4	75.6	74.2	66.8	72.2	72.8
18	UP 3006	218	75.7	65.9	76.3	75.1	77.8	74.1	79.4	75.3	70.1	74.9	74.5
19	UP 3007	219	72.7	72.4	75.9	71.9	75.9	73.7	77.7	74.9	62.2	71.6	72.6
20	BRW 3814	220	77.0	74.0	76.7	76.5	79.1	76.6	79.8	74.6	67.9	74.1	75.4
21	DBW 260	221	75.8	69.1	76.7	75.2	77.1	74.8	79.8	74.9	66.1	73.6	74.2
22	WH 1242	222	76.3	74.4	73.0	74.6	77.4	75.1	79.5	74.4	67.7	73.9	74.5
23	K 1705	223	73.0	62.8	73.1	71.2	72.3	70.5	77.3	72.8	68.1	72.7	71.6
24	HUW 829	224	74.9	75.3	74.1	71.5	76.4	74.4	76.8	73.0	63.8	71.2	72.8
25	HD 3086 (C)	225	76.8	70.1	75.9	74.2	78.5	75.1	79.3	75.2	69.0	74.5	74.8
26	WH 1241	226	75.2	72.5	74.7	74.3	76.2	74.6	77.8	74.9	66.3	73.0	73.8
27	DBW 261	227	77.3	70.0	76.0	74.3	78.4	75.2	79.8	75.3	68.1	74.4	74.8
28	HD 3283	228	73.1	74.2	75.9	72.8	76.1	74.4	78.6	73.3	67.8	73.2	73.8
29	HD 3284	229	72.4	66.8	75.1	73.8	76.3	72.9	76.2	71.8	63.0	70.3	71.6
30	NW 7047	230	73.2	71.8	74.6	71.3	74.6	73.1	76.8	74.0	62.0	70.9	72.0
31	RAJ 4531	231	71.2	59.4	70.8	70.5	72.8	68.9	75.6	71.1	61.2	69.3	69.1
32	DBW 262	232	76.5	70.7	75.2	74.3	78.0	74.9	79.5	74.5	64.8	72.9	73.9
33	RAJ 4536	233	73.4	72.3	73.6	72.0	77.6	73.8	76.2	70.4	63.1	69.9	71.8
34	DBW 88 (C)	234	76.2	72.7	76.1	71.5	76.4	74.6	80.4	75.6	65.4	73.8	74.2
35	RAJ 4530	235	76.6	74.0	75.2	71.9	77.4	75.0	78.3	73.6	59.0	70.3	72.6
36	NW 7049	236	77.5	74.2	77.0	74.7	78.0	76.2	81.4	76.1	71.2	76.2	76.2
Mean			75.2	70.2	75.4	73.3	76.7	74.2	78.5	74.1	66.1	72.9	73.5

Table 8: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in NIVT-1B

S. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean	Kanpur	Pusa	Sabour	Mean	
1	PBW 787	201	10.2	13.8	12.4	10.5	11.8	11.8	11.2	11.1	12.6	11.6	11.7
2	HD 3286	202	10.0	14.3	12.6	11.1	10.6	11.7	11.3	10.1	11.9	11.1	11.4
3	PBW 786	203	10.2	15.7	13.0	10.1	10.9	12.0	11.6	10.7	11.8	11.4	11.7
4	HD 3285	204	10.6	16.5	13.1	10.1	11.5	12.4	11.5	11.2	13.4	12.0	12.2
5	DBW 259	205	9.7	13.9	12.8	9.8	10.3	11.3	11.0	9.9	11.4	10.8	11.0
6	K 1703	206	11.6	15.3	12.9	9.6	10.2	11.9	11.7	11.1	13.6	12.1	12.0
7	PBW 788	207	10.2	13.1	12.1	9.0	11.6	11.2	10.8	10.5	11.8	11.0	11.1
8	K 1006 (C)	208	10.4	14.3	13.5	9.0	11.0	11.6	11.5	11.5	12.3	11.8	11.7
9	K 1704	209	9.6	13.4	13.3	9.6	11.7	11.5	10.1	11.4	12.5	11.3	11.4
10	UP 3005	210	9.6	14.1	12.3	10.4	10.6	11.4	10.4	10.0	13.4	11.3	11.3
11	HD 3282	211	10.5	13.4	12.8	11.0	10.7	11.7	10.6	10.5	13.8	11.6	11.6
12	WH 1243	212	11.2	15.4	14.0	9.3	12.0	12.4	11.2	11.4	13.1	11.9	12.1
13	NW 7028	213	9.7	13.7	12.8	10.4	10.5	11.4	9.5	10.4	13.1	11.0	11.2
14	HUW 828	214	10.2	13.5	12.1	10.1	11.5	11.5	10.6	10.8	12.1	11.2	11.3
15	HUW 827	215	11.2	16.2	15.1	11.1	12.1	13.1	12.4	12.0	14.2	12.8	13.0
16	DBW 258	216	9.5	13.8	12.5	9.8	9.7	11.0	10.6	10.8	11.8	11.1	11.1
17	HD 2967 (C)	217	11.8	16.1	13.7	9.5	10.9	12.4	12.6	10.7	12.6	12.0	12.2
18	UP 3006	218	11.1	15.2	12.7	10.1	9.8	11.8	11.0	10.3	11.7	11.0	11.4
19	UP 3007	219	10.1	13.7	12.0	10.8	11.0	11.5	10.9	10.9	12.4	11.4	11.5
20	BRW 3814	220	11.2	14.3	12.8	9.9	11.2	11.9	11.7	11.5	12.5	11.9	11.9
21	DBW 260	221	10.6	14.7	13.2	9.0	10.5	11.6	10.2	10.5	12.9	11.2	11.4
22	WH 1242	222	10.2	12.9	13.1	10.2	10.8	11.5	10.1	11.2	11.7	11.0	11.2
23	K 1705	223	10.0	15.1	12.6	10.2	11.5	11.9	10.9	11.1	11.8	11.3	11.6
24	HUW 829	224	9.5	13.1	12.2	9.9	9.7	10.9	11.5	10.5	11.8	11.2	11.1
25	HD 3086 (C)	225	11.1	14.4	12.7	9.5	10.8	11.7	10.9	11.1	12.5	11.5	11.6
26	WH 1241	226	9.7	14.7	12.7	9.2	11.8	11.6	11.5	10.2	14.5	12.1	11.8
27	DBW 261	227	10.6	15.2	13.6	9.7	11.2	12.1	10.9	11.5	12.6	11.7	11.9
28	HD 3283	228	11.1	13.0	12.4	9.2	10.8	11.3	10.1	9.5	11.5	10.4	10.8
29	HD 3284	229	9.2	14.5	12.3	9.3	10.7	11.2	11.0	11.1	12.9	11.6	11.4
30	NW 7047	230	10.5	13.3	12.2	10.4	11.3	11.5	10.4	11.3	12.8	11.5	11.5
31	RAJ 4531	231	11.5	16.3	13.2	9.5	10.9	12.3	11.6	12.1	14.2	12.6	12.4
32	DBW 262	232	10.4	14.0	12.8	9.3	9.9	11.3	10.7	11.1	11.4	11.1	11.2
33	RAJ 4536	233	10.8	15.8	14.2	9.2	10.0	12.0	11.6	11.6	13.6	12.3	12.1
34	DBW 88 (C)	234	10.0	14.3	13.0	10.7	11.2	11.8	11.1	10.1	12.4	11.2	11.5
35	RAJ 4530	235	9.9	13.4	12.9	10.2	10.8	11.4	10.4	9.7	14.4	11.5	11.5
36	NW 7049	236	9.0	13.7	12.8	10.1	11.1	11.3	10.8	10.6	11.0	10.8	11.1
Mean			10.4	14.4	12.9	9.9	10.9	11.7	11.0	10.8	12.6	11.5	11.6

Table 9: Sedimentation value (ml) of *T. aestivum* genotypes in NIVT-1B

S. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Ludhiana	Durgapura	Delhi	Pantnagar	Hisar	Mean	Kanpur	Pusa	Sabour	Mean	
1	PBW 787	201	44.5	63.0	61.5	48.0	48.0	53.0	54.5	59.0	59.0	57.5	55.3
2	HD 3286	202	53.5	53.0	53.0	52.5	41.0	50.6	45.5	69.0	61.5	58.7	54.6
3	PBW 786	203	43.5	55.0	41.0	46.5	45.0	46.2	46.0	64.0	61.5	57.2	51.7
4	HD 3285	204	48.5	54.0	48.0	47.5	42.5	48.1	53.0	57.5	62.5	57.7	52.9
5	DBW 259	205	27.0	41.0	33.5	38.0	30.0	33.9	41.5	43.0	46.0	43.5	38.7
6	K 1703	206	47.0	56.0	49.5	50.5	49.0	50.4	51.0	59.0	61.5	57.2	53.8
7	PBW 788	207	43.5	57.0	43.0	41.0	41.5	45.2	45.5	50.5	47.0	47.7	46.4
8	K 1006 (C)	208	27.0	31.5	36.0	29.0	28.5	30.4	35.0	39.5	41.0	38.5	34.5
9	K 1704	209	45.5	57.0	52.5	46.0	40.5	48.3	51.5	51.5	62.0	55.0	51.7
10	UP 3005	210	42.0	50.5	37.0	38.5	37.5	41.1	43.5	49.5	54.5	49.2	45.1
11	HD 3282	211	48.5	55.0	52.0	51.0	41.0	49.5	52.5	56.5	56.5	55.2	52.3
12	WH 1243	212	56.0	66.0	46.5	67.0	59.5	59.0	61.5	66.0	71.5	66.3	62.7
13	NW 7028	213	41.0	54.5	43.5	51.5	46.0	47.3	45.5	56.5	57.0	53.0	50.2
14	HUW 828	214	52.0	60.5	48.5	47.0	49.5	51.5	44.5	58.0	65.0	55.8	53.7
15	HUW 827	215	60.0	62.0	38.0	59.0	48.5	53.5	62.0	64.5	58.5	61.7	57.6
16	DBW 258	216	50.0	52.5	47.5	47.5	41.0	47.7	52.5	59.0	63.5	58.3	53.0
17	HD 2967 (C)	217	46.0	54.0	60.0	52.0	58.0	54.0	53.0	64.5	61.5	59.7	56.8
18	UP 3006	218	45.5	63.5	51.0	50.0	47.5	51.5	54.0	56.5	66.0	58.8	55.2
19	UP 3007	219	39.5	60.5	43.5	54.5	46.0	48.8	51.0	53.0	68.0	57.3	53.1
20	BRW 3814	220	57.0	53.5	46.0	52.5	42.0	50.2	46.0	57.0	47.0	50.0	50.1
21	DBW 260	221	46.0	56.0	49.0	44.5	49.0	48.9	47.5	52.0	68.0	55.8	52.4
22	WH 1242	222	46.5	52.5	48.5	46.5	46.5	48.1	46.5	70.5	57.5	58.2	53.1
23	K 1705	223	41.0	42.5	43.5	37.0	34.0	39.6	42.0	46.0	50.5	46.2	42.9
24	HUW 829	224	27.5	54.5	48.0	41.0	39.0	42.0	53.0	52.5	68.5	58.0	50.0
25	HD 3086 (C)	225	51.5	58.5	48.5	50.5	42.0	50.2	49.5	61.5	54.0	55.0	52.6
26	WH 1241	226	43.0	56.0	39.5	42.0	51.0	46.3	49.5	53.5	54.5	52.5	49.4
27	DBW 261	227	51.0	59.5	46.0	53.5	51.0	52.2	60.0	57.5	66.0	61.2	56.7
28	HD 3283	228	52.5	59.5	50.0	54.0	50.5	53.3	50.0	51.0	62.5	54.5	53.9
29	HD 3284	229	66.0	73.5	49.0	48.5	48.0	57.0	50.5	59.5	70.0	60.0	58.5
30	NW 7047	230	44.0	54.0	50.0	46.0	45.0	47.8	51.5	53.0	56.5	53.7	50.7
31	RAJ 4531	231	53.0	54.5	51.0	53.0	53.0	52.9	57.0	58.0	77.0	64.0	58.5
32	DBW 262	232	36.5	46.0	41.0	36.0	34.5	38.8	37.0	42.5	54.0	44.5	41.7
33	RAJ 4536	233	35.5	42.5	46.0	42.5	40.0	41.3	41.0	54.0	51.5	48.8	45.1
34	DBW 88 (C)	234	41.0	62.0	48.0	57.0	46.5	50.9	57.0	58.0	61.5	58.8	54.9
35	RAJ 4530	235	55.0	77.0	57.5	57.5	48.5	59.1	58.0	64.5	83.5	68.7	63.9
36	NW 7049	236	56.0	61.5	51.5	52.5	48.5	54.0	52.0	58.0	57.5	55.8	54.9
Mean			46.2	55.8	47.2	48.1	44.7	48.4	49.8	56.3	60.1	55.4	51.9

Table 10: Grain Appearance Score (Max-10) of *T. aestivum* genotypes in NIVT-2

S. No	Entry	CZ					PZ					Overall Mean	
		Indore	Jnnagarh	P. kheda	Vijapur	Mean	Pune	Dharwad	Ugar	Nippani	Niphad		Mean
1	NIAW-3390	6.8	7.0	7.0	6.8	6.9	6.8	6.6	6.8	6.7	6.9	6.7	6.8
2	GW-322 (c)	6.9	7.2	7.0	6.8	6.9	6.8	6.7	6.7	6.8	6.9	6.8	6.8
3	GW-508	7.1	7.3	6.9	7.2	7.1	6.9	6.7	6.8	7.0	6.9	6.8	7.0
4	HP-1968	6.9	7.1	6.9	6.8	6.9	6.9	6.8	6.8	6.9	6.9	6.9	6.9
5	PBW-789	6.7	6.9	6.8	6.5	6.7	6.7	6.6	6.7	6.9	6.7	6.7	6.7
6	MACS-6727	6.9	7.1	7.0	6.8	6.9	7.0	6.5	6.7	6.8	7.0	6.8	6.8
7	GW-505	6.9	6.8	6.7	6.7	6.8	6.8	6.7	6.7	6.8	6.8	6.7	6.8
8	MACS-6222(c)	7.2	7.3	6.9	6.9	7.1	6.9	6.7	6.9	7.0	7.0	6.9	7.0
9	MACS-6478(c)	7.0	7.1	7.0	6.9	7.0	7.0	6.7	6.7	7.1	7.0	6.9	6.9
10	MACS-6729	7.1	7.2	7.0	7.1	7.1	6.9	6.6	6.7	7.0	7.1	6.8	7.0
11	WH-1244	6.8	6.7	7.0	6.6	6.8	6.8	6.6	6.6	7.0	6.8	6.7	6.7
12	HI-1544 (c)	7.2	7.1	7.0	7.1	7.1	6.9	6.8	6.7	7.1	7.3	6.9	7.0
13	CG-1028	6.9	7.0	6.9	6.9	6.9	6.8	6.7	6.7	6.7	6.9	6.7	6.8
14	MP-1350	6.9	7.0	7.0	6.9	6.9	7.0	6.6	6.7	7.2	7.0	6.9	6.9
15	GW-506	6.9	7.0	6.9	7.0	6.9	7.0	6.7	6.8	6.9	7.1	6.9	6.9
16	AKAW-5077	6.8	7.0	6.9	6.6	6.8	6.8	6.9	6.9	7.0	6.9	6.9	6.8
17	DBW-263	6.8	6.8	6.9	6.7	6.8	6.7	6.7	6.9	7.0	6.8	6.8	6.8
18	RAJ-4532	7.3	7.0	7.1	7.2	7.1	7.1	6.7	6.7	6.8	7.1	6.9	7.0
19	HI-1632	7.1	7.1	7.0	7.1	7.0	7.0	6.8	6.6	7.0	7.0	6.8	6.9
20	UAS-398	6.7	6.8	6.8	6.5	6.7	6.7	6.6	6.7	6.9	6.8	6.7	6.7
21	MP-1348	7.1	6.9	7.1	7.0	7.0	7.3	6.9	7.2	6.7	7.2	7.0	7.0
22	MP-1349	6.8	7.1	7.0	6.8	6.9	7.0	6.8	7.0	7.1	6.9	6.9	6.9
23	AKAW-5078	6.9	6.9	6.8	6.7	6.8	6.8	6.9	7.1	7.1	6.9	6.9	6.9
24	MACS-6722	7.1	6.9	6.8	6.9	6.9	6.7	6.6	7.0	7.2	7.0	6.9	6.9
25	NIAW-3270	6.9	6.9	7.1	7.0	7.0	7.0	6.7	6.8	7.0	6.9	6.9	6.9
26	UP-3008	6.8	6.7	6.9	6.5	6.7	6.7	6.6	6.8	6.7	6.7	6.7	6.7
27	HI-1631	7.2	7.2	7.2	7.2	7.2	7.2	6.9	6.8	6.9	7.3	7.0	7.1
28	UAS-3001	7.1	7.0	6.8	6.8	6.9	6.8	6.8	6.9	7.0	6.8	6.8	6.9
29	DBW-264	6.9	7.0	6.9	6.8	6.9	6.9	6.6	6.7	6.8	6.9	6.8	6.8
30	MP-3493	7.1	7.3	7.2	7.3	7.2	7.2	6.8	6.8	7.1	7.2	7.0	7.1
31	GW-507	7.1	7.3	7.3	7.1	7.2	7.0	6.7	6.9	7.0	7.2	6.9	7.0
32	UAS-399	6.9	7.2	7.1	6.9	7.0	6.9	6.8	6.7	7.0	7.0	6.9	6.9
33	HI-1629	7.2	7.2	7.0	7.2	7.1	6.9	6.8	6.6	7.1	7.1	6.9	7.0
34	HI-1630	7.2	7.2	7.1	7.1	7.1	6.9	6.8	6.7	6.9	7.3	6.9	7.0
35	JW-5154	6.9	7.2	7.0	6.8	7.0	6.9	6.7	6.7	6.8	7.0	6.8	6.9
36	MP-3495	7.0	7.1	6.8	6.8	6.9	6.8	6.7	6.6	7.0	7.0	6.8	6.9
	Mean	7.0	7.0	6.9	6.9	6.9	6.9	6.7	6.8	6.9	7.0	6.8	6.9

Table 11: Hectolitre weight (kg/hl) of *T. aestivum* genotypes in NIVT 2

S. No	Entry	CZ					PZ					Overall Mean	
		Indore	Junagarh	P. kheda	Vijapur	Mean	Pune	Dharwad	Ugar	Nippani	Niphad		Mean
1	NIAW-3390	77.1	80.6	79.4	78.2	78.8	77.0	72.9	77.5	76.9	78.7	76.6	77.6
2	GW-322 (c)	77.6	80.4	79.1	77.1	78.5	77.8	72.3	77.1	76.5	77.5	76.2	77.3
3	GW-508	82.3	82.9	82.0	82.4	82.4	80.6	72.6	79.4	76.9	83.4	78.6	80.3
4	HP-1968	75.2	79.8	78.6	77.3	77.7	77.9	72.1	76.5	77.7	78.7	76.6	77.1
5	PBW-789	73.3	80.6	76.4	74.0	76.1	75.9	70.6	76.7	76.0	75.2	74.9	75.4
6	MACS-6727	79.2	80.3	80.6	79.2	79.8	79.6	67.5	76.4	76.3	79.5	75.8	77.6
7	GW-505	78.6	79.8	77.4	79.0	78.7	78.0	72.0	76.3	78.0	78.6	76.6	77.5
8	MACS-6222(c)	82.3	82.9	80.5	80.4	81.5	81.1	73.8	79.4	78.1	81.2	78.7	80.0
9	MACS-6478(c)	77.0	80.8	78.7	77.4	78.5	78.6	70.4	76.1	78.4	78.3	76.3	77.3
10	MACS-6729	80.4	81.5	80.2	80.3	80.6	78.9	73.8	78.8	79.1	80.4	78.2	79.3
11	WH-1244	75.1	75.0	79.1	74.6	75.9	74.3	70.6	78.5	79.0	75.0	75.5	75.7
12	HI-1544 (c)	81.7	81.6	81.1	81.9	81.6	79.6	75.0	78.1	80.5	82.2	79.1	80.2
13	CG-1028	79.1	80.4	80.3	78.0	79.4	78.4	71.6	76.6	76.4	78.4	76.3	77.7
14	MP-1350	79.8	81.2	80.9	80.1	80.5	80.4	73.7	79.0	80.5	80.3	78.8	79.5
15	GW-506	77.6	80.3	77.2	78.7	78.4	77.5	73.3	77.3	77.6	79.8	77.1	77.7
16	AKAW-5077	80.4	82.3	81.2	80.9	81.2	81.1	75.7	80.5	80.9	81.7	80.0	80.5
17	DBW-263	75.2	78.5	77.9	74.2	76.4	75.3	73.1	77.5	78.5	75.1	75.9	76.1
18	RAJ-4532	82.7	81.9	82.7	82.2	82.4	81.4	75.8	77.1	79.4	82.8	79.3	80.7
19	HI-1632	81.5	81.2	81.7	81.0	81.3	80.8	75.5	79.1	80.6	82.1	79.6	80.4
20	UAS-398	76.9	79.0	80.4	77.6	78.5	79.8	73.6	78.8	78.8	77.7	77.7	78.1
21	MP-1348	81.3	80.8	80.5	80.0	80.7	82.1	76.0	81.4	74.8	82.0	79.3	79.9
22	MP-1349	79.0	82.2	79.6	78.6	79.8	79.1	73.1	79.5	78.0	80.2	78.0	78.8
23	AKAW-5078	81.5	82.4	80.3	80.2	81.1	80.9	75.4	81.0	80.0	81.2	79.7	80.3
24	MACS-6722	80.9	79.9	80.4	80.3	80.4	77.6	73.0	79.1	79.8	80.4	78.0	79.0
25	NIAW-3270	79.4	80.5	80.4	80.1	80.1	79.8	73.2	77.8	78.7	79.7	77.8	78.8
26	UP-3008	72.7	74.4	73.1	75.4	73.9	72.5	71.0	77.8	74.8	74.2	74.0	74.0
27	HI-1631	81.7	82.2	82.4	82.0	82.1	81.1	76.2	79.3	76.2	82.8	79.1	80.4
28	UAS-3001	81.5	83.1	80.9	81.0	81.6	81.8	75.6	80.1	78.7	82.1	79.6	80.5
29	DBW-264	81.9	80.3	79.3	78.9	80.1	79.2	68.8	78.0	79.2	78.6	76.7	78.3
30	MP-3493	81.4	82.4	81.6	81.5	81.7	81.1	74.9	77.3	79.5	81.8	78.9	80.2
31	GW-507	79.3	82.3	81.7	81.4	81.2	81.0	74.1	78.4	80.1	82.3	79.2	80.1
32	UAS-399	78.1	82.0	76.9	78.3	78.8	80.3	74.8	78.0	77.5	79.4	78.0	78.4
33	HI-1629	81.8	81.8	80.9	80.6	81.3	80.5	74.5	77.8	81.1	80.9	78.9	80.0
34	HI-1630	83.2	82.4	82.7	82.2	82.6	81.7	75.0	78.8	81.3	83.3	80.0	81.2
35	JW-5154	79.2	81.3	80.9	79.7	80.3	80.1	72.2	78.1	78.9	80.3	77.9	79.0
36	MP-3495	80.4	81.3	77.3	77.0	79.0	77.3	73.9	77.1	79.3	80.1	77.5	78.2
	Mean	79.3	80.8	79.8	79.2	79.8	79.1	73.2	78.2	78.4	79.9	77.8	78.7

Table 12: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in NIVT-2

S. No	Entry	CZ					PZ					Overall Mean	
		Indore	Junagarh	P. kheda	Vijapur	Mean	Pune	Dharwad	Ugar	Nippani	Niphad		Mean
1	NIAW-3390	11.9	12.6	12.2	12.2	12.2	11.2	12.5	11.6	11.7	11.7	11.7	12.0
2	GW-322 (c)	10.2	12.0	11.4	11.2	11.2	10.9	12.2	12.3	11.8	11.0	11.6	11.4
3	GW-508	10.3	12.6	11.2	11.5	11.4	11.1	13.0	12.4	12.8	11.1	12.1	11.8
4	HP-1968	13.0	13.5	13.1	13.2	13.2	12.5	13.3	13.4	12.3	13.0	12.9	13.0
5	PBW-789	13.4	12.8	12.4	12.9	12.9	11.7	13.7	12.6	12.3	13.2	12.7	12.8
6	MACS-6727	11.4	13.5	12.2	11.9	12.2	11.8	13.1	13.0	12.3	11.9	12.4	12.3
7	GW-505	10.6	12.0	11.5	11.3	11.3	11.1	12.4	12.7	11.7	11.1	11.8	11.6
8	MACS-6222(c)	10.5	12.5	11.9	11.9	11.7	11.4	13.4	12.9	12.4	11.7	12.3	12.0
9	MACS-6478(c)	12.0	13.2	12.4	13.0	12.6	11.6	12.9	12.3	13.1	12.8	12.5	12.6
10	MACS-6729	10.6	12.6	11.8	11.2	11.5	10.9	12.9	12.5	11.9	10.9	11.8	11.7
11	WH-1244	12.8	13.4	11.9	12.7	12.7	11.6	12.5	11.9	12.7	12.9	12.3	12.5
12	HI-1544 (c)	10.3	12.5	11.5	11.9	11.6	10.9	12.9	11.2	11.9	11.2	11.6	11.6
13	CG-1028	11.3	12.0	11.8	12.0	11.8	11.1	12.4	12.6	12.8	11.6	12.1	11.9
14	MP-1350	10.8	12.1	11.5	11.2	11.4	11.0	12.3	11.4	13.6	11.2	11.9	11.7
15	GW-506	10.7	11.6	11.8	10.9	11.2	10.5	12.3	10.8	12.5	11.1	11.4	11.3
16	AKAW-5077	11.5	12.4	12.0	12.3	12.0	11.8	12.7	12.7	11.0	12.2	12.0	12.0
17	DBW-263	12.5	12.9	12.1	13.3	12.7	11.8	12.5	12.1	12.2	12.9	12.3	12.5
18	RAJ-4532	12.3	14.5	13.0	12.4	13.0	12.3	14.6	14.0	12.0	13.3	13.2	13.1
19	HI-1632	11.0	13.5	12.0	12.7	12.3	11.7	13.1	12.3	12.6	11.6	12.2	12.2
20	UAS-398	11.5	12.7	12.1	12.1	12.1	10.8	12.6	11.9	12.7	12.2	12.0	12.0
21	MP-1348	12.9	14.7	13.8	14.6	14.0	12.9	13.3	13.0	13.4	14.0	13.3	13.6
22	MP-1349	11.3	12.0	12.2	11.8	11.8	11.1	12.3	11.9	13.3	11.8	12.0	11.9
23	AKAW-5078	10.7	13.0	12.4	12.4	12.1	11.7	13.2	12.8	11.0	12.0	12.1	12.1
24	MACS-6722	9.8	12.1	10.9	11.7	11.1	10.7	12.1	10.9	12.8	10.8	11.5	11.3
25	NIAW-3270	12.0	12.8	12.4	12.6	12.4	12.5	13.6	12.6	11.4	12.4	12.5	12.4
26	UP-3008	14.5	14.8	14.3	14.4	14.5	13.4	14.2	13.6	14.5	13.9	13.9	14.2
27	HI-1631	10.4	13.2	11.4	11.9	11.7	11.0	12.9	12.6	12.8	11.5	12.1	11.9
28	UAS-3001	11.4	12.1	12.3	12.6	12.1	11.3	12.9	13.4	12.9	11.5	12.4	12.2
29	DBW-264	11.5	13.0	12.2	13.0	12.4	11.4	14.0	11.9	12.4	12.7	12.5	12.4
30	MP-3493	13.3	14.1	12.9	12.9	13.3	12.8	13.7	13.6	11.6	12.9	12.9	13.1
31	GW-507	12.0	13.5	12.4	11.9	12.4	11.8	13.5	12.5	12.6	12.5	12.5	12.5
32	UAS-399	12.4	13.0	13.2	12.6	12.8	11.1	13.1	13.4	12.9	12.0	12.5	12.6
33	HI-1629	11.0	12.1	12.0	11.7	11.7	11.0	12.3	12.2	11.9	11.4	11.7	11.7
34	HI-1630	9.9	13.1	11.3	12.2	11.6	10.8	12.6	12.8	11.7	11.3	11.8	11.7
35	JW-5154	11.8	13.9	12.0	13.0	12.7	12.2	13.3	12.9	13.0	12.5	12.8	12.7
36	MP-3495	10.9	13.2	13.1	12.3	12.4	12.1	12.8	13.3	12.4	11.7	12.4	12.4
	Mean	11.5	12.9	12.2	12.3	12.2	11.5	12.9	12.5	12.4	12.0	12.3	12.2

Table 13: Sedimentation value (ml) of *T. aestivum* genotypes in NIVT-2

S. No	Entry	CZ					PZ					Overall Mean	
		Indore	Junagarh	P. kheda	Vijapur	Mean	Pune	Dharwad	Ugar	Nippani	Niphad		Mean
1	NIAW-3390	48	51	50	60	52	44	45	43	46	45	44	48
2	GW-322 (c)	38	46	42	55	45	39	43	42	43	42	42	43
3	GW-508	37	47	40	55	45	39	48	44	47	39	43	44
4	HP-1968	52	51	52	62	54	46	48	49	47	51	48	51
5	PBW-789	53	49	46	62	52	44	48	44	47	51	46	49
6	MACS-6727	48	56	50	59	53	46	46	45	49	49	47	50
7	GW-505	37	45	44	56	45	40	44	48	45	41	43	44
8	MACS-6222(c)	37	44	43	57	45	40	47	45	48	44	45	45
9	MACS-6478(c)	46	54	48	62	52	44	47	46	48	51	47	49
10	MACS-6729	37	46	44	53	45	38	45	43	46	39	42	43
11	WH-1244	50	53	47	61	53	45	44	43	51	53	47	49
12	HI-1544 (c)	37	48	44	57	46	39	46	40	44	41	42	44
13	CG-1028	44	45	45	60	48	41	45	45	48	46	45	46
14	MP-1350	42	48	45	55	47	40	42	41	53	45	44	46
15	GW-506	41	43	46	53	46	37	43	39	45	42	41	43
16	AKAW-5077	42	47	45	57	47	43	44	45	42	46	44	46
17	DBW-263	48	51	48	62	52	45	43	43	46	50	45	48
18	RAJ-4532	49	59	53	59	55	47	57	54	44	55	51	53
19	HI-1632	45	56	46	61	52	42	48	47	47	48	46	49
20	UAS-398	42	49	44	55	47	39	44	41	48	45	43	45
21	MP-1348	54	60	47	65	56	52	48	47	51	57	51	53
22	MP-1349	45	49	48	59	50	43	44	46	50	48	46	48
23	AKAW-5078	40	48	46	57	48	42	47	46	41	45	44	46
24	MACS-6722	34	45	39	55	43	37	42	37	48	39	40	42
25	NIAW-3270	48	51	47	61	52	47	47	46	46	49	47	49
26	UP-3008	60	62	58	65	61	51	51	50	53	55	52	56
27	HI-1631	38	51	41	56	46	40	46	45	48	43	44	45
28	UAS-3001	42	44	45	60	48	41	45	47	50	43	45	46
29	DBW-264	45	52	46	63	51	44	48	43	49	51	47	49
30	MP-3493	50	59	52	62	56	50	50	50	41	53	49	52
31	GW-507	46	52	47	56	50	43	49	46	49	48	47	48
32	UAS-399	51	54	55	61	55	43	47	52	49	49	48	51
33	HI-1629	42	46	46	57	48	39	43	45	45	44	43	45
34	HI-1630	35	52	41	56	46	38	43	46	41	42	42	44
35	JW-5154	43	55	46	62	51	45	46	45	49	49	47	49
36	MP-3495	44	53	52	60	52	45	45	49	48	48	47	49
	Mean	44	50	46	59	50	42	46	45	47	47	45	47

