

Proposal for Release of Crop Varieties

DBW377 **(Karan Bold)**

Bread Wheat (*Triticum aestivum* L.)

For

Irrigated Early Sown Condition of Central Zone

(Comprising whole of Madhya Pradesh, Chhattisgarh, Gujarat and Kota & Udaipur division of Rajasthan)



Submitted to

**Central Sub-Committee on Crop Standards, Notification and
Release of Varieties for Agricultural Crops**

**Department of Agriculture, Cooperation & Farmers Welfare
Ministry of Agriculture and Farmers Welfare
Government of India**



**ICAR- Indian Institute of Wheat and Barley Research
Karnal Haryana - 132001**



**Proforma for Submission of Proposals for Release of
DBW 377 to Central Sub-Committee on Crop
Standards Notification and Release of Varieties**



सत्यमेव जयते

Department of Agriculture Cooperation & Farmers Welfare

**Ministry of Agriculture & Farmers Welfare
Government of India**

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Summary of Proposal: DBW377

Superior Performance in Yield Trials

- DBW377 recorded high mean yield (63.9q/ha) and established yield superiority over check varieties HD3086 (11.0%), DBW303 (6.25%), DBW187 (4.4%) and GW322 (1.3%).
- With yield potential of 86.4 q/ha it had the high frequency(10/16) in the first non-significant group indicating its stability across locations.

Agronomic performance

- In agronomic trials, DBW377 ranked first in the experiment on recommended dose of fertilizers
- DBW377 has shown less reduction in yield (4.4%) under RDF over 150% RDF+FYM+GR as compared to checks HD3086 (14.4%), DBW187(12.6%), DBW187(8.7%), DBW303 (11.6%) and GW322(8.5%).
- It has shown the highest thousand grain weight (49.1g), number of grains per ear head and biomass yield over the check varieties.

Disease Resistance

- DBW377 is highly resistant for leaf and stem rust under natural and artificial conditions as evident from the lower ACI values.
- Under APR studies, conducted for predominant race of brown rust viz., 77-5,77-9 it had shown immune reaction and 104-2. For stem rust has shown resistance to race 11 and 40A at adult plant stage.
- Gene postulation indicated gene combination *Lr23+1+* for brown rust and *R* for black rust.
- DBW377 is resistant to wheat blast disease (Av. Score 10.0).
- The genotype has shown better resistance against Karnal bunt as compared to checks.

Grain Quality

- DBW377 has high grain protein content (11.7%), hectoliter weight (79.5), high biscuit spread factor (8.5) and good chapati quality score (7.7/10).

Field View of bread wheat variety DBW377



DBW 377: Some characteristic features

			
			
Complete plant	At Vegetative Stage	At Anthesis stage	Amber grains

Performance of DBW 377 in comparison to check varieties

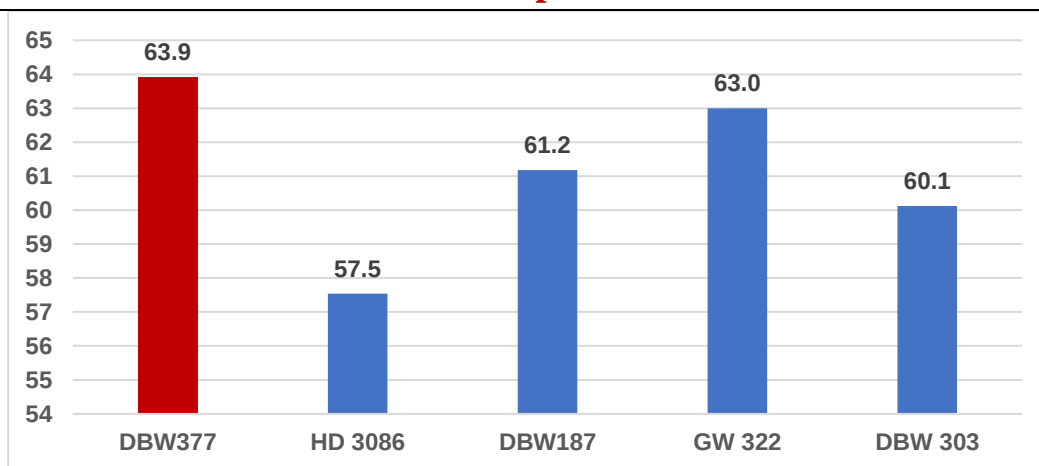


Fig 1: Mean yield (q/ha) of DBW 377 along with check varieties in breeding trials

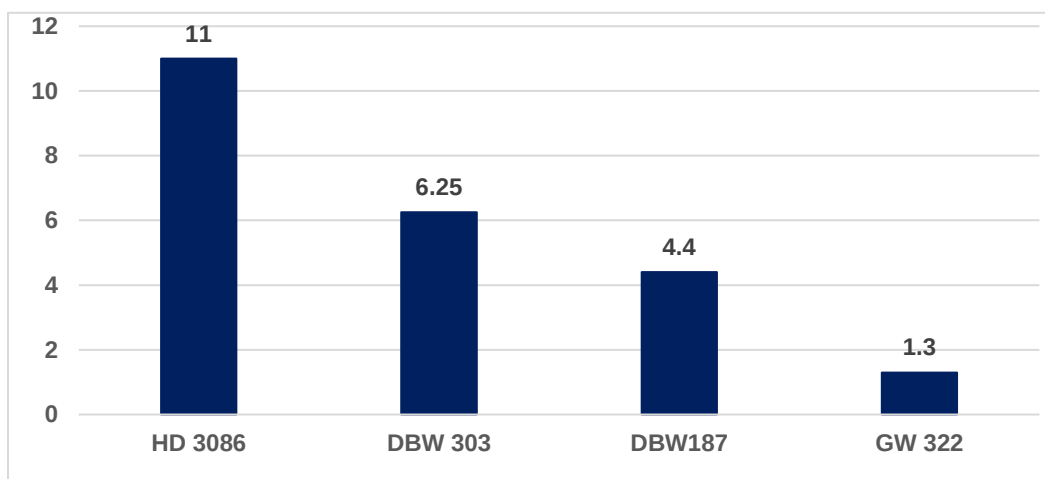


Fig 2: Per cent gain in yield of DBW 377 over the check varieties

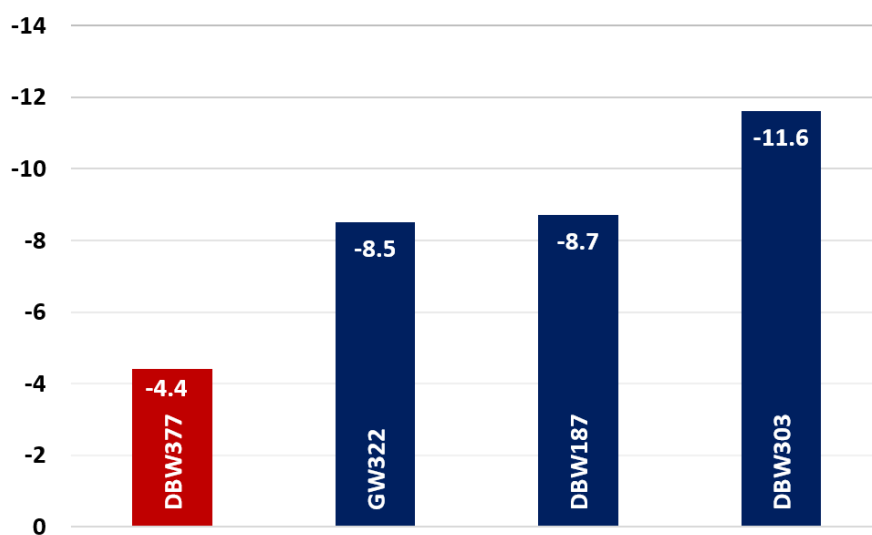


Fig3: Loss under (%) over Rec. NPK Over150%RDF+GR of DBW 377 along with check varieties in agronomic trials

