International Trials and Nurseries

During *rabi* 2018-19 season Two international trials and two international germplasm nurseries were supplied from ICARDA which included a total of 347 genotypes for different production conditions. These international trials and nurseries were evaluated at different selected locations. One set each of these nurseries and trials was also sown at ICAR-IIWBR, Karnal, and barley breeders from SAUs and ICAR institutes were given an opportunity to select desirable germplasm from these international trials and nurseries during a Field Day organized on 29^{h} March, 2019 at Indian Institute of Wheat and Barley Research, Karnal, and a total of 241-germplasm lines were selected. In addition, one set each of EIBGN and NBGSN, was each supplied to 9-different locations.

International trials and nurseries evaluated during crop season 2018-19

Sr. No.	Trial/Nurseries	Genotypes received from ICARDA	Indian National check	Number of Sets	Locations
1.	IBYT-HI-2019	24	BH946	4	Karnal, Durgapura, Hisar, Ludhiana
2.	6th GSYT-2019	24	K603	4	Karnal, Hisar , Pantnagar, Kanpur
3.	IBON-HI-2019	138	BH946	4	Durgapura,Pantnagar,Ludhiana, Karnal
4.	6th GSBON-2019	161	Lakhan	4	Karnal, Kanpur, Faizabad, Bajaura

International Barley Yield Trial-High Input-2019 (IBYT-HI-2019)

This trial comprising of 25 entries including one local check variety BH946, was evaluated in an Alpha-Lattice Design with two replications at four locations namely, Durgapura, Hisar, Karnal and Ludhiana under high input conditions. The check variety BH946 ranked 5, 11, 7 and 21 at Karnal, Durgapura, Hisar and Ludhiana. At Karnal and Durgapura all the test entries were at par with the check variety, however, four test entries (15, 17, 22 and 24) at Hisar; and three test entries (7, 12 and 16) at Ludhiana were statistically superior to the check variety BH946 for grain yield. Based on field performance and plant type, 11-entries (1,4,6,9,10,11,13,14,15, 19 and 20) were selected by the barley breeders during the field day.

Grain yield, ranking and grouping of barley genotypes evaluated under IBYT-HI-(2019) at different locations in *rabi* 2018-19 season

IBYT-HI-19	Karnal			Durgapura			Hisar			Ludhiana		
	Yield	RK	G	Yield	RK	G	Yield	RK	G	Yield	RK	G
1	29	23	0	43	13	1	36	11	0	22	15	0
2	33	16	0	47	7	1	29	25	0	19	22	0
3	39	4	1	53	2	1	35	15	0	17	24	0
4	30	21	0	27	25	0	30	23	0	16	25	0
5	33	15	0	53	1	1	35	14	0	23	10	0
6	33	17	0	32	23	0	39	8	0	27	5	0
7	32	18	0	52	3	1	33	20	0	30	2	1
8	30	22	0	37	19	0	29	24	0	21	19	0

9	36	10	1	38	16	0	38	9	0	19	20	0
10	34	14	0	47	6	1	30	22	0	21	18	0
11	43	1	1	33	21	0	42	5	0	29	4	0
12	38	8	1	37	20	0	34	17	0	36	1	1
13	28	25	0	30	24	0	34	16	0	24	8	0
14	39	6	1	38	16	0	33	19	0	18	23	0
15	37	9	1	47	7	1	48	1	1	23	11	0
16	35	11	0	51	4	1	36	12	0	30	3	1
17	29	24	0	46	9	1	47	2	1	21	17	0
18	39	3	1	44	12	1	41	6	0	23	14	0
19	40	2	1	46	9	1	33	18	0	23	12	0
20	34	13	0	38	15	0	33	21	0	23	9	0
21	38	7	1	43	14	1	35	13	0	22	16	0
22	34	12	0	33	22	0	45	4	1	27	7	0
23	31	20	0	49	5	1	37	10	0	23	13	0
24	32	19	0	37	18	0	45	3	1	27	6	0
BH946 ©	39	5	1	46	11	1	41	7	0	19	21	0
Mean	35			42			37			23		
CD (5%)	7.9			14.7			5.6			6.1		
CV (%)	13.4			20.36			8.8			14.9		

Mean and range (in parenthesis) across the locations for ancillary characters of barley genotypes evaluated under IBYT-HI-(2019) in *rabi* 2018-19 season

Genotype (IBYT-HI-19)	**Days to Heading (Mean & Range)**	**Days to Maturity (Mean & Range)**	**Plant Height (cm) (Mean & Range)**
1.	86 (73-92)	135 (125-142)	99 (85-142)
2.	84 (72-94)	135 (127-140)	94 (77-140)
3.	85 (73-94)	136 (129-140)	96 (79-140)
4.	98 (94-108)	140 (129-146)	87 (56-146)
5.	90 (73-97)	137 (121-146)	100 (85-146)
6.	86 (76-97)	138 (129-142)	96 (77-142)
7.	84 (70-92)	133 (120-140)	102 (85-140)
8.	91 (73-105)	139 (126-145)	93 (69-145)
9.	86 (74-95)	136 (129-143)	95 (77-143)
10.	85 (73-95)	135 (127-140)	93 (81-140)
11.	94 (80-105)	142 (131-147)	99 (81-147)
12.	93 (79-100)	140 (131-146)	109 (98-146)
13.	92 (78-98)	141 (131-147)	113 (83-147)
14.	90 (79-95)	137 (124-144)	92 (58-144)