Table 14: Phenol test (Max-10) of *T. aestivum* genotypes in NIVT 2

S. No	Entry	CZ					PZ					Overall mean	
		Indore	Junagarh	P. kheda	Vijapur	Mean	Pune	Dharwad	Ugar	Nippani	Niphad		Mean
1	NIAW-3390	6	5	7	4	5.5	5	5	7	5	5	5.4	5.4
2	GW-322 (c)	5	5	7	5	5.5	6	6	7	5	5	5.8	5.6
3	GW-508	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
4	HP-1968	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
5	PBW-789	6	6	7	7	6.5	6	6	6	7	7	6.4	6.4
6	MACS-6727	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
7	GW-505	6	4	6	6	5.5	5	6	6	7	7	6.2	5.8
8	MACS-6222(c)	7	4	6	6	5.7	5	6	6	4	5	5.2	5.4
9	MACS-6478(c)	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
10	MACS-6729(c)	6	4	6	5	5.2	5	7	6	6	6	6.0	5.6
11	WH-1244	6	4	6	5	5.2	4	7	7	5	6	5.8	5.5
12	HI-1544 (c)	5	4	6	5	5.0	5	7	7	4	6	5.8	5.4
13	CG-1028	4	5	4	4	4.2	4	5	6	4	4	4.6	4.4
14	MP-1350	7	5	5	5	5.5	4	5	5	4	7	5.0	5.2
15	GW-506	5	5	5	4	4.7	4	6	7	5	7	5.8	5.2
16	AKAW-5077	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
17	DBW-263	5	4	6	5	5.0	4	6	5	4	6	5.0	5.0
18	RAJ-4532	5	4	7	5	5.2	6	6	7	7	7	6.6	5.9
19	HI-1632	4	4	4	5	4.2	4	4	4	4	5	4.2	4.2
20	UAS-398	7	4	5	6	5.5	7	5	5	7	7	6.2	5.8
21	MP-1348	4	4	5	4	4.2	5	5	7	5	4	5.2	4.7
22	MP-1349	5	4	6	4	4.7	7	6	5	4	6	5.6	5.1
23	AKAW-5078	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
24	MACS-6722	4	4	6	4	4.5	5	6	6	5	6	5.6	5.0
25	NIAW-3270	4	6	7	6	5.7	4	6	7	4	4	5.0	5.3
26	UP-3008	7	7	7	6	6.7	6	7	7	7	7	6.8	6.7
27	HI-1631	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
28	UAS-3001	6	4	7	4	5.2	6	6	7	7	7	6.6	5.9
29	DBW-264	4	4	5	4	4.2	5	6	6	4	5	5.2	4.7
30	MP-3493	0	0	0	0	0.0	0	0	0	0	0	0.0	0.0
31	GW-507	6	4	4	4	4.5	4	4	5	4	5	4.4	4.4
32	UAS-399	5	4	5	5	4.7	4	5	7	4	4	4.8	4.7
33	HI-1629	4	5	4	4	4.2	4	4	7	4	4	4.6	4.4
34	HI-1630	4	6	6	5	5.2	4	6	4	4	5	4.6	4.9
35	JW-5154	5	6	7	5	5.7	6	6	5	7	7	6.2	5.9
36	MP-3495	6	6	6	5	5.7	6	6	7	4	6	5.8	5.7
Mean		4.1	3.6	4.5	3.8	4.0	3.8	4.4	4.7	3.9	4.4	4.2	4.1

Table 15: Grain appearance score (Max-10) of *T. aestivum* genotypes in NIVT-3A

S. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Pantnagar	Ludhiana	Hisar	Delhi	Durgapura	Mean	Kanpur	Samastipur	Sabour	Mean	
1	RAJ 4535	401	4.5	5.5	6.0	5.5	5.0	5.3	6.0	4.0	4.0	4.7	5.0
2	WH 1247	402	4.5	5.5	5.5	5.5	4.5	5.1	6.0	5.0	4.5	5.2	5.1
3	HI 1563 (C)	403	4.5	4.5	6.5	6.5	5.0	5.4	6.5	5.0	4.5	5.3	5.4
4	DBW 90 (C)	404	4.5	4.5	6.0	5.5	4.5	5.0	6.0	4.5	4.0	4.8	4.9
5	WH 1248	405	4.0	4.5	6.0	5.5	3.5	4.7	5.0	4.0	4.0	4.3	4.5
6	HD 3290	406	4.0	5.5	6.5	6.0	5.0	5.4	5.0	3.5	3.5	4.0	4.7
7	NW 7033	407	4.5	6.0	7.0	6.5	5.5	5.9	6.5	4.5	4.5	5.2	5.5
8	PBW 793	408	5.0	5.5	5.5	5.5	4.0	5.1	5.5	4.0	4.0	4.5	4.8
9	HD 3291	409	5.0	6.5	6.0	6.0	5.5	5.8	6.0	4.0	3.5	4.5	5.2
10	PBW 792	410	6.0	6.0	7.0	6.0	4.0	5.8	5.5	4.0	4.0	4.5	5.2
11	K 1707	411	4.5	6.0	6.0	5.5	5.5	5.5	5.5	4.5	4.0	4.7	5.1
12	DBW 267	412	6.0	5.5	5.0	5.5	4.5	5.3	5.5	5.0	4.5	5.0	5.2
13	UP 3010	413	6.0	6.0	6.0	5.5	4.0	5.5	5.5	4.5	4.0	4.7	5.1
14	PBW 790	414	6.0	6.0	6.0	5.5	3.5	5.4	5.0	5.0	4.0	4.7	5.0
15	HP 1969	415	5.5	6.0	5.5	5.5	5.0	5.5	5.5	4.0	4.0	4.5	5.0
16	UP 3011	416	5.5	6.5	6.0	6.0	5.0	5.8	6.0	4.0	4.0	4.7	5.2
17	HUW 830	417	6.5	6.0	6.5	5.5	5.5	6.0	6.0	4.0	4.0	4.7	5.3
18	PBW 791	418	5.5	5.5	6.0	5.5	4.5	5.4	5.0	5.5	4.5	5.0	5.2
19	DBW 107 (C)	419	5.5	6.5	6.5	5.5	5.0	5.8	5.5	5.0	4.5	5.0	5.4
20	HD 3288	420	6.5	6.5	6.0	7.0	5.5	6.3	4.5	5.5	4.5	4.8	5.6
21	DBW 269	421	5.5	6.0	6.0	5.5	4.5	5.5	6.0	4.5	4.0	4.8	5.2
22	K 1708	422	6.5	5.0	6.5	6.0	4.5	5.7	6.5	4.5	4.5	5.2	5.4
23	PBW 799	423	5.5	5.0	5.5	6.0	4.5	5.3	6.0	4.0	4.0	4.7	5.0
24	HD 3059 (C)	424	5.5	6.0	5.5	5.0	4.5	5.3	5.0	5.0	4.0	4.7	5.0
25	DBW 265	425	5.5	6.0	5.0	4.5	5.5	5.3	6.0	3.5	4.0	4.5	4.9
26	DBW 266	426	5.5	6.0	5.5	5.0	4.5	5.3	5.0	3.5	4.0	4.2	4.7
27	RAJ 4534	427	6.0	6.5	6.5	7.0	5.5	6.3	5.5	4.5	5.0	5.0	5.7
28	WH 1245	428	5.5	5.5	6.0	6.5	5.5	5.8	5.0	4.0	4.0	4.3	5.1
29	NW 7034	429	5.0	4.0	5.5	5.5	4.5	4.9	6.0	4.0	3.5	4.5	4.7
30	WH 1246	430	5.5	4.0	5.5	5.0	3.5	4.7	5.0	3.5	4.0	4.2	4.4
31	DBW 268	431	5.5	4.5	5.5	6.0	4.0	5.1	5.5	4.0	4.0	4.5	4.8
32	HD 3289	432	5.5	5.5	5.5	5.5	5.0	5.4	6.0	4.5	4.5	5.0	5.2
33	HD 3287	433	5.5	6.0	6.0	5.5	5.0	5.6	5.5	4.0	4.5	4.7	5.1
34	HUW 831	434	5.5	6.0	5.5	5.5	4.5	5.4	6.0	4.5	4.0	4.8	5.1
35	RAJ 4533	435	5.0	6.0	5.5	5.0	5.0	5.3	6.0	4.5	4.5	5.0	5.2
36	UP 3009	436	5.5	6.0	5.5	5.5	5.5	5.6	6.5	5.0	5.0	5.5	5.6
Mean			5.3	5.6	5.9	5.7	4.7	5.5	5.7	4.4	4.2	4.7	5.1

Table 16: Hectolitre weight (kg/hl) of *T. aestivum* genotypes in NIVT-3A

S. No.	Entry	Trial code	NWPZ						NEPZ				Overall Mean
			Pantnagar	Ludhiana	Hisar	Delhi	Durgapura	Mean	Kanpur	Samastipur	Sabour	Mean	
1	RAJ 4535	401	72.9	77.7	80.0	-	77.5	77.0	77.6	70.4	65.0	71.0	74.0
2	WH 1247	402	74.4	77.9	74.3	77.3	71.2	75.0	78.7	73.9	70.4	74.3	74.7
3	HI 1563 (C)	403	76.9	78.0	81.1	82.7	77.4	79.2	83.2	76.2	73.7	77.7	78.5
4	DBW 90 (C)	404	74.8	76.6	80.9	77.1	74.7	76.8	77.4	73.1	67.2	72.6	74.7
5	WH 1248	405	71.7	77.5	81.0	79.7	68.1	75.6	77.1	72.1	68.7	72.6	74.1
6	HD 3290	406	71.5	78.3	82.1	80.5	77.7	78.0	78.0	72.4	68.5	73.0	75.5
7	NW 7033	407	74.2	79.4	82.0	79.8	75.6	78.2	79.7	72.1	69.6	73.8	76.0
8	PBW 793	408	74.5	75.7	79.4	78.5	67.5	75.1	76.7	70.1	68.5	71.8	73.5
9	HD 3291	409	73.0	80.4	82.9	77.5	77.6	78.3	78.5	71.3	63.0	70.9	74.6
10	PBW 792	410	74.8	79.0	81.6	79.3	71.2	77.2	78.3	71.7	70.8	73.6	75.4
11	K 1707	411	74.9	81.3	80.9	79.8	77.9	79.0	80.0	72.8	67.3	73.4	76.2
12	DBW 267	412	75.2	78.6	79.5	76.1	69.1	75.7	77.1	72.1	66.7	72.0	73.8
13	UP 3010	413	75.9	79.2	81.7	78.7	69.9	77.1	79.0	73.0	69.0	73.7	75.4
14	PBW 790	414	75.3	79.5	81.5	79.0	64.8	76.0	74.7	73.2	68.2	72.0	74.0
15	HP 1969	415	76.7	79.0	81.7	80.0	77.2	78.9	77.3	73.9	69.3	73.5	76.2
16	UP 3011	416	75.9	79.7	82.1	79.2	76.2	78.6	80.9	70.7	68.9	73.5	76.1
17	HUW 830	417	76.0	79.6	82.0	78.8	69.7	77.2	79.7	71.1	66.9	72.6	74.9
18	PBW 791	418	76.2	78.6	82.0	79.2	64.5	76.1	77.6	74.8	72.6	75.0	75.6
19	DBW 107 (C)	419	76.9	79.6	81.3	79.8	75.2	78.6	76.6	74.5	72.2	74.4	76.5
20	HD 3288	420	78.0	81.0	81.0	82.5	72.9	79.1	75.2	74.6	67.7	72.5	75.8
21	DBW 269	421	72.7	76.7	79.6	76.4	65.8	74.2	77.8	69.2	65.7	70.9	72.6
22	K 1708	422	76.2	75.6	81.0	78.9	68.7	76.1	80.7	66.7	64.8	70.7	73.4
23	PBW 799	423	74.6	75.3	79.9	77.5	71.3	75.7	75.1	66.9	62.5	68.2	71.9
24	HD 3059 (C)	424	76.4	77.9	81.6	78.2	72.0	77.2	77.6	74.0	66.7	72.8	75.0
25	DBW 265	425	74.6	81.6	79.8	77.1	72.6	77.1	80.0	69.1	66.8	72.0	74.5
26	DBW 266	426	76.0	81.1	81.5	78.8	67.7	77.0	77.7	70.0	64.2	70.6	73.8
27	RAJ 4534	427	73.8	79.9	83.0	81.6	74.4	78.5	78.1	73.8	69.7	73.8	76.2
28	WH 1245	428	74.1	73.9	79.8	76.5	71.8	75.2	71.6	68.5	63.9	68.0	71.6
29	NW 7034	429	73.4	72.9	79.9	77.0	68.1	74.3	74.9	68.6	60.4	67.9	71.1
30	WH 1246	430	76.9	74.1	80.5	76.7	61.3	73.9	79.4	69.1	66.4	71.6	72.8
31	DBW 268	431	75.9	74.8	81.8	-	64.8	74.3	79.2	70.2	64.0	71.1	72.7
32	HD 3289	432	76.2	79.3	80.5	-	63.0	74.7	77.8	71.3	67.4	72.2	73.4
33	HD 3287	433	74.5	79.0	82.2	79.6	67.1	76.5	80.0	71.3	69.1	73.4	75.0
34	HUW 831	434	76.9	78.8	79.8	78.2	68.0	76.3	78.8	72.9	67.2	72.9	74.6
35	RAJ 4533	435	73.5	77.2	80.2	-	65.7	74.2	77.0	71.7	67.6	72.1	73.1
36	UP 3009	436	75.2	80.2	80.9	79.5	70.7	77.3	80.7	77.4	72.9	77.0	77.1
Mean			75.0	78.2	80.9	78.7	70.8	76.6	78.0	71.8	67.6	72.5	74.6

Table 17: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in NIVT-3A

S. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Pantnagar	Ludhiana	Hisar	Delhi	Durgapura	Mean	Kanpur	Samastipur	Sabour	Mean	
1	RAJ 4535	401	13.5	11.4	11.3	-	14.6	12.7	11.2	13.9	14.2	13.1	12.9
2	WH 1247	402	12.2	11.5	10.1	13.3	14.5	12.3	12.4	13.4	13.0	12.9	12.6
3	HI 1563 (C)	403	10.4	10.7	10.3	12.3	13.1	11.4	10.0	11.9	11.8	11.2	11.3
4	DBW 90 (C)	404	10.2	10.8	9.6	12.7	13.3	11.3	11.1	13.2	12.1	12.1	11.7
5	WH 1248	405	11.7	10.3	9.2	12.4	14.4	11.6	11.6	12.8	12.3	12.2	11.9
6	HD 3290	406	12.2	10.1	9.9	12.7	14.1	11.8	11.1	12.5	11.6	11.7	11.8
7	NW 7033	407	11.1	10.4	10.5	13.8	14.4	12.0	11.1	13.2	13.0	12.4	12.2
8	PBW 793	408	11.1	11.0	9.0	12.5	14.3	11.6	10.3	13.3	12.4	12.0	11.8
9	HD 3291	409	11.8	10.6	9.8	12.4	13.7	11.7	11.5	13.1	12.5	12.4	12.0
10	PBW 792	410	11.1	10.6	9.1	12.6	14.8	11.7	11.5	12.9	11.9	12.1	11.9
11	K 1707	411	11.7	11.9	10.8	12.9	13.6	12.2	10.9	13.4	13.2	12.5	12.3
12	DBW 267	412	10.1	10.7	9.6	12.9	14.2	11.5	11.6	12.8	12.2	12.2	11.9
13	UP 3010	413	11.3	10.4	9.5	11.9	15.1	11.7	10.6	12.9	12.5	12.0	11.8
14	PBW 790	414	12.2	10.4	11.4	13.3	16.4	12.7	10.4	12.9	12.7	12.0	12.4
15	HP 1969	415	11.8	10.9	10.2	13.3	14.1	12.1	11.7	13.8	13.4	13.0	12.5
16	UP 3011	416	12.2	10.3	9.8	13.7	15.0	12.2	11.8	13.9	13.2	13.0	12.6
17	HUW 830	417	10.1	11.1	9.1	12.5	14.3	11.4	10.8	12.9	12.6	12.1	11.8
18	PBW 791	418	10.9	10.5	9.6	12.1	13.6	11.4	10.6	12.7	11.6	11.6	11.5
19	DBW 107 (C)	419	11.0	9.8	9.3	13.4	13.4	11.4	12.2	12.4	11.3	12.0	11.7
20	HD 3288	420	12.2	10.6	9.8	13.4	14.8	12.2	9.7	13.2	12.7	11.9	12.0
21	DBW 269	421	11.0	9.9	9.7	12.2	14.4	11.4	12.0	12.4	11.8	12.1	11.8
22	K 1708	422	11.1	11.5	9.8	13.1	15.7	12.3	12.1	14.0	12.7	12.9	12.6
23	PBW 799	423	11.5	11.0	11.7	13.0	14.4	12.3	12.8	13.8	12.5	13.0	12.7
24	HD 3059 (C)	424	11.3	11.1	10.2	13.2	13.9	11.9	11.5	13.4	12.7	12.6	12.3
25	DBW 265	425	12.1	11.6	10.2	12.9	14.8	12.3	11.5	13.3	12.5	12.4	12.4
26	DBW 266	426	11.0	10.1	10.1	12.4	14.9	11.7	10.8	13.3	12.8	12.3	12.0
27	RAJ 4534	427	12.0	10.4	10.6	12.6	13.0	11.7	11.5	13.0	13.0	12.5	12.1
28	WH 1245	428	11.9	11.0	10.7	13.1	13.9	12.1	12.5	13.3	12.8	12.9	12.5
29	NW 7034	429	12.1	10.9	9.3	12.2	14.3	11.7	10.6	12.7	13.4	12.2	12.0
30	WH 1246	430	11.4	11.8	10.2	13.2	15.8	12.5	9.9	13.9	13.0	12.3	12.4
31	DBW 268	431	10.4	10.8	10.2	-	14.9	11.6	10.7	13.0	12.3	12.0	11.8
32	HD 3289	432	10.5	9.9	9.5	-	16.2	11.5	12.2	13.0	12.0	12.4	12.0
33	HD 3287	433	11.4	10.8	9.8	12.8	14.8	11.9	10.7	13.0	12.6	12.1	12.0
34	HUW 831	434	10.7	10.2	9.4	13.8	13.8	11.6	11.6	12.5	12.2	12.1	11.8
35	RAJ 4533	435	-	11.6	12.0	-	16.8	13.5	12.4	14.3	13.8	13.5	13.5
36	UP 3009	436	12.5	12.2	12.0	15.0	14.0	13.2	13.0	13.8	13.1	13.3	13.2
Mean			11.4	10.8	10.1	12.9	14.5	11.9	11.3	13.2	12.6	12.4	12.2

Table 18: Sedimentation value (ml) of *T. aestivum* genotypes in NIVT-3A

Sr. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Pantnagar	Ludhiana	Hisar	Delhi	Durgapura	Mean	Kanpur	Samastipur	Sabour	Mean	
1	RAJ 4535	401	42	42	38	45	48	43	43	44	36	41	42
2	WH 1247	402	46	46	44	52	55	49	54	45	48	49	49
3	HI 1563 (C)	403	43	48	37	42	51	44	45	42	51	46	45
4	DBW 90 (C)	404	42	48	44	51	50	47	48	52	58	53	50
5	WH 1248	405	38	44	43	46	53	45	43	44	49	45	45
6	HD 3290	406	50	46	49	45	56	49	45	44	46	45	47
7	NW 7033	407	56	50	50	52	61	54	52	59	64	58	56
8	PBW 793	408	46	47	50	54	61	52	49	50	58	52	52
9	HD 3291	409	51	48	51	50	62	52	46	45	55	49	51
10	PBW 792	410	43	46	40	40	52	44	39	43	51	44	44
11	K 1707	411	48	44	42	42	50	45	38	47	38	41	43
12	DBW 267	412	47	50	48	54	58	51	44	47	38	43	47
13	UP 3010	413	49	52	46	48	60	51	46	48	56	50	51
14	PBW 790	414	48	56	47	49	60	52	49	49	58	52	52
15	HP 1969	415	43	43	41	48	49	45	49	52	48	50	47
16	UP 3011	416	50	51	50	48	60	52	53	57	47	52	52
17	HUW 830	417	44	50	47	51	55	49	43	50	47	47	48
18	PBW 791	418	42	38	41	48	54	45	38	45	45	43	44
19	DBW 107 (C)	419	40	34	34	38	48	39	34	38	37	36	38
20	HD 3288	420	47	44	47	52	60	50	42	48	49	46	48
21	DBW 269	421	41	40	40	42	50	43	43	44	47	45	44
22	K 1708	422	45	49	47	48	56	49	55	63	60	59	54
23	PBW 799	423	50	48	50	47	60	51	48	58	50	52	52
24	HD 3059 (C)	424	51	53	50	55	63	54	50	46	52	49	52
25	DBW 265	425	58	56	48	54	58	55	58	63	66	62	59
26	DBW 266	426	48	50	45	44	56	49	50	57	59	55	52
27	RAJ 4534	427	34	36	34	33	44	36	48	56	58	54	45
28	WH 1245	428	45	47	44	48	60	49	55	63	62	60	54
29	NW 7034	429	53	47	47	62	58	53	48	54	46	49	51
30	WH 1246	430	41	50	42	42	52	45	42	47	51	47	46
31	DBW 268	431	48	56	49	51	64	54	42	43	42	42	48
32	HD 3289	432	47	52	48	56	62	53	44	52	44	47	50
33	HD 3287	433	48	42	37	47	48	44	46	51	43	47	46
34	HUW 831	434	42	45	45	42	48	44	55	53	56	55	50
35	RAJ 4533	435	30	35	29	33	40	33	30	37	37	35	34
36	UP 3009	436	32	33	34	41	43	37	38	32	40	37	37
Mean			45	46	44	47	55	47	46	49	50	48	48

Table 19: Phenol test (Max score 10) of *T. aestivum* genotypes in NIVT-3A

S. No.	Entry	Trial Code	NWPZ						NEPZ				Overall Mean
			Pantnagar	Ludhiana	Hisar	Delhi	Durgapura	Mean	Kanpur	Samastipur	Sabour	Mean	
1	RAJ 4535	401	4	4	5	4	4	4.2	4	5	4	4.3	4.3
2	WH 1247	402	7	7	8	7	7	7.2	8	7	7	7.3	7.3
3	HI 1563 (C)	403	4	5	5	5	4	4.6	4	5	4	4.3	4.5
4	DBW 90 (C)	404	8	8	7	7	7	7.4	7	7	6	6.7	7.0
5	WH 1248	405	7	8	7	8	7	7.4	7	8	7	7.3	7.4
6	HD 3290	406	8	7	8	8	7	7.6	7	8	7	7.3	7.5
7	NW 7033	407	7	7	8	7	8	7.4	7	7	8	7.3	7.4
8	PBW 793	408	6	6	6	6	5	5.8	6	7	6	6.3	6.1
9	HD 3291	409	6	7	6	7	6	6.4	7	8	7	7.3	6.9
10	PBW 792	410	6	7	7	7	6	6.6	6	7	6	6.3	6.5
11	K 1707	411	5	4	4	5	4	4.4	3	4	4	3.7	4.0
12	DBW 267	412	8	7	7	8	7	7.4	7	7	7	7.0	7.2
13	UP 3010	413	4	4	5	5	4	4.4	4	5	5	4.7	4.5
14	PBW 790	414	7	7	7	8	8	7.4	7	7	8	7.3	7.4
15	HP 1969	415	8	7	8	8	8	7.8	8	8	8	8.0	7.9
16	UP 3011	416	8	7	7	7	7	7.2	6	7	7	6.7	6.9
17	HUW 830	417	6	6	6	7	7	6.4	7	8	8	7.7	7.0
18	PBW 791	418	6	7	7	6	7	6.6	7	8	7	7.3	7.0
19	DBW 107 (C)	419	7	7	7	8	7	7.2	6	7	7	6.7	6.9
20	HD 3288	420	5	4	4	5	4	4.4	5	4	5	4.7	4.5
21	DBW 269	421	7	8	7	8	8	7.6	6	7	7	6.7	7.1
22	K 1708	422	7	6	6	7	7	6.6	6	7	7	6.7	6.6
23	PBW 799	423	6	6	7	7	7	6.6	7	8	7	7.3	7.0
24	HD 3059 (C)	424	8	7	7	8	7	7.4	8	7	8	7.7	7.5
25	DBW 265	425	8	8	8	8	7	7.8	8	7	8	7.7	7.7
26	DBW 266	426	7	6	7	7	6	6.6	7	7	7	7.0	6.8
27	RAJ 4534	427	8	7	8	7	7	7.4	6	7	7	6.7	7.0
28	WH 1245	428	7	6	6	7	6	6.4	7	8	7	7.3	6.9
29	NW 7034	429	8	7	7	7	7	7.2	7	7	8	7.3	7.3
30	WH 1246	430	7	7	7	6	6	6.6	6	7	7	6.7	6.6
31	DBW 268	431	5	5	4	4	4	4.4	4	5	5	4.7	4.5
32	HD 3289	432	6	5	6	6	6	5.8	6	7	6	6.3	6.1
33	HD 3287	433	7	6	7	7	7	6.8	6	7	7	6.7	6.7
34	HUW 831	434	6	6	7	6	7	6.4	6	7	7	6.7	6.5
35	RAJ 4533	435	6	5	5	5	6	5.4	5	5	6	5.3	5.4
36	UP 3009	436	7	7	7	7	8	7.2	8	7	7	7.3	7.3
Mean			6.6	6.3	6.5	6.7	6.4	6.5	6.3	6.8	6.6	6.6	6.5

Table 20: Grain appearance score (Max-10) of *T. aestivum* genotypes in NIVT-3B

S. No.	Entry	Trial Code	CZ					PZ				Overall Mean
			Indore	Vijapur	Junagarh	P. kheda	Mean	Pune	Dharwad	Niphad	Mean	
1	GW 510	501	7.0	6.5	6.5	7.0	6.8	6.0	6.0	7.5	6.5	6.6
2	NIAW 3523	502	6.5	7.0	6.0	6.0	6.4	6.0	6.0	7.0	6.3	6.4
3	MP 3503	503	8.0	7.5	7.0	7.0	7.4	7.0	6.0	8.0	7.0	7.2
4	GW 511	504	7.5	8.0	7.5	7.5	7.6	7.5	6.5	8.0	7.3	7.5
5	MACS 6732	505	7.0	6.5	6.0	6.0	6.4	5.0	5.0	7.5	5.8	6.1
6	PBW 794	506	7.0	5.5	5.0	6.0	5.9	6.0	5.5	7.0	6.2	6.0
7	MP 1352	507	7.0	6.5	6.0	6.0	6.4	6.0	5.5	7.0	6.2	6.3
8	HI 1633	508	8.0	6.5	6.0	7.0	6.9	5.5	5.0	7.5	6.0	6.4
9	NIAW 3354	509	7.5	6.5	7.0	6.0	6.8	5.0	4.5	6.5	5.3	6.0
10	MP 3497	510	7.5	5.5	5.5	6.5	6.3	5.0	4.5	7.0	5.5	5.9
11	UAS 3002	511	7.0	6.0	6.0	6.0	6.3	6.0	6.0	5.5	5.8	6.0
12	MP 1351	512	8.0	7.0	7.5	7.0	7.4	6.5	6.0	7.0	6.5	6.9
13	GW 509	513	7.5	7.5	7.5	7.0	7.4	6.0	6.0	7.5	6.5	6.9
14	AKAW 5023	514	7.5	7.5	7.0	6.0	7.0	6.0	5.5	7.5	6.3	6.7
15	HD 2932 (C)	515	7.0	7.5	6.5	5.5	6.6	5.5	4.0	6.5	5.3	6.0
16	HI 1634	516	7.5	7.5	6.5	8.0	7.4	6.0	5.0	6.0	5.7	6.5
17	DBW 270	517	5.5	6.0	5.5	4.0	5.3	5.5	5.5	7.0	6.0	5.6
18	HD 2864 (C)	518	6.5	7.0	6.5	6.0	6.5	6.0	5.5	4.5	5.3	5.9
19	HI 8807	519	7.5	7.0	7.5	5.5	6.9	7.5	5.0	6.5	6.3	6.6
20	MACS 6726	520	6.0	6.0	7.0	5.5	6.1	5.0	5.0	7.0	5.7	5.9
21	HI 8808	521	7.5	7.0	7.0	6.0	6.9	7.0	4.5	6.5	6.0	6.4
22	DBW 271	522	6.0	5.0	6.0	5.5	5.6	6.0	4.5	7.0	5.8	5.7
23	NIAW 3525	523	7.0	5.5	7.0	6.0	6.4	6.5	4.5	7.0	6.0	6.2
24	HD 3300	524	6.5	5.5	6.5	5.0	5.9	5.0	4.5	6.0	5.2	5.5
25	CG 1029	525	7.5	6.0	7.0	8.0	7.1	7.0	5.5	6.0	6.2	6.6
Mean			7.1	6.6	6.5	6.2	6.6	6.0	5.3	6.8	6.0	6.3

Table 21: Hectolitre weight (kg/hl) of *T. aestivum* genotypes in NIVT-3B

S. No.	Entry	Trial Code	CZ					PZ				Overall Mean
			Indore	Vijapur	Junagarh	P. kheda	Mean	Pune	Dharwad	Niphad	Mean	
1	GW 510	501	81.7	80.1	77.0	79.5	79.6	76.9	72.5	81.9	77.1	78.4
2	NIAW 3523	502	81.9	80.2	78.4	79.6	80.0	79.0	70.6	81.6	77.0	78.5
3	MP 3503	503	83.6	81.8	80.1	81.6	81.8	81.2	72.9	82.7	78.9	80.3
4	GW 511	504	84.0	81.5	81.0	80.2	81.7	83.6	75.6	84.0	81.1	81.4
5	MACS 6732	505	81.5	78.5	76.1	78.1	78.5	79.1	71.7	81.5	77.4	78.0
6	PBW 794	506	82.1	74.1	72.6	78.2	76.7	77.1	69.9	80.0	75.6	76.2
7	MP 1352	507	81.7	80.3	76.3	77.4	78.9	80.3	71.8	81.9	78.0	78.5
8	HI 1633	508	83.3	78.7	75.7	81.6	79.8	79.7	72.7	81.6	78.0	78.9
9	NIAW 3354	509	81.6	77.0	78.1	75.9	78.2	76.4	69.3	79.3	75.0	76.6
10	MP 3497	510	82.5	76.0	76.3	76.1	77.7	78.8	69.6	79.3	75.9	76.8
11	UAS 3002	511	83.7	79.4	76.8	77.9	79.5	80.4	74.5	79.6	78.2	78.8
12	MP 1351	512	84.0	78.4	78.1	80.6	80.3	80.4	74.8	81.7	79.0	79.6
13	GW 509	513	81.8	80.3	80.4	80.7	80.8	80.9	76.2	83.5	80.2	80.5
14	AKAW 5023	514	82.8	81.5	77.3	78.3	80.0	80.9	73.0	82.4	78.8	79.4
15	HD 2932 (C)	515	81.1	79.4	76.8	77.3	78.6	78.8	67.0	82.2	76.0	77.3
16	HI 1634	516	83.3	81.4	77.6	80.6	80.7	81.0	70.8	79.9	77.2	79.0
17	DBW 270	517	79.3	77.8	75.1	72.6	76.2	76.4	73.5	82.1	77.3	76.8
18	HD 2864 (C)	518	81.8	81.7	78.2	81.0	80.7	81.9	74.6	77.6	78.0	79.4
19	HI 8807	519	83.6	81.0	80.4	78.6	80.9	83.8	73.0	81.4	79.4	80.1
20	MACS 6726	520	80.2	75.3	76.8	73.9	76.6	76.7	73.5	81.6	77.3	76.9
21	HI 8808	521	83.4	80.2	79.4	79.5	80.6	83.3	73.7	80.1	79.0	79.8
22	DBW 271	522	81.0	72.7	74.9	75.8	76.1	78.8	69.3	82.0	76.7	76.4
23	NIAW 3525	523	82.8	76.7	80.3	75.0	78.7	78.3	70.9	80.0	76.4	77.5
24	HD 3300	524	81.4	77.4	76.1	75.0	77.5	77.8	71.4	77.7	75.6	76.5
25	CG 1029	525	83.8	77.8	78.7	81.5	80.5	81.7	74.9	76.7	77.7	79.1
Mean			82.3	78.8	77.5	78.3	79.2	79.7	72.3	80.9	77.6	78.4