Proposal for Release of Wheat Variety **DBW 377** for Irrigated Early Sown, High Fertility conditions of the **Central Zone** comprising of whole of Madhya Pradesh, Chhattisgarh, Gujarat, and Kota & Udaipur division of Rajasthan by **Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops**

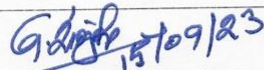
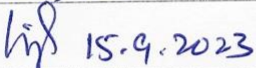
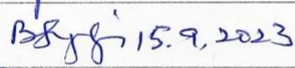
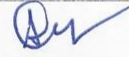
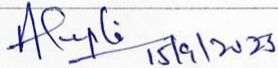
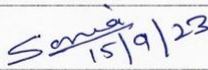
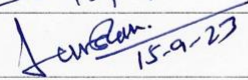
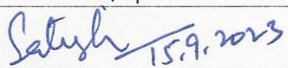
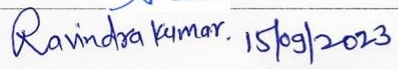
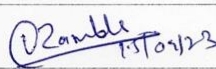
1	Name of the crop and species	: Wheat (<i>Triticum aestivum</i> L.)
2	a) Name of the variety under which tested in AICRP trials	: DBW 377
	b) Proposed name of the variety	: Karan Bold
3	Sponsored by (institute)	: Director, ICAR-Indian Institute of Wheat and Barley Research, Karnal Haryana- 132001
4	a) Institution or agency responsible for developing variety (with full address)	: ICAR-Indian Institute of Wheat and Barley Research, Karnal Haryana- 132001
	b) Name of the person who helped in the development of the variety	: Developers: Gyanendra Singh : Selection and yield evaluation Vikas Gupta : Selection and yield evaluation Charan Singh : Yield evaluation and DUS trait recording Bhudeva Singh Tyagi : Multi-location Evaluation Amit Kumar Sharma : Basic Seed multiplication Arun Gupta : Recording of DUS Traits Sonia Sheoran : Screening for heat & drought tolerance Sewa Ram : Quality trait evaluation Vishnu Kumar : Multi-location Evaluation Satish Kumar : Evaluation in station trials Chandra Nath Mishra : Recording of ancillary traits Pramod Prasad : SRT for Rusts Ravindra Kumar : Screening for rusts UR Kamble : Basic Seed Production GP Singh : Overall monitoring and guidance
	Technical support	: Ronak Ram, Rajendra Kumar
	Collaborators	: Drs. SC Tripathi, Sudheer Kumar, Poonam Jasrotia, OP Ahlawat and OP Gangwar
5	a) Parentage (with details of its pedigree including variety/ Inbred/A, B and R lines of hybrid has been developed)	: NADI#2*2/6/BECARD#1/5/KIRITATI/4/2*SERI.1B*2/3/KAUZ*2/BOW//KAUZ
	b) Source of material in case of introduction	: NA

	c) DNA profile of variety/inbred/A, B, R line of hybrid vis à-vis check variety/ line	Please see Table No. 6, Figure 1
	d) Breeding method used	: Selection
	e) Breeding objective	: To develop high yielding wheat varieties for irrigated early sown conditions having wider adaptability, better nutrition and better resistance to foliar diseases especially stem and leaf rust.
6	State the varieties which are most closely resemble the proposed variety in general characters	: DBW187, DBW327 and DBW303
7	Recommended productions ecology (Rainfed/Irrigated; high/low fertility; season)	: Early sown, Irrigated conditions of Central Zone
8	Specific area of its adaptation (zones and states for which variety is proposed) and recommended productions ecology	: Central Zone comprising of Comprising whole of Madhya Pradesh, Chhattisgarh, Gujarat, and Kota & Udaipur division of Rajasthan
9	Description of hybrid/variety	:
	a) Plant height	: 87 (74-101) cm
	b) Distinguishing morphological characters	: Please see attached varietal description Annexure I
	c) Maturity (range in number of days) (from seedling/ transplanting to flowering, seed to seed)	: Seed to flowering: 73 days Seed to seed: 124 days (Range: 107-138 days) Details in Table. No.1.2
	d) Maturity group (early, medium and late wherever such classification exists)	: Medium
	e) Reaction to major diseases under field and controlled conditions (reaction to physiological strains/ races/pathotypes/ bio-types to be indicated wherever possible)	: DBW 377 is highly resistant for leaf rust under natural and artificial conditions (as evident from the lower ACI values (ACI-5.2) and resistant against stem rust (ACI-8.2) as compared to checks. Under APR studies, the proposed entry is highly resistant to the predominant races of leaf rust viz., 77-5, 77-9 and 104-2 races. it has shown high resistant reaction also to the black rust at adult plant stage. The variety has shown moderate resistance against Karnal bunt (Avg. 13.4%) as compared to checks. Please see table 3, 3.1a, b, c and 3.2.

	f) Reaction to major pests (under field and controlled condition including store pests)	: Please see Table 4.
	g) Agronomic features (e.g. resistance to lodging, shattering, fertilizer responsiveness, suitability to early or late sown conditions, seed rate etc.)	: DBW 377 was high yielding in agronomical trials both under 150%RDF+FYM +GR (72.21q/ha) and recommended dose of fertilizer (69.03 q/ha). In total it has shown less reduction in yield (4.4%) under RDF over 150%RDF+FYM +GR as compared to checks DBW303(11.6%), GW322(8.5%) and DBW303 (12.8%). It has shown the highest biomass and thousand grains weight over the check and candidate varieties. (Table 2 & 2.1).
	h) Quality of produce	:
	Grain quality	: DBW 377 has high hectoliter weight (79.5), high protein content (11.7%), good chapatti making quality (7.7/10.0) and high biscuit spread factor (8.5). Please see table No. 5 and 5.1
	i) Reaction to stresses	:
11	a) Yield data in coordinated trials (breeding, agronomy, pathology, entomology, quality etc) regional/inter regional district trials year wise (levels of fertilizer application, density of plant population and superiority over local control/standard variety to be indicated (to be attached))	: <i>DBW 377 (63.9 q/ha) has shown significant yield superiority over all the checks under three years of testing in the coordinated trials.</i> <i>It has established superiority over the check varieties HD3086 (11.0%), DBW303 (6.25%), DBW187 (4.4%) and GW322 (1.3%).</i> <i>DBW 377 also had the high frequency of 10 out of 16 times in the first non-significant group indicates its wider adaptability.</i> <i>DBW 377 has shown the potential yield of is 86.4q/ha.</i>
	b) Yield data from national, demonstration/large scale demonstrations (to be attached)	: Not available
12	a) Agency responsible for maintaining breeder seed	: ICAR-Indian Institute of Wheat and Barley Research Karnal-132001
	b) Quantity of breeder seed in stock (kg)	: 20 quintals of breeder seed is available to meet all the requirements of seed chain.