15.	85 (71-92)	135 (121-143)	96 (75-143)
16.	84 (71-94)	135 (125-141)	96 (77-147)
17.	82 (64-92)	133 (123-129)	92 (76-139)
18.	87 (70-94)	137 (125-143)	97 (73-143)
19.	89 (72-97)	139 (127-145)	106 (79-145)
20.	84 (73-91)	133 (124-140)	100 (87-140)
21.	91 (75-98)	138 (125-145)	101 (82-145)
22.	88 (78-94)	136 (129-142)	106 (87-142)
23.	88 (72-95)	138 (125-146)	97 (76-146)
24.	102 (92-108)	142 (131-147)	112 (94-147)
25.	86 (73-108)	137 (127-143)	96 (73-143)

7th Global Spring Barley Yield Trail-2019 (7th GSBYT-2019)

This trial comprised of twenty-five entries including check variety K603 and was evaluated at four locations (Kanpur, Karnal, Hisar and Pantnagar) under low input production conditions. The check variety K603 was ranked nine, second, first and eleven position at Karnal, Kanpur, Hisar and Pantnagar locations. At three locations (Karnal, Kanpur and Hisar), no test entry was found to be superior over the check variety for grain yield. However, at Pantnagar, two test entries (8 and 9) were statistically superior over this check variety for grain yield at Pantnagar. Based on field observations on plant and spike characters, 14-genotypes (1,4,5,6,7,10,13,15,17,18,19,20,24 and 25) were selected by the barley breeders of different centres during the field day organized at ICAR-IIWBR, Karnal.

Grain yield, ranking and grouping of barley genotypes evaluated under 7th GSBYT-(2019) at different locations in *rabi* 2018-19 season

7th GSBYT-19-	Karnal			Kanpur			Hisar			Pantnagar		
	Yield	RK	G	Yield	RK	G	Yield	RK	G	Yield	RK	G
1	74	5	1	42	17	0	35	9	0	40	3	0
2	73	8	1	57	4	0	36	7	0	34	8	0
3	61	21	0	70	1	1	34	10	0	31	14	0
4	78	2	1	53	6	0	37	5	0	31	13	0
5	73	7	1	58	3	0	33	13	0	22	24	0
6	77	3	1	43	16	0	30	17	0	36	7	0
7	74	6	1	42	18	0	29	20	0	24	21	0
8	81	1	1	42	19	0	36	6	0	40	2	1
9	70	12	1	34	24	0	41	2	1	43	1	1
10	68	16	1	52	8	0	39	4	0	29	17	0
11	57	25	0	36	22	0	34	12	0	36	6	0
12	67	18	1	46	11	0	35	8	0	37	5	0

13	59	24	0	54	5	0	29	18	0	32	12	0
14	70	11	1	38	20	0	26	23	0	29	16	0
15	68	16	1	44	13	0	33	15	0	32	10	0
16	70	10	1	46	10	0	33	14	0	27	19	0
17	69	14	1	33	25	0	26	22	0	38	4	0
18	67	19	1	44	12	0	34	11	0	30	15	0
19	70	13	1	43	15	0	28	21	0	24	22	0
20	60	22	0	44	14	0	31	16	0	24	23	0
21	67	19	1	37	21	0	20	25	0	20	25	0
22	59	23	0	34	23	0	23	24	0	25	20	0
23	76	4	1	50	9	0	29	18	0	32	9	0
24	68	15	1	53	7	0	39	3	0	28	18	0
check, K603	71	9	1	69	2	1	46	1	1	32	11	0
Mean	69			47			33			31		
CD (5%)	16			5			5			4		
CV (%)	14			6			9			7		

Mean and range (in parenthesis) across the locations for ancillary characters of barley genotypes evaluated under 6th GSBYT-(2019) at different locations

Genotype 6th GSBYT-19	Days to Heading (Mean & Range)	Days to Maturity (Mean & Range)	Plant Height (cm) (Mean & Range)
1.	90 (84-95)	132 (125-138)	82 (65-00)
2.	88 (81-92)	133 (129-137)	85 (54-106)
3.	83 (76-87)	132 (127-135)	87 (71-100)
4.	85 (81-90)	132 (130-135)	89 (64-111)
5.	92 (82-97)	136 (132-140)	84 (71-94)
6.	83 (74-88)	133 (131-135)	82 (62-100)
7.	100 (88-108)	137 (131-141)	69 (54-95)
8.	86 (81-90)	132 (126-135)	84 (72-111)
9.	87 (82-91)	133 (127-137)	81 (46-109)
10.	79 (74-83)	129 (123-134)	86 (73-110)
11.	78 (72-83)	128 (124-133)	89 (63-107)
12.	94 (90-97)	135 (127-141)	100 (57-139)
13.	94 (84-99)	134 (129-138)	80 (62-93)
14.	94 (81-98)	137 (133-139)	97 (72-121)
15.	90 (81-95)	133 (130-138)	96 (74-119)