Table 22: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in NIVT-3B

S. No.	Entry	Trial Code	CZ					PZ				Overall Mean
			Indore	Vijapur	Junagarh	P. kheda	Mean	Pune	Dharwad	Niphad	Mean	
1	GW 510	501	11.5	15.0	14.3	13.2	13.5	11.6	13.9	12.4	12.7	13.1
2	NIAW 3523	502	9.9	12.8	13.6	12.9	12.3	11.0	12.2	11.8	11.7	12.0
3	MP 3503	503	10.7	14.1	13.6	13.1	12.9	12.3	14.0	12.2	12.8	12.8
4	GW 511	504	10.4	14.6	13.4	13.8	13.1	12.9	14.1	12.3	13.1	13.1
5	MACS 6732	505	11.5	15.3	15.1	13.9	13.9	12.4	13.8	13.2	13.1	13.5
6	PBW 794	506	11.0	15.6	16.4	13.8	14.2	12.8	14.5	13.9	13.7	14.0
7	MP 1352	507	11.1	14.7	13.9	14.1	13.4	12.7	13.3	12.8	12.9	13.2
8	HI 1633	508	10.8	14.8	14.9	12.4	13.2	11.2	13.9	11.9	12.3	12.8
9	NIAW 3354	509	11.3	14.7	14.8	13.4	13.5	12.8	15.0	13.1	13.6	13.6
10	MP 3497	510	10.1	14.4	14.5	13.1	13.0	12.3	13.6	13.0	13.0	13.0
11	UAS 3002	511	10.8	13.4	15.3	12.7	13.0	12.4	13.6	12.8	12.9	13.0
12	MP 1351	512	11.2	15.1	14.1	13.4	13.5	13.3	14.2	13.6	13.7	13.6
13	GW 509	513	10.7	13.9	13.6	12.5	12.7	11.7	13.2	12.1	12.3	12.5
14	AKAW 5023	514	11.4	14.4	14.4	14.0	13.6	11.9	15.4	12.8	13.3	13.4
15	HD 2932 (C)	515	11.1	14.2	14.2	12.6	13.0	12.3	13.0	13.2	12.8	12.9
16	HI 1634	516	10.8	14.1	14.0	12.6	12.9	11.5	13.7	12.0	12.4	12.6
17	DBW 270	517	10.8	15.5	15.1	14.5	14.0	13.9	13.5	12.6	13.3	13.7
18	HD 2864 (C)	518	10.7	14.1	14.3	12.2	12.8	11.3	13.9	12.0	12.4	12.6
19	HI 8807	519	10.3	14.9	13.4	14.1	13.2	12.5	13.1	13.5	13.0	13.1
20	MACS 6726	520	10.6	13.8	14.7	12.6	12.9	12.7	13.6	13.0	13.1	13.0
21	HI 8808	521	10.8	14.8	14.8	14.2	13.7	12.1	14.4	13.9	13.5	13.6
22	DBW 271	522	11.5	14.7	15.2	13.8	13.8	12.5	13.7	12.9	13.0	13.4
23	NIAW 3525	523	10.6	14.1	15.1	13.5	13.3	11.7	13.7	12.7	12.7	13.0
24	HD 3300	524	11.1	15.6	15.4	14.0	14.0	13.2	14.7	13.2	13.7	13.9
25	CG 1029	525	10.6	14.9	14.1	12.6	13.1	11.1	14.3	12.3	12.6	12.8
Mean			10.9	14.5	14.5	13.3	13.3	12.2	13.9	12.8	13.0	13.1

Table 23: Sedimentation value (ml) of *T. aestivum* genotypes in NIVT-3B

S. No.	Entry	Trial Code	CZ					PZ				Overall Mean
			Indore	Vijapur	Junagarh	P. kheda	Mean	Pune	Dharwad	Niphad	Mean	
1	GW 510	501	36	47	45	39	42	44	45	38	42	42
2	NIAW 3523	502	35	47	46	36	41	46	48	45	46	44
3	MP 3503	503	30	33	35	33	33	34	35	34	34	34
4	GW 511	504	36	37	40	34	37	42	44	37	41	39
5	MACS 6732	505	33	38	38	35	36	36	36	36	36	36
6	PBW 794	506	44	45	50	44	46	48	56	48	51	48
7	MP 1352	507	34	46	38	40	40	44	44	38	42	41
8	HI 1633	508	40	47	35	42	41	32	35	34	34	37
9	NIAW 3354	509	39	46	51	44	45	48	54	60	54	50
10	MP 3497	510	30	41	37	40	37	34	41	40	38	38
11	UAS 3002	511	42	49	48	45	46	45	51	54	50	48
12	MP 1351	512	24	21	24	20	22	22	26	22	23	23
13	GW 509	513	28	35	34	30	32	30	34	30	31	32
14	AKAW 5023	514	34	46	48	38	42	39	39	31	36	39
15	HD 2932 (C)	515	35	38	45	40	40	38	42	41	40	40
16	HI 1634	516	30	33	36	31	33	32	40	42	38	35
17	DBW 270	517	36	48	38	41	41	44	52	39	45	43
18	HD 2864 (C)	518	33	38	30	37	35	36	44	48	43	39
19	HI 8807	519	26	27	30	28	28	27	36	35	33	30
20	MACS 6726	520	33	37	40	44	39	43	47	36	42	40
21	HI 8808	521	23	28	28	26	26	25	33	33	30	28
22	DBW 271	522	42	41	50	54	47	48	53	41	47	47
23	NIAW 3525	523	42	40	49	39	43	40	49	39	43	43
24	HD 3300	524	49	41	53	48	48	42	52	48	47	48
25	CG 1029	525	27	31	31	30	30	27	36	38	34	32
Mean			34	39	40	38	38	38	43	39	40	39

Table 24: Phenol test (Max-10)) of *T. aestivum* genotypes in NIVT-3B

S. No.	Entry	Trial Code	CZ					PZ				Overall Mean
			Indore	Vijapur	Junagarh	P. kheda	Mean	Pune	Dharwad	Niphad	Mean	
1	GW 510	501	4	3	4	4	3.8	4	4	5	4.3	4.0
2	NIAW 3523	502	6	6	7	7	6.5	7	6	7	6.7	6.6
3	MP 3503	503	4	4	5	4	4.3	4	5	5	4.7	4.5
4	GW 511	504	6	7	6	7	6.5	6	7	7	6.7	6.6
5	MACS 6732	505	7	7	7	6	6.8	8	7	7	7.3	7.0
6	PBW 794	506	6	6	6	6	6.0	7	7	7	7.0	6.5
7	MP 1352	507	7	6	7	6	6.5	7	8	7	7.3	6.9
8	HI 1633	508	7	7	7	6	6.8	7	7	8	7.3	7.0
9	NIAW 3354	509	7	6	7	7	6.8	8	7	7	7.3	7.0
10	MP 3497	510	5	5	4	5	4.8	6	6	6	6.0	5.4
11	UAS 3002	511	7	6	7	7	6.8	7	8	7	7.3	7.0
12	MP 1351	512	0	0	0	0	0.0	0	0	0	0.0	0.0
13	GW 509	513	6	6	6	7	6.3	6	7	6	6.3	6.3
14	AKAW 5023	514	7	7	7	8	7.3	7	7	7	7.0	7.1
15	HD 2932 (C)	515	3	3	4	4	3.5	5	5	6	5.3	4.4
16	HI 1634	516	6	6	6	7	6.3	6	7	6	6.3	6.3
17	DBW 270	517	7	7	8	7	7.3	8	7	7	7.3	7.3
18	HD 2864 (C)	518	4	4	4	4	4.0	4	5	5	4.7	4.3
19	HI 8807	519	0	0	0	0	0.0	0	0	0	0.0	0.0
20	MACS 6726	520	5	5	6	6	5.5	6	7	6	6.3	5.9
21	HI 8808	521	0	0	0	0	0.0	0	0	0	0.0	0.0
22	DBW 271	522	7	7	7	8	7.3	7	7	7	7.0	7.1
23	NIAW 3525	523	4	4	5	4	4.3	5	5	6	5.3	4.8
24	HD 3300	524	8	7	8	7	7.5	7	8	8	7.7	7.6
25	CG 1029	525	7	7	7	8	7.3	6	7	6	6.3	6.8
Mean			5.2	5.0	5.4	5.4	5.3	5.5	5.8	5.7	5.7	5.5

Table 25: Grain appearance score of *T. durum* genotypes in NIVT-4

S. No	Entry	Trial Code	CZ						PZ					Overall mean
			Indore	vijapur	junagadh	P. kheda	Mean	Dharwad	Niphad	Nippani	Pune	Ugar	Mean	
1	DDW 48	601	6.1	6.5	7.0	6.0	6.4	3.5	6.5	6.0	5.9	5.2	5.4	5.9
2	HI 8813	602	6.0	6.7	6.9	5.8	6.4	3.6	6.8	6.5	6.0	5.3	5.6	6.0
3	HI 8737 (C)	603	6.3	6.9	7.0	5.7	6.5	3.7	6.7	6.2	4.2	5.6	5.3	5.9
4	MACS 4085	604	6.2	6.2	7.1	5.2	6.2	3.6	6.0	6.4	5.0	5.3	5.3	5.7
5	MPO 1355	605	5.8	5.7	6.0	5.8	5.8	3.5	5.5	6.0	6.1	3.9	5.0	5.4
6	HI 8812	606	6.8	6.8	6.7	7.0	6.8	4.0	6.9	6.2	5.6	5.5	5.6	6.2
7	HI 8811	607	6.9	6.9	6.9	6.5	6.8	3.5	9.8	6.1	5.4	5.9	6.1	6.4
8	HI 8810	608	6.7	6.5	6.0	6.2	6.4	3.7	6.1	7.0	5.7	5.8	5.7	6.1
9	AKDW 5079	609	5.9	6.6	7.0	6.5	6.5	5.0	5.8	4.7	4.5	5.9	5.2	5.9
10	HI 8809	610	6.0	6.4	6.8	5.8	6.3	4.2	5.9	4.9	5.0	3.8	4.8	5.6
11	WHD 963	611	5.8	5.8	6.5	5.7	6.0	4.0	5.5	4.8	6.0	3.5	4.8	5.4
12	RKD 331	612	5.9	5.7	6.0	5.9	5.9	4.3	5.4	5.6	6.1	3.8	5.0	5.5
13	MACS 4083	613	5.9	6.2	6.6	6.0	6.2	4.6	5.9	6.0	5.8	4.5	5.4	5.8
14	GW 1348	614	5.4	6.1	6.7	6.2	6.1	4.3	5.4	6.1	5.2	4.9	5.2	5.7
15	NIDW 1171	615	5.7	6.4	6.8	6.0	6.2	5.0	5.6	6.4	4.6	4.1	5.1	5.7
16	UAS 468	616	6.4	6.2	6.3	6.2	6.3	5.1	5.5	6.2	5.8	4.7	5.5	5.9
17	MPO 1353	617	6.2	5.7	5.8	6.0	5.9	5.3	5.1	5.9	5.1	4.5	5.2	5.6
18	MPO 1354	618	6.5	5.5	5.6	6.3	5.9	3.8	5.0	6.0	4.0	3.5	4.5	5.2
19	UAS 469	619	7.2	6.3	6.0	6.5	6.5	3.9	6.1	7.0	5.7	4.5	5.4	6.0
20	PDW 355	620	6.8	6.2	6.3	6.1	6.4	4.0	6.2	6.4	6.1	4.6	5.5	6.0
21	HI 8713 (C)	621	6.1	6.1	6.5	6.8	6.4	4.6	5.7	7.0	5.6	4.5	5.5	6.0
22	DDW 49	622	7.8	5.9	6.1	5.9	6.4	3.8	5.9	6.0	6.0	4.8	5.3	5.9
23	NIDW 1158	623	6.7	5.8	5.8	6.3	6.2	3.7	5.2	6.2	5.8	5.7	5.3	5.8
24	MACS 3949 (C)	624	7.3	6.3	6.8	5.9	6.6	4.0	5.9	5.5	5.9	5.2	5.3	6.0
25	GW 1349	625	6.8	6.1	6.3	6.1	6.3	4.1	5.8	4.9	5.5	4.9	5.0	5.7
Mean			6.4	6.2	6.5	6.1	6.3	4.1	6.0	6.0	5.5	4.8	5.3	5.8

Table 26: Hectolitre weight (kg/hl) of *T. durum* genotypes in NIVT-4

S. No	Entry	Trial Code	CZ				PZ						Overall Mean	
			Indore	Vijapur	junagqdh	P. kheda	Mean	Dharwad	Niphad	Nippani	pune	Ugar		Mean
1	DDW 48	601	82.3	83.5	81.7	83.0	82.6	82.7	82.1	84.0	82.5	81.1	82.5	82.6
2	HI 8813	602	85.3	84.5	82.9	83.9	84.2	81.6	84.1	84.4	81.8	81.9	82.8	83.5
3	HI 8737 (C)	603	85.3	84.5	82.3	84.7	84.2	78.8	85.8	84.2	81.2	82.4	82.5	83.4
4	MACS 4085	604	83.4	81.7	82.1	81.9	82.3	84.4	86.0	82.4	83.6	79.7	83.2	82.8
5	MPO 1355	605	82.7	81.8	80.8	80.4	81.4	82.9	81.5	82.5	83.9	81.2	82.4	81.9
6	HI 8812	606	84.8	83.8	82.7	85.0	84.1	79.4	85.3	84.3	83.2	82.2	82.8	83.5
7	HI 8811	607	85.0	83.5	82.4	84.0	83.7	78.4	84.0	84.4	85.4	82.9	83.0	83.3
8	HI 8810	608	83.4	83.4	81.5	82.1	82.1	78.5	85.5	83.8	79.2	80.9	81.6	81.8
9	AKDW 5079	609	81.6	82.4	81.9	81.1	81.8	81.9	83.2	84.2	84.5	80.4	82.9	82.4
10	HI 8809	610	86.2	85.5	82.8	85.3	85.0	80.3	85.3	85.0	82.7	83.1	83.3	84.2
11	WHD 963	611	84.9	81.8	82.1	81.3	82.5	79.9	82.3	84.5	83.7	81.8	82.4	82.5
12	RKD 331	612	83.4	80.3	79.5	80.4	80.9	79.2	79.5	85.9	82.7	79.0	81.3	81.1
13	MACS 4083	613	86.1	84.3	81.8	83.6	84.0	84.1	83.2	85.4	84.3	82.9	84.0	84.0
14	GW 1348	614	84.5	83.5	81.3	82.9	83.0	81.0	84.8	84.3	82.6	81.7	83.0	83.0
15	NIDW 1171	615	83.8	82.4	81.2	80.8	82.0	79.6	82.7	82.2	83.2	80.6	82.0	82.0
16	UAS 468	616	81.7	78.1	80.0	78.5	80.0	78.0	83.4	81.8	84.2	76.9	81.0	80.5
17	MPO 1353	617	80.9	82.0	81.0	81.9	81.5	77.0	84.7	83.2	79.2	81.4	81.1	81.3
18	MPO 1354	618	83.1	80.1	80.5	81.8	81.4	76.7	82.9	82.9	84.4	80.5	81.5	81.5
19	UAS 469	619	83.4	82.7	81.9	81.7	82.4	79.0	82.8	84.1	82.6	82.2	82.1	82.3
20	PDW 355	620	83.5	82.1	80.9	82.9	82.3	78.1	84.9	84.2	84.9	82.4	82.9	82.6
21	HI 8713 (C)	621	85.3	83.2	81.4	80.4	82.6	77.7	84.4	81.7	85.4	82.9	82.4	82.5
22	DDW 49	622	85.6	84.0	82.2	84.4	84.1	81.7	85.3	85.6	84.5	82.9	84.0	84.1
23	NIDW 1158	623	80.8	80.0	79.8	79.9	80.1	74.2	81.4	81.2	83.6	76.9	79.5	79.8
24	MACS 3949 (C)	624	85.5	83.4	82.4	83.1	83.6	79.5	84.8	85.2	82.9	82.2	82.9	83.2
25	GW 1349	625	83.9	82.2	80.6	82.2	82.2	76.8	83.5	83.6	82.3	81.8	81.6	81.9
Mean			83.9	82.6	81.5	82.3	82.6	79.7	83.8	83.8	83.1	81.3	82.3	82.2

Table 27: Protein content (%) at 14% moisture basis of *T. durum* genotypes in NIVT-4

S. No	Entry	Trial Code	CZ				PZ							Overall Mean
			Indore	Vijapur	junagqdh	P. kheda	Mean	Dharwad	Niphad	Nippani	pune	Ugar	Mean	
1	DDW 48	601	11.9	12.5	12.2	12.8	12.4	12.6	12.0	12.4	12.6	11.4	12.2	12.3
2	HI 8813	602	12.4	11.3	11.6	11.3	11.7	12.0	12.6	12.5	11.5	12.8	12.3	12.0
3	HI 8737 (C)	603	12.2	11.9	12.8	12.2	12.3	12.3	11.9	12.8	12.9	12.5	12.5	12.4
4	MACS 4085	604	12.6	12.5	12.9	11.5	12.4	11.5	12.6	12.4	11.0	12.4	12.0	12.2
5	MPO 1355	605	11.0	11.0	12.8	12.2	11.8	12.6	12.4	12.5	12.6	11.9	12.4	12.1
6	HI 8812	606	12.5	12.8	12.1	11.3	12.2	11.9	11.4	11.0	12.9	12.0	11.8	12.0
7	HI 8811	607	12.6	12.6	12.6	11.5	12.3	12.9	12.1	11.5	12.1	12.7	12.3	12.3
8	HI 8810	608	12.3	12.4	12.7	12.0	12.4	11.8	12.0	11.2	12.0	12.1	11.8	12.1
9	AKDW 5079	609	12.0	11.7	11.0	11.5	11.6	11.6	12.7	11.4	11.1	12.6	11.9	11.8
10	HI 8809	610	12.5	11.3	12.1	12.4	12.1	12.6	12.8	12.9	13.2	12.9	12.9	12.5
11	WHD 963	611	11.4	12.7	11.9	11.5	11.9	12.2	11.7	12.6	12.8	12.4	12.3	12.1
12	RKD 331	612	12.3	11.9	12.5	12.6	12.3	12.3	11.4	12.0	13.4	12.0	12.2	12.3
13	MACS 4083	613	11.5	12.0	11.6	11.8	11.7	12.4	12.5	11.6	11.5	11.2	11.8	11.8
14	GW 1348	614	11.4	12.4	12.8	12.0	12.6	12.1	12.0	11.4	12.6	11.1	11.8	12.2
15	NIDW 1171	615	11.9	12.6	11.3	11.7	11.9	11.9	12.8	11.2	11.0	11.0	11.6	11.8
16	UAS 468	616	11.9	13.0	12.5	12.1	12.4	12.3	11.9	12.4	12.6	12.0	12.2	12.3
17	MPO 1353	617	12.0	12.9	11.3	12.0	12.1	12.4	11.1	12.3	12.8	12.1	12.1	12.1
18	MPO 1354	618	12.2	11.0	11.2	12.0	11.6	12.7	11.0	11.2	12.4	12.4	11.9	11.8
19	UAS 469	619	11.3	12.6	12.4	11.9	12.1	11.9	12.6	12.1	12.0	12.0	12.1	12.1
20	PDW 355	620	12.4	12.0	12.7	11.5	12.2	12.1	11.0	12.5	11.1	11.0	11.5	11.9
21	HI 8713 (C)	621	12.9	12.8	12.9	11.5	12.5	11.0	12.4	12.7	12.5	11.5	12.1	12.3
22	DDW 49	622	11.6	12.0	11.7	12.7	12.0	12.1	12.0	11.7	12.6	11.3	11.9	12.0
23	NIDW 1158	623	11.1	11.9	12.2	12.4	11.9	11.6	11.5	12.2	11.8	12.5	11.9	11.9
24	MACS 3949 (C)	624	11.2	12.8	11.0	11.8	11.7	12.0	12.5	11.8	12.6	12.2	12.2	12.0
25	GW 1349	625	12.6	12.3	12.0	11.0	12.0	12.3	12.0	12.3	12.7	12.0	12.3	12.2
Mean			12.0	12.2	12.1	11.9	12.0	12.1	12.0	12.0	12.3	12.0	12.1	12.0

Table 28: Sedimentation value (ml) of *T. durum* genotypes in NIVT-4

S. No	Entry	Trial Code	CZ					PZ					Overall Mean	
			Indore	Vijapur	junagqdh	P.kheda	Mean	Dharwad	Niphad	Nippani	pune	Ugar		Mean
1	DDW 48	601	30	35	33	33	33	34	37	33	30	30	33	33
2	HI 8813	602	32	33	36	31	33	37	32	35	31	31	33	33
3	HI 8737 (C)	603	39	32	34	30	34	38	37	38	38	33	37	35
4	MACS 4085	604	32	30	39	38	35	39	33	40	36	32	36	35
5	MPO 1355	605	47	47	40	42	44	40	35	48	39	34	39	41
6	HI 8812	606	35	26	45	30	34	31	36	45	47	37	39	36
7	HI 8811	607	30	31	46	36	35	35	33	43	49	39	39	37
8	HI 8810	608	32	32	49	30	35	37	35	40	48	30	38	36
9	AKDW 5079	609	32	34	36	34	34	36	39	47	39	31	38	36
10	HI 8809	610	39	31	37	31	34	40	38	40	35	38	38	36
11	WHD 963	611	39	32	39	35	36	30	42	41	32	34	35	36
12	RKD 331	612	38	37	40	33	37	32	45	36	34	31	35	36
13	MACS 4083	613	32	30	36	39	34	33	38	34	38	38	36	35
14	GW 1348	614	37	32	38	33	35	35	37	37	37	37	36	35
15	NIDW 1171	615	34	31	40	38	35	40	37	40	39	36	38	37
16	UAS 468	616	36	35	31	37	34	35	31	42	33	30	34	34
17	MPO 1353	617	31	32	35	32	32	36	35	35	39	38	36	34
18	MPO 1354	618	38	36	32	36	35	37	45	38	31	37	37	36
19	UAS 469	619	46	30	33	37	36	38	31	39	36	39	36	36
20	PDW 355	620	30	36	35	39	35	31	36	40	39	37	36	35
21	HI 8713 (C)	621	31	34	37	40	35	30	38	43	32	39	36	35
22	DDW 49	622	34	31	39	47	37	33	39	40	30	35	35	36
23	NIDW 1158	623	35	34	34	49	38	36	32	35	33	36	34	36
24	MACS 3949 (C)	624	38	32	40	36	36	37	39	36	32	35	35	36
25	GW 1349	625	33	35	41	31	35	34	30	40	39	34	35	35
Mean			35	33	37	36	35	35	36	39	36	35	36	36

Table 29: Yellow berries incidence of *T. durum* genotypes in NIVT-4

S. No	Entry	Trial Code	CZ					PZ					Overall Mean	
			Indore	Vijapur	Junagadh	<i>p.khadra</i>	Mean	Dharwad	Nipahad	Nippani	Pune	Ugar		Mean
1	DDW 48	601	0.0	0.0	1.1	0.0	0.2	4.0	1.2	2.0	1.0	1.0	1.8	1.0
2	HI 8813	602	0.0	0.0	1.0	0.0	0.2	4.1	0.0	1.0	2.0	1.0	1.6	0.9
3	HI 8737 (C)	603	1.0	0.0	0.1	1.0	0.5	12.0	0.4	3.0	0.0	1.0	3.2	1.9
4	MACS 4085	604	1.0	0.0	1.0	1.0	0.7	7.0	3.9	3.0	3.0	1.0	3.3	2.0
5	MPO 1355	605	0.0	0.0	0.0	0.0	0.0	21.5	0.0	0.0	0.0	0.0	4.3	2.1
6	HI 8812	606	0.0	0.0	0.0	0.0	0.0	4.6	0.0	3.0	3.0	2.0	2.5	1.1
7	HI 8811	607	0.0	0.0	0.0	1.0	0.2	12.0	0.4	2.0	2.0	3.0	3.8	2.0
8	HI 8810	608	0.0	0.0	0.0	1.0	0.2	12.1	0.0	0.0	2.1	1.0	3.0	1.6
9	AKDW 5079	609	1.0	0.0	1.0	0.0	0.5	7.5	0.0	3.0	3.0	1.0	2.9	1.7
10	HI 8809	610	1.0	0.0	0.0	2.0	0.7	7.0	0.0	2.0	2.0	3.0	2.8	1.7
11	WHD 963	611	2.0	0.0	0.3	0.0	0.5	12.0	4.1	3.0	3.0	3.0	5.0	2.7
12	RKD 331	612	1.0	0.0	0.2	0.0	0.3	7.0	0.3	1.0	2.1	1.0	2.3	1.2
13	MACS 4083	613	2.0	0.0	0.0	3.0	1.2	7.0	0.0	1.0	1.0	1.0	2.0	1.6
14	GW 1348	614	3.0	0.0	0.1	2.0	1.3	12.0	1.4	1.0	1.0	3.0	3.7	2.4
15	NIDW 1171	615	2.0	0.0	1.0	2.0	1.2	7.0	0.0	2.0	2.0	3.0	2.8	2.0
16	UAS 468	616	0.0	0.0	0.0	0.0	0.0	9.0	0.1	1.2	2.0	2.0	2.9	1.4
17	MPO 1353	617	0.0	0.0	0.0	0.0	0.0	19.1	3.4	1.1	0.0	2.0	5.1	2.5
18	MPO 1354	618	0.0	0.0	0.0	0.0	0.0	4.2	0.1	1.0	2.0	0.0	1.3	0.6
19	UAS 469	619	1.0	0.0	1.1	0.0	0.5	4.0	0.2	1.0	3.0	2.0	2.0	1.3
20	PDW 355	620	0.0	0.0	1.0	0.0	0.2	7.0	1.0	1.3	3.0	0.0	2.4	1.3
21	HI 8713 (C)	621	3.0	0.0	0.1	0.0	0.7	21.2	1.0	2.0	1.0	3.0	5.6	3.2
22	DDW 49	622	0.0	0.0	0.0	1.0	0.2	7.3	0.0	2.1	1.0	2.0	2.4	1.3
23	NIDW 1158	623	1.0	0.0	0.0	0.0	0.2	12.0	0.2	1.0	2.0	2.0	3.4	1.8
24	MACS 3949 (C)	624	0.0	0.0	0.0	0.0	0.0	12.0	0.6	0.0	3.0	2.0	3.5	1.7
25	GW 1349	625	0.0	0.0	0.0	0.0	0.0	12.0	0.5	0.0	0.0	3.0	3.1	1.5
Mean			1.2	0.0	0.3	0.5	0.6	9.7	0.7	1.5	1.7	1.7	3.1	1.8

Table 30: Yellow pigment (ppm) of *T. durum* genotypes in NIVT-4

S. No	Entry	Trial Code	CZ					PZ					Overall Mean	
			Indore	Vijapur	Junagadh	P.kheda	Mean	Dharwad	Niphad	Nippani	Pune	Ugar		Mean
1	DDW 48	601	5.0	6.0	6.1	6.5	5.9	4.2	6.8	5.0	6.0	4.5	5.3	5.6
2	HI 8813	602	5.4	6.2	6.0	6.5	6.0	4.6	6.1	5.2	6.9	6.3	5.8	5.9
3	HI 8737 (C)	603	5.6	5.6	6.0	6.4	5.9	5.0	6.5	5.3	6.4	4.8	5.6	5.8
4	MACS 4085	604	6.0	6.8	6.8	6.3	6.5	4.8	6.3	5.9	6.7	4.9	5.7	6.1
5	MPO 1355	605	6.2	7.1	6.3	6.0	6.5	5.5	6.0	5.7	6.1	6.0	5.9	6.2
6	HI 8812	606	4.6	5.2	6.5	6.1	5.6	5.2	6.4	6.0	6.3	5.9	6.0	5.8
7	HI 8811	607	4.8	7.1	5.6	6.9	6.1	5.0	6.5	6.0	6.6	6.0	6.0	6.1
8	HI 8810	608	5.2	6.0	6.5	6.7	6.1	4.3	6.4	5.9	6.4	5.4	5.7	5.9
9	AKDW 5079	609	5.3	6.8	6.2	6.5	6.2	4.8	6.8	5.0	6.8	5.1	5.7	6.0
10	HI 8809	610	5.4	6.4	6.8	5.0	5.9	4.9	6.1	5.1	6.5	6.8	5.9	5.9
11	WHD 963	611	6.0	4.5	6.3	5.6	5.6	4.6	6.0	4.9	6.0	6.4	5.6	5.6
12	RKD 331	612	6.1	6.5	6.2	6.3	6.3	5.0	5.0	4.8	6.1	7.0	5.6	6.0
13	MACS 4083	613	6.2	6.2	6.1	6.2	6.2	5.1	5.9	4.3	6.0	6.8	5.6	5.9
14	GW 1348	614	6.3	6.3	6.0	6.8	6.3	5.3	5.8	4.0	6.2	6.5	5.6	6.0
15	NIDW 1171	615	6.4	6.1	6.0	6.4	6.2	4.8	6.9	4.6	6.8	5.7	5.8	6.0
16	UAS 468	616	6.7	6.0	4.5	6.9	6.0	5.0	5.9	6.0	6.9	5.2	5.8	5.9
17	MPO 1353	617	6.8	6.8	6.3	6.0	6.5	5.0	6.4	5.9	6.5	5.3	5.8	6.2
18	MPO 1354	618	6.0	6.2	6.9	6.4	6.4	4.3	6.9	5.8	6.6	5.6	5.8	6.1
19	UAS 469	619	6.5	6.2	6.5	7.3	6.6	4.2	6.8	5.6	6.3	5.1	5.6	6.1
20	PDW 355	620	6.0	6.4	5.6	6.1	6.2	4.6	6.2	4.0	6.0	5.0	5.2	5.7
21	HI 8713 (C)	621	6.5	6.9	7.0	6.0	6.6	5.0	6.1	4.6	6.0	5.4	5.4	6.0
22	DDW 49	622	6.4	6.7	6.8	6.4	6.6	5.9	7.1	5.8	6.9	5.6	6.3	6.5
23	NIDW 1158	623	5.5	6.5	6.1	5.0	5.8	5.0	5.0	6.0	6.0	5.6	5.5	5.7
24	MACS 3949 (C)	624	5.0	5.6	6.3	6.5	5.8	4.8	6.0	6.4	6.1	5.2	5.7	5.8
25	GW 1349	625	5.6	6.3	6.7	6.7	6.3	4.9	6.2	5.4	6.2	6.0	5.7	6.0
Mean			5.9	6.2	6.0	6.3	6.1	4.9	6.2	5.3	6.4	5.7	5.7	5.9