13	Specific recommendations, if any, for seed production (e.g. staggered sowing, plating ratio of parental lines of hybrids in foundation and certified seed production, probable area of seed production)	:	DBW 377 is a high input responsive genotype and performs better under early sown conditions with higher dose of fertilizers (150 % RDF NPK+ 15 t/ha FYM) and application of growth regulators
14	Vivid presentation (field view, close-up of single plant and seed)		Attached overleaf
15a	Whether recommended by any workshop, seminar, conference, state seed committee, etc		Yes, DBW 377 was identified by varietal identification committee during 62 nd All India Wheat & Barley Research Workers' Meet held at MPUA&T, Udaipur and ICAR-Hqtr. Krishi Bhawan, New Delhi on 28.8.2023 and 05.09.2023. <i>(Copy Attached as Annexure-XI)</i>
15b	If so, its recommendations with specific justifications for the release of proposed variety		"Based on high yield superiority and high yield DBW377 was identified for release.
16	Specific area of its adaptation	:	Central Zone comprising of whole of Madhya Pradesh, Chhattisgarh, Gujarat, and Kota & Udaipur division of Rajasthan under irrigated early sown conditions.
17	Acknowledgement of submission of seed sample of variety from NBPGR and IC numbers		Acknowledgement certificate of submission of seed sample of variety DBW 377 is attached as <i>Annexure-X</i> IC No. – IC 650298
18	Package of practices along with attainable yield levels		<i>Please see Table 8</i>
19	Information on acceptability of the variety by farmers/ consumers/ industry		Not available
20	Any other pertinent information		Nil

Signatures of all contributors in the development of DBW377

Name	Signature
Gyanendra Singh	 15/09/23
Vikas Gupta	 15.9.23
Charan Singh	 15.9.2023
Bhudeva Singh Tyagi	 15.9.2023
Amit Kumar Sharma	
Arun Gupta	 15/9/2023
Sonia Sheoran	 15/9/23
Sewa Ram	 15-9-23
Vishnu Kumar	 15/9/23
Satish Kumar	 15.9.2023
Chandra Nath Mishra	 15/9/23
Pramod Prasad	
Ravindra Kumar	 15/09/2023
UR Kamble	 15/09/23
GP Singh	

Proposed by


15-9-23
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Senior Scientist (Plant Breeding)
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निदेशक / Director
भा.कृ.अनु.प.-भारतीय गेहूँ एवं जौ अनुसंधान संस्थान
ICAR-Indian Institute of Wheat & Barley Research
करनाल-132001(भारत) / KARNAL-132001 (INDIA)

Checklist for proforma for submission of proposal for release of crop - variety to central sub-committee on crop standards notification and release of varieties

Details/document	Attached	
	Yes	No
Parentage with details of its pedigree including source from which variety/Inbred/A, B and R lines of hybrid has been developed	Yes	No
Source of material in case of introduction (IC/EC numbers provided by NBPGR)	Yes	No
Flow chart of details of development of variety/ parental lines of hybrids	Yes	No
Molecular/ DNA profile of variety/hybrid/A, B, R line of hybrid vis-à-vis check variety/ line (details of unique amplicons that distinguishing markers along with photographs	Yes	No
Detailed description of hybrid/variety	Yes	No
Detailed description of the parental lines of hybrid	Yes	No
Yield data and other data on diseases, insect-pest, quality etc. from coordinated trials	Yes	No
Yield data from national, demonstration/large scale demonstrations	Yes	No
Specific recommendations, if any, for seed production (e.g. staggered sowing, plating ratio of parental lines of hybrids in foundation and certified seed production, probable area of seed production etc.)	Yes	No
Vivid presentation (field view, close-up of single plant and seed) with the help of photographs of the variety)	Yes	No
Recommendation of workshop, conference	Yes	No
Acknowledgement of submission of seed sample of variety/hybrid/ A, B and R lines of hybrid submitted to NBPGR	Yes	No
Package of practices	Yes	No
Proforma signed by all co-authors and Head of Organization	Yes	No
Any other pertinent information	Yes	No

G. Singh
15/09/23

Signature of Head of Institution

DBW 377
Varietal Description Traits

1.	Growth habit	Intermediate
2.	Anthocyanin pigmentation of a) Coleoptile b) Leaf Sheath c) Auricle (at flag leaf stage)	Green Absent Absent
3.	Foliage colour (Boot stage)	Green
4.	Leaf width (Boot stage)	Medium
5.	Average days to heading	~73 days
6.	Average days to maturity	~124 days
7.	Waxiness at ear emergence a) Flag leaf b) Flag leaf sheath c) Ear d) Peduncle	Medium Medium Medium Strong
8.	Peduncle Shape	Straight
9.	Average plant height	87 cm
10.	Ear colour at maturity	White
11.	Ear shape	Tapering
12.	Ear density	Medium
13.	Awns length	6.5cm
14.	Awns colour (at maturity)	White
15.	Glume shoulder width and shape	Narrow elevated
16.	Glume beak length	Medium
17.	Glume pubescence	Absent
18.	Grain:- a) Colour b) Texture c) Crease width d) Germ width e) Brush hair length f) Shape g) Size h) Avg. 1000-grain weight	Amber Semi-hard Round Medium Medium Ovate very large ~48g

Table1: Summary grain yield data of Coordinated Varietal Trials

Name of the proposed variety: DBW 377

Adaptability Zone: CZ

Production condition: Irrigated Early sown

<i>Item</i>	<i>Year of testing</i>	<i>No. of trials</i>	<i>Proposed variety DBW 377</i>	<i>Checks</i>				<i>CD</i>
				<i>HD 3086</i>	<i>DBW187</i>	<i>GW 322</i>	<i>DBW 303</i>	
<i>Mean Yield q/ha</i>	2020-21	5	66.3(1)	55.8(21)	60.5(7)	-	-	4.6
	2021-22	6	61.6(1)	59.0(6)	60.9(3)	60.6(4)	59.9(5)	1.9
	2022-23	5	64.2(4)	-	62.2(5)	65.9(3)	60.4(6)	2.0
	Weighted Mean	-	63.9	57.5	61.2	63.0	60.1	-
<i>% Increase / decrease over checks & qualifying varieties</i>	2020-21	-		18.8	9.6	1.7	2.8	-
	2021-22	-		4.4	1.14	-2.6	6.29	-
	Mean			11.0	4.4	1.3	6.25	-
<i>Frequency in top NS group</i>	2020-21	-	4/5	1/5	3/5	-	-	-
	2021-22	-	3/6	3/6	4/6	2/6	2/6	-
	2022-23	-	3/5	-	2/5	3/5	1/5	-
	Total	-	10/16	4/11	9/16	5/11	3/11	-

* Significant yield advantage.