16.	94 (86-100)	136 (131-139)	97 (66-120)
17.	95 (86-100)	136 (133-139)	94 (69-112)
18.	93 (89-96)	133 (130-137)	86 (57-104)
19.	93 (86-99)	137 (133-140)	88 (62-106)
20.	82 (72-87)	134 (132-137)	89 (58-110)
21.	94 (88-102)	136 (130-139)	89 (64-109)
22.	83 (75-89)	129 (124-133)	97 (72-119)
23.	94 (80-100)	134 (127-139)	88 (66-106)
24.	98 (84-104)	138 (130-141)	90 (65-108)
25.	85 (81-92)	136 (130-139)	92 (81-108)

International Barley Observation Nursery-High Input-2019 (IBON-HI-2019)

The IBON comprising of 138 entries including one local check (BH946), repeated five times, were raised at four locations namely, Durgapura, Pantnagar, Ludhiana and Karnal in rabi 2018-19. The means and range for ancillary characters, and mean yields worked out as g/plot (plot size 1.15 m^2) across the test locations for 30 top entries based on grain yield in the decreasing order of ranking are tabulated and given below. Plot yield in the check variety BH946 ranged from 259 g to 1225 g with a mean of 627 g. Only nine test entries gave higher grain yield across the locations over the average yield of the check variety BH946. A total of 37 entries (1,2,6, 11, 13, 27,32,34, 39, 46, 47, 50, 52, 60, 62, 65, 73, 80, 81, 82, 83, 91, 93, 94, 98,103, 104, 108, 109, 110, 111, 112, 123, 126, 128, 134 and 135) were selected by the barley breeders during the field day.

Mean and range (in parenthesis) across the locations for ancillary characters of barley genotypes evaluated under IBON-HI-(2019) at different locations in *rabi* 2018-19 season

Genotype (IBON-HI-19)	Days to Heading	Days to Maturity	Plant Height (cm)	Yield /plot (1.15m^2)	Genotype (IBON-HI-2019)	Days to Heading	Days to Maturity	Plant Height (cm)	Yield /plot (1.15m^2)
73	75 (67-89)	128 (124-133)	95 (74-121)	788 (274-1200)	102	72 (64-82)	128 (123-136)	91 (72-105)	593 (403-1075)
96	80 (73-90)	128 (125-131)	99 (89-109)	731 (303-1450)	123	88 (79-108)	129 (123-140)	90 (73-116)	585 (305-804)
127	85 (73-98)	131 (123-141)	97 (75-111)	694 (193-1250)	91	76 (66-90)	128 (121-139)	91 (79-119)	583 (399-850)
1	90 (79-106)	134 (130-141)	99 (86-117)	689 (255-1250)	11	79 (69-98)	130 (125-139)	91 (75-100)	582 (240-1018)
24	81 (73-94)	130 (126-133)	98 (83-121)	687 (340-1250)	110	82 (73-95)	129 (122-140)	101 (77-120)	580 (235-1050)
138	98 (93-105)	136 (131-144)	104 (94-118)	668 (470-1000)	131	73 (66-83)	126 (122-132)	95 (69-110)	578 (403-836)
108	86 (81-95)	130 (125-138)	100 (87-115)	654 (500-962)	23	87 (79-94)	129 (127-131)	95 (83-116)	575 (284-928)
86	73 (64-83)	125 (121-132)	103 (90-131)	649 (369-900)	47	83 (73-98)	131 (127-139)	102 (75-129)	563 (284-1000)
121	89 (82-97)	135 (129-144)	107 (87-120)	635 (300-1200)	72	76 (70-84)	128 (123-138)	89 (75-109)	562 (278-900)
BH946	77 (67-92)	130 (126-140)	90 (71-121)	627 (259-1225)	48	80 (78-84)	131 (125-139)	96 (72-121)	561 (254-1100)

107	74 (63-92)	128 (122-138)	71 (12-96)	614 (213-1000)	75	82 (73-97)	132 (128-141)	99 (75-126)	560 (365-826)
69	80 (72-94)	127 (122-133)	92 (78-119)	614 (272-1286)	90	71 (61-81)	127 (121-138)	88 (71-110)	558 (274-704)
78	82 (73-90)	130 (126-133)	98 (78-119)	611 (224-1000)	55	96 (87-108)	136 (131-144)	93 (75-116)	556 (271-922)
83	77 (73-84)	127 (122-137)	90 (70-113)	609 (237-996)	124	100 (95-105)	138 (132-145)	105 (95-115)	552 (382-776)
57	72 (64-80)	128 (124-133)	100 (77-128)	595 (344-1000)	117	77 (66-95)	130 (125-138)	80 (69-90)	552 (390-800)

7th Global Spring Barley Observation Nursery-2019 (6th GSBON-2019)