Table 31: Grain appearance score (Max-10) of *T. aestivum* genotypes in NIVT-5A

S.No	Entry	Trial Code	NWPZ				NEPZ			Overall Mean
			Ludhiana	Delhi	Hisar	Mean	Kanpur	Pusa	Mean	
1	UP 3012	701	5.2	5.0	5.7	5.3	5.0	5.5	5.3	5.3
2	PBW 644 (C)	702	5.1	5.3	5.9	5.4	5.7	5.8	5.8	5.6
3	WH 1250	703	4.9	4.3	5.0	4.7	5.9	5.4	5.7	5.2
4	K 1710	704	5.4	5.1	5.4	5.3	4.9	5.9	5.4	5.4
5	DBW 274	705	4.9	4.8	5.2	5.0	5.0	5.4	5.2	5.1
6	HD 3295	706	5.6	4.8	5.4	5.3	5.4	5.8	5.6	5.4
7	HD 3294	707	5.8	5.1	5.0	5.3	5.0	5.6	5.3	5.3
8	HS 649	708	4.9	4.8	4.9	4.9	5.1	5.0	5.1	5.0
9	NW 7030	709	5.5	5.8	5.4	5.6	5.3	5.9	5.6	5.6
10	WH 1142 (C)	710	5.0	5.1	5.1	5.1	5.5	5.2	5.4	5.2
11	K 1317 (C)	711	5.6	5.4	6.0	5.7	5.3	5.4	5.4	5.5
12	UP 3013	712	5.1	5.3	5.3	5.2	5.4	5.3	5.4	5.3
13	DBW 275	713	5.9	5.3	5.5	5.6	5.1	5.8	5.5	5.5
14	BRW 3823	714	5.0	5.4	5.0	5.1	5.0	5.7	5.4	5.2
15	PBW 795	715	5.7	5.5	5.8	5.7	5.0	5.6	5.3	5.5
16	DBW 273	716	5.3	5.3	4.9	5.2	4.9	5.8	5.4	5.3
17	HD 3292	717	5.4	5.7	5.2	5.4	6.3	5.4	5.9	5.6
18	HD 2888 (C)	718	6.4	6.2	5.7	6.1	5.9	6.3	6.1	6.1
19	UP 3018	719	5.0	5.8	5.5	5.4	5.4	5.9	5.7	5.5
20	HUW 832	720	5.2	5.2	5.3	5.2	5.3	5.9	5.6	5.4
21	PBW 796	721	5.3	5.4	5.3	5.3	5.2	5.8	5.5	5.4
22	K 1711	722	5.2	5.0	5.6	5.3	5.0	5.6	5.3	5.3
23	WH 1251	723	5.3	5.2	5.2	5.2	4.9	5.5	5.2	5.2
24	DBW 272	724	5.2	5.1	5.0	5.1	5.3	5.7	5.5	5.3
25	HD 3293	725	5.7	5.6	5.2	5.5	6.0	5.4	5.7	5.6
Mean			5.3	5.3	5.3	5.3	5.3	5.6	5.5	5.4

Table 32: Hectolitre weight (kg/hl) of *T. aestivum* genotypes in NIVT-5A

S. No	Entry	Trial Code	NWPZ				NEPZ			Overall Mean
			Ludhiana	Delhi	Hisar	Mean	Kanpur	Pusa	Mean	
1	UP 3012	701	80.2	79.1	82.5	80.6	86.7	81.5	84.1	82.4
2	PBW 644 (C)	702	73.2	76.7	83.5	77.8	84.2	82.7	83.4	80.6
3	WH 1250	703	73.4	76.1	81.1	76.9	80.6	80.4	80.5	78.7
4	K 1710	704	73.8	78.4	82.3	78.2	80.3	78.8	79.5	78.8
5	DBW 274	705	70.3	79.9	80.9	77.0	84.3	77.9	81.1	79.0
6	HD 3295	706	75.7	81.3	79.8	78.9	83.3	78.0	80.6	79.8
7	HD 3294	707	76.4	80.0	81.0	79.1	83.1	77.0	80.0	79.6
8	HS 649	708	66.6	72.0	80.8	73.2	80.9	74.1	77.5	75.3
9	NW 7030	709	76.1	75.6	80.9	77.5	80.7	76.4	78.6	78.0
10	WH 1142 (C)	710	76.0	79.1	83.1	79.4	82.7	79.4	81.0	80.2
11	K 1317 (C)	711	78.0	81.9	82.9	80.9	84.0	82.4	83.2	82.1
12	UP 3013	712	70.4	76.3	82.6	76.4	78.3	78.3	78.3	77.4
13	DBW 275	713	76.9	77.6	81.3	78.6	82.5	76.1	79.3	78.9
14	BRW 3823	714	68.2	74.9	76.0	73.0	75.4	74.8	75.1	74.1
15	PBW 795	715	78.1	77.1	82.0	79.1	83.5	78.1	80.8	80.0
16	DBW 273	716	76.2	77.3	82.4	78.6	82.6	79.4	81.0	79.8
17	HD 3292	717	71.9	77.8	82.0	77.2	81.6	79.4	80.5	78.9
18	HD 2888 (C)	718	79.6	84.6	83.3	82.5	85.4	85.6	85.5	84.0
19	UP 3018	719	75.8	77.9	80.8	78.1	82.5	78.9	80.7	79.4
20	HUW 832	720	77.6	77.3	80.7	78.6	80.1	79.1	79.6	79.1
21	PBW 796	721	79.0	82.3	82.5	81.3	83.3	80.4	81.9	81.6
22	K 1711	722	72.7	76.3	81.2	76.7	77.4	79.4	78.4	77.6
23	WH 1251	723	73.1	79.9	82.4	78.5	79.3	77.7	78.5	78.5
24	DBW 272	724	70.3	73.8	79.7	74.6	77.5	74.7	76.1	75.3
25	HD 3293	725	76.0	80.2	81.9	79.4	81.9	81.1	81.5	80.4
Mean			74.6	78.1	81.5	78.1	81.7	78.9	80.3	79.2

Table 33: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in NIVT-5A

S. No	Entry	Trial Code	NWPZ				NEPZ			Overall Mean
			Ludhiana	Delhi	Hisar	Mean	Kanpur	Pusa	Mean	
1	UP 3012	701	13.1	16.2	10.1	13.1	13.8	13.3	13.5	13.3
2	PBW 644 (C)	702	12.8	15.0	9.9	12.6	11.6	11.4	11.5	12.1
3	WH 1250	703	12.9	14.2	8.5	11.9	12.5	11.4	12.0	11.9
4	K 1710	704	13.0	14.5	8.0	11.8	12.5	11.5	12.0	11.9
5	DBW 274	705	14.3	13.0	7.9	11.7	12.1	11.3	11.7	11.7
6	HD 3295	706	12.5	13.5	10.4	12.1	12.0	12.0	12.0	12.0
7	HD 3294	707	11.9	12.7	10.3	11.6	11.4	11.9	11.7	11.6
8	HS 649	708	13.0	14.5	9.9	12.4	11.5	11.8	11.6	12.0
9	NW 7030	709	12.6	13.9	9.1	11.8	11.3	12.5	11.9	11.9
10	WH 1142 (C)	710	12.6	14.4	9.1	12.0	12.3	11.8	12.0	12.0
11	K 1317 (C)	711	14.1	14.4	9.5	12.7	12.5	12.6	12.6	12.6
12	UP 3013	712	13.1	13.5	9.4	12.0	13.2	11.7	12.4	12.2
13	DBW 275	713	12.1	15.0	9.5	12.2	10.6	11.1	10.8	11.5
14	BRW 3823	714	12.5	12.5	8.2	11.1	11.6	11.3	11.4	11.2
15	PBW 795	715	12.5	13.3	9.4	11.7	11.1	11.9	11.5	11.6
16	DBW 273	716	12.9	14.3	8.5	11.9	11.4	11.1	11.2	11.6
17	HD 3292	717	12.3	13.7	8.4	11.5	11.6	11.0	11.3	11.4
18	HD 2888 (C)	718	14.1	14.3	10.5	13.0	13.2	12.6	12.9	12.9
19	UP 3018	719	15.3	16.0	10.0	13.8	14.7	14.2	14.4	14.1
20	HUW 832	720	13.3	14.9	9.3	12.5	14.3	12.0	13.1	12.8
21	PBW 796	721	12.0	12.3	8.1	10.8	11.4	11.8	11.6	11.2
22	K 1711	722	14.1	14.5	9.9	12.8	13.1	13.1	13.1	12.9
23	WH 1251	723	13.8	13.4	9.4	12.2	13.1	12.1	12.6	12.4
24	DBW 272	724	13.6	15.6	10.0	13.1	12.5	12.3	12.4	12.7
25	HD 3293	725	12.5	12.2	9.2	11.3	11.2	12.0	11.6	11.4
Mean			13.1	14.1	9.3	12.1	12.3	12.0	12.1	12.1

Table 34: Sedimentation value (ml) of *T. aestivum* genotypes in NIVT-5A

S. No	Entry	Trial code	NWPZ				NEPZ			Overall Mean
			Ludhiana	Delhi	Hisar	Mean	Kanpur	Pusa	Mean	
1	UP 3012	701	41	50	35	42.0	46	50	48.0	45.0
2	PBW 644 (C)	702	36	47	33	38.7	43	42	42.5	40.6
3	WH 1250	703	55	54	38	49.0	50	45	47.5	48.3
4	K 1710	704	44	48	33	41.7	47	44	45.5	43.6
5	DBW 274	705	39	42	30	37.0	42	47	44.5	40.8
6	HD 3295	706	43	52	33	42.7	45	46	45.5	44.1
7	HD 3294	707	42	37	33	37.3	44	47	45.5	41.4
8	HS 649	708	45	47	36	42.7	52	55	53.5	48.1
9	NW 7030	709	52	53	40	48.3	48	54	51.0	49.7
10	WH 1142 (C)	710	45	44	30	39.7	44	53	48.5	44.1
11	K 1317 (C)	711	38	43	39	40.0	43	51	47.0	43.5
12	UP 3013	712	35	42	33	36.7	47	45	46.0	41.3
13	DBW 275	713	43	50	36	43.0	43	52	47.5	45.3
14	BRW 3823	714	45	52	33	43.3	49	49	49.0	46.2
15	PBW 795	715	50	52	35	45.7	39	46	42.5	44.1
16	DBW 273	716	40	37	30	35.7	48	42	45.0	40.3
17	HD 3292	717	42	40	34	38.7	46	49	47.5	43.1
18	HD 2888 (C)	718	35	41	32	36.0	31	42	36.5	36.3
19	UP 3018	719	54	55	50	53.0	47	55	51.0	52.0
20	HUW 832	720	49	49	31	43.0	49	50	49.5	46.3
21	PBW 796	721	51	48	30	43.0	52	51	51.5	47.3
22	K 1711	722	54	55	35	48.0	55	53	54.0	51.0
23	WH 1251	723	52	53	33	46.0	56	55	55.5	50.8
24	DBW 272	724	49	54	48	50.3	46	50	48.0	49.2
25	HD 3293	725	44	46	30	40.0	40	42	41.0	40.5
Mean			44.9	47.6	34.8	42.5	46.1	48.6	47.3	44.9

Table 35: Phenol test (Max-10) of *T. aestivum* genotypes in NIVT-5A

S. No	Entry	Trial code	NWPZ				NEPZ			Overall Mean
			Ludhiana	Delhi	Hisar	Mean	Kanpur	Pusa	Mean	
1	UP 3012	701	8	9	7	8.0	8	7	7.5	7.8
2	PBW 644 (C)	702	8	9	7	8.0	8	8	8.0	8.0
3	WH 1250	703	8	9	8	8.3	8	8	8.0	8.2
4	K 1710	704	7	8	8	7.7	8	8	8.0	7.8
5	DBW 274	705	8	8	8	8.0	8	8	8.0	8.0
6	HD 3295	706	8	8	8	8.0	8	8	8.0	8.0
7	HD 3294	707	8	8	8	8.0	8	8	8.0	8.0
8	HS 649	708	8	8	8	8.0	8	8	8.0	8.0
9	NW 7030	709	8	8	7	7.7	8	8	8.0	7.8
10	WH 1142 (C)	710	8	8	8	8.0	8	8	8.0	8.0
11	K 1317 (C)	711	5	5	5	5.0	6	5	5.5	5.3
12	UP 3013	712	6	7	6	6.3	8	6	7.0	6.7
13	DBW 275	713	8	7	8	7.7	8	8	8.0	7.8
14	BRW 3823	714	7	7	7	7.0	7	7	7.0	7.0
15	PBW 795	715	7	8	8	7.7	7	8	7.5	7.6
16	DBW 273	716	8	9	8	8.3	7	8	7.5	7.9
17	HD 3292	717	8	7	8	7.7	7	8	7.5	7.6
18	HD 2888 (C)	718	5	5	5	5.0	6	5	5.5	5.3
19	UP 3018	719	4	3	4	3.7	6	4	5.0	4.3
20	HUW 832	720	6	7	6	6.3	7	6	6.5	6.4
21	PBW 796	721	5	6	5	5.3	6	5	5.5	5.4
22	K 1711	722	6	7	6	6.3	8	6	7.0	6.7
23	WH 1251	723	8	8	7	7.7	8	7	7.5	7.6
24	DBW 272	724	7	8	7	7.3	8	7	7.5	7.4
25	HD 3293	725	8	9	8	8.3	9	8	8.5	8.4
Mean			7.1	7.4	7.0	7.2	7.5	7.1	7.3	7.2

Table 36: Grain appearance score (Max-10) of *T. aestivum* and *T. durum* genotypes in NIVT-5B

S. No	Entry	Trial Code	CZ				PZ					Overall Mean
			Vijapur	Indore	P. kheda	Mean	Dharwad	Bagalkot	Niphad	Pune	Mean	
<i>T. aestivum</i>												
1	MP 3507	804	4.8	4.2	4.5	4.5	4.5	4.0	4.5	5.6	4.7	4.6
2	DBW 280	808	5.0	4.8	5.5	5.1	5.6	5.7	5.5	4.8	5.4	5.3
3	DBW 276	809	5.1	5.5	6.0	5.5	6.0	5.5	6.0	6.0	5.9	5.7
4	MP 1346	810	6.2	7.0	5.5	6.2	5.0	6.8	6.4	5.5	5.9	6.1
5	GW 512	811	5.5	6.0	6.0	5.8	6.0	6.0	6.2	5.4	5.9	5.9
6	HD 3297	812	5.0	5.5	5.6	5.4	4.1	5.8	5.5	4.6	5.0	5.2
7	MP 1345	813	5.7	5.5	6.0	5.7	5.2	5.4	6.6	5.0	5.6	5.6
8	NIAW 3386	818	6.5	5.0	5.0	5.5	5.5	5.2	5.5	6.3	5.6	5.6
9	CG 1030	819	6.8	7.0	6.0	6.6	6.5	7.0	7.0	5.5	6.5	6.5
10	HD 3296	820	6.5	6.8	5.2	6.2	6.1	6.8	6.8	5.0	6.2	6.2
11	AKAW 5082	821	4.0	4.5	4.0	4.2	4.0	4.5	4.0	4.5	4.3	4.2
12	MACS 6719	822	7.0	6.8	5.0	6.3	6.8	5.1	6.5	6.5	6.2	6.2
13	DBW 277	823	5.5	5.8	4.2	5.2	5.5	6.0	5.0	5.0	5.4	5.3
14	HP 1970	825	5.8	5.0	4.8	5.2	5.0	6.0	4.3	4.0	4.8	5.0
15	DBW 110 ©	802	6.8	6.5	5.8	6.4	6.0	5.2	5.3	4.4	5.2	5.8
16	HI 1605 ©	814	4.5	6.0	4.7	5.1	5.5	6.2	5.5	6.0	5.8	5.4
Mean			5.7	5.7	5.2	5.6	5.5	5.7	5.7	5.3	5.5	5.5
<i>T. durum</i>												
17	GW 1350 (d)	801	8.0	7.0	7.3	7.4	5.8	5.5	8.5	5.5	6.3	6.9
18	NIDW 1149 (d)	803	9.0	8.6	7.8	8.5	8.8	8.8	8.5	8.5	8.7	8.6
19	HI 8815 (d)	805	4.5	8.8	9.0	7.4	8.5	9.0	8.0	9.0	8.6	8.0
20	UAS 470 (d)	806	7.5	8.0	9.0	8.2	8.2	9.0	8.0	8.5	8.4	8.3
21	HI 8814 (d)	807	7.5	9.0	8.5	8.3	6.1	8.5	7.5	8.5	7.7	8.0
22	MPO 1347 (d)	815	8.5	9.0	8.3	8.6	9.0	6.0	7.8	8.5	7.8	8.2
23	MACS 4075 (d)	817	8.5	8.5	9.0	8.7	8.2	8.5	6.6	8.5	8.0	8.3
24	UAS 466 (d) (C)	816	7.0	8.5	8.5	8.0	7.0	8.3	7.5	8.3	7.8	7.9
25	HI 8627 (d) (C)	824	8.0	8.0	8.0	8.0	6.8	7.5	7.5	7.5	7.3	7.7
Mean			7.6	8.4	8.4	8.1	7.6	7.9	7.8	8.1	7.8	8.0

Table 37: Hectolitre weight (kg/hl) of *T. aestivum* and *T. durum* genotypes in NIVT-5B

S. No	Entry	Trial Code	CZ				PZ					Overall Mean
			Vijapur	Indore	P. kheda	Mean	Dharwad	Bagalkot	Niphad	Pune	Mean	
<i>T. aestivum</i>												
1	MP 3507	804	84.5	86.1	83.2	84.6	80.1	83.3	83.8	84.9	83.0	83.8
2	DBW 280	808	78.7	80.7	78.4	79.2	79.5	80.3	78.3	78.9	79.3	79.3
3	DBW 276	809	82.8	86.5	84.6	84.6	82.4	84.6	85.1	85.0	84.3	84.4
4	MP 1346	810	81.1	83.9	79.0	81.3	79.9	83.7	79.7	78.2	80.4	80.9
5	GW 512	811	87.2	87.7	85.5	86.8	83.9	83.9	85.7	83.2	84.2	85.5
6	HD 3297	812	83.1	83.1	83.6	83.3	82.4	82.8	82.9	80.7	82.2	82.7
7	MP 1345	813	85.1	87.3	83.4	85.3	83.6	85.6	84.9	84.6	84.7	85.0
8	NIAW 3386	818	82.3	84.6	77.8	81.6	78.2	81.9	78.4	76.2	78.7	80.1
9	CG 1030	819	81.4	85.2	82.7	83.1	81.1	84.6	82.3	83.6	82.9	83.0
10	HD 3296	820	80.5	84.0	83.0	82.5	81.5	82.8	81.8	81.3	81.8	82.2
11	AKAW 5082	821	80.6	83.8	81.4	81.9	79.0	83.1	81.0	80.1	80.8	81.4
12	MACS 6719	822	86.0	88.4	85.4	86.6	85.2	85.7	87.2	82.0	85.0	85.8
13	DBW 277	823	81.8	84.7	81.1	82.5	80.7	85.0	82.4	84.9	83.2	82.9
14	HP 1970	825	78.0	81.6	81.2	80.3	79.5	85.7	77.1	77.9	80.0	80.2
15	DBW 110 ©	802	85.0	84.7	83.6	84.4	80.7	83.0	81.1	80.8	81.4	82.9
16	HI 1605 ©	814	83.1	89.0	84.1	85.4	84.1	86.8	85.1	84.9	85.2	85.3
Mean			82.6	85.1	82.4	83.3	81.3	83.9	82.3	81.7	82.3	82.8
<i>T. durum</i>												
17	GW 1350 (d)	801	81.9	81.4	75.4	79.6	77.9	78.4	85.0	74.6	79.0	79.3
18	NIDW 1149 (d)	803	85.6	86.6	82.5	84.9	82.2	82.9	83.0	84.2	83.1	84.0
19	HI 8815 (d)	805	83.0	87.7	84.1	85.0	82.5	83.3	85.8	85.6	84.3	84.6
20	UAS 470 (d)	806	83.6	85.9	82.4	84.0	81.2	84.1	81.5	85.0	82.9	83.5
21	HI 8814 (d)	807	86.4	88.3	85.8	86.8	84.8	84.7	85.1	85.1	84.9	85.9
22	MPO 1347 (d)	815	86.3	87.2	84.7	86.1	84.0	81.0	86.2	84.1	83.8	85.0
23	MACS 4075 (d)	817	84.0	87.1	85.5	85.5	83.5	83.9	78.1	82.3	82.0	83.8
24	UAS 466 (d) (C)	816	83.5	88.5	84.1	85.4	83.3	85.0	84.4	84.8	84.3	84.9
25	HI 8627 (d) (C)	824	82.0	89.5	85.0	85.5	83.9	83.6	84.3	84.7	84.1	84.8
Mean			84.0	86.9	83.3	84.7	82.6	83.0	83.7	83.4	83.2	83.9

Table 38: Protein content (%) at 14% moisture basis of *T. aestivum* and *T. durum* genotypes in NIVT-5B

S. No	Entry	Trial Code	CZ				PZ					Overall Mean
			Vijapur	Indore	P. kheda	Mean	Dharwad	Bagalkot	Niphad	Pune	Mean	
<i>T. aestivum</i>												
1	MP 3507	804	13.9		12.7	13.3	13.6	12.1	12.4	12.5	12.7	13.0
2	DBW 280	808	15.5		14.4	15.0	14.0	11.7	12.1	12.1	12.5	13.7
3	DBW 276	809	15.0		12.6	13.8	13.1	11.5	11.9	12.3	12.2	13.0
4	MP 1346	810	13.1		12.0	12.6	11.5	11.2	11.6	11.0	11.3	11.9
5	GW 512	811	14.7		12.3	13.5	15.0	13.5	12.2	12.9	13.4	13.5
6	HD 3297	812	13.5		13.1	13.3	13.1	10.9	11.8	12.1	12.0	12.6
7	MP 1345	813	14.4		13.6	14.0	11.0	10.3	11.0	11.4	10.9	12.5
8	NIAW 3386	818	13.0		13.3	13.2	12.3	11.2	12.1	10.2	11.5	12.3
9	CG 1030	819	13.7		12.4	13.1	12.5	10.0	11.3	12.0	11.5	12.3
10	HD 3296	820	13.8		12.6	13.2	12.7	12.0	12.6	11.9	12.3	12.8
11	AKAW 5082	821	13.1		10.8	12.0	12.2	9.4	12.8	10.3	11.2	11.6
12	MACS 6719	822	12.7		11.1	11.9	11.3	11.0	10.4	11.5	11.1	11.5
13	DBW 277	823	14.4		13.8	14.1	12.2	11.0	11.9	11.6	11.7	12.9
14	HP 1970	825	14.3		12.6	13.5	12.7	11.0	12.5	11.1	11.8	12.6
15	DBW 110 ©	802	13.6		11.6	12.6	12.5	10.3	10.9	11.3	11.3	11.9
16	HI 1605 ©	814	13.7		11.5	12.6	12.8	11.5	11.8	12.4	12.1	12.4
Mean			13.9		12.5	13.2	12.7	11.2	11.8	11.7	11.8	12.5
<i>T. durum</i>												
17	GW 1350 (d)	801	13.3		11.1	12.2	10.5	11.8	11.7	11.0	11.3	11.7
18	NIDW 1149 (d)	803	12.7		11.3	12.0	11.6	11.5	10.9	12.0	11.5	11.8
19	HI 8815 (d)	805	14.0		12.4	13.2	11.4	10.5	11.3	10.8	11.0	12.1
20	UAS 470 (d)	806	14.3		13.3	13.8	11.9	11.6	12.8	11.1	11.9	12.8
21	HI 8814 (d)	807	13.6		11.6	12.6	10.3	11.7	10.4	11.0	10.9	11.7
22	MPO 1347 (d)	815	13.7		11.2	12.5	13.1	12.8	11.5	12.2	12.4	12.4
23	MACS 4075 (d)	817	15.8		12.7	14.3	13.0	12.2	11.3	13.2	12.4	13.3
24	UAS 466 (d) (C)	816	14.9		12.9	13.9	12.5	10.8	12.2	11.2	11.7	12.8
25	HI 8627 (d) (C)	824	14.5		11.9	13.2	11.6	10.0	10.4	10.6	10.7	11.9
Mean			13.9		12.7	13.3	13.6	12.1	12.4	12.5	12.7	13.0

Table 39: Sedimentation value (ml) of *T. aestivum* and *T. durum* genotypes in NIVT-5B

S. No	Entry	Trial Code	CZ				PZ					Overall Mean
			Vijapur	Indore	P. kheda	Mean	Dharwad	Bagalkot	Niphad	Pune	Mean	
<i>T. aestivum</i>												
1	MP 3507	804	46	43	47	45.3	49	47	44	40	45.0	45.2
2	DBW 280	808	67	63	64	64.7	67	60	60	60	61.8	63.2
3	DBW 276	809	59	56	55	56.7	63	55	55	55	57.0	56.8
4	MP 1346	810	58	55	59	57.3	61	62	56	50	57.3	57.3
5	GW 512	811	57	66	64	62.3	64	65	59	49	59.3	60.8
6	HD 3297	812	57	58	64	59.7	59	56	54	50	54.8	57.2
7	MP 1345	813	42	38	43	41.0	43	42	44	36	41.3	41.1
8	NIAW 3386	818	54	47	49	50.0	59	49	49	50	51.8	50.9
9	CG 1030	819	59	56	61	58.7	66	58	56	55	58.8	58.7
10	HD 3296	820	47	45	50	47.3	51	49	44	43	46.8	47.0
11	AKAW 5082	821	56	50	59	55.0	52	52	51	44	49.8	52.4
12	MACS 6719	822	49	48	50	49.0	49	54	46	45	48.5	48.8
13	DBW 277	823	63	61	65	63.0	66	59	60	58	60.8	61.9
14	HP 1970	825	54	49	59	54.0	53	52	50	49	51.0	52.5
15	DBW 110 ©	802	57	54	54	55.0	55	54	54	49	53.0	54.0
16	HI 1605 ©	814	36	46	50	44.0	59	58	59	49	56.3	50.1
Mean			53.8	52.2	55.8	53.9	57.3	54.5	52.6	48.9	53.3	53.6
<i>T. durum</i>												
17	GW 1350 (d)	801	25	22	27	24.7	27	27	27	24	26.3	25.5
18	NIDW 1149 (d)	803	33	29	33	31.7	34	34	35	30	33.3	32.5
19	HI 8815 (d)	805	21	20	24	21.7	23	24	23	20	22.5	22.1
20	UAS 470 (d)	806	35	34	36	35.0	39	37	38	33	36.8	35.9
21	HI 8814 (d)	807	32	30	34	32.0	37	37	36	33	35.8	33.9
22	MPO 1347 (d)	815	44	45	45	44.7	47	46	43	40	44.0	44.3
23	MACS 4075 (d)	817	26	21	37	28.0	29	35	27	26	29.3	28.6
24	UAS 466 (d) (C)	816	41	38	43	40.7	48	44	42	36	42.5	41.6
25	HI 8627 (d) (C)	824	31	26	37	31.3	31	33	32	30	31.5	31.4
Mean			32.0	29.4	35.1	32.2	35.0	35.2	33.7	30.2	33.5	32.9

Table 40: Yellow berry incidence (%) of *T. aestivum* and *T. durum* genotypes in NIVT-5B

S. No	Entry	Trial Code	CZ				PZ					Overall Mean
			Vijapur	Indore	P. kheda	Mean	Dharwad	Bagalkot	Niphad	Pune	Mean	
<i>T. aestivum</i>												
1	MP 3507	804	0	4	0	1	3	27	0	1	8	4
2	DBW 280	808	0	0	1	0	1	4	2	0	2	1
3	DBW 276	809	0	2	0	1	2	2	2	1	1	1
4	MP 1346	810	1	2	0	1	1	2	1	3	2	1
5	GW 512	811	3	1	3	2	1	3	3	2	2	2
6	HD 3297	812	0	0	3	1	2	5	0	1	2	1
7	MP 1345	813	1	4	1	2	8	15	3	5	8	5
8	NIAW 3386	818	0	6	0	2	6	12	4	3	6	4
9	CG 1030	819	1	0	0	0	0	0	0	6	1	1
10	HD 3296	820	0	10	7	5	4	5	2	6	4	5
11	AKAW 5082	821	0	22	0	7	0	28	1	14	11	9
12	MACS 6719	822	2	3	13	6	19	4	14	3	10	8
13	DBW 277	823	0	2	1	1	1	3	0	3	2	1
14	HP 1970	825	0	4	0	1	3	8	0	0	3	2
15	DBW 110 ©	802	0	3	2	2	3	27	6	15	13	7
16	HI 1605 ©	814	2	0	0	1	1	6	2	4	3	2
Mean			0.6	3.9	1.9	2.1	3.4	9.4	2.5	4.2	4.9	3.4
<i>T. durum</i>												
17	GW 1350 (d)	801	2	26	20	16	60	45	5	17	31	24
18	NIDW 1149 (d)	803	0	0	3	1	2	12	3	5	5	3
19	HI 8815 (d)	805	2	3	0	1	4	5	6	4	5	3
20	UAS 470 (d)	806	0	1	0	0	3	2	0	1	1	1
21	HI 8814 (d)	807	4	1	0	2	17	3	1	2	6	4
22	MPO 1347 (d)	815	0	2	15	6	6	1	4	1	3	4
23	MACS 4075 (d)	817	3	0	3	2	1	4	28	5	9	5
24	UAS 466 (d) (C)	816	2	0	0	1	0	5	2	0	2	1
25	HI 8627 (d) (C)	824	2	3	0	2	1	12	8	6	7	4
Mean			1.7	4.0	4.6	3.4	10.4	9.9	6.3	4.6	7.7	5.4

Table 41: Yellow Pigment (ppm) of *T. aestivum* and *T. durum* genotypes in NIVT-5B