Table 1.1: Yield data (q/h) of coordinated trials at individual locations over three years

Proposed Variety: DBW 377

Adaptability Zone: CZ

Production conditions: Irrigated Early sown

SPL-HYPT-IR-ES-TAS-CZ 2020-21						
Location	Proposed variety DBW 377	Checks				CD
		HD 3086	DBW 187	DBW 303	GW 322	
Gwalior	81.2(3)	71.6(10)	75.4(8)	-	-	11.3
Indore	51.5(7)	50.1(11)	52.6(5)	-	-	5.5
Jabalpur	70.3(3)	47.5(15)	44.8(17)	-	-	14.1
Vijapur	55.4(10)	38.4(24)	55.5(9)	-	-	12.6
Udaipur	73.1(8)	71.5(9)	74.0(3)	-	-	8.4
Mean	66.3	55.8	60.5	-	-	4.6
Frequency	4/5	1/5	3/5	-	-	
2021-22						
Jabalpur (BISA)	80.1(3)	74.2(5)	76.8(4)	80.3(2)	83.2(1)	7.6
Jabalpur	63.4(1)	54.0(5)	53.9(6)	51.5(7)	59.1(3)	3.0
Junagadh	53.1(5)	44.0(7)	60.1(3)	56.8(4)	60.5(2)	5.0
Durgapura	54.7(5)	56.3(3)	56.4(2)	58.9(1)	51.0(7)	3.5
Udaipur	55.5(5)	62.9(1)	57.5(4)	54.8(6)	57.9(3)	4.7
Bilaspur	62.8(2)	62.7(3)	60.7(5)	57.2(6)	52.0(7)	4.7
Mean	61.6	59	60.9	59.9	60.6	1.9
Frequency	3/6	3/6	4/6	2/6	2/6	
2022-23						
Indore (MP)	53.4(4)	-	52.9(5)	51.5(6)	55.7(1)	6.2
Powarkheda (MP)	47.3(4)	-	45.5(5)	43.4(6)	59.3(1)	3.6
Jabalpur-BISA (MP)	86.4(6)	-	88.5(2)	86.5(5)	92.0(1)	4.8
Junagadh (GJ)	65.8(3)	-	62.7(5)	64.8(4)	60.2(6)	3.2
Vijapur (GJ)	67.9(3)	-	61.4(5)	55.8(6)	62.1(4)	5.3
Mean	64.2	-	62.2	60.4	65.9	2.0
Frequency	3/5		2/5	1/5	3/5	
Total Frequency	10/16	4/11	9/16	5/11	3/11	

Table1.2 Data on other important characters

Name of the proposed variety: DBW 377

Adaptability Zone: CZ

Production conditions Irrigated Early sown

Year	Proposed variety DBW 377		Checks							
			HD 3086		DBW187		DBW303		GW322	
	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean
Heading (days)										
20-21	64-86	76	64-83	72	61-80	71	-	-	-	-
21-22	57-85	72	50-84	69	49-81	68	47-83	68	56-80	68
22-23	57-85	71	-	-	50-81	66	54-81	65	55-77	66
Mean	57-86	73	50-84	71	49-81	68	47-83	67	55-80	67
Maturity (days)										
20-21	107-138	126	108-138	124	108-134	123	-	-	-	-
21-22	111-131	124	109-133	122	107-130	120	111-130	122	108-129	121
22-23	103-134	122	-	-	100-129	119	106-129	119	98-130	119
Mean	107-138	124	108-138	123	100-134	121	106-130	121	98-130	120
Plant height (cm)										
20-21	77-93	85	67-95	79	75-95	88	-	-	-	-
21-22	76-101	89	68-103	88	77-113	93	72-100	89	74-100	87
22-23	74-98	86	-	-	78-103	89	76-95	86	76-97	87
Mean	74-101	87	67-103	84	75-113	90	72-100	88	74-100	87
1000- grains weight (g)										
20-21	45-56	50	41-44	42	44-52	47	-	-	-	-
21-22	38-52	45	31-48	41	38-53	46	31-46	40	31-46	41
22-23	40-51	48	-	-	44-51	47	37-45	41	39-48	43
Mean	38-56	48	31-48	42	38-53	46.5	31-46	41	31-48	42

Table 2. Adaptability to Agronomic Variables (2022-23)

Name of the proposed variety: DBW 377

Adaptability Zone: CZ
Production conditions: Irrigated Early Sown

Experiment	Agronomic conditions	Proposed Variety <i>DBW377</i>	Checks		
Nutrient management			DBW187	DBW303	GW322
Yield (q/ha)	RDF (22-23)	69.03	66.41	65.18	65.63
	150% + FYM+GR (22-23)	72.21	72.80	73.74	71.73
	Mean	70.62	69.61	69.46	70.62
% loss under Rec. NPK over 150% Rec. NPK + GR		-4.4	-8.7	-11.6	-8.5

Data based on agronomical trails conducted at four centers in NWPZ (BISA Jabalpur, Jabalpur, Udaipur and Vijapur)

Table 2.1a: Adaptability to changes in agronomic conditions (Centre wise) 2022-23

Name of the proposed variety: DBW 377

Adaptability Zone: CZ

Production conditions: Irrigated Early Sown

Location	Proposed Variety <i>DBW 377</i>	Check varieties		
		DBW187	DBW303	GW322
Recommended NPK				
BISA Jabalpur	88.60	89.23	86.57	89.23
Jabalpur	74.98	71.31	70.47	73.58
Udaipur	60.53	53.27	50.50	49.87
Vijapur	52.0	51.83	53.17	49.38
Mean	69.03	66.41	65.18	65.63
150% Recommended NPK+GR				
BISA Jabalpur	88.73	88.07	86.53	88.07
Jabalpur	84.39	77.82	76.67	80.05
Udaipur	54.93	65.53	69.60	59.90
Vijapur	60.79	59.79	62.17	58.92
Mean	72.21	72.80	73.74	71.73

Table 2.1c: Data on ancillary characters under different Input Conditions

Name of the proposed variety: DBW 377

Adaptability Zone:CZ

Experiment: Nutrient Management

Production conditions: Irrigated Early Sown

Agronomic condition	Proposed variety DBW377		Qualifying varieties	
		DBW187	DBW303	GW322
Ear head/sq. meter				
Rec. NPK	370	365	379	372
150% Rec.NPK+GR	433	422	425	421
Mean	402	394	402	397
Grains/Ear				
Rec. NPK	38.52	37.51	38.00	39.59
150% Rec.NPK+GR	33.57	35.98	37.74	38.45
Mean	36.0	36.7	37.9	39.0
Thousand Grains Weight				
Rec. NPK	48.41	48.62	45.15	44.33
150% Rec.NPK+GR	49.80	48.29	46.20	44.36
Mean	49.1	48.5	45.7	44.3
Plant Height (cm)				
Rec. NPK	93.6	95.9	93.4	90.9
150% Rec.NPK+GR	86.8	87.7	84.7	86.0
Mean	90.2	91.8	89.1	88.5
Biomass (q/ha)				
Rec. NPK	143.4	141.9	138.9	135.7
150% Rec.NPK+GR	156.8	156.8	157.5	154.0
Mean	150.1	149.4	148.2	144.9
Physiological Maturity (days)				
Rec. NPK	124	121	123	122
150% Rec.NPK+GR	125	123	123	123
Mean	125	122	123	123

Table 3: Reaction to Major diseases

Name of the proposed variety: DBW 377

Adaptability Zone: CZ

Production conditions: Irrigated Early sown

Disease/ condition	Year	Proposed variety DBW377		HD 3086		DBW 187		DBW303		GW 322	
		HS	ACI	HS	ACI	HS	ACI	HS	ACI	HS	ACI
Brown Rust											
Natural	20-21	0	-	0	-	0	-	-	-	-	-
	21-22	0	-	0	-	0	-	0	-	0	-
	22-23	0	-	0	-	0	-	0	-	0	-
Artificial	20-21	30S	4.3	60S	17.7	40S	5.3	-	-	-	-
	21-22	20MS	6.8	20S	10.4	20MS	5.6	15MR	1.7	30S	14.4
	22-23	20S	4.6	20S	14.6	10S	3.2	40S	8.1	40S	11.2
Avg. ACI			5.2		14.23		4.7		4.9		12.8
Black Rust											
Natural	20-21	0	-	0	-	0	-	0	-	0	-
	21-22	20MR	-	60S	-	10MR	-	10MS	-	40S	-
	22-23	0	-	0	-	0	-	0	-	0	-
Artificial	20-21	40MS	11.5	80S	35.5	20S	8.8	-	-	-	-
	21-22	20MS	3.8	40S	19.9	10S	5.3	10S	4.6	20S	8
	22-23	20S	9.3	60S	38	20S	9.2	20S	8.6	20S	9
Avg. ACI			8.2		31.3		7.8		6.6		8.5