This nursery consisted of 161 entries including a local check Lakhan repeated five times and was raised at four locations namely, Kanpur, Faizabad, Bajaura and Karnal. The means and range for ancillary characters, and mean yields worked out as g/plot (plot size 1.15 m^2) across the test locations for 30 top entries based on grain yield in the decreasing order of ranking are tabulated and given below. A total of 56 entries (1,2,3,5,6,10,12, 13,1,9,21, 26,28, 29,33, 34,36, 37,41, 42, 44, 48, 50, 53, 62, 64, 66, 67, 68, 74, 76, 77, 83, 86, 96, 103, 105, 106, 109, 112, 116, 121, 122, 128, 131, 132, 138, 140, 142, 144, 145, 148, 149, 156, 157 and 161) were selected by the barley breeders during the field day. Twenty-nine entries registered higher grain yields compared to the check variety Lakhan whose plot (1.5 m^2) yields ranged from 97 to 756 g .

Mean and range (in parenthesis) across the locations for ancillary characters of barley genotypes evaluated under 5th GSBSN-(2019) at different locations

Genotype 6th GYSBON-19	Days to Heading	Days to Maturity	Plant Height (cm)	Yield /plot (1.15m^2)	*Genotype 6th GYSBON-19*	Days to Heading	Days to Maturity	Plant Height (cm)	Yield /plot (1.15m^2)
9	94 (78-137)	140 (110-178)	76 (53-91)	757 (210-1346)	**122**	99 (86-131)	139 (115-175)	85 (65-110)	498 (210-770)
11	95 (79-136)	140 (110-177)	85 (66-109)	640 (400-813)	**92**	97 (79-139)	140 (115-181)	91 (65-124)	494 (130-715)
6	93 (76-136)	139 (110-178)	78 (52-100)	640 (500-750)	**112**	93 (76-138)	140 (107-181)	79 (60-96)	489 (376-580)
5	98 (81-145)	143 (112-184)	76 (62-91)	591 (230-750)	**22**	99 (85-137)	142 (114-182)	78 (54-103)	489 (250-705)
4	100 (85-140)	139 (113-180)	92 (71-113)	577 (240-900)	**3**	92 (75-138)	139 (108-179)	85 (61-110	487 (210-727)
10	93 (77-131)	140 (112-178)	84 (50-110)	553 (240-894)	**111**	98 (83-134)	140 (123-170)	95 (75-119)	482 (230-650)
7	105 (89-143)	146 (128-183)	81 (61-106)	550 (250-790)	**124**	100 (84-137)	144 (127-181)	96 (79-120)	482 (220-650)
114	79 (76-83)	125 (112-134)	92 (73-120)	549 (425-630)	**94**	94 (77-140)	138 (109-181)	85 (54-111)	480 (360-678)
60	96 (77-132)	139 (110-175)	86 (64-110)	541 (350-700)	**40**	97 (79-138)	142 (118-180)	89 (72-120)	476 (120-694)
115	79 (75-83)	125 (112-134)	87 (69-120)	528 (400-852)	**100**	100 (86-133)	144 (125-175)	87 (54-130)	475 (130-647)
38	101 (81-145)	145 (128-184)	67 (56-90)	515 (200-778)	**18**	89 (72-132)	138 (107-179)	86 (70-111)	474 (250-619)
74	94 (79-130)	138 (112-173)	84 (62-106)	502 (478-529)	**47**	109 (96-146)	145 (128-184)	76 (53-960	473 (115-797)
2	98 (82-142)	143 (112-184)	87 (64-103)	498 (200-780)	**157**	93 (79-131)	140 (111-176)	85 (60-116)	471 (250-720)
149	96 (77-140)	141 (113-182)	87 (61-111)	498 (135-890)	**88**	97 (81-131)	140 (111-174)	86 (68-106)	470 (125-825)
109	94 (76-141)	140 (112-182)	83 (52-110)	498 (230-625)	**Lakhan**	93 (77-138)	140 (109-180)	95 (80-130)	460 (268-586)

Elite International Barley Germplasm Nursery (EIBGN-2018-19)

EIBGN was constituted with 45-germplasm lines and six released varieties (BH946, BH959, BHS400, RD2715, DWRB101 and HUB113) as checks. These 45 promising germplasm lines were selected from different international trials and nurseries based on their performance in *rabi* 2017-18 under respective trials/nurseries. A set of 75 treatments including six checks repeated five times at each location were evaluated in an augmented design at nine locations in NEPZ (Kanpur, Faizabad,), NHZ (Shimla, Bajaura) and NWPZ (Karnal, Hisar, Durgapura, Ludhiana, Pantnagar). Each entry was sown in a plot of two rows each of 2.5 m length and spaced at 30 cm. The data for grain yield recorded in grams (g) per plot (1.5 m^2) plot was pooled across the locations and is given zone wise in the following table. Similarly, data for ancillary characters is tabulated below trait-wise as mean and range for a character across the 10-testing locations.