S. No	Entry	Trial Code	CZ				PZ					Overall Mean
			Vijapur	Indore	P. kheda	Mean	Dharwad	Bagalkot	Niphad	Pune	Mean	
<i>T. aestivum</i>												
1	MP 3507	804										
2	DBW 280	808										
3	DBW 276	809										
4	MP 1346	810										
5	GW 512	811										
6	HD 3297	812										
7	MP 1345	813										
8	NIAW 3386	818										
9	CG 1030	819										
10	HD 3296	820										
11	AKAW 5082	821										
12	MACS 6719	822										
13	DBW 277	823										
14	HP 1970	825										
15	DBW 110 ©	802										
16	HI 1605 ©	814										
Mean												
<i>T. durum</i>												
17	GW 1350 (d)	801	6.7	5.0	5.6	5.8	4.8	4.3	7.5	6.6	5.8	5.8
18	NIDW 1149 (d)	803	7.2	6.0	6.3	6.5	5.3	4.4	7.7	6.2	5.9	6.2
19	HI 8815 (d)	805	7.1	6.1	7.1	6.8	5.0	4.5	7.6	6.3	5.9	6.3
20	UAS 470 (d)	806	5.5	6.6	7.1	6.4	5.9	3.6	6.1	6.5	5.5	6.0
21	HI 8814 (d)	807	7.7	6.2	6.7	6.9	6.1	4.1	8.2	6.6	6.3	6.6
22	MPO 1347 (d)	815	5.7	5.9	6.0	5.9	5.3	3.4	7.3	5.3	5.3	5.6
23	MACS 4075 (d)	817	6.8	6.2	5.2	6.1	4.0	3.8	7.8	7.2	5.7	5.9
24	UAS 466 (d) (C)	816	6.8	6.1	7.4	6.8	6.8	5.0	6.0	4.7	5.6	6.2
25	HI 8627 (d) (C)	824	6.1	6.3	5.6	6.0	6.3	4.5	6.0	3.5	5.1	5.5
Mean			6.6	6.1	6.3	6.3	5.5	4.2	7.1	5.9	5.7	6.0

Table 42: Grain appearance score (Max-10) of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	5.0	5.0	5.0	5.0
2	HS 562 (C)	1711	6.0	5.0	5.5	5.5
3	DBW 279	1712	5.5	4.5	4.0	4.7
4	HS 650	1704	5.0	5.0	5.0	5.0
5	HS 651	1714	6.0	5.0	4.0	5.0
6	HS 652	1709	5.5	5.0	4.5	5.0
7	HS 653	1715	6.0	4.5	6.0	5.5
8	HPW 453	1707	4.5	5.5	5.0	5.0
9	HPW 454	1701	4.5	5.0	4.0	4.5
10	HPW 455	1706	5.5	5.0	4.0	4.8
11	UP 3014	1708	5.0	5.5	6.0	5.5
12	UP 3015	1716	5.5	5.0	4.5	5.0
13	VL 2031	1703	6.0	5.0	5.0	5.3
14	VL 2032	1713	5.0	4.5	4.5	4.7
15	VL 2033	1705	4.5	4.5	4.0	4.3
16	VL 2034	1702	5.5	5.5	5.0	5.3
Mean			5.3	5.0	4.8	5.0

Table 43: Hectolitre weight (kg/hl) of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	79.7	80.0	80.8	80.2
2	HS 562 (C)	1711	79.8	81.0	80.3	80.4
3	DBW 279	1712	79.5	79.0	79.9	79.5
4	HS 650	1704	78.3	79.5	80.1	79.3
5	HS 651	1714	78.6	80.7	80.4	79.9
6	HS 652	1709	77.5	79.0	78.6	78.4
7	HS 653	1715	79.8	81.3	81.6	80.9
8	HPW 453	1707	77.4	79.4	78.2	78.3
9	HPW 454	1701	78.2	79.0	77.6	78.3
10	HPW 455	1706	78.2	79.7	79.9	79.3
11	UP 3014	1708	78.7	80.6	80.4	79.9
12	UP 3015	1716	78.8	81.1	78.3	79.4
13	VL 2031	1703	78.6	79.2	80.4	79.4
14	VL 2032	1713	77.9	77.0	78.7	77.9
15	VL 2033	1705	78.5	78.7	77.1	78.1
16	VL 2034	1702	78.9	79.0	78.9	78.9
Mean			78.6	79.6	79.5	79.2

Table 44: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	9.26	12.38	9.59	10.41
2	HS 562 (C)	1711	10.35	10.64	10.61	10.53
3	DBW 279	1712	10.01	11.41	9.64	10.35
4	HS 650	1704	10.53	12.03	10.48	11.01
5	HS 651	1714	12.47	12.74	9.09	11.43
6	HS 652	1709	9.15	11.64	9.75	10.18
7	HS 653	1715	9.22	9.98	10.87	10.02
8	HPW 453	1707	9.96	13.85	10.74	11.52
9	HPW 454	1701	10.89	12.45	9.81	11.05
10	HPW 455	1706	11.00	12.03	9.32	10.78
11	UP 3014	1708	11.14	12.37	10.33	11.28
12	UP 3015	1716	11.21	12.54	11.49	11.75
13	VL 2031	1703	12.09	12.31	10.85	11.75
14	VL 2032	1713	11.15	12.70	10.63	11.49
15	VL 2033	1705	10.86	11.92	9.50	10.76
16	VL 2034	1702	12.25	13.03	10.73	12.00
Mean			10.72	12.12	10.21	11.02

Table 45: Sedimentation value (ml) of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	52.3	54.9	52.1	53.1
2	HS 562 (C)	1711	67.8	62.3	57.4	62.5
3	DBW 279	1712	64.1	63.1	59.0	62.1
4	HS 650	1704	56.4	52.1	53.3	53.9
5	HS 651	1714	60.5	58.2	50.0	56.2
6	HS 652	1709	57.8	58.2	55.4	57.1
7	HS 653	1715	62.3	59.0	57.0	59.4
8	HPW 453	1707	59.2	58.2	55.4	57.6
9	HPW 454	1701	56.8	54.9	50.9	54.2
10	HPW 455	1706	65.1	66.8	62.5	64.8
11	UP 3014	1708	62.7	67.2	64.2	64.7
12	UP 3015	1716	62.5	59.8	58.2	60.2
13	VL 2031	1703	51.3	47.6	52.5	50.5
14	VL 2032	1713	66.0	63.1	56.6	61.9
15	VL 2033	1705	63.3	59.4	52.9	58.6
16	VL 2034	1702	56.0	52.1	49.2	52.4
Mean			60.3	58.6	55.4	58.1

Table 46: Phenol test of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	4.5	5.0	5.0	4.8
2	HS 562 (C)	1711	6.5	5.5	5.0	5.7
3	DBW 279	1712	5.0	5.0	5.0	5.0
4	HS 650	1704	5.0	6.0	6.0	5.7
5	HS 651	1714	4.0	6.0	5.0	5.0
6	HS 652	1709	5.0	5.5	5.5	5.3
7	HS 653	1715	7.0	5.5	5.0	5.8
8	HPW 453	1707	6.5	6.0	6.0	6.2
9	HPW 454	1701	7.5	6.0	6.0	6.5
10	HPW 455	1706	7.5	5.5	5.5	6.2
11	UP 3014	1708	5.0	6.0	5.0	5.3
12	UP 3015	1716	5.5	6.0	5.5	5.7
13	VL 2031	1703	7.0	5.0	5.5	5.8
14	VL 2032	1713	7.0	5.5	5.0	5.8
15	VL 2033	1705	5.0	5.5	5.5	5.3
16	VL 2034	1702	7.5	5.5	5.5	6.2
Mean			6.0	5.6	5.4	5.6

Table 47: Hardness index of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	78.0			78.0
2	HS 562 (C)	1711	88.0			88.0
3	DBW 279	1712	42.0			42.0
4	HS 650	1704	91.0			91.0
5	HS 651	1714	71.0			71.0
6	HS 652	1709	83.0			83.0
7	HS 653	1715	92.0			92.0
8	HPW 453	1707	68.0			68.0
9	HPW 454	1701	73.0			73.0
10	HPW 455	1706	83.0			83.0
11	UP 3014	1708	72.0			72.0
12	UP 3015	1716	77.0			77.0
13	VL 2031	1703	82.0			82.0
14	VL 2032	1713	64.0			64.0
15	VL 2033	1705	57.0			57.0
16	VL 2034	1702	70.0			70.0
Mean			74.4			74.4

Table 48: Grain Fe content (ppm) of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	40.5	39.0	34.3	37.9
2	HS 562 (C)	1711	37.0	40.3	38.7	38.7
3	DBW 279	1712	38.1	43.8	36.1	39.3
4	HS 650	1704	45.7	49.3	37.9	44.3
5	HS 651	1714	40.8	44.2	35.7	40.2
6	HS 652	1709	37.1	44.4	35.5	39.0
7	HS 653	1715	36.6	35.4	40.1	37.4
8	HPW 453	1707	36.9	39.4	35.4	37.2
9	HPW 454	1701	36.7	45.0	36.9	39.5
10	HPW 455	1706	36.5	46.4	37.7	40.2
11	UP 3014	1708	42.5	42.3	39.0	41.3
12	UP 3015	1716	39.3	40.2	42.4	40.6
13	VL 2031	1703	38.9	48.7	42.0	43.2
14	VL 2032	1713	45.8	42.2	32.6	40.2
15	VL 2033	1705	43.2	39.6	35.1	39.3
16	VL 2034	1702	44.0	42.7	41.4	42.7
Mean			40.0	42.7	37.6	40.1

Table 49: Grain Zn content (ppm) of *T. aestivum* genotypes in Northern Hills Zone IVT

S. No.	Entry	Code	Malan	Almora	Shimla	Mean
Rainfed, Timely Sown						
1	HS 507 (C)	1710	22.0	41.0	23.5	28.8
2	HS 562 (C)	1711	24.6	34.9	26.2	28.6
3	DBW 279	1712	22.0	39.0	22.9	28.0
4	HS 650	1704	21.7	50.7	26.5	33.0
5	HS 651	1714	29.7	51.2	27.0	36.0
6	HS 652	1709	24.7	42.6	28.5	31.9
7	HS 653	1715	24.9	29.0	29.7	27.9
8	HPW 453	1707	20.6	43.3	29.4	31.1
9	HPW 454	1701	22.5	41.8	28.4	30.9
10	HPW 455	1706	21.5	44.2	21.3	29.0
11	UP 3014	1708	24.5	44.4	28.1	32.3
12	UP 3015	1716	25.8	46.8	36.3	36.3
13	VL 2031	1703	26.9	45.8	27.2	33.3
14	VL 2032	1713	26.3	42.3	28.5	32.4
15	VL 2033	1705	25.3	39.1	22.5	29.0
16	VL 2034	1702	34.9	44.4	28.1	35.8
Mean			24.9	42.5	27.1	31.5

SECTION C

SPECIAL TRIALS

- i. SPL-VLS
- ii. *T. dicoccum*

SPECIAL TRIALS

Very Late Sown Trial (Table 1-8)

The grain samples were evaluated from Delhi, Ludhiana, Pantnagar and Hisar in NWPZ and Pusa & Sabour in NEPZ under very late sown condition. The entries including checks were analysed for grain appearance score, test weight, protein content, grain hardness Index, sedimentation value, phenol test and **Fe and Zn** content.

Dicoccum Trial (Table 9-12)

Dicoccum samples were received from six centres of PZ namely Dharwad, Arabhavi, Kalloli, Ugarkhurd, Mudhol and Pune. There were 6 genotypes under testing including 3 new test entries of dicoccum and data were recorded on 1000 grain weight (TGW), grain protein content (GPC), sedimentation value and yellow pigments content.

Table 1: Grain appearance score (Max-10) of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105	5.5	6.0	6.0	4.0	5.4	8.0	6.0	7.0	6.2
2	DBW 71 (C)	103	5.5	5.5	5.5	6.5	5.8	7.5	7.0	7.3	6.5
3	DBW 14 (C)	108	5.0	5.5	5.0	6.0	5.4	6.0	5.5	5.8	5.6
4	WR 544 (C)	101	2.0	2.0	6.5	2.0	3.1	5.0	2.5	3.8	3.4
5	HD 3271	102	4.5	6.0	5.5	6.0	5.5	6.5	5.5	6.0	5.8
6	HD 3298	110	6.0	7.0	4.5	6.5	6.0	6.5	5.5	6.0	6.0
7	DBW 278	106	5.5	6.5	5.5	7.0	6.1	8.0	6.0	7.0	6.6
8	HI 1621	107	6.0	6.0	4.5	4.0	5.1	7.0	5.5	6.3	5.7
9	PBW 777	109	5.0	6.0	5.5	6.0	5.6	7.0	6.0	6.5	6.1
10	PBW 797	104	5.0	7.5	6.0	6.5	6.3	7.5	7.0	7.3	6.8
	Mean		5.0	5.8	5.5	5.5	5.4	6.9	5.7	6.3	5.9

Table 2: Hectolitre weight (Kg/hl) of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105	81.3	75.5	81.0	81.0	79.7	78.0	72.0	75.0	77.4
2	DBW 71 (C)	103	80.6	77.5	77.3	78.5	78.5	76.3	72.0	74.2	76.3
3	DBW 14 (C)	108	78.0	79.0	78.0	77.5	78.1	75.8	70.2	73.0	75.6
4	WR 544 (C)	101	82.6	79.3	81.6	83.0	81.6	79.7	74.0	76.9	79.2
5	HD 3271	102	78.7	77.6	78.6	76.5	77.9	75.0	70.2	72.6	75.2
6	HD 3298	110	79.2	76.3	76.0	77.0	77.1	74.5	68.2	71.4	74.2
7	DBW 278	106	80.5	80.2	79.0	79.0	79.7	76.8	74.0	75.4	77.5
8	HI 1621	107	78.3	78.0	76.0	77.5	77.5	72.4	67.0	69.7	73.6
9	PBW 777	109	80.0	76.5	78.6	79.0	78.5	75.0	69.5	72.3	75.4
10	PBW 797	104	80.5	80.3	78.2	78.5	79.4	76.2	73.4	74.8	77.1
	Mean		80.0	78.0	78.4	78.8	78.8	76.0	71.1	73.5	76.2

Table 3: Protein content (%) at 14% moisture basis of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105	12.5	14.1	11.5	12.5	12.6	14.1	12.8	13.4	13.0
2	DBW 71 (C)	103	12.8	13.7	11.3	12.8	12.7	12.9	12.8	12.9	12.8
3	DBW 14 (C)	108	12.3	13.4	11.6	12.9	12.5	13.6	13.0	13.3	12.9
4	WR 544 (C)	101	11.8	14.1	12.8	13.3	13.0	13.7	13.4	13.5	13.3
5	HD 3271	102	12.8	13.5	10.7	12.5	12.4	13.3	12.6	13.0	12.7
6	HD 3298	110	12.4	13.0	9.3	12.0	11.7	13.3	12.9	13.1	12.4
7	DBW 278	106	12.7	13.2	11.9	13.1	12.7	14.1	13.2	13.6	13.2
8	HI 1621	107	11.3	12.3	9.5	11.7	11.2	12.7	12.4	12.5	11.9
9	PBW 777	109	12.8	14.5	10.7	13.6	12.9	14.6	14.5	14.6	13.7
10	PBW 797	104	11.9	13.7	10.7	12.5	12.2	13.2	12.6	12.9	12.6
	Mean		12.3	13.6	11.0	12.7	12.4	13.5	13.0	13.3	12.8

Table 4: Sedimentation value (ml) of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105	66.2	67.9	68.7	67.2	67.5	64.7	66.8	65.8	66.6
2	DBW 71 (C)	103	47.9	51.1	52.8	48.8	50.2	50.0	54.1	52.1	51.1
3	DBW 14 (C)	108	53.2	54.4	50.3	46.8	51.2	50.9	51.3	51.1	51.1
4	WR 544 (C)	101	41.7	50.7	46.6	46.0	46.3	50.0	48.8	49.4	47.9
5	HD 3271	102	55.6	64.6	52.4	63.1	58.9	67.2	66.4	66.8	62.9
6	HD 3298	110	64.6	59.3	51.5	56.6	58.0	64.7	66.4	65.6	61.8
7	DBW 278	106	67.1	67.5	66.7	69.7	67.7	67.2	65.6	66.4	67.0
8	HI 1621	107	57.3	58.1	51.1	54.5	55.3	59.0	60.7	59.8	57.6
9	PBW 777	109	69.5	65.8	65.4	66.8	66.9	65.6	68.0	66.8	66.8
10	PBW 797	104	61.3	60.5	58.5	58.2	59.6	60.7	61.1	60.9	60.3
	Mean		58.4	60.0	56.4	57.8	58.2	60.0	60.9	60.5	59.3

Table 5: Phenol test (Max-10) of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105	5.5	6.0	6.0	4.0	5.4	8.0	6.0	7.0	6.2
2	DBW 71 (C)	103	5.5	5.5	5.5	6.5	5.8	7.5	7.0	7.3	6.5
3	DBW 14 (C)	108	5.0	5.5	5.0	6.0	5.4	6.0	5.5	5.8	5.6
4	WR 544 (C)	101	2.0	2.0	6.5	2.0	3.1	5.0	2.5	3.8	3.4
5	HD 3271	102	4.5	6.0	5.5	6.0	5.5	6.5	5.5	6.0	5.8
6	HD 3298	110	6.0	7.0	4.5	6.5	6.0	6.5	5.5	6.0	6.0
7	DBW 278	106	5.5	6.5	5.5	7.0	6.1	8.0	6.0	7.0	6.6
8	HI 1621	107	6.0	6.0	4.5	4.0	5.1	7.0	5.5	6.3	5.7
9	PBW 777	109	5.0	6.0	5.5	6.0	5.6	7.0	6.0	6.5	6.1
10	PBW 797	104	5.0	7.5	6.0	6.5	6.3	7.5	7.0	7.3	6.8
	Mean		5.0	5.8	5.5	5.5	5.4	6.9	5.7	6.3	5.9

Table 6: Hardness index of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105		86							86
2	DBW 71 (C)	103		83							83
3	DBW 14 (C)	108		86							86
4	WR 544 (C)	101		83							83
5	HD 3271	102		75							75
6	HD 3298	110		88							88
7	DBW 278	106		75							75
8	HI 1621	107		80							80
9	PBW 777	109		85							85
10	PBW 797	104		95							95
	Mean			83.6							83.6

Table 7: Grain Fe content (ppm) of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105	32.5	37.3	38.2	38.1	36.5	42.8	40.5	41.7	39.1
2	DBW 71 (C)	103	35.3	38.3	37.3	39.7	37.7	47.7	38.8	43.3	40.5
3	DBW 14 (C)	108	34.0	37.4	38.2	41.9	37.9	43.4	53.4	48.4	43.1
4	WR 544 (C)	101	33.9	38.9	42.7	41.3	39.2	44.0	48.9	46.5	42.8
5	HD 3271	102	32.0	35.4	39.0	33.3	34.9	36.7	37.7	37.2	36.1
6	HD 3298	110	35.8	36.9	38.8	42.2	38.4	43.8	50.3	47.1	42.7
7	DBW 278	106	35.0	35.7	40.8	42.3	38.5	43.0	43.8	43.4	40.9
8	HI 1621	107	30.2	34.3	33.2	37.3	33.8	34.8	42.3	38.6	36.2
9	PBW 777	109	36.1	41.7	38.4	39.8	39.0	46.6	42.6	44.6	41.8
10	PBW 797	104	33.1	38.3	41.0	38.0	37.6	41.4	38.0	39.7	38.7
	Mean		33.8	37.4	38.8	39.4	37.3	42.4	43.6	43.0	40.2

Table 8: Grain Zn content (ppm) of *T. aestivum* genotypes in SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757*	105	39.7	56.3	27.4	45.6	42.3	36.7	31.6	34.2	38.2
2	DBW 71 (C)	103	42.6	62.6	25.9	49.4	45.1	36.5	31.2	33.9	39.5
3	DBW 14 (C)	108	43.5	56.5	26.8	52.6	44.9	38.3	33.2	35.8	40.3
4	WR 544 (C)	101	40.0	69.8	29.7	57.7	49.3	40.7	35.6	38.2	43.7
5	HD 3271	102	41.2	51.2	25.8	41.8	40.0	31.0	27.8	29.4	34.7
6	HD 3298	110	48.4	55.2	29.7	48.6	45.5	39.9	29.3	34.6	40.0
7	DBW 278	106	35.9	58.1	28.3	52.7	43.8	35.6	29.0	32.3	38.0
8	HI 1621	107	37.7	51.3	21.9	45.9	39.2	34.4	28.6	31.5	35.4
9	PBW 777	109	37.0	65.1	28.3	46.2	44.2	38.6	38.0	38.3	41.2
10	PBW 797	104	39.1	55.8	29.4	48.3	43.2	35.1	29.5	32.3	37.7
	Mean		40.5	58.2	27.3	48.9	43.7	36.7	31.4	34.0	38.9

Table 9: Thousand grain weight (g) of Dicoccum genotypes

Sl No.	Variety	Peninsular Zone						Mean
		Dharwad	Arabhazi	Kalloli	Ugar	Pune	Mudhol	
1	DDK 1029 (C)	39.80	46.35	47.05	42.80	41.15	46.45	43.93
2	MACS 6222 (ae.) (C)	36.60	43.10	46.70	38.85	43.20	40.15	41.43
3	MACS 5051	42.00	45.55	49.20	42.45	39.05	43.15	43.57
4	HW 4101	41.50	46.50	45.00	42.80	42.30	44.95	43.84
5	DDK 1054	38.15	47.25	46.90	44.45	41.65	42.65	43.51
6	HW 1098 (C)	40.25	44.75	44.95	42.40	39.75	42.85	42.49
		39.72	45.58	46.63	42.29	41.18	43.37	43.13

Table 10: Protein content (%) at 14% moisture basis of Dicoccum genotypes

Sl No.	Variety	Peninsular Zone						Mean
		Dharwad	Arabhazi	Kalloli	Ugar	Pune	Mudhol	
1	DDK 1029 (C)	13.43	10.93	12.16	11.24	13.82	13.61	12.53
2	MACS 6222 (ae.) (C)	13.02	12.84	13.45	12.04	12.68	14.15	13.03
3	MACS 5051	13.78	11.87	13.23	12.13	14.59	13.71	13.22
4	HW 4101	13.53	11.90	13.04	13.40	14.97	14.80	13.61
5	DDK 1054	14.45	11.36	13.15	13.09	13.82	13.87	13.29
6	HW 1098 (C)	14.47	12.51	13.62	11.49	14.78	14.02	13.48
		13.78	11.90	13.11	12.23	14.11	14.03	13.19

Table 11: Sedimentation Value (ml) of Dicocum genotypes

Sl No.	Variety	Peninsular Zone						Mean
		Dharwad	Arabhavi	Kalloli	Ugar	Pune	Mudhol	
1	DDK 1029 (C)	30	30	28	29	28	27	28
2	MACS 6222 (ae.) (C)	44	45	43	42	43	43	43
3	MACS 5051	26	27	30	25	25	32	27
4	HW 4101	31	30	36	34	28	33	32
5	DDK 1054	30	26	30	33	29	31	30
6	HW 1098 (C)	30	27	31	29	29	32	29
		32	31	33	32	30	33	32

Table 12: Yellow Pigment (ppm) of Dicocum genotypes

Sl No.	Variety	Peninsular Zone						Mean
		Dharwad	Arabhavi	Kalloli	Ugar	Pune	Mudhol	
1	DDK 1029 (C)	3.26	3.74	3.36	3.53	3.61	3.64	3.52
2	MACS 6222 (ae.) (C)	3.38	3.85	3.92	3.43	4.44	3.72	3.79
3	MACS 5051	3.34	3.26	3.64	3.61	3.72	2.79	3.39
4	HW 4101	3.40	3.08	3.67	3.30	4.32	3.78	3.59
5	DDK 1054	3.44	3.21	3.12	3.43	4.04	3.14	3.40
6	HW 1098 (C)	4.06	3.17	3.37	3.47	4.45	4.12	3.77
		3.48	3.39	3.51	3.46	4.10	3.53	3.58

SECTION D

NURSERY

i. QCSN

Quality Component Screening Nursery (QCSN)

The nursery constituted to select useful donors for quality improvement were evaluated from 15 locations to evaluate 52 entries including 5 checks namely C 306, NIAW1415, HS 490, DDW42(durum) and UP 2672 (Table 1-6). Samples from Varanasi centre could not be evaluated for quality traits because of very poor quality of grain samples. Grain quality analysis was done at IIBWR, Karnal and the parameters involved were grain protein content at 14% grain moisture level, hectolitre weight, sedimentation value, grain appearance score and grain hardness index (Table 1-5) and agronomic traits (table 6).

Quality analysis: JWS855 and GW2014-596 recorded highest grain protein content with 14.3%. HD3215 recorded highest sedimentation value (68.8) followed by UP2996 (68.7), QLD102 (67.4), HD3241 (67.4), QLD101 (66.8) and QLD100 (66.0). QLD84 was the softest genotype with grain hardness index of 18.

Most promising genotypes identified in QCSN 2017-18 for individual quality parameters

Component	Genotypes	Range	Best Check
Protein content (%)	JWS855, GW2014-596, UP2994, QLD91, Local Collection 1c 01, QLD103	13.2-14.3	UP2672 (13.1)
Sedimentation value (ml)	QLD100, QLD101, QLD102, HD3241, UP2996, HD3215	66-68.8	UP2672 (62.3)
Grain hardness index (hard wheat)	TAW33, UP2997	92-102	-
Grain hardness index (soft wheat)	QLD84	18	HS490 (35)
Hectoliter weight (Kg/hl)	GW2015-699(d), GW2016-793(d)	81.9-82.1	-
Grain appearance score (out of 10)	UP2997	6.6	C306 (6.5)

Novel genetic resources: QLD84 and GW2014-596 were evaluated in QCSN for three consecutive years (2015-16, 2016-17 and 2017-18). QLD84 was found to be superior with 18 grain hardness index over the years and locations to all the testing genotypes and soft grain check variety HS490 (30: grain hardness index). GW2014-596 found to be superior with 14.4% protein content over the years and locations to the check variety UP2672 (13.7%). Thus, QLD84 and GW2014-596 would be potential sources to be utilized in future breeding programs to develop bread wheat varieties suitable for better biscuit making and high grain protein content, respectively.

Three years performance of newly identified promising genetic resources

Genotypes	2015-16	2016-17	2017-18	Average
Soft grain (grain hardness index)				
QLD84	19	18	18	18
HS490(C)	27	-	35	31
Grain protein content at 14% moisture				
GW2014-596	14.8	14.04	14.3	14.4
UP2672(C)	14.4	13.7	13.1	13.7

Quality analysis of Quality Component Screening Nursery (QCSN) of preliminary entries

At Karnal centre, 61 new genotypes contributed by the cooperators were evaluated to select entries for multilocation testing. Six entries had grain protein content in the range 13.5 to 14.9% (on 14% moisture basis). Test weight of most of the entries was less than 78 Kg/hl and thus poor quality of grains. Only four entries had test weight of 80 or more. Nine entries gave sedimentation volume of more than 60ml. The overall grain appearance was poor, only two entries could score 6.5. Depending upon the disease reactions and yield traits, some of them might be promoted for multilocation testing in the coming year. Promising genotypes are given in the table below.

Table : Promising genotypes noted in preliminary screening

Component	Genotypes	Range
Protein content (%)	HD3310, GW2017-825, GW2017-879 (d), HD3305, HD3305, GW2017-832	13.5 – 14.9
Sedimentation value(ml)	HD3304, HD3305, HD3302, BWL5205	65 - 67
Test weight (kg/hl)	GW2017-829, BWL5205, HD3307, JWS940	80 - 80.8
Grain appearance score out of 10	BWL5205, HD3302	6.5

Table 1: Grain appearance score (Max-10) of Quality Component Screening Nursery (QCSN) entries

Sr.	Genotype	NWPZ							NEPZ		
		Ludhiana	Durgapura	Delhi	Pantnagar	Karnal	Hisar	Mean	Kanpur	Sabour	Mean
1.	JWS819	6.0	6.0	6.0	4.5	5.0	5.0	5.4	6.0	4.5	5.3
2.	JWS855	4.0	5.5	4.5	5.0	5.0	4.5	4.8	4.5	3.0	3.8
3.	Local		4.0	6.0	4.5	6.0	4.0	4.9	5.0	4.0	4.5
4.	UP2994	6.5	6.0	6.5	6.5	6.5	5.5	6.3	6.5	5.5	6.0
5.	GW2014-596	5.5	6.0	6.0	4.5	5.0	5.5	5.4	6.0	4.0	5.0
6.	QLD91	4.0	5.0	5.5	5.0	6.0	4.5	5.0	5.0	3.5	4.3
7.	AKAW4924	6.0	6.0	6.5	4.5	6.5	5.0	5.8	5.5	4.5	5.0
8.	HD3215	4.5	5.0	5.5	5.0	5.5	5.0	5.1	4.5	4.5	4.5
9.	UP2927	5.0	5.0	5.5	5.5	6.0	5.5	5.4	4.5	4.5	4.5
10.	HD3241	5.5	6.0	5.5	5.0	6.0	5.0	5.5	5.5	4.5	5.0
11.	HS 490 (C)	4.5	5.0	5.0	4.5	4.5	4.5	4.7	4.5	3.5	4.0
12.	QLD93	5.5	6.5	6.5	5.5	6.0	5.5	5.9	5.5	4.5	5.0
13.	QLD94	5.5	6.5	6.5	6.0	6.0	5.5	6.0	5.5	4.5	5.0
14.	UP2958	5.0	6.0	6.0	5.0	6.0	5.0	5.5	6.5	5.0	5.8
15.	JWS809	5.5	6.5	6.0	5.5	6.0	5.5	5.8	6.0	4.5	5.3
16.	JWS825	5.0	6.0	6.0	5.5	5.5	4.5	5.4	5.5	4.0	4.8
17.	JWS150	6.0	4.0	6.0	6.0	5.5	5.0	5.4	4.5	4.0	4.3
18.	UP2995	4.5	4.0	5.5	4.0	5.0	4.5	4.6	5.0	4.0	4.5
19.	UP2996	6.0	5.0	6.0	6.0	6.5	4.5	5.7	5.5	4.5	5.0
20.	GW2016-740	5.0	6.0	5.5	5.0	5.5	5.0	5.3	5.5	4.0	4.8
21.	QLD84	4.0	4.5	4.0	4.5	5.0	4.5	4.4	5.0	4.0	4.5
22.	NIAW1415	4.5	4.0	5.5	4.5	4.0	5.0	4.6	5.5	3.5	4.5
23.	QLD89	6.0	4.0	5.5	5.5	6.5	5.5	5.5	6.5	4.0	5.3
24.	TAW33	6.0	6.0	5.5	5.5	6.0	5.5	5.8	6.5	4.5	5.5
25.	UP2997	7.0	5.5	6.5	7.0	7.5	6.5	6.7	6.0	5.0	5.5
26.	JWS733	6.0	5.5	6.0	6.0	6.0	5.5	5.8	6.5	4.5	5.5
27.	HD2189	6.0	5.5	6.0	6.0	6.0	6.0	5.9	5.5	4.5	5.0
28.	GW 2016-731	6.0	6.0	5.5		6.0	5.0	5.7	5.0	4.5	4.8
29.	GW 2016-735	6.0	6.0	6.0	4.5	5.5	5.0	5.5	5.5	4.5	5.0
30.	GW 2016-741	5.5	6.0	5.5	6.0	6.0	4.5	5.6	5.5		5.5
31.	QLD95	5.5	6.0	6.0	6.0	6.5	5.0	5.8	6.0	5.0	5.5
32.	C306 (C)	7.0	4.0	6.5	6.0	5.5	6.5	5.9	6.5	5.1	5.8
33.	QLD98	4.5	4.5	5.0	5.5	6.0	5.5	5.2	6.0	4.5	5.3
34.	QLD99	6.0	5.5	6.0	5.5	6.5	5.5	5.8	6.0	4.5	5.3
35.	QLD100	4.0	4.0	5.5	5.5	5.5	4.5	4.8	5.0	4.0	4.5
36.	QLD101	3.0	3.0	4.0	6.0	5.5	4.5	4.3	5.0	4.5	4.8
37.	QLD102	4.5	4.0	5.0	5.5	5.5	5.5	5.0	5.0	4.0	4.5
38.	QLD103	4.0	5.5	5.5	6.0	4.5	5.5	5.2	5.0		5.0
39.	QLD104	5.5	6.0	5.5	6.0	5.5	5.0	5.6	5.0	3.5	4.3
40.	QLD105	5.5	6.5	6.0	6.0	5.5	6.0	5.9	6.0	4.0	5.0
41.	QLD106	6.0	4.5	5.0	5.5	4.5	5.5	5.2	5.0		5.0
42.	GW2016-793	6.5	7.5	7.0	5.5	6.0	4.5	6.2	5.1		5.1
43.	UP2672 (C)	6.5	6.0	5.5	5.5	5.5	5.5	5.8	5.5	4.5	5.0
44.	GW2016-794	6.5	7.0	6.5	6.0	5.5	5.0	6.1	6.0	4.5	5.3
45.	GW2015-691	6.0	6.5	6.0	5.0	5.5	6.0	5.8	6.5	3.1	4.8
46.	GW2015-699	6.5	7.0	7.0	6.0	7.0	3.5	6.2	5.5	4.1	4.8
47.	DDW47 (d)	5.0	5.5	6.0	5.0	5.5	6.5	5.6	4.5	3.5	4.0
48.	DDW42 (d)	5.0	5.5	6.0	4.5	5.5	6.5	5.5	4.5	4.0	4.3
49.	HS490 (C)		4.5	5.0	4.5	4.5	4.5	4.6	4.5	4.0	4.3
50.	NIAW1415		4.5	5.0		4.5	4.5	4.6	5.5	4.0	4.8
51.	C306 (C)		5.0	6.5	6.0	5.5	6.5	5.9	7.0		7.0
52.	UP2672 (C)		5.5	4.5		6.5	5.5	5.5	5.5	4.0	4.8
		5.4	5.4	5.7	5.4	5.7	5.2	5.5	5.5	4.2	4.9

Contd.