Table 3.1a: Race specific APR response for stem (black) and leaf (brown) rusts at IIWBR RS Shimla (2021-23)

Genotype	Black rust				Brown rust					
	11		40A		77-5		77-9		104-2	
	21-22	22-23	21-22	22-23	21-22	22-23	21-22	22-23	21-22	22-23
DBW377	30S	20MS	20MS	0	0	0	0	TS	0	0
HD 3086(C)		30MSS		0		40MS		0R		0R
DBW187(C)		20MS		TMS		NG		10S		0R
DBW303(C)		5MS		5MSS		NG		TS		NG
GW 322(C)		0		5MS		0R		80S		0R

Table 3.1b: SRT Data on stem (black) rust

Name of the proposed variety: DBW 377

Adaptability Zone:

CZ

Production conditions: Irrigated Early sown

SRT Data on stem (black) rust 2020-21

Pathotype	11	11A	15-1	21	21A-2	24A	34-1	40A	40-1	40-2	40-3	42B	117	117A	117A-1	117-1	117-2	117-3	117-6	122	184	184-1	295
DBW377	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
HD 3086(C)	S	S	S	R	R	R	R	MR	MR	S	S	MR	R	MS	R	R	MS	S	R	S	MR	R	MS
DBW187(C)	MR	R	R	R	R	R	R	R	R	R	S	MR	R	MR	R	R	R	R	R	R	R	R	R
DBW303(C)	R	R	R	R	R	R	R	R	R	R	R	MR	R	R	R	R	R	R	R	R	R	R	R
GW 322(C)	MR	R	R	R	R	R	R	MR	R	R	MR	R	R	S	S	R	R	MR	R	R	R	R	MR

SRT Data on stem (black) rust 2021-22

Pathotype	11	11A	15-1	21	21A-2	24A	34-1	40A	40-1	40-2	40-3	42B	117	117A	117A-1	117-1	117-2	117-3	117-6	122	184	184-1	295
DBW377	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
HD 3086(C)																							
DBW187(C)																							
DBW303(C)																							
GW 322(C)																							

SRT Data on stem (black)rust 2022-23

Pathotype	11	11A	15-1	21	21A-2	24A	34-1	40A	40-1	40-2	40-3	42B	117	117A	117A-1	117-1	117-2	117-3	117-6	122	184	184-1	295
DBW377	R	R	R	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R
HD 3086(C)	R	R	R	MR	R	R	R	R	R	R	MS	S	MS	R	R	R	R	R	R	R	R	R	R
DBW187(C)	S	S	R	MS	R	R	R	R	R	S	S	MR	R	R	R	R	R	R	R	R	R	R	S
DBW303(C)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
GW 322(C)	R	R	R	S	R	R	R	R	R	S	S	MR	R	R	R	R	R	R	R	R	R	R	R

Table 3.1b: SRT Data on Leaf (Brown) rust

Name of the proposed variety: DBW 377

Adaptability Zone:

CZ

Production conditions: Irrigated Early sown

SRT Data on leaf (brown) rust 2020-21

Pathotype	11	12-2	12-3	12-5	12-7	16-1	77	77-1	77-2	77-5	77-7	77-8	77-9	77-10	77A-1	104-1	104-2	104-4	106	107-1	108-1	162A	162-1
DBW377	R	R	R	R	R	R	R	R	R	R	R	R	MR	MR	R	R	R	R	R	R	R	R	R
HD 3086(C)	R	S	R	R	S	R	R	S	S	S	S	R	S	S	R	S	S	R	R	R	R	R	M
DBW187(C)	R	R	R	R	R	R	R	R	R	S	MS	R	NG	R	R	R	R	R	R	R	R	R	R
DBW303(C)	R	R	S	R	MS	R	MR	S	R	S	R	R	R	R	S	R	R	R	R	R	R	R	R
GW 322(C)	R	R	R	R	R	R	S	MS	S	S	S	R	S	S	R	R	R	S	R	R	R	R	R

SRT Data on leaf (brown) rust 2021-22

Pathotype	11	12-2	12-3	12-5	12-7	16-1	77	77-1	77-2	77-5	77-7	77-8	77-9	77-10	77A-1	104-1	104-2	104-4	106	107-1	108-1	162A	162-1
DBW377	R	R	R	R	R	R	R	R	R	R	R	R	MS	MS	R	R	R	R	R	R	R	R	R
HD 3086(C)																							
DBW187(C)																							
DBW303(C)																							
GW 322(C)																							

SRT Data on leaf (brown) rust 2022-23

Pathotype	11	12-2	12-3	12-5	12-7	16-1	77	77-1	77-2	77-5	77-7	77-8	77-9	77-10	77A-1	104-1	104-2	104-4	106	107-1	108-1	162A	162-1
DBW377	R	R	R	R	R	R	MS	S	S	S	S	R	S	S	S	R	R	R	R	R	R	R	R
HD 3086(C)	R	R	R	R	R	R	R	R	MS	MS	R	R	MR	S	R	R	R	R	R	R	R	R	R
DBW187(C)	R	MX	R	S	S	R	R	S	MX	S	S	R	S	S	R	MX	S	S	R	R	R	R	R
DBW303(C)	NG	R	R	R	S	R	R	S	S	S	S	MS	S	S	R	R	S	MX	R	R	R	R	R
GW 322(C)	S	R	MR	S	S	R	S	S	S	S	R	MS	S	S	S	R	S	S	MS	MS	S	MS	S

Table 3.1c. Gene Postulation based on SRT data

		2020-21		2021-22		2022-23	
Pathotype		Stem Rust (black)	Leaf Rust (brown)	Stem Rust (black)	Leaf Rust (brown)	Stem Rust (black)	Leaf Rust (brown)
Proposed Variety	DBW377	<i>R</i>	<i>Lr23+1+</i>	<i>R</i>	<i>R</i>	<i>R</i>	<i>Lr13+1+*</i>
Check Varieties	HD 3086(C)	<i>Sr7b+2+</i>	<i>Lr23+10+3+</i>			<i>Sr7b+2+</i>	<i>Lr13+10+3+</i>
	DBW187(C)	<i>Sr5+11+</i>	<i>Lr23+10+1+</i>			<i>Sr5+11+</i>	<i>Lr13+*</i>
	DBW303(C)	<i>R</i>	<i>Lr13+</i>			<i>R</i>	<i>Lr13+</i>
	GW 322(C)	<i>Sr11+2+</i>	<i>Lr13+1+</i>			<i>Sr11+2+</i>	<i>-*</i>