The yields were higher in NWPZ followed by NEPZ and NHZ. The check variety HUB113 was adjudged to be the best check in NWPZ and NEPZ. However, in NHZ BH 946 was found to be the best. No test entry was statistically superior in any of the three zones compared to the respective best check of these zones. Among the test entries, test entries INBON-HI-18-49 and IBON-18-60 were in the NSG 1 giving higher yields. Similarly, the top performing seven entries namely IBON-18-100, IBON-18-46, IBYT-18-8, IBYT-18-16, INBYT-HI-18-11, INBYT-HI-18-13 and 5thGSBYT-18-7 were in the NSG 1 in NEPZ. In case NHZ six entries (IBYT-18-16, IBYT-18-4, IBON-18-59, IBYT-18-12, IBYT-18-9 and IBYT-18-5) were higher yielder and were in NSG 1.

Zonal means for grain yield, ranking and grouping of barley genotypes evaluated under EIBGN-2019 at different locations in *rabi* 2018-19 season

Sr. No.	Genotype	Grain Yield (q/ha)											
		NWPZ	Rk	G	NEPZ	Rk	G	NHZ	Rk	G	Overall	Rk	G
1	IBYT-18-4	38	7	0	30	11	0	31	2	1	35	3	1
2	IBYT-18-5	24	38	0	23	34	0	26	6	1	24	33	0
3	IBYT-18-6	22	41	0	25	26	0	21	13	0	22	41	0
4	IBYT-18-8	27	34	0	34	3	1	24	9	0	28	25	0
5	IBYT-18-9	20	43	0	28	16	0	27	5	1	24	39	0
6	IBYT-18-12	23	39	0	29	12	0	28	4	1	25	31	0
7	IBYT-18-16	26	36	0	33	4	1	31	1	1	29	20	0
8	IBYT-18-18	21	42	0	25	23	0	22	11	0	22	42	0
9	IBYT-18-21	34	18	0	28	17	0	26	7	0	31	10	0
10	INBYT-HI-18-3	29	30	0	24	32	0	12	42	0	24	35	0
11	INBYT-HI-18-9	18	45	0	23	38	0	11	44	0	17	45	0
12	INBYT-HI-18-11	31	25	0	33	5	1	15	35	0	28	24	0
13	INBYT-HI-18-13	35	17	0	33	6	1	14	38	0	30	15	0
14	INBYT-HI-18-18	22	40	0	22	39	0	13	41	0	20	44	0
15	INBYT-HI-18-22	30	28	0	23	35	0	9	45	0	24	34	0
16	5thGSBYT-18-3	33	22	0	20	43	0	14	39	0	26	29	0
17	5thGSBYT-18-4	32	23	0	29	14	0	18	24	0	28	23	0
18	5thGSBYT-18-6	37	10	0	25	25	0	24	8	0	32	7	0

19	5thGSBYT-18-7	50	1	1	32	7	1	20	16	0	39	1	1
20	5thGSBYT-18-15	36	13	0	30	10	0	15	34	0	30	14	0
21	5thGSBYT-18-16	25	37	0	25	27	0	14	37	0	23	40	0
22	5thGSBYT-18-19	35	14	0	28	15	0	20	20	0	30	12	0
23	5thGSBYT-18-21	31	26	0	24	29	0	20	17	0	27	27	0
24	5thGSBYT-18-22	28	32	0	25	24	0	21	14	0	25	30	0
25	IBON-18-46	30	29	0	38	2	1	15	31	0	28	22	0
26	IBON-18-47	20	44	0	28	18	0	17	28	0	21	43	0
27	IBON-18-59	38	9	0	32	7	1	28	3	1	34	4	1
28	IBON-18-60	43	3	1	25	22	0	18	26	0	33	5	1
29	IBON-18-82	27	33	0	23	33	0	14	36	0	24	38	0
30	IBON-18-97	42	4	0	24	30	0	21	15	0	33	6	0
31	IBON-18-100	32	24	0	38	1	1	17	29	0	30	13	0
32	IBON-18-108	36	12	0	29	13	0	15	32	0	30	16	0
33	INBON-HI-18-7	27	35	0	25	28	0	15	33	0	24	37	0
34	INBON-HI-18-11	38	8	0	27	19	0	16	30	0	31	11	0
35	INBON-HI-18-26	29	31	0	23	37	0	12	43	0	24	36	0
36	INBON-HI-18-48	35	15	0	24	31	0	17	27	0	28	21	0
37	INBON-HI-18-49	47	2	1	30	9	0	20	18	0	37	2	1
38	INBON-HI-18-55	35	16	0	23	36	0	13	40	0	27	26	0
39	5thGSBON-18-65	31	27	0	11	45	0	23	10	0	25	32	0
40	5thGSBON-18-79	34	20	0	18	44	0	19	23	0	27	28	0
41	5thGSBON-18-84	40	5	0	20	42	0	20	21	0	31	9	0
42	5thGSBON-18-94	40	6	0	20	41	0	20	19	0	31	8	0
43	5thGSBON-18-104	37	11	0	21	40	0	18	25	0	29	18	0
44	5thGSBON-18-109	34	19	0	26	20	0	19	22	0	29	19	0
45	5thGSBON-18-114	34	21	0	26	21	0	21	12	0	29	17	0
Checks													
1	BH 946	82			50			39			57		
2	BH 960	68			47			43			53		
3	BHS 400	63			41			42			49		
4	DWRB 101	65			39			42			49		
5	HUB 113	88			47			46			61		
6	RD 2715	68			49			35			51		