Grain appearance score continue

Sr. No.	Genotype	CZ					PZ				Overall
		Junagarh	Vijapur	Indore	P.Kheda	Mean	Pune	Dharwad	Niphad	Mean	
1.	JWS819	6.0	6.5	5.5	7.0	6.3	6.5	4.0	6.5	5.7	5.6
2.	JWS855	7.0	6.0	4.5	6.0	5.9	6.0	3.5	6.0	5.2	4.9
3.	Local	5.5	4.5	4.0	5.5	4.9	6.0	4.0	6.0	5.3	4.9
4.	UP2994	7.0	6.5	7.0	7.0	6.9	7.0	4.5	7.0	6.2	6.3
5.	GW2014-596	7.0	6.0	6.5	6.5	6.5	6.0	4.0	7.0	5.7	5.6
6.	QLD91	6.5	6.5	6.0	6.5	6.4	6.0	4.0	6.0	5.3	5.2
7.	AKAW4924	7.5	7.0	6.0	6.0	6.6	3.5	4.0	6.5	4.7	5.5
8.	HD3215	6.0	6.5	6.5	5.5	6.1	6.5	4.0	5.5	5.3	5.3
9.	UP2927	6.5	7.5	5.5	5.0	6.1	7.0	3.5	6.0	5.5	5.4
10.	HD3241	6.5	7.0	6.0	5.5	6.3	7.0	4.5	7.0	6.2	5.7
11.	HS 490 (C)	5.0	5.5	4.0	5.0	4.9	5.0	4.5	4.5	4.7	4.6
12.	QLD93	6.5	7.0	6.5	6.5	6.6	7.0	5.5	6.0	6.2	5.9
13.	QLD94	6.5	7.0	6.5	6.5	6.6	7.0	5.5	6.5	6.3	6.0
14.	UP2958	6.5	6.5	6.5	6.5	6.5	7.0	3.0	6.5	5.5	5.8
15.	JWS809	7.0	7.0	6.5	6.5	6.8	7.5	4.0	7.0	6.2	6.0
16.	JWS825	7.0	7.5	6.0	6.5	6.8	7.5	4.5	6.5	6.2	5.8
17.	JWS150	6.5	7.0	6.0	6.0	6.4	6.5	5.5	7.0	6.3	5.6
18.	UP2995	6.5	6.5	6.0	6.5	6.4	7.0	5.0	6.0	6.0	5.4
19.	UP2996	7.0	7.0	6.5	6.0	6.6	7.0	5.0	6.5	6.2	5.9
20.	GW2016-740	7.0	7.0	6.5	6.0	6.6	7.0	5.5	6.0	6.2	5.7
21.	QLD84	5.0	5.0	2.5	5.0	4.4	4.5	4.5	5.5	4.8	4.5
22.	NIAW1415	6.5	6.0	6.5	6.5	6.4	5.5	3.0	7.0	5.2	5.2
23.	QLD89	6.5	7.0	6.0	7.0	6.6	7.0	4.5	7.0	6.2	5.9
24.	TAW33	7.0	7.0	7.0	6.0	6.8	6.5	5.5	7.0	6.3	6.1
25.	UP2997	6.5	7.0	7.0	7.0	6.9	7.5	5.5	7.0	6.7	6.4
26.	JWS733	7.5	7.0	6.5	6.5	6.9	7.5	5.5	7.0	6.7	6.2
27.	HD2189	7.5	6.0	7.0	6.5	6.8	7.0	6.0	7.0	6.7	6.1
28.	GW 2016-731	7.5	7.5	6.5	6.0	6.9	6.5	4.5	7.5	6.2	5.9
29.	GW 2016-735	7.0	6.5	6.5	6.5	6.6	6.0	3.5	7.0	5.5	5.7
30.	GW 2016-741	7.5	7.0	6.0	6.5	6.8	6.5	4.5	7.0	6.0	6.0
31.	QLD95	6.5	6.0	5.5	5.0	5.8	6.5	4.5	6.5	5.8	5.7
32.	C306 (C)	7.0	7.0	6.5	6.5	6.8	7.0	6.1	7.5	6.9	6.3
33.	QLD98	6.5	5.5	6.0	5.5	5.9	6.5	3.0	6.5	5.3	5.4
34.	QLD99	7.5	6.5	6.5	5.5	6.5	7.0	2.5	7.0	5.5	5.8
35.	QLD100	6.5	6.5	6.0	5.5	6.1	6.0	4.0	6.0	5.3	5.2
36.	QLD101	6.5	6.5	5.0	5.5	5.9	6.5	4.5	6.0	5.7	5.2
37.	QLD102	5.5	6.5	5.5	6.5	6.0	5.5	2.5	6.5	4.8	5.1
38.	QLD103	6.5	6.5	6.0	6.5	6.4	6.0	3.0	7.0	5.3	5.5
39.	QLD104	7.0	6.0	6.5	6.0	6.4	6.5	3.5	7.5	5.8	5.5
40.	QLD105	6.5	6.5	7.0	6.0	6.5	7.0	4.0	7.5	6.2	5.9
41.	QLD106	5.5	5.5	5.0	5.5	5.4	6.0	4.0	7.0	5.7	5.3
42.	GW2016-793	8.0	7.0	6.5	6.0	6.9	5.5	5.0	7.0	5.8	6.0
43.	UP2672 (C)	8.0	7.5	6.0	6.0	6.9	6.5	4.5	7.5	6.2	5.9
44.	GW2016-794	7.5	7.0	7.5	7.0	7.3	6.5	4.5	8.0	6.3	6.2
45.	GW2015-691	7.0	7.5	7.0	7.0	7.1	6.5	6.5	8.0	7.0	6.2
46.	GW2015-699	8.0	6.5	6.5	6.5	6.9	4.0	2.5	7.0	4.5	5.6
47.	DDW47 (d)	7.0	7.0	6.5	6.0	6.6	4.5	4.5	7.0	5.3	5.4
48.	DDW42 (d)	7.0	7.0	7.0	6.0	6.8	5.5	4.5	7.0	5.7	5.5
49.	HS490 (C)	5.5	5.0	4.0	5.0	4.9	4.5	4.5	6.0	5.0	4.7
50.	NIAW1415	6.5	6.5	6.0	6.0	6.3	5.5	3.5	6.0	5.0	5.2
51.	C306 (C)	7.0	7.0	6.5	6.5	6.8	7.0	6.1	7.5	6.9	6.6
52.	UP2672 (C)	7.0	7.5	6.0	6.0	6.6	6.5	5.0	7.0	6.2	5.8
		6.7	6.6	6.1	6.1	6.4	6.3	4.4	6.7	5.8	5.6

Table 2: Hectolitre weight (kg/hl) of Quality Component Screening Nursery (QCSN) entries

Sr.	Genotype	NWPZ							NEPZ		
		Ludhiana	Durgapura	Delhi	Pantnagar	Karnal	Hisar	Mean	Kanpur	Sabour	Mean
1.	JWS819	76.7	76.0	75.7	78.6	74.2	79.5	76.8	76.3	72.3	74.3
2.	JWS855	69.6	71.6	69.7	72.0	73.0	74.0	71.7	66.0	66.0	66.0
3.	Local		74.0	80.6	79.5	79.7	82.0	79.2	78.0	68.0	73.0
4.	UP2994	79.0	75.6	79.3	79.6	78.5	82.0	79.0	76.5	78.7	77.6
5.	GW2014-596	74.5	74.0	77.6	74.0	75.7	78.0	75.6	75.4	75.0	75.2
6.	QLD91	71.0	68.4	75.0	75.0	77.0	79.0	74.2	73.0	74.0	73.5
7.	AKAW4924	75.5	76.7	79.6	76.3	78.5	78.5	77.5	76.5	76.6	76.6
8.	HD3215	72.5	70.4	75.2	73.6	75.6	78.5	74.3	70.8	71.6	71.2
9.	UP2927	74.0	71.5	76.3	76.0	77.0	79.5	75.7	72.3	74.0	73.2
10.	HD3241	75.0	75.0	77.0	75.0	75.4	78.5	76.0	75.0	72.5	73.8
11.	HS 490 (C)	72.0	71.5	73.0	75.3	73.2	77.5	73.8	68.0	69.2	68.6
12.	QLD93	75.0	75.0	76.6	78.0	75.4	81.0	76.8	73.0	73.3	73.2
13.	QLD94	76.7	77.3	77.1	76.2	77.3	81.0	77.6	74.0	73.5	73.8
14.	UP2958	75.6	78.5	76.4	74.2	77.4	78.5	76.8	78.5	73.2	75.9
15.	JWS809	77.0	77.5	75.8	74.5	76.0	80.0	76.8	77.5	71.0	74.3
16.	JWS825	75.0	75.3	76.0	74.5	76.3	77.5	75.8	71.0	72.8	71.9
17.	JWS150	73.7	64.0	74.0	74.6	75.7	77.0	73.2	71.5	72.0	71.8
18.	UP2995	75.7	67.0	77.0	71.6	71.0	75.0	72.9	72.6	75.0	73.8
19.	UP2996	75.6	70.0	77.3	76.7	75.5	76.0	75.2	71.5	73.2	72.4
20.	GW2016-740	74.6	76.0	73.3	73.6	74.8	77.5	75.0	75.2	72.5	73.9
21.	QLD84	71.2	66.6	71.3	70.5	74.6	75.5	71.6	70.0	70.0	70.0
22.	NIAW1415	73.0	65.5	73.6	69.5	71.6	77.5	71.8	73.5	69.2	71.4
23.	QLD89	75.0	64.5	76.0	76.0	77.6	79.0	74.7	74.3	73.8	74.1
24.	TAW33	77.0	69.0	76.7	75.6	76.0	79.5	75.6	75.8	74.0	74.9
25.	UP2997	78.2	67.0	77.5	79.0	80.0	79.5	76.9	74.6	76.0	75.3
26.	JWS733	80.0	68.2	79.0	77.5	77.6	81.5	77.3	78.0	76.6	77.3
27.	HD2189	82.0	66.7	81.0	79.0	80.0	82.0	78.5	81.5	75.0	78.3
28.	GW 2016-731	80.0	73.2	76.7		75.6	81.5	77.4	79.0	73.0	76.0
29.	GW 2016-735	80.3	75.5	75.8	74.5	78.3	81.0	77.6	78.6	75.2	76.9
30.	GW 2016-741	77.5	76.4	77.8	75.2	76.7	80.5	77.4	77.8		77.8
31.	QLD95	78.2	72.0	77.3	75.6	79.5	79.0	76.9	77.0	72.8	74.9
32.	C306 (C)	81.0	64.3	80.0	81.2	79.0	82.5	78.0	80.6	77.8	79.2
33.	QLD98	72.0	61.9	72.5	74.5	73.0	77.5	71.9	74.6	72.0	73.3
34.	QLD99	76.0	72.7	77.3	78.6	75.3	81.0	76.8	78.6	75.3	77.0
35.	QLD100	70.0	67.0	74.8	74.3	74.8	78.0	73.2	74.5	71.0	72.8
36.	QLD101	69.0	58.0	72.0	76.0	73.0	77.0	70.8	73.8	72.4	73.1
37.	QLD102	71.0	65.3	73.8	75.0	75.0	78.0	73.0	72.5	72.5	72.5
38.	QLD103	70.3	70.2	75.0	77.0	75.0	76.5	74.0	71.0		71.0
39.	QLD104	77.0	75.1	76.0	75.0	73.7	78.5	75.9	73.6	72.3	73.0
40.	QLD105	79.5	77.0	77.0	75.0	76.3	82.0	77.8	78.5	72.0	75.3
41.	QLD106	75.0	63.0	73.5	77.5	74.0	77.0	73.3	75.3		75.3
42.	GW2016-793	82.0	81.5	82.0	79.4	80.0	81.0	81.0	81.0		81.0
43.	UP2672 (C)	76.0	74.5	77.6	72.5	75.4	77.0	75.5	76.8	74.4	75.6
44.	GW2016-794	79.0	77.5	80.0	78.0	75.0	80.5	78.3	78.0	73.7	75.9
45.	GW2015-691	78.6	79.0	77.3	76.3	77.0	82.0	78.4	80.2	74.8	77.5
46.	GW2015-699	82.0	79.5	81.0	80.5	80.0	79.0	80.3	81.5	77.0	79.3
47.	DDW47 (d)	72.3	74.0	76.0	78.0	74.0	78.5	75.5	76.2	73.2	74.7
48.	DDW42 (d)	71.0	73.7	75.7	78.0	74.0	79.5	75.3	75.8	76.0	75.9
49.	HS490 (C)		68.0	70.4	73.7	73.6	76.5	72.4	73.6	68.7	71.2
50.	NIAW1415		68.6	73.6		72.0	78.5	73.2	75.8	71.0	73.4
51.	C306 (C)		73.1	80.3	78.0	76.7	81.5	77.9	80.0		80.0
52.	UP2672 (C)		73.2	74.3		75.4	79.0	75.5	76.8	71.5	74.2
		75.6	71.7	76.3	75.9	75.9	79.0	75.7	75.4	73.1	74.4

Contd.

Hectolitre weight (kg/hl) continue

Sr. No.	Genotype	CZ					PZ				Overall
		Junagarh	Vijapur	Indore	P.Kheda	Mean	Pune	Dharwad	Niphad	Mean	
1.	JWS819	78.0	77.6	75.2	81.5	78.1	81.0	73.4	80.3	78.2	76.8
2.	JWS855	77.8	79.2	69.5	78.3	76.2	78.6	72.0	76.0	75.5	72.3
3.	Local	78.7	77.0	73.7	80.8	77.6	85.4	77.5	80.3	81.1	77.7
4.	UP2994	79.6	81.0	82.6	80.5	80.9	83.3	76.0	81.2	80.2	79.4
5.	GW2014-596	80.4	79.0	82.2	81.6	80.8	81.6	73.8	82.0	79.1	77.7
6.	QLD91	78.6	81.0	79.2	81.5	80.1	81.0	74.0	80.6	78.5	76.6
7.	AKAW4924	83.0	81.7	82.3	82.4	82.4	81.5	76.5	82.2	80.1	79.1
8.	HD3215	79.0	80.6	81.0	80.5	80.3	81.6	74.0	79.5	78.4	76.0
9.	UP2927	81.0	81.8	76.7	80.6	80.0	82.0	71.6	81.0	78.2	76.8
10.	HD3241	80.3	82.7	79.2	80.0	80.6	81.4	74.5	82.0	79.3	77.4
11.	HS 490 (C)	75.6	76.0	76.0	78.2	76.5	77.3	73.2	77.3	75.9	73.7
12.	QLD93	80.0	82.0	77.4	81.0	80.1	80.6	76.5	80.6	79.2	77.3
13.	QLD94	78.2	82.2	78.1	82.0	80.1	80.5	76.0	81.0	79.2	77.7
14.	UP2958	81.0	81.6	80.3	82.2	81.3	80.8	73.7	82.0	78.8	78.2
15.	JWS809	82.0	81.4	80.1	81.3	81.2	82.0	75.0	82.7	79.9	78.0
16.	JWS825	81.3	81.0	73.7	81.0	79.3	82.4	73.6	80.2	78.7	76.4
17.	JWS150	81.0	80.5	75.0	80.3	79.2	82.2	74.7	81.0	79.3	75.9
18.	UP2995	80.0	78.7	76.1	81.2	79.0	84.0	75.0	81.0	80.0	76.4
19.	UP2996	79.3	79.2	74.0	80.0	78.1	81.4	72.5	82.3	78.7	76.1
20.	GW2016-740	82.5	83.1	80.7	82.7	82.3	82.5	76.0	76.4	78.3	77.3
21.	QLD84	76.6	74.2	68.0	78.3	74.3	78.0	73.2	77.0	76.1	73.0
22.	NIAW1415	79.3	79.7	78.8	80.6	79.6	81.0	73.0	81.0	78.3	75.3
23.	QLD89	80.0	83.0	80.5	81.5	81.3	82.0	74.7	82.3	79.7	77.4
24.	TAW33	80.8	81.6	80.1	82.6	81.3	82.5	75.6	80.5	79.5	77.8
25.	UP2997	78.7	80.3	79.3	80.6	79.7	80.6	74.2	80.3	78.4	77.6
26.	JWS733	83.0	85.0	77.5	84.5	82.5	84.7	76.7	85.0	82.1	79.8
27.	HD2189	82.4	82.7	83.0	84.3	83.1	85.0	78.2	84.0	82.4	80.6
28.	GW 2016-731	83.0	82.8	83.3	83.2	83.1	81.4	75.5	84.4	80.4	79.2
29.	GW 2016-735	82.5	82.0	82.0	83.8	82.6	83.2	74.2	83.5	80.3	79.3
30.	GW 2016-741	83.2	81.5	80.6	82.7	82.0	83.8	74.0	84.0	80.6	79.4
31.	QLD95	82.0	79.7	79.1	81.2	80.5	82.5	74.4	82.2	79.7	78.0
32.	C306 (C)	79.0	83.3	83.5	82.0	82.0	85.0	81.2	85.0	83.7	80.7
33.	QLD98	78.0	78.5	77.0	78.5	78.0	79.5	72.3	79.3	77.0	75.1
34.	QLD99	82.0	80.5	80.1	81.5	81.0	82.7	73.5	83.0	79.7	78.6
35.	QLD100	81.4	82.1	76.5	81.0	80.3	81.0	74.2	80.5	78.6	76.2
36.	QLD101	79.5	79.0	75.0	76.5	77.5	80.0	74.0	79.2	77.7	74.8
37.	QLD102	72.0	78.0	78.0	78.0	76.5	78.0	72.0	77.2	75.7	74.4
38.	QLD103	79.0	81.4	78.0	81.0	79.9	80.0	71.6	80.5	77.4	75.6
39.	QLD104	79.7	80.1	80.3	82.0	80.5	81.0	72.3	81.0	78.1	76.9
40.	QLD105	80.5	80.5	81.3	83.0	81.3	82.2	73.0	84.0	79.7	78.5
41.	QLD106	75.6	77.3	76.8	78.0	76.9	79.0	73.0	78.7	76.9	75.6
42.	GW2016-793	83.3	82.7	85.0	84.6	83.9	83.6	78.0	85.0	82.2	82.0
43.	UP2672 (C)	81.6	81.5	77.8	80.5	80.4	82.4	76.7	81.0	80.0	77.9
44.	GW2016-794	82.0	80.8	83.9	83.7	82.6	83.5	77.0	84.2	81.6	79.6
45.	GW2015-691	83.0	83.2	83.8	84.0	83.5	83.3	80.0	84.0	82.4	80.5
46.	GW2015-699	84.8	82.8	84.5	84.8	84.2	83.7		85.4	84.6	82.1
47.	DDW47 (d)	79.1	80.0	81.6	79.3	80.0	81.5	79.0	81.0	80.5	77.7
48.	DDW42 (d)	79.7	81.6	82.6	80.3	81.1	83.2	77.3	83.0	81.2	78.4
49.	HS490 (C)	75.0	78.0	75.2	77.3	76.4	76.3	71.6	77.8	75.2	73.8
50.	NIAW1415	79.2	80.1	78.5	80.3	79.5	80.5	73.4	80.4	78.1	76.1
51.	C306 (C)	80.4	81.0	78.0	83.0	80.6	85.0	80.4	83.5	83.0	80.4
52.	UP2672 (C)	82.2	83.0	73.2	80.7	79.8	81.6	76.0	79.4	79.0	77.1
		80.1	80.7	78.8	81.2	80.2	81.7	74.9	81.3	79.4	77.4

Table 3: Protein content (%) at 14% moisture basis of Quality Component Screening Nursery (QCSN) entries

S. No.	Genotype	NWPZ							NEPZ		
		Ludhiana	Durgapura	Delhi	Pantnagar	Karnal	Hisar	Mean	Kanpur	Sabour	Mean
1.	JWS819	12.6	15.9	14.1	10.7	14.2	13.3	13.5	12.0	11.9	12.0
2.	JWS855	14.1	16.3	15.8	11.6	15.5	14.6	14.6	15.6	14.4	15.0
3.	Local		17.3	14.2	11.0	15.1	12.0	13.9	14.1	12.9	13.5
4.	UP2994	12.1	17.0	15.5	12.3	14.3	12.4	13.9	15.3	11.4	13.3
5.	GW2014-596	14.3	17.0	15.3	13.0	14.5	13.0	14.5	14.8	11.9	13.3
6.	QLD91	14.3	16.4	15.0	11.3	13.8	11.9	13.8	14.6	11.5	13.0
7.	AKAW4924	13.2	13.8	14.0	12.0	12.8	11.9	12.9	13.4	10.6	12.0
8.	HD3215	12.3	15.4	13.9	10.5	11.6	11.7	12.6	14.1	10.2	12.1
9.	UP2927	12.5	15.9	14.2	10.4	12.8	11.6	12.9	14.0	10.6	12.3
10.	HD3241	11.9	14.0	13.1	11.1	12.6	12.4	12.5	12.5	11.3	11.9
11.	HS 490 (C)	11.8	14.0	12.4	9.8	12.2	10.7	11.8	13.8	10.0	11.9
12.	QLD93	12.1	13.7	13.0	11.2	12.6	10.9	12.3	13.2	10.5	11.8
13.	QLD94	11.6	13.4	13.6	10.9	12.4	10.5	12.1	13.7	10.0	11.9
14.	UP2958	10.9	14.8	13.7	10.9	11.9	9.9	12.0	10.5	9.7	10.1
15.	JWS809	9.7	12.8	13.0	9.0	11.9	9.5	11.0	10.8	9.3	10.1
16.	JWS825	11.4	14.7	13.5	10.8	12.1	11.3	12.3	13.5	9.8	11.6
17.	JWS150	10.7	16.4	12.8	9.5	11.4	11.9	12.1	13.5	9.6	11.6
18.	UP2995	11.0	17.8	13.5	9.5	12.7	12.1	12.8	14.2	9.7	11.9
19.	UP2996	11.4	17.1	13.6	10.3	13.2	12.5	13.0	14.8	10.1	12.4
20.	GW2016-740	11.0	13.4	13.8	11.0	11.6	11.9	12.1	12.8	9.7	11.2
21.	QLD84	12.9	17.0	14.7	10.6	13.1	10.1	13.1	13.5	10.1	11.8
22.	NIAW1415	11.2	15.4	13.2	11.0	11.9	10.3	12.2	11.9	10.8	11.4
23.	QLD89	12.1	17.1	14.0	11.0	12.3	11.7	13.0	11.8	10.8	11.3
24.	TAW33	10.7	15.2	12.6	11.9	12.2	11.6	12.4	11.7	10.7	11.2
25.	UP2997	10.9	17.2	13.1	10.7	12.5	12.8	12.9	14.6	11.1	12.9
26.	JWS733	10.0	16.2	13.4	9.5	12.5	12.0	12.3	12.7	9.4	11.1
27.	HD2189	10.3	15.5	12.5	9.6	12.2	12.3	12.1	9.0	11.7	10.3
28.	GW 2016-731	10.0	14.8	12.9		12.6	11.7	12.4	10.7	11.6	11.1
29.	GW 2016-735	10.7	14.2	13.2	10.0	12.3	11.7	12.0	10.8	11.3	11.1
30.	GW 2016-741	10.7	15.2	12.7	10.4	12.3	11.7	12.2	11.0		11.0
31.	QLD95	11.8	15.6	13.6	11.0	13.6	11.9	12.9	11.8	12.3	12.1
32.	C306 (C)	11.3	18.2	13.2	9.0	12.4	11.6	12.6	9.7	10.3	10.0
33.	QLD98	11.3	15.7	13.6	10.0	11.9	11.1	12.3	11.2	10.1	10.7
34.	QLD99	11.8	16.0	13.7	9.6	13.0	11.0	12.5	11.1	10.4	10.8
35.	QLD100	12.7	15.7	12.8	9.7	12.5	10.6	12.3	10.4	9.1	9.7
36.	QLD101	14.3	17.6	14.3	10.3	12.5	11.1	13.4	11.2	9.6	10.4
37.	QLD102	12.7	16.2	13.9	9.8	12.1	10.4	12.5	11.5	8.9	10.2
38.	QLD103	13.1	16.6	13.6	10.4	13.0	12.2	13.2	14.1		14.1
39.	QLD104	11.2	14.0	13.5	11.3	13.0	12.0	12.5	12.9	10.3	11.6
40.	QLD105	11.8	14.0	13.7	11.9	13.1	11.3	12.6	10.8	10.5	10.6
41.	QLD106	11.9	14.5	12.6	11.3	12.1	11.6	12.3	9.4		9.4
42.	GW2016-793	10.5	14.1	13.8	12.5	13.3	12.8	12.8	9.4		9.4
43.	UP2672 (C)	12.9	14.6	14.0	12.1	13.4	13.4	13.4	11.5	10.1	10.8
44.	GW2016-794	12.0	15.5	14.7	9.6	13.2	11.7	12.8	10.7	10.3	10.5
45.	GW2015-691	11.8	16.0	16.0	10.8	13.1	11.4	13.2	9.8	9.6	9.7
46.	GW2015-699	12.4	15.1	14.7	11.3	12.9	13.3	13.3	10.4	10.0	10.2
47.	DDW47 (d)	13.4	16.6	15.0	10.2	13.0	12.3	13.4	9.6	10.0	9.8
48.	DDW42 (d)	14.5	16.4	15.3	10.5	13.0	11.8	13.6	10.2	10.3	10.3
49.	HS490 (C)		13.6	12.9	10.4	11.5	11.2	11.9	10.3	10.3	10.3
50.	NIAW1415		15.1	13.2		12.1	9.8	12.6	9.4	9.7	9.5
51.	C306 (C)		15.0	13.4	8.7	12.5	10.2	11.9	11.7		11.7
52.	UP2672 (C)		15.4	14.5		13.2	11.5	13.7	12.7	12.2	12.5
		11.9	15.5	13.8	10.7	12.8	11.7	12.7	12.1	10.6	11.4

Contd.