Table 3.2: Reaction to other diseases

Name of the proposed variety: DBW 377

Adaptability Zone: CZ
Production conditions: Irrigated Early sown

Disease/ Condition	Year	Proposed variety		Checks							
		DBW377		HD3086		DBW187		DBW303		GW322	
		HS	AV	HS	AV	HS	AV	HS	AV	HS	AV
Powdery Mildew (0-9)											
Artificial	2020-21	7	5	9	6	9	4	9	4	9	6
	2021-22	7	5								
	2022-23	6	4	6	3	7	5	5	3	6	3
Leaf Blight(dd)											
Artificial	2020-21	89	35	78	46	78	46	78	35	79	46
	2021-22	89	47								
	2022-23	99	46	89	57	99	57	79	46	99	45
Karnal Bunt%											
Artificial	2020-21	18.5	6.9	50.3	15.7	13.5	6.1	34.2	10.7	8.5	4.8
	2021-22	23.6	9.6								
	2022-23	58.3	13.4	40.5	10	40.8	11.4	45.1	13.6	64.4	15.5
Flag Smut%											
Artificial	2020-21	6.6	3.4	7.2	2.4	7.2	2.4	2.5	0.8	9.7	8.6
	2021-22	8.3	5.2								
	2022-23	60	18.2	8.1	7.1	9.1	5.2	11.1	4.2	10.8	4.3
Fusarium head blight (0-5)											
Artificial	2020-21	4		4		4		4		5	
	2021-22	4									
	2022-23	5		5		4.0		4.0		4	
Foot Rot (%)											
Artificial	2020-21	35		0		0		85.0		35.0	
	2021-22	31.3									
	2022-23	27.78		31.3		20.0		38.89		38.89	

-HS=Highest score, AV = Average score

Table 4: Reaction to insect pests

Name of the proposed variety: DBW 377

Adaptability Zone: NWPZ

Production conditions: Irrigated Early Sown

Disease/ condition	Year	Proposed variety		Check varieties							
		DBW377		HD3086		DBW187		DBW303		GW322	
		HS	AV	HS	AV	HS	AV	HS	AV	HS	AV
Foliar Aphid											
Artificial	2020-21	4.5	5.0	4.8	5.0	4.3	5.0	4.8	5.0	4.8	5.0
	2021-22	4.6	5.0	4.0	4.0	4.0	4.0	4.7	5.0	4.7	5.0
	2022-23	4.3	5.0	4.3	5.0	4.3	5.0	4.3	5.0	3.5	4.0
Shoot fly incidence (%)											
Artificial	2020-21		4.18		4.76		3.01		7.79		3.70
	2021-22		7.32		11.5		9.0		10.08		12.37
	2022-23		7.76								
Brown mite (No. of mites/10 cm ² area)											
Artificial	2020-21	12.7		10.0		12.3		10.0		11.3	
	2021-22	12.3									
	2022-23	14.0		10.33		12.67		11.67		10.67	

-HS=Highest score, AV = Average score

Table 5: Data on important quality characteristics

Name of the proposed variety: DBW 377

Adaptability Zone: CZ

Production conditions: Irrigated, Early Sown

Grain characteristics

Year	Proposed variety DBW377	Checks			
		HD3086	DBW187	DBW303	GW322
Grain Appearance (max score 10)					
2020-21	5.5	5.9	5.6		
2021-22	5.8	6.6	6.2	6.2	6.0
2022-23	7.1	-	7.3	7.1	7.2
Mean	6.1	6.3	6.4	6.7	6.6
Hectolitre weight (kg)					
2020-21	78.1	80.4	80.3		
2021-22	79.8	81.6	81.3	82.8	81.7
2022-23	80.5	-	80.4	82.6	81.6
Mean	79.5	81.0	80.7	82.7	81.7
Protein (%)					
2020-21	12.8	11.6	12.6		
2021-22	11.5	11.5	11.4	11.2	10.5
2022-23	10.9	-	11.2	11.1	10.2
Mean	11.7	11.6	11.7	11.2	10.4
Sedimentation (ml)					
2020-21	53.9	49.8	61.0		
2021-22	53.4	57.2	56.7	48.4	39.5
2022-23	53.0	-	59	56	40
Mean	53	54	59	52	40
Hardness Index					
2020-21					
2021-22	76	87	83	80	83
2022-23	78	-	84	83	88
Mean	77	87	84	82	86
Phenol test					
2020-21	8.0	7.8	7.5		
2021-22	6.5	5.4	6.0	5.4	5.4
2022-23	7.1	-	6.8	5.1	5.5
Mean	7.2	6.6	6.8	5.3	5.5

Table 5.1: Data on other quality characteristics (2022-23)

Chapati, bread and biscuit quality

Trait	Proposed variety DBW 377	Checks		
		DBW187	DBW303	GW322
Chapati quality (max. score 10)	7.7	7.9	8.1	8.0
Bread loaf volume (ml)	435	450	465	408
Bread quality (max. score 10)	4.6	5.4	5.5	4.2
Biscuit Spread factor	8.5	8.3	8.2	8.8
Wet Gluten (%)	26.7	26.0	28.0	25.7
Dry Gluten (%)	8.9	9.2	9.4	8.5
Gluten Index (%)	79	92	75	79

Nutritional quality

Year	Propose variety DBW 377	Checks		
		DBW187	DBW303	GW322
Fe content				
2021-22	37.7	36.6	36.2	34.2
2022-23	35.7	36.1	38.0	35.2
Mean				
Zn Content				
2021-22	36.4	35.5	38.5	40.6
2022-23	34.4	34.5	36.0	38.1
Mean				

High molecular weight glutenin subunits

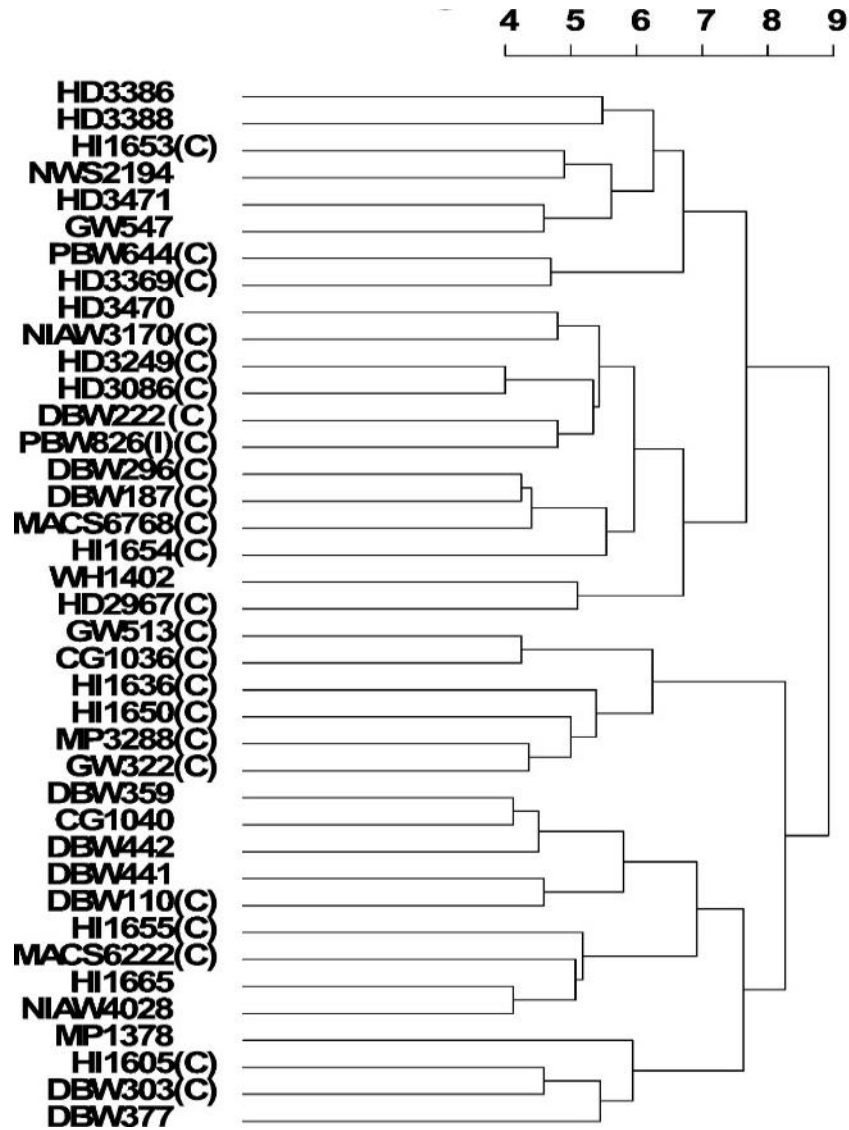
Trait	Proposed variety DBW377	Checks		
		DBW187	DBW303	GW322
Glu-D1	2+12	5+10	5+10	2+12
Glu-A1	2*	2*	2*	2*
Glu-B1	7	17+18	7	7+8
Glu-1 Score	6	10	8	8