Mean and range (in parenthesis) across the locations for ancillary characters of barley genotypes evaluated under EIBGN-(2019) at 10-different locations

Genotype	Days to heading (75%)	Days to maturity	Plant height (cm)	Tiller/ meter	Spike length (cm)	Grains/ spike	1000-Grain weight (g)	2/6 Row
IBYT-18-4	87 (77-112)	134 114-150)	86 (68-109)	98 (68-125)	8 (7-10)	62 (44-86)	46 (42-50)	6R
IBYT-18-5	95 (83-114)	138 (122-156)	84 (73-104)	132 (101-183)	8 (5-10)	25 (18-29)	43 (38-46)	2R
IBYT-18-6	91 (81-108)	140 (123-181)	82 (64-104)	104 (76-164)	6 (6-8)	62 (36-74)	35 (34-42)	6R
IBYT-18-8	102 (87-118)	146 (125-182)	90 (68-119)	97 (62-155)	8 (7-11)	65 (44-84)	40 (36-46)	6R

IBYT-18-9	89 (79-109)	139 (120-177)	82 (69-106)	110 (80-148)	7 (5-8)	58 (32-76)	35 (31-41)	6R
IBYT-18-12	96 (80-135)	140 (123-179)	78 62-89)	111 (78-156)	7 (6-9)	53 (18-75)	35 (32-39)	6R
IBYT-18-16	90 (78-127)	139 (118-175)	88 (73-104)	98 (78-125)	7 (5-9)	61 (44-95)	40 (35-44)	6R
IBYT-18-18	103 (88-137)	143 (123-181)	85 (61-109)	99 (76-136)	8 (6-10)	57 (32-86)	42 (36-45)	6R
IBYT-18-21	103 (85-138)	142 (121-180)	79 (61-105)	100 (80-142)	8 (7-9)	64 (48-84)	39 (36-42)	6R
INBYT-HI-18-3	91 (75-124)	137 (108-171)	96 (73-111)	87 (43-144)	8 (7-11)	43 (21-78)	45 (34-50)	2R
INBYT-HI-18-9	94 (77-131)	137 (110-178)	86 (64-113)	73 (28-127)	8 (6-10)	60 (28-84)	38 (32-44)	6R
INBYT-HI-18-11	98 (80-132)	139 (123-179)	84 (70-102)	84 (64-129)	8 (6-10)	68 (36-92)	34 (32-38)	6R
INBYT-HI-18-13	100 (87-137)	143 (125-175)	95 (76-116)	100 (70-133)	8 (6-10)	36 (24-64)	39 (32-45)	2R
INBYT-HI-18-18	94 (78-136)	138 (120-174)	95 (80-117)	78 (13-101)	8 (5-10)	68 (46-96)	36 (32-40)	6R
INBYT-HI-18-22	98 (79-136)	140 (118-174)	81 (68-109)	104 (53-143)	6 (5-8)	53 (26-70)	40 (36-43)	6R
5thGSBYT-18-3	106 (89-134)	144 (123-173)	87 (57-111)	89 (38-115)	8 (7-11)	65 (38-90)	38 (27-44)	6R
5thGSBYT-18-4	107 (88-135)	144 (125-174)	85 (58-108)	89 (49-132)	9 (7-11)	67 (36-84)	39 (36-45)	6R
5thGSBYT-18-6	99 (83-125)	142 (121-171)	93 (71-113)	104 (31-221)	8 (5-11)	53 (27-79)	42 (38-47)	6R
5thGSBYT-18-7	96 (82-129)	140 (119-174)	87 (54-106)	112 (75-164)	8 (7-10)	56 (40-68)	42 (35-49)	6R
5thGSBYT-18-15	102 (85-134)	140 (123-173)	81 (64-98)	124 (48-190)	7 (5-9)	24 (17-30)	39 (32-44)	2R
5thGSBYT-18-16	117 (85-140)	147 (125-177)	86 (55-109)	97 (59-130)	8 (3-10)	25 (21-32)	40 (32-47)	2R
5thGSBYT-18-19	107 (87-139)	144 (122-176)	86 (51-114)	100 (43-185)	7 (5-9)	23 (15-32)	42 (36-52)	2R
5thGSBYT-18-21	106 (88-134)	142 (119-175)	81 (52-102)	127 (76-204)	7 (5-8)	22 (14-27)	41 (35-54)	2R
5thGSBYT-18-22	91 (75-121)	138 (123-167)	88 (59-117)	106 (27-206)	7 (4-10)	23 (15-34)	43 (36-52)	2R
IBON-18-46	104 (86-140)	141 (115-176)	88 (69-111)	88 (50-128)	8 (7-10)	73 (56-92)	36 (31-42)	6R
IBON-18-47	106 (88-129)	142 (120-171)	103 (84-123)	92 (48-140)	9 (7-11)	26 (19-32)	46 (36-51)	2R
IBON-18-59	100 (81-139)	141 (121-176)	98 (73-118)	83 (48-142)	8 (6-10)	71 (55-80)	43 (31-52)	6R
IBON-18-60	97 (80-135)	137 (113-174)	88 (59-116)	97 (53-176)	8 (5-12)	62 (28-80)	39 (36-50)	6R
IBON-18-82	100 (84-136)	140 (124-173)	81 (55-102)	90 (58-145)	7 (7-8)	34 (23-66)	45 (38-50)	2R
IBON-18-97	104 (83-137)	143 (123-174)	89 (64-107)	91 (47-162)	6 (5-8)	52 (40-68)	45 (41-50)	6R
IBON-18-100	108 (85-141)	144 (125-176)	92 (51-108)	87 (64-117)	5 (4-8)	49 (25-66)	41 (32-48)	6R
IBON-18-108	107 (83-140)	143 (123-176)	83 (51-95)	89 (60-153)	7 (5-9)	47 (21-22)	36 (28-42)	6R
INBON-HI-18-7	110 (88-142)	145 (120-179)	89 (58-117)	106 (65-155)	9 (8-11)	33 (22-72)	38 (32-45)	2R