Protein content (%) continue

Sr. No.	Genotype	CZ					PZ				Overall
		Junagarh	Vijapur	Indore	P.Kheda	Mean	Pune	Dharwad	Niphad	Mean	
1.	JWS819	15.1	12.3	10.8	11.1	12.3	11.4	14.9	13.9	13.4	12.8
2.	JWS855	14.8	12.2	14.0	14.7	13.9	11.9		15.0	13.4	14.3
3.	Local	15.2	12.3	10.0	14.5	13.0	10.9		15.2	13.1	13.4
4.	UP2994	16.1	12.8	13.7	14.6	14.3	10.2	17.0	15.6	14.3	14.0
5.	GW2014-596	16.6	13.6	12.3	13.6	14.0	12.1	17.6	15.4	15.0	14.2
6.	QLD91	16.1	12.0	12.6	13.5	13.6	10.2	15.8	14.6	13.6	13.5
7.	AKAW4924	13.7	12.5	10.4	12.2	12.2	9.7	15.1	13.4	12.7	12.5
8.	HD3215	14.8	12.0	10.5	12.2	12.4	9.0	13.8	13.1	12.0	12.3
9.	UP2927	14.8	12.3	10.6	13.4	12.8	10.4	15.8	13.4	13.2	12.8
10.	HD3241	14.9	12.1	10.5	13.0	12.6	11.6	14.0	12.5	12.7	12.4
11.	HS 490 (C)	13.2	10.8	10.3	11.4	11.4	10.0	13.0	12.2	11.7	11.7
12.	QLD93	14.2	12.1	11.3	12.4	12.5	10.6	14.1	12.7	12.4	12.3
13.	QLD94	14.1	12.2	11.2	12.5	12.5	10.5	14.6	11.2	12.1	12.1
14.	UP2958	14.8	12.2	11.9	12.0	12.7	10.2		12.2	11.2	11.5
15.	JWS809	13.2	11.7	11.0	11.7	11.9	11.9	15.6	11.0	12.9	11.5
16.	JWS825	13.6	11.2	9.8	11.6	11.5	9.9	13.5	12.5	12.0	11.9
17.	JWS150	13.1	11.4	10.6	12.3	11.9	9.7	13.3	10.6	11.2	11.7
18.	UP2995	14.6	11.8	12.4	12.5	12.9	9.2	13.3	11.2	11.2	12.2
19.	UP2996	16.0	12.1	10.3	12.2	12.6	9.5	14.0	12.3	11.9	12.5
20.	GW2016-740	13.3	11.8	10.4	11.5	11.7	9.3	14.6	14.0	12.6	11.9
21.	QLD84	14.8	11.4	9.7	13.8	12.4	9.2	15.1	15.2	13.2	12.6
22.	NIAW1415	13.4	11.1	11.4	11.1	11.8	9.0	13.5	12.1	11.5	11.7
23.	QLD89	14.2	11.9	11.8	12.1	12.5	10.2	13.5	12.9	12.2	12.3
24.	TAW33	14.6	11.3	12.1	11.6	12.4	8.8	14.5	12.9	12.0	12.0
25.	UP2997	14.8	11.6	12.9	13.1	13.1	11.8	16.2	14.6	14.2	13.3
26.	JWS733	14.5	12.4	10.4	12.9	12.6	10.7	15.6	13.1	13.1	12.3
27.	HD2189	14.0	11.8	12.1	12.6	12.6	9.7	13.8	12.2	11.9	11.7
28.	GW 2016-731	14.2	12.6	12.1	11.8	12.7	11.4	15.3	12.6	13.1	12.3
29.	GW 2016-735	14.1	12.6	12.5	11.9	12.8	11.9	14.0	13.0	13.0	12.2
30.	GW 2016-741	13.6	12.2	12.7	12.4	12.8	9.9	15.1	12.4	12.5	12.1
31.	QLD95	15.0	12.8	9.4	13.1	12.6	10.5	15.7	10.9	12.4	12.5
32.	C306 (C)	14.4	11.8	9.3	12.7	12.1	8.4	12.1	11.0	10.5	11.3
33.	QLD98	15.1	12.2	11.1	12.1	12.6	10.2	14.9	12.2	12.4	12.0
34.	QLD99	15.2	12.7	10.8	13.0	12.9	11.9	16.8	12.6	13.8	12.5
35.	QLD100	14.4	12.2	10.1	13.2	12.5	9.7	14.7	11.5	12.0	11.6
36.	QLD101	16.2	11.8	11.8	14.4	13.5	10.2	15.7	13.7	13.2	12.6
37.	QLD102	15.9	11.9	12.2	13.0	13.2	10.4	17.3	13.0	13.6	12.4
38.	QLD103	15.0	11.9	12.2	13.3	13.1	10.7	16.4	12.6	13.2	13.4
39.	QLD104	15.1	12.2	11.8	13.1	13.1	11.2	15.8	13.1	13.4	12.6
40.	QLD105	15.9	12.3	12.3	13.1	13.4	11.5	16.0	13.0	13.5	12.5
41.	QLD106	13.7	12.8	11.7	12.8	12.7	10.2	13.5	12.2	12.0	11.6
42.	GW2016-793	14.7	12.4	10.5	13.5	12.8	9.7	13.6	13.1	12.1	11.8
43.	UP2672 (C)	15.8	12.4	10.8	13.7	13.2	10.9	15.8	13.6	13.5	12.7
44.	GW2016-794	14.1	12.2	9.9	13.1	12.3	9.8	15.8	12.2	12.6	12.0
45.	GW2015-691	15.1	12.7	10.7	12.7	12.8	9.6	16.3	11.7	12.5	12.1
46.	GW2015-699	14.1	12.3	11.8	12.4	12.6	9.1		12.0	10.6	11.7
47.	DDW47 (d)	14.1	11.6	10.9	12.4	12.2	9.2	15.9	11.9	12.4	12.0
48.	DDW42 (d)	14.6	11.7	10.0	12.3	12.2	9.2	13.8	11.7	11.6	11.9
49.	HS490 (C)	14.0	11.0	10.5	11.3	11.7	8.6	12.9	10.9	10.8	11.2
50.	NIAW1415	13.6	11.3	11.9	11.8	12.1	9.2	14.1	11.5	11.6	11.5
51.	C306 (C)	14.2	11.1	11.4	11.7	12.1	8.1	12.2	11.3	10.5	11.6
52.	UP2672 (C)	15.0	12.0	13.0	13.5	13.4	10.8	13.6	13.1	12.5	13.0
		14.6	12.0	11.3	12.7	12.6	10.2	14.8	12.7	12.5	12.3

Table 4: Sedimentation value (ml) of Quality Component Screening Nursery (QCSN) entries

Sr.	Genotype	NWPZ							NEPZ		
		Ludhiana	Durgapura	Delhi	Pantnagar	Karnal	Hisar	Mean	Kanpur	Sabour	Mean
1.	JWS819	54.9	58.2	60.7	57.0	56.6	56.6	57.3	57.4	66.8	62.1
2.	JWS855	52.5	47.6	50.0	56.6	57.4	48.4	52.1	55.4	69.2	62.3
3.	Local		52.1	50.9	52.1	59.0	51.3	53.1	55.8	53.3	54.5
4.	UP2994	59.0	54.5	52.5	57.4	57.4	52.1	55.5	63.1	65.2	64.1
5.	GW2014-596	47.2	50.0	48.8	58.2	56.6	46.8	51.3	52.9	57.4	55.2
6.	QLD91	63.1	57.4	57.4	64.3	66.4	54.1	60.5	67.2	64.7	66.0
7.	AKAW4924	48.8	47.6	46.8	46.8	48.4	44.3	47.1	50.9	46.8	48.8
8.	HD3215	71.3	67.2	72.9	61.1	73.7	68.4	69.1	73.3	69.2	71.3
9.	UP2927	67.2	65.6	61.1	60.7	67.2	58.2	63.3	67.6	60.7	64.1
10.	HD3241	64.7	70.5	67.2	72.9	71.3	63.1	68.3	70.9	71.3	71.1
11.	HS 490 (C)	40.7	53.3	43.5	40.2	45.1	40.7	43.9	52.9	39.4	46.2
12.	QLD93	64.3	62.7	64.7	70.5	70.9	55.4	64.7	66.4	68.4	67.4
13.	QLD94	62.3	66.0	69.2	73.3	72.9	55.8	66.6	67.2	59.0	63.1
14.	UP2958	60.7	67.2	63.1	68.8	67.2	51.3	63.0	67.6	57.0	62.3
15.	JWS809	46.0	50.5	54.5	50.5	52.5	43.5	49.6	57.0	52.5	54.7
16.	JWS825	55.8	56.6	59.0	58.6	66.4	50.5	57.8	66.4	52.9	59.6
17.	JWS150	50.9	48.8	55.4	57.0	61.1	52.1	54.2	65.6	54.5	60.1
18.	UP2995	59.0	66.8	59.0	54.5	71.3	59.0	61.6	71.3	60.7	66.0
19.	UP2996	67.2	71.3	66.8	75.0	71.3	62.7	69.0	71.7	63.5	67.6
20.	GW2016-740	58.2	72.9	69.2	69.7	62.7	56.6	64.9	67.6	54.9	61.3
21.	QLD84	61.9	68.4	71.3	60.7	70.9	50.5	63.9	68.0	57.0	62.5
22.	NIAW1415	50.0	52.9	57.0	46.8	54.1	45.1	51.0	53.7	50.9	52.3
23.	QLD89	59.0	65.2	67.2	63.1	65.6	56.6	62.8	65.2	60.7	62.9
24.	TAW33	48.0	64.7	54.1	57.0	54.9	44.7	53.9	54.1	50.5	52.3
25.	UP2997	57.0	51.7	53.3	57.8	60.3	54.5	55.8	59.0	54.9	57.0
26.	JWS733	46.0	57.4	54.9	43.5	51.3	55.6	51.4	57.0	47.2	52.1
27.	HD2189	42.7	43.9	42.7	41.1	46.4	38.6	42.6	41.9	43.5	42.7
28.	GW 2016-731	44.7	51.7	53.3		53.3	43.5	49.3	50.0	50.9	50.5
29.	GW 2016-735	43.1	46.0	51.3	38.6	50.9	41.1	45.1	51.3	50.5	50.9
30.	GW 2016-741	42.7	43.5	42.7	45.1	46.8	38.6	43.2	44.3		44.3
31.	QLD95	51.7	58.6	59.0	54.9	62.7	51.3	56.4	43.5	53.7	48.6
32.	C306 (C)	46.0	42.7	44.3	42.7	47.2	43.5	44.4	43.9	45.1	44.5
33.	QLD98	69.2	65.2	71.3	59.8	72.1	50.1	64.6	67.2	59.0	63.1
34.	QLD99	69.7	71.3	68.8	60.3	73.7	56.6	66.7	67.2	55.4	61.3
35.	QLD100	68.4	70.1	68.8	63.5	73.3	57.8	67.0	67.6	53.3	60.5
36.	QLD101	66.8	63.9	65.6	70.5	73.3	57.4	66.2	65.2	58.6	61.9
37.	QLD102	68.8	69.7	69.7	67.2	70.1	54.1	66.6	71.3	56.6	63.9
38.	QLD103	63.1	68.4	65.6	65.6	70.9	54.5	64.7	65.6		65.6
39.	QLD104	55.4	59.0	57.4	62.7	59.0	53.7	57.9	60.3	58.6	59.4
40.	QLD105	50.0	60.7	56.6	53.3	56.2	50.9	54.6	57.8	52.5	55.2
41.	QLD106	58.2	48.4	46.0	48.8	48.4	41.9	48.6	48.4		48.4
42.	GW2016-793	48.4	40.2	42.7	43.5	48.8	38.6	43.7	38.6		38.6
43.	UP2672 (C)	67.2	62.3	62.3	62.7	68.8	57.8	63.5	61.5	54.9	58.2
44.	GW2016-794	46.8	41.5	48.4	49.2	52.5	40.7	46.5	46.8	47.2	47.0
45.	GW2015-691	43.5	42.7	46.8	41.9	46.8	39.4	43.5	54.9	43.5	49.2
46.	GW2015-699	41.5	38.6	39.4	42.7	48.8	35.8	41.1	42.7	43.1	42.9
47.	DDW47 (d)	44.3	42.7	41.9	40.2	42.7	41.1	42.2	42.7	46.8	44.7
48.	DDW42 (d)	43.1	43.5	39.8	44.7	51.3	45.1	44.6	47.2	42.7	44.9
49.	HS490 (C)		48.8	44.3	42.3	46.4	38.6	44.1	42.7	41.5	42.1
50.	NIAW1415		50.5	52.5		52.9	44.7	50.1	49.2	44.7	47.0
51.	C306 (C)		43.9	45.1	42.7	45.1	41.5	43.7	48.8		48.8
52.	UP2672 (C)		67.2	63.9		71.3	57.0	64.9	66.4	59.8	63.1
		55.1	56.4	56.2	55.5	59.5	49.8	55.3	57.9	54.7	56.0

Contd.

Sedimentation value (ml) continue

Sr. No.	Genotype	CZ					PZ				Overall
		Junagarh	Vijapur	Indore	P.Kheda	Mean	Pune	Dharwad	Niphad	Mean	
1.	JWS819	58.2	59.0	57.0	57.8	58.0	63.1	59.0	59.0	60.4	59.5
2.	JWS855	48.4	60.0	57.4	48.4	53.6	54.9	61.9	54.9	57.3	56.3
3.	Local	57.0	66.0	56.6	47.2	56.7	52.9	57.4	48.8	53.0	54.3
4.	UP2994	50.5	51.0	54.5	57.0	53.2	60.7	66.8	54.9	60.8	58.4
5.	GW2014-596	47.6	47.0	49.2	48.0	48.0	50.9	56.6	46.4	51.3	51.4
6.	QLD91	45.6	57.0	63.1	50.9	54.1	58.6	67.2	60.3	62.0	60.6
7.	AKAW4924	46.4	49.0	46.8	46.8	47.2	50.0	55.8	48.8	51.5	48.7
8.	HD3215	69.7	68.0	70.1	65.6	68.3	58.6	71.7	70.9	67.1	68.9
9.	UP2927	61.5	62.0	62.3	68.0	63.4	57.4	70.5	63.5	63.8	63.7
10.	HD3241	66.0	65.0	68.8	50.9	62.7	68.8	72.1	66.8	69.2	67.8
11.	HS 490 (C)	48.4	49.0	40.2	46.4	46.0	41.5	59.0	42.7	47.7	46.0
12.	QLD93	65.6	67.0	63.1	65.6	65.3	63.1	63.5	61.1	62.6	65.0
13.	QLD94	61.5	69.0	69.7	64.7	66.2	65.2	67.2	57.0	63.1	64.8
14.	UP2958	64.7	69.4	66.8	66.0	66.7	61.9	68.4	64.3	64.9	64.2
15.	JWS809	57.0	65.0	54.9	46.8	55.9	62.7	63.1	52.5	59.4	54.9
16.	JWS825	57.8	74.0	56.6	56.6	61.2	52.9	67.6	56.6	59.0	59.4
17.	JWS150	59.0	69.0	59.0	62.3	62.3	51.7	66.8	54.9	57.8	58.6
18.	UP2995	66.0	69.0	67.2	66.8	67.2	57.4	71.7	61.5	63.5	64.6
19.	UP2996	69.7	69.7	69.2	70.5	69.8	61.9	72.9	66.8	67.2	68.4
20.	GW2016-740	59.0	70.0	58.6	64.7	63.1	52.5	70.9	69.7	64.3	63.4
21.	QLD84	68.4	71.0	52.9	59.0	62.8	54.1	67.2	68.8	63.4	63.2
22.	NIAW1415	48.8	46.0	51.3	46.8	48.2	49.2	54.9	48.4	50.9	50.6
23.	QLD89	56.2	68.0	65.2	59.0	62.1	59.0	65.2	57.4	60.5	62.1
24.	TAW33	46.0	55.0	59.0	51.7	52.9	49.6	58.6	52.9	53.7	53.2
25.	UP2997	53.3	60.0	59.4	52.9	56.4	58.0	56.6	53.3	56.0	56.3
26.	JWS733	52.9	50.0	50.9	48.8	50.6	48.8	63.5	47.6	53.3	51.9
27.	HD2189	46.0	46.0	46.4	40.7	44.7	44.3	48.4	46.4	46.4	44.1
28.	GW 2016-731	51.7	47.0	49.2	46.8	48.7	50.5	54.9	48.8	51.4	50.0
29.	GW 2016-735	47.6	49.0	50.5	47.2	48.6	46.0	48.8	49.2	48.0	48.1
30.	GW 2016-741	41.1	33.0	50.9	40.7	41.4	40.2	51.3	40.2	43.9	43.2
31.	QLD95	52.9	57.0	52.5	54.9	54.3	59.0	56.0	61.1	58.7	54.5
32.	C306 (C)	67.2	52.0	44.3	44.3	52.0	45.1	46.8	46.8	46.2	46.8
33.	QLD98	67.2	70.0	68.8	69.7	68.9	62.3	68.8	71.3	67.5	66.0
34.	QLD99	65.2	63.0	69.7	64.7	65.6	66.0	68.4	62.7	65.7	64.8
35.	QLD100	69.7	67.0	69.7	63.1	67.4	57.4	70.5	69.2	65.7	65.1
36.	QLD101	68.8	66.7	68.8	67.6	68.0	67.6	70.5	70.1	69.4	66.4
37.	QLD102	69.7	66.5	66.8	70.5	68.4	71.3	66.0	70.1	69.1	67.0
38.	QLD103	63.5	70.0	67.2	63.5	66.1	64.7	66.8	67.2	66.2	65.6
39.	QLD104	57.4	46.0	57.8	59.8	55.3	56.2	66.4	57.8	60.1	58.2
40.	QLD105	59.0	46.0	54.5	56.2	53.9	54.9	68.8	50.9	58.2	55.5
41.	QLD106	46.8	41.0	50.0	46.0	45.9	48.0	50.5	46.4	48.3	47.8
42.	GW2016-793	42.7	35.0	41.9	42.3	40.5	37.8	46.8	38.6	41.1	41.0
43.	UP2672 (C)	67.2	70.0	65.6	59.0	65.4	61.1	65.6	69.2	65.3	63.1
44.	GW2016-794	52.5	49.0	48.4	48.0	49.5	43.5	54.5	48.8	49.0	48.0
45.	GW2015-691	46.0	39.0	43.5	43.5	43.0	43.1	46.8	45.6	45.1	45.2
46.	GW2015-699	41.5	34.0	37.0	41.9	38.6	37.8	47.2	38.6	41.2	41.0
47.	DDW47 (d)	42.7	41.0	41.5	41.1	41.6	38.6	54.9	45.1	46.2	43.7
48.	DDW42 (d)	46.8	45.0	37.8	44.3	43.5	43.9	46.0	47.2	45.7	44.7
49.	HS490 (C)	46.0	43.0	45.1	41.9	44.0	34.5	52.9	42.7	43.4	43.4
50.	NIAW1415	49.2	48.0	50.0	48.0	48.8	46.8	52.1	48.8	49.2	48.8
51.	C306 (C)	46.8	50.0	48.4	46.4	47.9	45.6	48.4	46.8	46.9	46.8
52.	UP2672 (C)	61.1	64.0	65.6	58.6	62.3	59.0	55.8	60.7	58.5	62.2
		55.8	56.6	56.2	54.2	55.7	53.7	60.6	55.4	56.5	55.9

Table 5: Hardness index of Quality Component Screening Nursery (QCSN) entries

Sr. No.	Genotype	NWPZ	NEPZ	CZ	PZ	Mean
		Delhi	Kanpur	Vijapur	Niphad	
1.	JWS819	89	75	83	79	81.5
2.	JWS855	93	76	73	73	78.8
3.	Local collection 1c 01	91	91	72	85	84.8
4.	UP2994	80	70	84	89	80.8
5.	GW2014-596	86	79	64	71	75.0
6.	QLD91	80	63	79	82	76.0
7.	AKAW4924	71	79	71	71	73.0
8.	HD3215	92	83	79	96	87.5
9.	UP2927	91	77	69	92	82.3
10.	HD3241	79	59	66	69	68.3
11.	HS 490 (C)	38	39	33	36	36.5
12.	QLD93	82	71	59	81	73.3
13.	QLD94	82	71	61	79	73.3
14.	UP2958	92	77	69	80	79.5
15.	JWS809	83	76	72	80	77.8
16.	JWS825	88	96	89	75	87.0
17.	JWS150	80	75	71	73	74.8
18.	UP2995	79	57	77	76	72.3
19.	UP2996	77	70	66	79	73.0
20.	GW2016-740	88	69	71	72	75.0
21.	QLD84	20	18	16	18	18.0
22.	NIAW1415 (C)	99	69	91	88	86.8
23.	QLD89	91	82	89	96	89.5
24.	TAW33	101	106	96	105	102.0
25.	UP2997	97	82	93	96	92.0
26.	JWS733	88	78	79	94	84.8
27.	HD2189	81	75	71	89	79.0
28.	GW 2016-731	74	67	67	81	72.3
29.	GW 2016-735	84	75	70	82	77.8
30.	GW 2016-741	74	65	72	85	74.0
31.	QLD95	55	50	57	70	58.0
32.	C306 (C)	90	90	85	92	89.3
33.	QLD98	87	76	80	86	82.3
34.	QLD99	71	74	73	81	74.8
35.	QLD100	84	55	71	81	72.8
36.	QLD101	99	65	73	79	79.0
37.	QLD102	88	79	82	79	82.0
38.	QLD103	87	82	75	84	82.0
39.	QLD104	82	78	82	85	81.8
40.	QLD105	78	71	73	88	77.5
41.	QLD106	77	75	72	86	77.5
42.	GW2016-793 (d)	95	82	89	98	91.0
43.	UP2672 (C)	92	68	71	78	77.3
44.	GW2016-794 (d)	93	87	80	99	89.8
45.	GW2015-691 (d)	107	78	79	95	89.8
46.	GW2015-699 (d)	87	77	78	92	83.5
47.	DDW47 (d)	88	77	87	97	87.3
48.	DDW42 (d) (C)	86	76	87	96	86.3
49.	HS490 (C)	39	20	37	35	32.8
50.	NIAW1415 (C)	86	77	82	96	85.3
51.	C306 (C)	82	90	85	96	88.3
52.	UP2672 (C)	83	74	78	87	80.5
		82.4	72.5	73.6	81.8	77.6

Table 6: Summary of agronomic characteristics of Quality Component Screening Nursery (QCSN) entries

Sr. No.	Genotype	Hd. M	Tillers/ m (no.)	TGW (gm)	Yield (gm/m ²)
1.	JWS819	75	105	42	448
2.	JWS855	74	99	40	329
3.	Local collection 1c 01	83	122	31	323
4.	UP2994	81	107	41	433
5.	GW2014-596	73	84	46	386
6.	QLD91	78	102	41	465
7.	AKAW4924	71	85	42	465
8.	HD3215	75	99	39	474
9.	UP2927	78	104	36	534
10.	HD3241	70	93	42	454
11.	HS 490 (C)	77	101	41	413
12.	QLD93	75	91	39	512
13.	QLD94	74	91	40	532
14.	UP2958	77	93	41	473
15.	JWS809	69	105	42	472
16.	JWS825	78	111	37	474
17.	JWS150	71	84	43	454
18.	UP2995	75	97	35	407
19.	UP2996	76	89	38	449
20.	GW2016-740	69	101	36	471
21.	QLD84	78	87	39	443
22.	NIAW1415 (C)	77	89	40	490
23.	QLD89	76	96	41	513
24.	TAW33	75	103	40	393
25.	UP2997	81	95	45	442
26.	JWS733	72	100	38	460
27.	HD2189	73	87	40	395
28.	GW 2016-731	70	87	40	469
29.	GW 2016-735	69	98	42	459
30.	GW 2016-741	69	95	39	501
31.	QLD95	71	87	45	432
32.	C306 (C)	79	101	39	371
33.	QLD98	76	89	42	457
34.	QLD99	73	85	38	403
35.	QLD100	71	85	43	393
36.	QLD101	77	101	38	458
37.	QLD102	79	100	39	492
38.	QLD103	75	93	40	470
39.	QLD104	67	84	41	447
40.	QLD105	69	82	42	407
41.	QLD106	74	79	45	401
42.	GW2016-793 (d)	73	84	43	364
43.	UP2672 (C)	77	94	40	410
44.	GW2016-794 (d)	67	85	45	340
45.	GW2015-691 (d)	71	87	44	449
46.	GW2015-699 (d)	72	88	43	411
47.	DDW47 (d)	80	90	39	403
48.	DDW42 (d) (C)	77	86	40	376
49.	HS490 (C)	78	89	39	337
50.	NIAW1415 (C)	76	84	39	399
51.	C306 (C)	80	89	38	340
52.	UP2672 (C)	75	92	41	415

Table 7: Quality analysis of Quality Component Screening Nursery (QCSN) of preliminary entries

Sr. No.	QCSN Entries	Grain Appearance (Max-10.0)	Hectolitre Weight (kg/hl)	Protein Content (%)	Sedimentation Value (ml)
53	HUWL1733	5.0	73.0	12.23	55
54	HUWL1734	4.5	74.5	12.00	41
55	HUWL1735	4.0	70.6	12.67	41
56	HUWL1736	4.0	71.5	12.57	42
57	HUWL1737	4.5	72.6	12.74	56
58	HUWL1738	3.0	67.8	13.11	52
59	HUWL1739	6.0	78.2	11.96	40
60	HUWL1740	6.0	78.0	12.16	40
61	BWL5190	5.5	74.3	12.23	41
62	BWL5205	6.5	80.7	13.23	65
63	BWL5241	5.5	78.0	12.02	37
64	BWL5916	5.5	79.0	12.50	53
65	BWL5917	5.0	78.6	12.50	47
66	BWL6798	5.0	75.6	13.44	50
67	RAJ4537	5.0	75.2	12.78	50
68	RAJ4538	4.0	75.6	13.05	57
69	RAJ4539	6.0	78.0	12.61	63
70	RAJ4540	5.5	75.0	12.62	63
71	RAJ4541	5.5	77.5	11.48	62
72	HD3301	5.5	75.0	12.85	61
73	HD3302	6.5	77.0	13.14	65
74	HD3303	4.5	76.5	13.44	59
75	HD3304	4.5	73.5	13.59	67
76	HD3305	5.0	75.4	13.91	65
77	HD3306	5.5	77.5	12.31	55
78	HD3307	6.0	80.4	12.10	59
79	HD3308	5.5	77.6	12.60	44
80	HD3309	4.5	75.7	13.27	56
81	HD3310	4.5	76.3	14.87	47
82	JWS620	4.0	73.4	12.75	55
83	JWS723	3.5	71.3	13.03	53
84	JWS851	5.5	79.0	12.10	59
85	JWS908	5.0	74.7	12.31	41
86	JWS917	5.0	75.6	12.36	45
87	JWS930	5.5	78.7	12.22	49
88	JWS938	4.5	77.6	12.11	43
89	JWS940	5.0	80.0	12.15	63
90	JWS948	5.0	78.5	12.21	46
91	JWS973	4.5	75.6	11.76	58
92	GW2017-818	5.0	79.0	12.29	41
93	GW2017-819	5.0	76.3	13.35	45
94	GW2017-820	4.0	78.0	11.48	36
95	GW2017-821	4.0	77.2	11.44	35
96	GW2017-822	4.5	77.7	11.80	42
97	GW2017-823	4.5	79.3	12.11	39
98	GW2017-824	5.5	78.0	12.23	40
99	GW2017-825	4.0	72.6	14.70	41
100	GW2017-826	5.0	79.5	11.57	44
101	GW2017-827	4.5	76.5	11.60	39
102	GW2017-828	4.5	76.7	13.08	50
103	GW2017-829	5.0	80.8	12.32	46
104	GW2017-830	6.0	79.5	12.74	53
105	GW2017-831	4.0	75.7	13.22	43
106	GW2017-832	3.5	72.0	13.51	31
107	GW2017-833	5.0	78.7	12.08	44
108	GW2017-876 (d)	5.5	78.6	11.26	39
109	GW2017-877 (d)	5.0	77.5	12.63	24
110	GW2017-878 (d)	5.0	78.0	12.75	31
111	GW2017-879 (d)	4.5	75.4	14.09	26
112	GW2017-880 (d)	5.0	76.0	12.71	41
113	NIAW3559	3.5	71.0	13.02	51
	Mean	4.9	76.3	12.61	48

SECTION E

Wheat products

I. CHAPATI

II. BREAD

III. BISCUIT

IV. GLUTEN

WHEAT PRODUCTS EVALUATION

All the 2nd year AVT entries including checks were evaluated for chapati, bread & biscuit from *T.aestivum* in all the centres, sowing conditions and zones. Various aspects covered in this chapter are chapati quality (maximum score 10.0), bread loaf volume (ml), bread quality (maximum score 10.0), biscuit spread factor, wet gluten (%), dry gluten (%), gluten index of *T.aestivum*,.

Chapati Quality (Table 1)

For the evaluation of chapati quality, various parameters like water absorption, nature & colour of dough (before and after maturation), chapati appearance, colour, aroma, taste, puffing height, pliability and loss of water (just after and after 4 hrs of baking) were considered and the score was given out of 10.0.

Bread Quality (Table 2)

Among various parameters, loaf volume (Table 2) is considered most important and is given maximum weightage while evaluating bread quality. For the evaluation of bread quality various parameters like loaf volume, stickness, appearance, crust colour, texture, taste and aroma were considered and the score was given out of 10.0.

Biscuit Quality (Table 3)

Biscuit spread factor was calculated from cookies prepared using standard methods. Surprisingly there was no entry in all the zones having desirable spread factor (>10.0) for identification.

Gluten Content (Table 4-6):

Wet Gluten (Table 4), Dry Gluten (5) and Gluten Index (6) were evaluated for identification of superior entries.

Table 1: Chapati quality (Max-10) of *T. aestivum* genotypes**A. North Western Plains Zone (NWPZ) AVTs**

S. No.	Variety	Code	Ludhiana	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown							
1	HD 3226	110	7.25	7.79	7.41	7.95	7.60
2	HD 2967 (C)	111	7.45	7.70	7.70	7.83	7.67
3	WH 1105 (C)	115	7.54	7.90	7.08	7.62	7.54
4	HD 3086 (C)	108	7.66	7.45	7.25	7.83	7.55
5	DBW 88 (C)	113	7.33	7.62	7.58	7.95	7.62
6	DPW 621-50 (C)	103	7.25	7.54	7.33	8.16	7.57
	Mean		7.41	7.67	7.39	7.89	7.59
Irrigation, Late Sown							
1	PBW 752	206	7.54	7.58	7.50	7.66	7.57
2	HD 3059 (C)	204	7.66	7.45	7.41	7.75	7.57
3	DBW 90 (C)	203	7.58	7.62	7.75	7.75	7.68
4	WH 1021 (C)	205	7.54	7.83	7.37	7.83	7.64
5	WH 1124 (C)	202	8.12	7.75	7.83	8.66	8.09
6	DBW 173 (I) (C)	207	7.04	7.75	7.62	7.62	7.51
	Mean		7.58	7.66	7.58	7.88	7.68
Restricted Irrigation, Timely Sown							
1	HD 3237	304	8.20	8.00	7.66	8.04	7.98
2	HI 1620	305	7.00	7.79	7.50	7.45	7.44
3	WH 1080 (C)	303	7.29	7.91	7.25	7.54	7.50
4	PBW 644 (C)	306	7.62	7.59	7.80	7.75	7.69
5	HD 3043 (C)	307	7.83	7.41	7.75	7.41	7.60
6	WH 1142 (C)	301	7.54	7.66	7.50	7.87	7.64
	Mean		7.58	7.73	7.58	7.68	7.64

B. North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	8.04	7.54	7.41	7.66
2	HD 2733 (C)	105	7.70	7.62	7.50	7.61
3	K 0307 (C)	111	7.54	7.25	6.16	6.98
4	DBW 39 (C)	109	7.83	7.12	7.29	7.41
5	K 1006 (C)	104	7.45	7.37	6.75	7.19
6	HD 2967 (C)	110	7.12	7.54	7.08	7.25
	Mean		7.61	7.41	7.03	7.35

C. North Western and North Eastern Plains Zones (NWPZ & NEPZ) SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757	105	7.70	7.91	8.00	8.66	8.07	7.95	7.70	7.83	7.95
2	DBW 71 (C)	103	8.12	7.75	8.41	7.95	8.06	7.62	7.83	7.73	7.89
3	DBW 14 (C)	108	7.91	7.83	7.95	8.20	7.97	7.37	7.33	7.35	7.66
4	WR 544 (C)	101	8.08	8.00	7.83	8.12	8.01	7.75	7.70	7.73	7.87
	Mean		7.95	7.87	8.05	8.23	8.03	7.67	7.64	7.66	7.84

**Table 2: Bread loaf volume (ml) of *T. aestivum* genotypes
North Western Plains Zone (NWPZ) AVTs**

S. No.	Variety	Code	Ludhiana	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown							
1	HD 3226	110	555	640	585	585	591.3
2	HD 2967 (C)	111	545	630	575	615	591.3
3	WH 1105 (C)	115	525	590	550	585	562.5
4	HD 3086 (C)	108	545	555	570	560	557.5
5	DBW 88 (C)	113	520	620	550	600	572.5
6	DPW 621-50 (C)	103	540	635	550	530	563.8
	Mean		538.3	611.7	563.3	579.2	573.1
Irrigation, Late Sown							
1	PBW 752	206	535	585	600	615	583.8
2	HD 3059 (C)	204	545	625	500	660	582.5
3	DBW 90 (C)	203	545	545	600	630	580.0
4	WH 1021 (C)	205	500	630	510	555	548.8
5	WH 1124 (C)	202	475	620	585	590	567.5
6	DBW 173 (I) (C)	207	520	580	620	555	568.8
	Mean						
Restricted Irrigation, Timely Sown							
1	HD 3237	304	550	595	520	515	545.0
2	HI 1620	305	635	570	495	480	545.0
3	WH 1080 (C)	303	665	635	535	570	601.3
4	PBW 644 (C)	306	540	605	565	530	560.0
5	HD 3043 (C)	307	640	655	525	500	580.0
6	WH 1142 (C)	301	655	595	495	545	572.5
	Mean		614.2	609.2	522.5	523.3	567.3

North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	515	525	565	535.0
2	HD 2733 (C)	105	635	700	605	646.7
3	K 0307 (C)	111	535	470	500	501.7
4	DBW 39 (C)	109	560	580	535	558.3
5	K 1006 (C)	104	510	525	505	513.3
6	HD 2967 (C)	110	575	680	590	615.0
	Mean		555.0	580.0	550.0	561.7

North Western and North Eastern Plains Zones (NWPZ & NEPZ) SPL-VLS

S. No.	Variety	Code	NWPZ				NEPZ				Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757	105	495	535	495	675	550.0	585		585	567.5
2	DBW 71 (C)	103	625	500	600	550	568.8	595		595	581.9
3	DBW 14 (C)	108	475	560	550	600	546.3	500		500	523.1
4	WR 544 (C)	101	505	525	565	575	542.5	625		625	583.8
	Mean		525.0	530.0	552.5	600.0	551.9	576.3		576.3	564.1