Annexure-VII

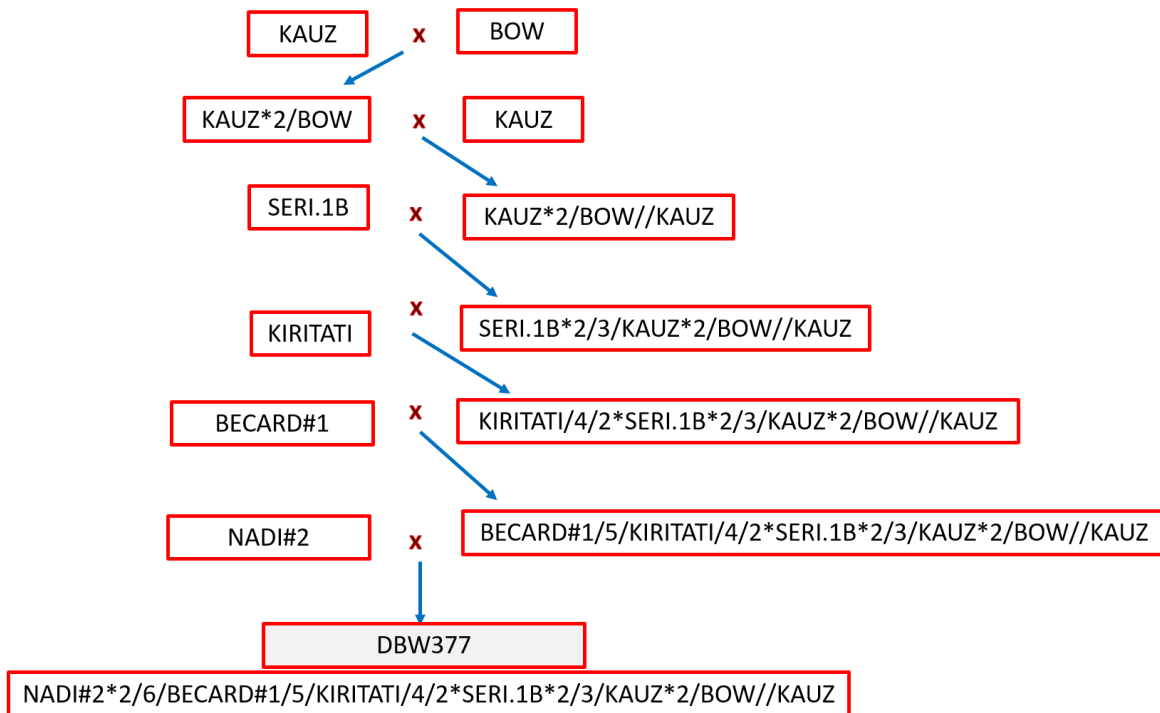
Table 6: Molecular Marker Profile of SPL-HYPT Entries and Checks of 2022-23

S.N.	Marker/ Allele Size	<i>WxB1</i>		<i>DREB</i>	<i>Vp1B3</i>		<i>Lr10</i>	<i>Lr34</i>		<i>Ppd-D1</i>		<i>VrnA1A</i>	<i>VrnA1bR2</i>	<i>DuPW004</i>		<i>Almt</i>		
	Genotype	425	690	700	569	652	300	150	230	228	414	965	1068	250	350	426	706	836
1	DBW377	+	+	+	-	+	-	-	+	+	-	-	-	+	-	+	-	-
2	DBW187	+	+	+	-	+	-	-	+	+	-	-	-	+	+	+	-	-
3	DBW303	+	-	+	+	-	-	-	+	+	-	-	-	+	-	-	-	-
4	GW322	+	+	+	+	-	-	-	+	+	-	+	-	+	+	-	-	-

Figure 1. Dendrogram showing relative diversity of genotypes under the Advanced varietal Trial(second year entries and checks) 2022-23



Pedigree tree of bread wheat variety DBW 377



Annexure-VIII

Table: 8. DBW377 package of practices along with attainable yield levels in Central Zone.

1	Suitability of the variety for the area:	Central Zone (CZ) of India under irrigated early sown conditions.
2	Selection of field and/land preparation:	Flat fertile soil, pre-sowing irrigation followed by ploughing with disc harrow, tiller and leveler at field capacity for optimum field conditions.
3	Seed treatment:	Vitavax (Carboxin 37.5% + Thiram 37.5%) @ 2-3gm/kg seed.
4	Sowing time:	1-10 November
5	Seed rate/sowing method:	100 Kg/ha. Line sowing with spacing of 20 cm between the rows.
6	Fertilizer doses:	Best performance can be achieved under 180:90:60 Kg/ha N:P:K. + FYM @ 15 tonnes/ha.
7	Growth regulators:	Chlormequat chloride (Lihocin) @ 0.2%+ Tebuconazole (Folicur 430 SC) @ 0.1% of commercial product dose (Tank mix application) at First Node and Flag leaf the genotype's response was highest.
8	Weed control:	For the control of broad-leaved weeds 2,4-D @500g/ha or metasulfuron @4g/ha or carfentranzone @ 20g/ha can be sprayed using about 300 litres of water/ha. For the control of grasses isoproturon @1000g/clodinafop @60g/pinoxaden 50 g/ha/fenoxaprop @ 100g/sulfosulfuron @25g/ha/pyroxasulfone 127.5 g/ha should be used. In multiple herbicide resistant <i>P. minor</i> infested areas use pre-emergence pendimethalin 1500 g/ha or pyroxasulfone 127.5 g/ha. For the control of complex weed flora combination of isoproturon with 2,4-D/metsulfuron or sulfosulfuron with metsulfuron or grass herbicide followed by broadleaved herbicide should be applied at 30-40 DAS at sufficient soil moisture.
9	Pest and Disease control:	Variety is resistant to leaf and stem rust and other diseases. However, for the control of rusts, Karnal bunt and powdery mildew, apply propiconazole/ triademefone/ tebucanazole @ 0.1% (1ml/litre) as foliar spray twice after disease appearance at 15 days interval.
10	Irrigation:	4-6 irrigations. First at 20-25 DAS and thereafter at 20 days interval.
11	Harvesting:	Harvest and thresh as soon as fully ripe. The grain should be thoroughly dried before storage.
12	Quality:	DBW 377 has high hectoliter weight (79.5), high protein content (11.7%), good chapatti making quality (7.7/10.0) and high biscuit spread factor (8.5).
13	Mean Yield:	63.9 q/ha
14	Potential Yield:	86.4 q/ha

Note: These are standard package of practices which may vary with environmental fluctuations.



