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# COMPENDIUM OF WHEAT VARIETIES NOTIFIED IN INDIA DURING 2018-2023



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# PREFACE

Wheat is the second important crop in the world and main source of energy for a large section of the population. The production and productivity of wheat have increased 787% and 275% compared to base year 1964-65. The many fold increase in production and productivity can be attributed to development of disease resistant and input responsive varieties for different production conditions of the country. A book titled “Wheat varieties notified in India since 1965” was published in 2018 and documented the notable feature on 448 wheat varieties. In the present bulletin information on 98 wheat varieties was compiled. The information provided in the present bulletin was taken from the proposals. The listed varieties have been categorized on production condition wise along with information about their pedigree, developing institute/universities, notification number and date of release, average yield, potential yield and special features. The researchers, farmers and policy-makers can select the wheat varieties as per their need.

We hope that this bulletin would be useful to farmers researchers, academicians, students, extension workers and seed producers.

**Authors**

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# 1. Introduction

Wheat is one of the important staple foods of nearly 2.5 billion of world population which grown under diverse agro-ecological conditions across the globe. India, being blessed and enriched with a diverse agro-ecological condition, ensuring food and nutrition security to a majority of the Indian population is a major challenge. At present, wheat crop is grown in an acreage of 31.62 million hectares (14% of global area) to produce 109.52 million tonnes (13.64% of world production) with an average national productivity of 34.64 kg/ha during 2020-21 *rabiseason* in India.

In early 20<sup>th</sup> century (during 1904-1905) before the systematic research on wheat, the area (11.51 mha), production (9.72 mt) and productivity (8.45 kg/ha) of wheat was very low. The first systematic research on wheat was started during 1905 with the establishment of Imperial Agricultural Research Institute, Pusa, Bihar. The important wheat varieties *viz.*, Pusa4, Pusa6 and Pusa12 developed first time in India by pure line selection method in indigenous material and further these varieties were used in hybridization programme to developed new genotypes. Later, wheat improvement work was initiated at Lyallpur, Kanpur, Sabour, Powarkheda, Niphad and Pune and developed many outstanding wheat varieties *viz.*, PbC518, PbC591, C273, C281 and C286. In 1935, work on resistance breeding was initiated and developed rust resistant varieties like NP783 and NP784 (resistant to brown rust); NP785 and NP786 (resistant to yellow rust); NP789 and NP790 (resistant to black rust). Later, NP809 resistant to all the three rusts and loose smut of wheat was developed by Dr BP Pal and Dr KC Mehta.

An important milestone in wheat improvement programme was created with the establishment of the 'All India Coordinated Wheat Improvement Project (AICWIP) in 1965 with its headquarters at Indian Agricultural Research Institute (IARI), New Delhi. It provided a landmark in testing of high yielding wheat varieties at national level and laid the foundation for Green Revolution in India which is the biggest technological achievements of the 20<sup>th</sup> century. However it was just a matter of coincidence that the introduction of semi-dwarf genotypes from Mexico and the establishment of AICWIP in India took place simultaneously.

After the initiation of wheat coordinated research project led to the development of many popular varieties *viz.*, C 306, HD 2009, WL 711, UP 262, HUW 234, HD 2189, WH 147, Lok1, HI 617, HD 2285, HD 2329, PBW 343, Raj 3765, PBW 502, HD 2733, DBW 17, PBW 550, GW 273, GW 322, GW 496, HD 2967, HD 3086, DBW187 and WB 2 in bread wheat; and Raj 1555, PBW 34, HI 8498 and PDW 233 in durum wheat. The great success of coordinated research project was possible through the development of large number of high yielding varieties suited to meet the agronomic needs of various agro-ecological wheat growing zones in the country.

Since 1964-65, the coordinated research project contributed significantly in wheat improvement by increasing the area, production and productivity by 13.6 per cent (13.42 million ha to 31.62 million ha), 793 per cent (12.26 million tonnes to 109.92 million tonnes) and 279 per cent (913 to 3464 kg/ha) respectively to the year 2020-21. The overall scenario indicated that wheat production has grown continuously at 4.72 per cent per annum since the project started.

The present outstanding improvement in production and productivity level of wheat is not just

**Table 1.1: Area, production and productivity of wheat in 1904-05, 1964-65 vis-a-vis 2020-21**

Year	Area (m ha)	Production (mt)	Productivity (kg/ha)
2020-21	31.62	109.52	3464
1964-65	13.42	12.26	913
1904-05	11.51	9.72	845

because of area expansion, but also this improvement become possible mainly due to productivity growth attributed to the development of high yielding disease resistant varieties and improved agronomic practices across wheat growing regions in India.