INBON-HI-18-11	108 (88-141)	143 (118-175)	93 (52-108)	101 (58-143)	9 (7-11)	32 (25-54)	41 (36-45)	2R
INBON-HI-18-26	98 (80-135)	140 (119-174)	106 (80-126)	78 (48-122)	8 (5-10)	66 (34-76)	39 (25-45)	6R
INBON-HI-18-48	100 (84-135)	141 (117-175)	100 (89-117)	113 (65-209)	9 (7-10)	38 (21-72)	41 (36-46)	2R
INBON-HI-18-49	104 (85-139)	143 (123-179)	93 (71-117)	119 (72-172)	9 (6-11)	25 (20-30)	37 (28-46)	6R
INBON-HI-18-55	103 (82-137)	142 (119-178)	94 (83-113)	92 (75-125)	7 (6-9)	57 (29-74)	38 (33-44)	2R
5thGSBON-18-65	106 (85-139)	143 (125-180)	77 (43-93)	111 (63-192)	7 (6-8)	25 (16-34)	41 (36-49)	2R
5thGSBON-18-79	99 (85-137)	141 (124-179)	82 952-102)	114 (77-167)	8 (7-10)	24 (19-30)	45 (37-49)	2R
5thGSBON-18-84	98 (83-135)	141 (120-178)	89 (62-106)	115 (80-155)	8 (7-9)	25 (19-28)	49 (42-53)	2R
5thGSBON-18-94	107 (88-136)	142 (118-177)	88 (63-102)	114 (76-187)	7 (6-9)	25 (23-28)	41 (30-48)	2R
5thGSBON-18-104	101 (85-126)	141 (117-174)	95 (80-111)	107 (65-137)	7 (6-8)	25 (22-29)	48 (41-52)	2R
5thGSBON-18-109	102 (85-133)	143 (118-178)	96 (82-118)	103 (68-165)	8 (6-9)	27 (25-28)	49 (33-59)	2R
5thGSBON-18-114	91 (77-122)	136 (108-172)	97 (83-117)	113 (63-205)	8 (6-10)	23 (17-29)	49 (31-58)	2R
BH 946	96 (44-135)	140 (113-178)	84 (60-112)	92 (50-140)	7 (5-10)	56 (36-70)	40 (35-55)	6R
BH 959	95 (77-127)	140 (115-176)	83 (56-110)	95 (40-181)	8 (5-12)	57 (30-72)	40 (28-48)	6R
BHS 400	104 (80-139)	143 (112-181)	90 (65-113)	87 (37-128)	6 (3-9)	54 (34-78)	40 (33-46)	6R
DWRB 101	94 (78-128)	139 (115-175)	79 (57-91)	113 (58-192)	7 (4-9)	26 (21-55)	45 (34-54)	2R
HUB 113	97 (77-129)	140 (107-176)	84 (63-102)	103 (15-202)	7 (5-9)	57 (25-75)	41 (35-48)	6R
RD 2715	93 (77-124)	137 (110-172)	91 (67-117)	85 (38-170)	8 (5-11)	59 (15-78)	42 (28-54)	6R

National Barley Genetic Stock Nursery (NBGSN-2019)

This nursery comprising of a set of 18 promising entries endowed with trait(s) of breeding value, received from different cooperating centres were evaluated at 9-centres (Karnal, Durgapura, Kanpur, Hisar, Faizabad, Bajaura, Ludhiana, Pantnagar and Shimla). All the centres have reported the data. Genotype wise means and ranges obtained for different ancillary traits, and grain yield (g/plot) in a plot of 1.5 m^2 across the locations are given in the following table.