Table 3: Bread quality (Bread score Max-10) of *T. aestivum* genotypes North Western Plains Zone (NWPZ) AVTs

S. No.	Variety	Code	Ludhiana	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown							
1	HD 3226	110	6.3	8.0	6.1	6.4	6.7
2	HD 2967 (C)	111	5.6	6.5	6.3	6.6	6.2
3	WH 1105 (C)	115	5.1	6.5	5.3	5.7	5.6
4	HD 3086 (C)	108	6.1	5.7	5.7	5.8	5.8
5	DBW 88 (C)	113	5.5	7.3	5.4	6.1	6.1
6	DPW 621-50 (C)	103	5.8	7.4	5.4	5.7	6.1
	Mean		5.7	6.9	5.7	6.0	6.1
Irrigation, Late Sown							
1	PBW 752	206	5.7	7.0	6.6	7.4	6.7
2	HD 3059 (C)	204	6.3	7.4	4.6	7.3	6.4
3	DBW 90 (C)	203	6.1	5.9	6.9	6.4	6.3
4	WH 1021 (C)	205	4.3	6.9	3.9	4.5	4.9
5	WH 1124 (C)	202	4.9	6.6	6.3	5.8	5.9
6	DBW 173 (I) (C)	207	4.6	7.2	6.9	6.1	6.2
	Mean		5.3	6.8	5.9	6.3	6.1
Restricted Irrigation, Timely Sown							
1	HD 3237	304	5.7	6.7	5.0	5.5	5.7
2	HI 1620	305	7.4	6.6	4.7	4.7	5.8
3	WH 1080 (C)	303	8.2	7.1	5.2	6.5	6.7
4	PBW 644 (C)	306	5.4	7.0	5.1	5.4	5.7
5	HD 3043 (C)	307	7.8	7.5	5.1	4.7	6.3
6	WH 1142 (C)	301	8.0	6.6	4.4	5.7	6.2
	Mean		7.1	6.9	4.9	5.4	6.1

North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	5.2	5.1	5.3	5.2
2	HD 2733 (C)	105	7.1	9.1	6.1	7.4
3	K 0307 (C)	111	4.9	4.1	3.5	4.2
4	DBW 39 (C)	109	5.7	6.4	4.4	5.5
5	K 1006 (C)	104	4.9	4.8	3.7	4.5
6	HD 2967 (C)	110	7.1	8.2	4.9	6.7
	Mean		5.8	6.3	4.7	5.6

North Western and North Eastern Plains Zones (NWPZ & NEPZ) SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Mean	Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour			
1	PBW 757	105	5.2	6.1	6.0	8.2	6.4	7.2		7.2	6.8	
2	DBW 71 (C)	103	7.8	4.7	6.9	5.4	6.2	6.7		6.7	6.4	
3	DBW 14 (C)	108	4.4	5.9	5.4	6.6	5.6	5.1		5.1	5.4	
4	WR 544 (C)	101	5.2	5.1	6.1	6.1	5.6	7.4		7.4	6.5	
	Mean		5.6	5.5	6.1	6.6	6.0	6.6		6.6	6.3	

**Table 4: Biscuit spread factor of *T. aestivum* genotypes
North Western Plains Zone (NWPZ) AVTs**

S. No.	Variety	Code	Ludhiana	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown							
1	HD 3226	110	7.17	7.77	8.40	7.44	7.70
2	HD 2967 (C)	111	6.83	7.97	8.85	7.99	7.91
3	WH 1105 (C)	115	8.17	7.63	9.30	7.20	8.08
4	HD 3086 (C)	108	7.84	7.14	8.21	7.94	7.78
5	DBW 88 (C)	113	7.67	7.51	9.06	8.20	8.11
6	DPW 621-50 (C)	103	8.17	7.80	8.63	8.22	8.20
	Mean		7.64	7.64	8.74	7.83	7.96
Irrigation, Late Sown							
1	PBW 752	206	6.84	7.63	7.65	7.78	7.47
2	HD 3059 (C)	204	7.84	7.55	8.54	7.49	7.85
3	DBW 90 (C)	203	6.88	7.61	8.52	7.80	7.70
4	WH 1021 (C)	205	7.39	8.50	8.29	7.82	8.00
5	WH 1124 (C)	202	7.88	7.32	8.14	8.55	7.97
6	DBW 173 (I) (C)	207	7.34	7.99	7.97	7.09	7.60
	Mean		7.36	7.77	8.18	7.75	7.77
Restricted Irrigation, Timely Sown							
1	HD 3237	304	7.06	7.82	9.12	7.99	8.00
2	HI 1620	305	6.92	7.08	9.45	7.82	7.82
3	WH 1080 (C)	303	7.14	7.49	8.72	6.55	7.48
4	PBW 644 (C)	306	7.16	7.19	8.36	7.35	7.52
5	HD 3043 (C)	307	7.33	7.27	8.72	7.24	7.64
6	WH 1142 (C)	301	7.01	7.98	9.88	7.06	7.98
	Mean		7.10	7.47	9.04	7.34	7.74

North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	8.92	8.92	7.82	8.56
2	HD 2733 (C)	105	8.32	8.32	8.33	8.32
3	K 0307 (C)	111	9.30	9.30	8.25	8.95
4	DBW 39 (C)	109	8.09	8.09	7.95	8.04
5	K 1006 (C)	104	8.95	8.95	8.10	8.66
6	HD 2967 (C)	110	8.58	8.58	8.17	8.44
	Mean		8.69	8.69	8.10	8.50

North Western and North Eastern Plains Zones (NWPZ & NEPZ) SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757	105	6.76	7.05	6.97	6.89	6.92	6.69		6.69	6.80
2	DBW 71 (C)	103	7.53	7.73	8.07	7.62	7.74	7.65		7.65	7.69
3	DBW 14 (C)	108	7.81	7.32	7.44	7.76	7.58	7.71		7.71	7.65
4	WR 544 (C)	101	7.52	7.59	7.09	7.49	7.42	7.28		7.28	7.35
	Mean		7.41	7.42	7.39	7.44	7.42	7.33		7.33	7.37

**Table 5: Wet gluten (%) of *T. aestivum* genotypes
North Western Plains Zone (NWPZ) AVTs**

S. No.	Variety	Code	Ludhiana	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown							
1	HD 3226	110	33.1	34.9	19.8	31.7	29.9
2	HD 2967 (C)	111	30.8	30.6	19.3	26.8	26.9
3	WH 1105 (C)	115	27.6	32.0	21.3	26.1	26.7
4	HD 3086 (C)	108	28.1	31.6	19.3	30.2	27.3
5	DBW 88 (C)	113	35.9	32.4	18.7	28.9	29.0
6	DPW 621-50 (C)	103	27.7	33.1	20.9	30.2	28.0
	Mean		30.5	32.4	19.9	29.0	28.0
Irrigation, Late Sown							
1	PBW 752	206	21.5	34.7	28.6	29.2	28.5
2	HD 3059 (C)	204	28.1	31.3	25.7	32.1	29.3
3	DBW 90 (C)	203	26.1	32.6	26.7	32.9	29.6
4	WH 1021 (C)	205	28.5	37.1	26.6	35.9	32.0
5	WH 1124 (C)	202	22.2	34.4	23.5	29.2	27.3
6	DBW 173 (I) (C)	207	27.8	31.3	27.1	23.8	27.5
	Mean		25.7	33.6	26.4	30.5	29.0
Restricted Irrigation, Timely Sown							
1	HD 3237	304	32.4	30.5	18.2	19.8	25.2
2	HI 1620	305	30.8	30.4	--	19.2	26.8
3	WH 1080 (C)	303	34.5	34.5	20.2	22.2	27.9
4	PBW 644 (C)	306	37.1	36.7	17.2	29.0	30.0
5	HD 3043 (C)	307	34.4	34.7	--	22.3	30.5
6	WH 1142 (C)	301	35.7	30.4	17.2	24.1	26.8
	Mean		34.1	32.9	18.2	22.8	27.9

North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	25.4	21.1	24.5	22.8
2	HD 2733 (C)	105		25.5	22.7	24.1
3	K 0307 (C)	111	27.3	25.4	25.2	25.3
4	DBW 39 (C)	109	22.9	25.4	24.4	24.9
5	K 1006 (C)	104	29.5	25.2	25.9	25.5
6	HD 2967 (C)	110	25.8	28.3	23.4	25.8
	Mean		26.2	25.1	24.3	24.7

North Western and North Eastern Plains Zones (NWPZ & NEPZ) SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757	105	31.1	34.4	25.1	33.8	31.1	31.1	29.1	30.1	30.6
2	DBW 71 (C)	103	29.3	36.6	30.4	37.1	33.4	34.7	34.8	34.8	34.1
3	DBW 14 (C)	108	29.0	34.1	30.5	36.8	32.6	34.6		34.6	33.6
4	WR 544 (C)	101	27.9	39.6	39.2	32.2	34.7	38.5	36.5	37.5	36.1
	Mean		29.3	36.2	31.3	35.0	32.9	34.7	33.5	34.2	33.6

**Table 6: Dry gluten (%) of *T. aestivum* genotypes
North Western Plains Zone (NWPZ) AVTs**

S. No.	Variety	Code	Ludhiana	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown							
1	HD 3226	110	10.9	11.8	6.8	10.2	9.9
2	HD 2967 (C)	111	10.1	10.2	6.6	8.7	8.9
3	WH 1105 (C)	115	9.6	10.6	7.4	8.4	9.0
4	HD 3086 (C)	108	8.9	10.5	6.5	9.2	8.8
5	DBW 88 (C)	113	11.5	10.8	6.4	9.2	9.5
6	DPW 621-50 (C)	103	9.2	11.2	8.0	9.5	9.5
	Mean		10.0	10.8	7.0	9.2	9.3
Irrigation, Late Sown							
1	PBW 752	206	7.4	11.7	9.5	9.5	9.5
2	HD 3059 (C)	204	9.8	10.7	8.9	10.5	10.0
3	DBW 90 (C)	203	9.0	11.1	8.8	10.2	9.8
4	WH 1021 (C)	205	8.9	11.9	9.2	12.0	10.5
5	WH 1124 (C)	202	7.5	11.1	8.0	9.3	9.0
6	DBW 173 (I) (C)	207	9.2	11.1	9.5	8.0	9.4
	Mean		8.6	11.3	9.0	9.9	9.7
Restricted Irrigation, Timely Sown							
1	HD 3237	304	10.2	10.4	5.9	6.3	8.2
2	HI 1620	305	10.4	10.9		6.5	9.2
3	WH 1080 (C)	303	11.7	9.7	6.6	7.3	8.8
4	PBW 644 (C)	306	12.0	11.3	5.5	8.7	9.4
5	HD 3043 (C)	307	11.1	11.2		6.8	9.7
6	WH 1142 (C)	301	11.6	10.2	5.3	7.6	8.7
	Mean		11.2	10.6	5.8	7.2	9.0

North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	12.1	7.3	8.8	8.0
2	HD 2733 (C)	105		8.5	7.6	8.0
3	K 0307 (C)	111	8.7	8.0	7.9	7.9
4	DBW 39 (C)	109	8.0	8.3	7.9	8.1
5	K 1006 (C)	104	10.6	10.2	8.3	9.3
6	HD 2967 (C)	110	8.3	9.2	7.6	8.4
	Mean		9.6	8.6	8.0	8.3

North Western and North Eastern Plains Zones (NWPZ & NEPZ) SPL-VLS

S. No.	Variety	Code	NWPZ					NEPZ			Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757	105	9.9	11.7	9.4	10.7	10.4	11.3	9.3	10.3	10.4
2	DBW 71 (C)	103	9.4	11.3	9.3	13.0	10.8	10.8	11.1	11.0	10.9
3	DBW 14 (C)	108	9.3	10.9	9.5	13.8	10.9	11.6		11.6	11.2
4	WR 544 (C)	101	8.9	12.7		11.6	11.1	12.3	11.7	12.0	11.5
	Mean		9.4	11.6	9.4	12.3	10.8	11.5	10.7	11.2	11.0

**Table 7: Gluten index of *T. aestivum* genotypes
North Western Plains Zone (NWPZ) AVTs**

S. No.	Variety	Code	Ludhiana	Delhi	Pantnagar	Hisar	Mean
Irrigated, Timely Sown							
1	HD 3226	110	72.4	86.5	98.8	78.3	84.0
2	HD 2967 (C)	111	75.9	84.7	98.7	76.7	84.0
3	WH 1105 (C)	115	93.2	80.1	96.2	82.6	88.0
4	HD 3086 (C)	108	46.8	66.8	95.8	56.0	66.3
5	DBW 88 (C)	113	59.8	79.4	97.6	79.0	79.0
6	DPW 621-50 (C)	103	77.7	83.3	96.6	70.4	82.0
	Mean		71.0	80.1	97.3	73.8	80.6
Irrigation, Late Sown							
1	PBW 752	206	98.4	74.6	87.9	67.8	82.2
2	HD 3059 (C)	204	95.8	95.2	93.6	71.3	89.0
3	DBW 90 (C)	203	99.1	85.1	87.2	52.5	81.0
4	WH 1021 (C)	205	50.7	52.2	69.1	45.8	54.5
5	WH 1124 (C)	202	95.6	71.7	96.8	65.7	82.4
6	DBW 173 (I) (C)	207	94.4	97.7	97.5	94.5	96.0
	Mean		89.0	79.4	88.7	66.3	80.8
Restricted Irrigation, Timely Sown							
1	HD 3237	304	50.1	87.5	84.3	62.9	71.2
2	HI 1620	305	81.1	93.2		93.7	89.3
3	WH 1080 (C)	303	88.9	94.0	95.9	84.0	90.7
4	PBW 644 (C)	306	57.4	63.3	80.0	55.5	64.0
5	HD 3043 (C)	307	55.6	58.2		51.2	55.0
6	WH 1142 (C)	301	72.4	95.8	89.6	62.1	80.0
	Mean		67.6	82.0	87.4	68.2	75.0

North Eastern Plains Zone (NEPZ) AVTs

S. No.	Variety	Code	Kanpur	Pusa	Sabour	Mean
Irrigated, Timely Sown						
1	DBW 187	112	84.8	97.7	97.6	93.4
2	HD 2733 (C)	105		71.7	74.6	73.1
3	K 0307 (C)	111	45.5	45.6	44.9	45.3
4	DBW 39 (C)	109	71.6	62.5	65.4	66.5
5	K 1006 (C)	104	41.6	53.0	47.4	47.3
6	HD 2967 (C)	110	75.1	73.7	72.3	73.7
	Mean		63.7	67.4	67.0	66.0

North Western and North Eastern Plains Zones (NWPZ & NEPZ) SPL-VLS

S. No.	Variety	Code	NWPZ				NEPZ				Overall mean
			Ludhiana	Delhi	Pantnagar	Hisar	Mean	Pusa	Sabour	Mean	
1	PBW 757	105	86.3	92.1	98.4	55.0	83.0	97.6	95.8	96.7	89.8
2	DBW 71 (C)	103	64.6	54.0	46.1	50.6	53.8	46.2	47.3	46.8	50.3
3	DBW 14 (C)	108	35.7	57.7	23.3	53.6	42.6	53.8		53.8	48.2
4	WR 544 (C)	101	60.7	45.7	12.6	43.6	40.7	48.0	50.8	49.4	45.0
	Mean		61.8	62.4	45.1	50.7	55.0	61.4	64.6	61.7	58.3

RESEARCH HIGHLIGHTS

SUMMARY

The wheat production in India is estimated to be 98.61 million tons from 29.72 million hectares area at productivity level of 3.318 tons/ha during 2017-18 (third estimate). This could be made possible by developing high yielding, disease resistant wheat varieties and also matching production technologies. The increase in domestic demand of baked & pasta products and economic liberalization & global trade have offered opportunities for better utilization of wheat. Wheat quality needs uppermost attention to meet the trade requirements of the domestic and international markets. The report includes aspects like identification of product specific genotypes. Promising genotypes showing superiority in various quality traits including Fe and Zn content have been identified. Zone wise variability in wheat quality and grain nutrition parameters has been recorded. During 2017-18, 116 AVTs, 216 NIVTs, 28 SPL, 52 QCSN, and 61 preliminary QCSN were analysed from different zones and growing conditions. Details are given below.

AVT's:

All the IInd year AVT entries including checks were subjected to baking evaluation for chapati, bread, biscuit and gluten content. All AVTs were analyzed for several physico- chemical properties such as grain appearance, test weight, protein, sedimentation value, yellow pigment, phenol test, grain hardness index, wet / dry gluten and gluten index, HMWGS and iron and zinc content. Promising product specific entries identified are given below.

Promising *T.aestivum* Genotypes for Chapati

Category	Genotypes
Check	WH 1124 (IRLS, NWPZ), DBW 71(SPL-VLS)
2 nd year AVT	HD 3237 (RITS, NWPZ), PBW 757 (SPL-VLS)

Promising *T.aestivum* Genotypes for Bread

Category	Genotypes
Check	HD 2967, HD 3059, WH 1080, HD 2733, DBW 71
2 nd year AVT	HD 3226, PBW572

Biscuit quality:

The spread factor was calculated by dividing the diameter of the biscuit with its thickness. The entry HS 611 showed comparatively higher spread factor (8.13) followed by DBW 168 (7.87).

Promising Genotypes for Various Quality Parameters

Promising genotypes for various quality parameters were also identified. For *T. aestivum*, parameters included were protein, wet gluten, dry gluten, gluten index, hardness index, sedimentation value, extraction rate, yellow pigment, iron and zinc. Likewise, *T.durum* genotypes were selected for various quality parameters and micronutrients.

Parameter	Value	Genotypes
(T. aestivum)		
Protein	~12.5%	NHZ : RI-LS - HPW459, UP3017, HS 660 NWPZ : IR-TS – HD3226; IR-LS – PBW752 CZ : IR-TS – AKAW 4924; RI-TS – NIAW3170, DBW110 (c), MP3288, MP1331
Sedimentation value	~ 65 ml	NHZ : RES - HPW 451, HS 665; RTS - HPW 442, HS562 (c) NWPZ : IR-TS – HD3226; IR-LS – PBW752, DBW173, DBW237, HD3059(c) , DBW90(c); RI-TS – HI1620, WH 1080 (c) NEPZ : IR-TS – DBW187, HD3249; RI-TS – DBW252, HI1612 (c), BRW3806 CZ : RI-TS – DBW110 (c), MP3288 PZ : RI-TS – HI1605 (c)
Hardness Index	<35	NHZ : RI-LS - HS 490 (c) NWPZ : IR-TS –BRW3792; RI-TS – NIAW3170 CZ : RI-TS – NIAW3170 PZ : IR-TS – DBW 168(c)
Iron	>45ppm	NHZ : IR-TS - HS 634; RI-LS - HS 490 (c), VL 892 (c), HS 660, HS 661, HPW 459, VL 3016, VL 3017, UP3017; RES – HS665, HPW451, UP3016
	~42ppm	NWPZ : IR-TS - HD 3086 (c) , PBW 766, PBW 801, DBW 233, UP2981 NEPZ : IR-TS – DBW187, K0307 (c), DBW90(c), K1006, HD2967(c) PZ : RI-TS - HI 1605 (c)
Zinc	>40ppm	NHZ : RTS – HS634; RI-LS - HPW 459; NWPZ : IR-LS-WH 1124 (c) CZ : RI-TS - NIAW 3170
(T. durum)		
Protein	>12.5%	CZ : RI-TS - HI 8627 (c) , DDW47, UAS466 PZ : RI-TS –MACS4059
Sedimentation value	>40ml	CZ : IR-TS - HI 8737 (c) , MPO1343; RI-TS - DDW47, UAS466 PZ : IR-TS - MACS 3949 (c) , UAS 428 (c) , HI8800; RI-TS - AKDW 2997-16 (c) , UAS 446 (c) , HI 8805, HI 8802, MACS4058, MACS4059
Yellow Pigment	>7.0ppm	CZ : IR-TS – UAS465; RI-TS – DDW47
Iron	~42ppm	CZ : RI-TS – UAS466 PZ : RI-TS – MPO1336, MACS 4059
Zinc	>40ppm	CZ : IR-TS - HI 8737 (c) ; RI-TS - HI 8627 (c) , DDW47

Variability in the quality parameters of AVT's

Zone-wise variability in various quality traits are given in the table below.

Variability in the quality parameters of *T. aestivum* in AVT's

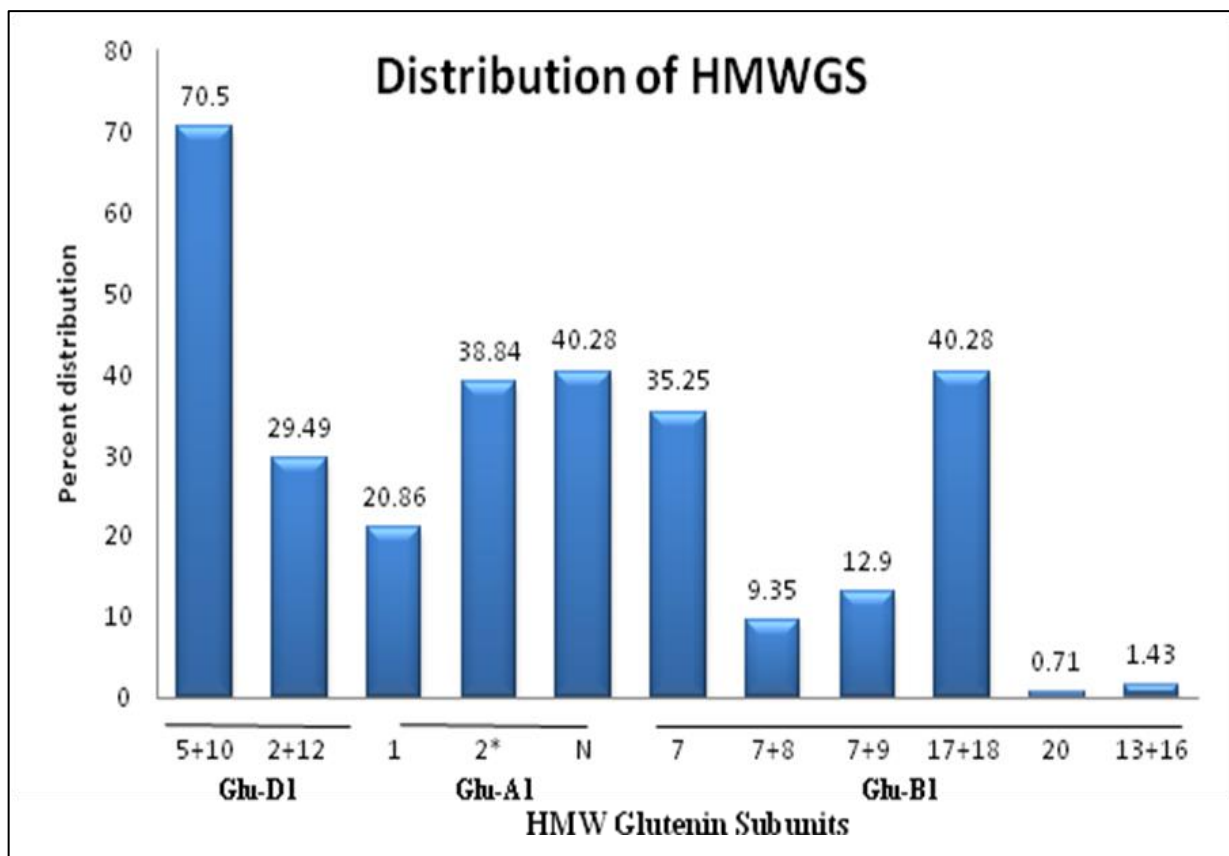
Parameter	NWPZ	NEPZ	CZ	PZ	NHZ	Overall
Grain Appearance (out of 10.0)	5.1 (3-7)	5.2 (3.5-8)	6.5 (5-7.5)	5.9 (4-7)	4.95 (3.5-6.5)	5.53 (3-8)
Hectoliter Weight (kg/hl)	76.8 (68-82.5)	77.1 (71-83)	81.3 (77.2-83.6)	80.75 (72-84.5)	78.35 (66.5-82.8)	78.86 (68-84.5)
Protein content (%)	11.42 (8.12-14.9)	10.96 (9.7-12.3)	12.14 (10-14.86)	11.39 (9.59-13.36)	11.04 (7.31-15.94)	11.39 (7.31-15.94)
Sedimentation value (ml)	59.04 (45.15-72.92)	56.2 (41.5-68.8)	54.15 (41.9-69.2)	54.65 (42.7-66.8)	55.68 (37.8-68.4)	55.94 (37.8-72.92)
Grain hardness index	80.46 (30-96)	77.05 (44-88)	75.15 (34-88)	70.65 (35-80)	73.56 (29-91)	75.37 (29-96)
Iron (ppm)	36.6 (19.8-50.4)	39.3 (32.9-49.7)	37.85 (30.1-44.6)	39.45 (33.3-44.6)	42.9 (31-57.7)	39.22 (19.8-57.7)
Zinc (ppm)	34.33 (19.8-47.3)	29.6 (19.8-40.7)	36.5 (25.7-49.7)	33.45 (25-53.1)	32.77 (16.7-56.3)	33.33 (16.7-56.3)
Wet gluten (%)	28.3 (17.2-37.1)	24.7 (21.1-29.5)	-	-	-	26.5 (17.2-37.1)
Dry gluten (%)	9.33 (5.3-12.1)	8.3 (7.3-12.1)	-	-	-	8.81 (5.3-12.1)
Gluten Index (%)	78.8 (45.8-99.1)	67.2 (41.6-97.7)	-	-	-	73 (41.6-99.1)

Variability in the quality parameters of *T. durum* in AVT's

Parameter	CZ	PZ	Overall
Grain Appearance (out of 10.0)	7.05 (6-8)	6.6 (4-7.5)	6.82 (4-8)
Hectoliter Weight (kg/hl)	82.5 (79.6-85.7)	82.15 (75.7-85.3)	82.32 (75.7-85.7)
Protein content (%)	12.43 (10.21-16.79)	11.43 (10.52-14.02)	11.93 (10.21-16.79)
Sedimentation value (ml)	38.25 (29.2-44.7)	45.65 (34.5-52.9)	41.95 (29.2-52.9)
Grain hardness index	86.05 (82-93)	80.7 (75-87)	83.37 (75-93)
Iron (ppm)	39.15 (32.7-46.9)	38.35 (33.8-44.6)	38.75 (32.7-46.9)
Zinc (ppm)	37.4 (26.2-51.3)	34.95 (22.5-51.7)	36.17 (22.5-51.7)
Yellow pigment (ppm)	6.25 (4.18-8.55)	5.04 (2.86-6.46)	5.64 (2.86-8.55)

Distribution of HMW glutenin subunits in AVTs and IVT

One thirty nine (139) AVT and IVT entries including checks were evaluated for High Molecular Weight Glutenin subunits (HMWs) encoded by Glu-A1, Glu-B1 and Glu-D1 loci. Subunits 5+10 and 2+12 were present in 70.5 % and 29.5 % of the total entries, whereas entries having 1, 2* and N subunits were 20.86 %, 38.84 % and 40.28 %, respectively. Entries with subunits 7, 7+8, 7+9, 17+18, 20 and 13+16 were 35.25, 9.35, 12.9, 40.28, 0.71 and 1.43%, respectively.



Average values of different quality parameters in NIVT trials

T. aestivum

Trial	Zone	Condition	Grain Appearance Score (Max 10)	Hectoliter Weight (Kg/hl)	Protein (%)	Sedimentation value (ml)
NIVT 1A	NWPZ	IR-TS	5.5	74.1	11.46	45
NIVT 1A	NEPZ	IR-TS	5.4	72.4	11.15	45
NIVT 1A	Overall	IR-TS	5.4	73.3	11.32	45
NIVT 1B	NWPZ	IR-TS	7.1	74.2	11.7	48
NIVT 1B	NEPZ	IR-TS	6.8	72.9	11.5	55
NIVT 1B	Overall	IR-TS	7.0	73.5	11.6	52
NIVT 2	CZ	IR-TS	6.9	79.8	12.2	50
NIVT 2	PZ	IR-TS	6.8	77.8	12.3	45
NIVT 2	Overall	IR-TS	6.9	78.7	12.2	47
NIVT 3A	NWPZ	IR-LS	5.5	76.6	11.9	47
NIVT 3A	NEPZ	IR-LS	4.7	72.5	12.4	48
NIVT 3A	Overall	IR-LS	5.1	74.6	12.2	48
NIVT 3B	CZ	IR-LS	6.6	79.2	13.3	38
NIVT 3B	PZ	IR-LS	6.0	77.6	13.0	40
NIVT 3B	Overall	IR-LS	6.3	78.4	13.1	39
NIVT 5A	NWPZ	RI-TS	5.3	78.1	12.1	43
NIVT 5A	NEPZ	RI-TS	5.5	80.3	12.1	47
NIVT 5A	Overall	RI-TS	5.4	79.2	12.1	45
NIVT 5B	CZ	RI-TS	5.6	83.3	13.2	54
NIVT 5B	PZ	RI-TS	5.5	82.3	11.8	53
NIVT 5B	Overall	RI-TS	5.5	82.8	12.5	54
IVT	NHZ	RTS	5.0	79.2	11.0	58

T.durum

Trial	Zone	Condition	GAS (Max 10)	Hectoliter Weight (Kg/hl)	Protein (%)	Sed. value (ml)	Yellow Berry (%)	Yellow Pigment (ppm)
NIVT 4	CZ	IR-TS	6.3	82.6	12.0	35	0.6	6.1
NIVT 4	PZ	IR-TS	5.3	82.3	12.1	36	3.1	5.7
NIVT 4	Overall	IR-TS	5.8	82.4	12.0	36	1.8	5.9
NIVT 5B	CZ	RI-TS	8.1	84.7	13.3	32	3.4	6.3
NIVT 5B	PZ	RI-TS	7.8	83.2	12.7	34	7.7	5.7
NIVT 5B	Overall	RI-TS	8.0	83.9	13.0	33	5.4	6.0

Special Trials

The entries including checks of special trials on *T. dicoccum* were analysed for thousand grain weight, protein content, sedimentation value and yellow pigment. Entries of SPL-VLS were also analyzed for grain appearance, test weight, protein content and sedimentation value and Fe and Zn content.

Quality Parameters of genotypes in *T. dicoccum* Trial

Zone	Thousand Grain weight (g)	Protein Content (%)	Sedimentation Value (ml)	Yellow Pigment (ppm)
PZ	43.13	13.19	32	3.58

Quality Parameters of *T.aestivum* genotypes in Very Late Sown Trial

Zone	Grain Appearance Score (Max 10)	Hectoliter Weight (Kg/hl)	Protein (%)	Sedimentation value (ml)	Hardness Index	Fe ppm	Zn ppm
NWPZ	5.4	78.8	12.4	58	84	37.3	43.7
NEPZ	6.3	73.5	13.3	60	-	43.0	34.0
Mean	5.9	76.2	12.8	59	84	40.2	38.9



हर कदम, हर उमर
किसानों का ह्वासफर
राष्ट्रीय कृषि अनुसंधान परिषद,

*Agri*search with a *human* touch



Issued on the occasion of 57th All India Wheat and Barley Research Workers' Meet held at Birsa Agricultural University, Ranchi (Jharkhand) during August 24-26, 2018.