A total of 546 high yielding wheat varieties has been released since 1964-65 to 2022-23 comprising bread, durum and dicoccum wheat suited to different agro-climatic zones of the country. At national level, based on climate, crop duration and soil type, India has been divided into five major wheat growing zones viz., North Western Plains Zone (NWPZ), North Eastern Plains Zone (NEPZ), Central Zone (CZ), Peninsular zone (PZ) and Northern Hills zone (NHZ) (Table 1.2). Among the five zones, NWPZ is the largest and most productive wheat growing zone and holding an area of 12.33 mha followed by NEPZ (8.85 mha), CZ (6.84 mha) and PZ (0.71 mha). These four zones fall in plains areas of Gangetic Plains of northern, central and peninsular parts of India and covers a total of about 28.73 million hectares area of wheat cultivation. NHZ contributes 0.82 million hectares area that covers hills and foothills of the Himalayas region has long winter with low temperature. The Southern Hill zone was merged with PZ from 2015-16 onwards. Each zone has its unique features and agroecologic parameters.

**Table 1.2 Wheat growing mega-zones in India**

Zone	Area
North Western Plains Zone (NWPZ)	Punjab, Haryana, Delhi, Rajasthan (except Kota and Udaipur divisions) and Western UP (except Jhansi division), parts of J&K (Jammu and Kathua distt.) and parts of HP (Una distt. and Paonta valley) and Uttarakhand (Tarai region)
North Eastern Plains Zone (NEPZ)	Eastern Uttar Pradesh, Bihar, Jharkhand, Odisha, West Bengal, Assom and plains of North Eastern States
Central Zone (CZ)	Madhya Pradesh, Chhattisgarh, Gujarat, Rajasthan (Kota and Udaipur divisions) and Uttar Pradesh (Jhansi division)
Peninsular Zone (PZ)	Maharashtra, Karnataka, Andhra Pradesh, Telangana, Goa and Tamil Nadu
Northern Hills Zone (NHZ)	Western Himalayan regions of J&K (except Jammu and Kathua Distt.); Himachal Pradesh (except Una and Paonta Valley); Uttarakhand (except Tarai area); Sikkim and hills of West Bengal and N.E. States

The wheat crop is cultivated primarily under three broad cultural conditions, viz., timely sown irrigated, late sown irrigated and timely sown restricted irrigation, whereas in NHZ the major area under wheat is rainfed (83%) and irrigated area is confined only to valleys. All the three wheat species are cultivated in India. Bread wheat (*Triticum aestivum*) is grown in more than 96% of the total wheat area, while durum (*T. durum*) and dicoccum (*T. dicoccum*) wheat occupy around 4% area. The bread wheat is grown throughout the zones, while durum wheat is mainly grown in CZ and PZ and dicoccum wheat is confined to PZ.



To cater to the need of each agro-climatic condition and cultural conditions, around 353 varieties of wheat have been released and notified by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops (CVRC). Similarly, around 193 wheat varieties released by the State Varietal Release Committee (SVRC) notified under section 5 of Seeds Act, 1966. So far, 462 bread wheat varieties, 73 durum wheat and 7 dicoccum wheat beside 4 triticale varieties have been notified (Table 1.3).

**Table 1.3: Breakup of notified varieties of wheat (upto June 2023)**

<b>Crop species</b>	<b>CVRC</b>	<b>SVRC</b>	<b>Total</b>
Bread wheat (T. aestivum)	293	169	462
Durum (T. durum)	50	23	73
Dicoccum	6	1	7
Triticale	4	-	4
<b>Total</b>	<b>353</b>	<b>193</b>	<b>546</b>

A book titled “Wheat varieties notified in India since 1965” was published in 2018. After that number of wheat varieties was released in India. The present publication is aimed to provide an updated list and features of the notified wheat varieties in India between 2018 to 2023. During this period, to break the yield barrier special high yield potential trials was initiated, more emphasis were given on development of bio-fortified wheat varieties (rich in grain protein, iron and zinc) and further strengthen marker assisted backcross breeding.