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Principal Scientist and Head

DGC/RV/September/2023

Date: 13.09.2023

ACKNOWLEDGEMENT CERTIFICATE

This is to acknowledge the receipt of seed material of below mentioned varieties of wheat from **Dr Gyanendra Singh**, Director, ICAR – Indian Institute of Wheat & Barley Research, Post Box 158, Agrasain Marg, Karnal 132001 (Haryana), in part of requirement for notification and release of varieties by “**Central Sub-Committee on Crop Standards, Notification and Release of Varieties of Agri-Horticultural Crops**”. The material has been assigned with the national identity number, which should be used in all future correspondence.

Crop	Released Variety	National Identity
Wheat	DBW 359	IC 650297
	DBW 377	IC 650298
Barley	DWRB 219	IC 650299

Anju Mahendru Singh

(Anju Mahendru Singh)

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Copy to:

Deputy Commissioner (QC) & Member Secretary, Central Sub-Committee on Crop Standards, Notification and Release of Varieties in Agricultural Crops, F-212, Shastri Bhawan, Ministry of Agriculture, Govt. of India, New Delhi 110001, for information and early notification please.

SPECIAL SESSION
Varietal Identification Committee Meeting

August 28, 2023	Chairman:	Dr. T R Sharma, DDG(CS)
September 05, 2023	Member Secretary:	Dr. Gyanendra Singh, Director, IIWBR
	Venue:	Dean's Committee Room, RCA, MUAT, Udaipur Office of DDG (CS), ICAR Hqrs., KB, New Delhi

The meeting of Varietal Identification Committee of Wheat & Barley was held on 28 August 2023 during 62nd AGM of All India Coordinated Research Project (AICRP) on Wheat & Barley under the Chairmanship of Dr. T R Sharma, DDG (CS). The following members participated in the meeting:

1. Dr. T R Sharma, DDG (CS), ICAR, Krishi Bhavan, New Delhi (*Chairman*)
2. Dr. S K Pradhan, ADG (FFC), ICAR, Krishi Bhawan New Delhi
3. Dr. D K Yadav, ADG (Seed), ICAR, Krishi Bhawan New Delhi
4. Dr. P K Singh, Agriculture Commissioner, GOI, MOAFW (*Online*)
5. Dr. Sanjay Kumar, Director, ICAR-IISS, Mau Nath Bhanjan
6. Dr. M S Saharan, Head, Plant Pathology Division, IARI, New Delhi
7. Dr. P K Tyagi, GM (Production), NSC, Beej Bhawan, Pusa Campus, New Delhi
8. Dr. Arvind Verma, Director Research, MPUAT, Udaipur
9. Dr. G P Singh, Director, ICAR-NBPGR, New Delhi (*Online*)
10. Dr. Ravish Chatrath, Emeritus Scientist, Karnal
11. Dr. S K Sharma, MD, Signet Crop Science India Pvt., Ltd
12. Dr. Gyanendra Singh, Director, ICAR-IIWBR, Karnal (*Member Secretary*)

All Principal Investigators (PI) from IIWBR, Karnal also attended as Non-Voting members.

The wheat & barley varietal proposals were examined during this meeting. Some of the proposals were considered for identification in this meeting.

Subsequently, to reconsider the pending proposals, a meeting was held on 05.09.2023 at 5:00 pm, in the Office of the Deputy Director General (CS), ICAR Hqrs., Krishi Bhavan, New Delhi. The meeting was attended by:

1. Dr. T R Sharma, DDG (CS), ICAR, Krishi Bhavan, New Delhi (*Chairman*)
2. Dr. P K Singh, Agriculture Commissioner, GOI, MOAFW
3. Dr. M S Saharan, Head, Plant Pathology Division, IARI, New Delhi
4. Dr. Ravish Chatrath, Emeritus Scientist, Karnal
5. Dr. Gyanendra Singh, Director, ICAR-IIWBR, Karnal (*Member Secretary*)

Other members were apprised of the concerns and their input was taken before the decisions taken on the suitability of the proposals. After detailed deliberations, during both the meetings, the following recommendations unanimously, as indicated against each proposal were made:

SN	Name of Variety	Production conditions	Recommendations
North Western Plains Zone (NWPZ): Punjab, Haryana, Delhi, Rajasthan (excluding Kota and Udaipur division), Western Uttar Pradesh (except Jhansi division), Jammu and Kathua district of Jammu & Kashmir, Paonta Valley and Una district of Himachal Pradesh and Tarai region of Uttarakhand.			
1.	HD3386	IR-TS	The variety was identified based on its superior yield and disease resistance .
2.	WH1402	RI-TS	The genotype was identified based on its yield superiority , disease resistance and superior grain quality .
North Eastern Plains Zone (NEPZ): Eastern UP, Bihar, Jharkhand, Orissa, West Bengal, Assam and plains of NE States.			
3.	HD3388	IR-TS	The variety was identified based on its superior yield and disease resistance .

Central Zone (CZ): Madhya Pradesh, Gujarat, Rajasthan and Chhattisgarh states.			
4.	NWS2194	IR-TS	Both the genotypes were considered together. NWS2194 was identified for release due to its heat tolerance (HSI = 0.97) and being highly resistant to black and brown rusts. GW547 was identified as based on its superior grain quality, protein content (12.6%) , sedimentation value (55.2cc) and zinc content (40.5ppm)
5.	GW547	IR-TS	
6.	DBW359	RI-TS	Both the proposals were considered together and both were identified.
7.	CG1040	RI-TS	CG1040 was having yield advantage and superior grain quality. DBW359 had better disease resistance and grain quality such as sedimentation value (55.5cc) and iron content (40.3ppm).
8.	DBW377	ES-HF	The genotype was identified as it had yield advantage to the check varieties and also resistance to wheat blast disease.
Peninsular Zone (PZ): Maharashtra, Karnataka and plains of Tamil Nadu			
9.	MP1378	IR-TS	The proposal was considered by the committee and identified based on its yield superiority and disease resistance.
10.	HI1665	RI-TS	All the three breadwheat genotypes were considered together, and were identified for release based on yield and other parameters as indicated below: HI1665: Protein content (12.0 %) , Low gluten index (44) and high Grain zinc (40.0 ppm) .
11.	DBW359	RI-TS	DBW359: Better disease resistance and grain quality such as sedimentation value (55.5cc) and iron content (40.3ppm).
12.	NIAW4028	RI-TS	NIAW4028: Rust resistance, Protein content (12.4%) , sedimentation value (59.0cc).
13.	UAS478(d)	RI-TS	Both the genotypes were considered together.
14.	HI8840(d)	RI-TS	UAS478(d) was identified based on yield superiority and better grain quality: High yellow pigment content (7.2 ppm). HI8840(d) was identified based on its yield advantage along with superior grain quality: high grain zinc (41.1 ppm) , and excellent yellow pigment (7.3 ppm).
North Western Plains Zone (NWPZ): Punjab, Haryana, Delhi, Rajasthan (excluding Kota and Udaipur division), Western Uttar Pradesh (except Jhansi division), Jammu and Kathua district of Jammu & Kashmir, Paonta Valley and Una district of Himachal Pradesh and Tarai region of Uttarakhand.			
15.	DWRB219	IR-TS	The barley genotypes was identified , based on its yield superiority and malt quality.
Proposals for Area Extension			
16.	DBW327	CZ HF-ES	The variety was recommended for area extension in MP, Gujarat, Rajasthan, Chhattisgarh states.

At the end, the Member Secretary proposed a formal vote of thanks to the Chairman and members of the committee.


Gyanendra Singh
(Member Secretary)


Tilak Raj Sharma
(Chairman)