Table : Mean and range (in parenthesis) across the locations for ancillary characters of barley genotypes evaluated under NBGSN - (2019) at different locations in *rabi* 2018-19 season

Genotype	Special features	Pedigree	Days to Heading	Days to Maturity	Plant height (cm)	Tillers/ m	Spike Length (cm)	Grain/ Spike	1000-Grain weight (g)	Grain yield per plot (g)	2/6 Row
DWRB180	Resistance to leaf blight	P.STO/3/LBIRAN/UNA80// LIGNEE640/4 BLLU/5.PETUNIA1/6/M 111	94 (68-135)	144 (120-184)	89 (72-99)	92 (60-123)	9 (7.8-11.1)	66 (44-80)	43 (38.2-50)	413 (152-660)	6R
DWRB152	Resistance to yellow rust	DWRB73/SWRB78	93 (71-130)	140 (123-179)	84 (63-110.3)	110 (66-230)	8 (6.7-10.3)	40 (20-80)	53 (38-60)	343 (230-480)	6R
DWRB143	Resistance to yellow rust	DWRB73/DWR83	97 (71-127)	141 (121-176)	82 (60.3-100)	73 (42-120)	8 (5.8-10)	60 (41-72)	42 (32-50)	346 (99-500)	6R
BHS462	Resistance to yellow and brown rust	Ist GBYT-9 (2012-13)	99 (73-132)	141 (117-178)	87 (67.3-107)	113 (75-192)	7 (6-8.2)	53 (28-78)	39 (34.3-42)	402 (53-813)	2R
BHS463	Resistance to yellow	IBON-LRA-M-37 Manal/3/Lignee527/NK1272 /JLB70-63/4/Maknusa	103 (77-133)	139 (121-178)	84 (50-102)	107 (72-177)	6 (3.3-7)	46 (28-62)	38 (34.52-40)	325 (53-542)	6R
DWRB160	High 1000-gw, test wt, long spikes bold grains proportion, overall malting quality	DWRB62/DWRB78	101 (73-136)	138 (117-184)	87 (69-115.6)	87 (62-125)	9 (6.8-11)	25 (14.7-33)	61 (47.7-74.16)	328 (137-482)	6R
DWRB182	Low Beta-glucan, resistance to yellow and brown rusts	DWRUB52/DWR81	94 (72-132)	141 (119-177)	81 (57-107.5)	114 (57-218)	7 (5-8.3)	39 (19-92)	47 (29.8-62.5)	370 (126-508)	6R
DWRB184	High malt friability, resistance to yellow rust	DWRUB52/DWR81	94 (78-131)	142 (120-180)	80 (59-110.5)	125 (42-196)	7 (5.5-9)	27 (20.7-42)	51 (41-60)	366 (105-700)	2R
DWRB188	Resistance to black rust	PENCO/CHEVRON-BAR/3/LEGACY//PENCO /CHEVRON-BAR (Hulless)	95 (78-134)	139 (122-181)	86 (52.7-110.2)	74 (22-125)	7 (5.8-8.2)	49 (18-68)	41 (37-45.64)	359 (43-725)	2R
HBL793	Resistance to black rust	HBL316/Dolma	102 (80-138)	144 (120-185)	93 (72-115.5)	79 (25-129)	8 (5-10)	57 (28-76)	35 (30.44-38.4)	267 (80-695)	6R
PL905	Low Beta-glucan, Malt friability, high water extract, Over all malt quality	VJM 604/PL764	100 (80-128)	145 (124-177)	95 (74-106)	114 (45-187)	8 (6-10)	26 (20-28)	45 (42-50)	402 (180-600)	2R
RD2980	Resistance to yellow rust and CCN	RD-2660 / 13th EMBGSN-4	95 (79-125)	141 (121-176)	81 (57-93)	102 (58-130)	7 (5.3-9)	49 (20.7-86)	48 (41-52)	416 (138-634)	2R
RD2981	Resistance to yellow rust and CCN	RD-2660 / 13th EMBGSN-4	94 (75-121)	142 (120-174)	79 (64-92)	81 (48-118)	7 (5.6-8)	53 (34-72)	47 (38-55)	446 (136-590)	6R
DWRB174	Early heading and short plant height	GIJA 121/CI06248/4/ APM/IB65//11012-2/3/API/CM67//DS/APRO/5/	89 (64-129)	137 (115-162)	63 (46.3-80)	85 (41-125)	6 (4.5-7.8)	44 (11-78)	40 (37.15-43)	224 (100-475)	6R

		ATHS									
DWRB173	Hooded and early heading	YAGAN/CAPUCHONA20	89 (65-127)	136 (111-159)	90 (75-103)	83 (30-142)	9 (8-10)	28 (18-52)	45 (38-50)	197 (46-422)	2R
DWRB175	Short plant height	NACKTA/HJA A33//FNCI	93 (67-126)	140 (115-172)	62 (37-93)	68 (24-131)	7 (6-10.5)	30 (16-54)	46 (42-51)	171 (40-384)	6R
DWRB137	Yellow rust resistance, short plant height, high grain yield	DWR28/DWRUB64	92 (70-123)	139 (121-171)	75 (52-95)	92 (44-173)	7 (6-9)	60 (42-78)	47 (39-55)	405 (134-780)	6R
RD2907	Salinity/alkalinity	RD103/Rd2518//RD2592	95 (73-127)	139 (122-176)	88 (61-120.5)	98 (63-143)	7 (5.5-8.5)	58 (44-68.4)	47 (42.1-51.68)	569 (192-1025)	6R