# 2. CVRC Released Wheat Varieties

## Varieties for North Western Plains Zone (NWPZ)

- **Area:** North Western Plains Zone covering Punjab, Haryana, Delhi, Rajasthan (except Kota and Udaipur Divisions) and Western Uttar Pradesh (except Jhansi Division); Parts of J&K (Jammu and Kathua districts) and Parts of Himachal Pradesh (Una district and Paonta valley) and Uttarakhand (Terai region).
- **Area under cultivation:** NWPZ has the largest (12.33 mha) area of wheat cultivation in the country and estimated production was 55.82 mt with the productivity of 4527 kg/ha. Among all zones, NWPZ is the most productive zone and contributes 41.73% share in total area and 55.82% share in total production of wheat in the country. With assured irrigation facility available in ~95% area, wheat is mainly cultivated under high dose of fertilizer.
- **Cropping system:** Climatic conditions in this zone are most ideal for wheat growth. The major part of NWPZ comes under irrigated, timely sown conditions (mainly rice-wheat rotation) followed by irrigated, late sown conditions (cotton-wheat in Punjab and Haryana or wheat-sugarcane in western U.P.).
- **Major constraints:** NWPZ is one of the most important zone for wheat cultivation in India but there are some constraint that limits the wheat production. In this zone, high cost of inputs such as intensive tillage, excessive use of fertilizer and water resources increasing the cost of cultivation. The other major constraints are higher incidence of yellow rust, terminal heat stress during grain filling stage, decline in water table, low price of wheat, erratic power supply, *Phalaris minor*, low organic matter in the soil, poor quality of seeds, non-availability of labour, untimely rain, *Chenopodium album*, non-availability of electricity that limits the wheat production and productivity in North Western Plains Zone of India.
- **Major research institute/ university:** Development of high yield potential, disease resistant and climate resilient varieties are the major objectives of wheat improvement programmes in NWPZ. Thus various pioneer research institutes/agricultural universities such as IARI New Delhi, PAU Ludhiana, CCSHAU-Hisar, GBUA&T Pantnagar, and SKNA University Regional Station Durgapura played a significant role in development of wheat varieties for increasing the production and productivity of this zone.
- **Mega varieties of wheat:** In NWPZ, HD 2329, UP 2338, WH 542 and PBW 343, PBW 550 and DBW 17 released up to 2012 enhance the wheat productivity (yield up to 49.4 q/ha). The upward trend started happening with the development of HD 2967, WH 1105, HD 3086 and DBW 88 released up to 2017 (yield up to 53.10 q/ha) under timely-sown condition.

## Number of wheat varieties developed for different production conditions of NWPZ during 2018-23

Biofortified wheat varieties: 9 (Table 2.1); Early sown, high fertility, irrigated conditions: 4 (Table 2.2); Bread wheat for timely sown, irrigated conditions: 3 (Table 2.2); Late sown, irrigated conditions: 1 (Table 2.2); Very late sown, irrigated conditions: 2 (Table 2.2); Timely sown, restricted irrigation conditions: 9 (Table 2.2)

**Table 2.1: Biofortified Wheat Varieties for North Western Plains Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Timely sown, high fertility, Irrigated conditions</b>							
1.	DBW 371 (Karan Vrinda)	BORL14/CHIPAK	ICAR-IIWBR, Karnal	1056(E), 06.03.2023	75.9	87.1	Resistance to leaf rust, high protein content (12.2%), Higher iron content (44.9); low phenol content(2.8)
2.	DBW 372 (Karan Varuna)	FD08114/BECAR D#1//BOKOTA	ICAR-IIWBR, Karnal	1056(E), 06.03.2023	75.3	84.9	Resistance to leaf rust, high protein content (12.2%), Higher zinc content (40.8)
<b>Timely sown, Irrigated conditions</b>							
3.	PBW 872	MUTUS*2/MUJ// 2*MUCUY	PAU, Ludhiana	1056(E), 06.03.2023	75.2	93.4	Resistance to brown rust; chapati quality score 8.2 / 10 ; Higher Fe(42.3ppm), Zn(40.7 ppm) content
4.	DBW 303 (Karan Vaishnavi)	WBLL1*2/BRAMB LING/4/BABAX/L R42//BABAX*2/3/ SHAMA*2/5/PBW 343*2/KUKUNA* 2//FRTL/PIFED	ICAR-IIWBR, Karnal	500(E), 29.01.2021	81.2	97.4	Resistance to yellow and brown rust; higher grain protein content(12.1%), good chapatti quality
5.	DBW 187 (Karan Vandana)	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR/5/K ACHU/6/KACHU	ICAR-IIWBR, Karnal	99(E), 06.01.2020	75.5	96.6	Resistance to yellow and brown rust, good biscuit spread factor (8.6cm), High Fe content (43.1 ppm)
<b>Late sown, Irrigated conditions</b>							
6.	PBW 771	BW 3246/2*DBW17	PAU, Ludhiana	99(E), 06.01.2020	50.3	62.3	High grain hardness index; Good chapatti quality (8.32), high zinc content(41.4ppm)
7.	PBW 752	PBW 752 PBW621/4/PBW3 43//YR10/6*AVO CET/3/3*PBW343 /5/PBW621	PAU, Ludhiana	1498(E), 01.04.2019	49.7	65.4	High level of resistance for yellow and brown rust, hard grain hardness index(84), Protein content (12.4%), better adaptability to change in sowing time as indicated by higher grain yield (35.05%) when sown early and lower yield loss(-21.26%) when sown late.
8.	PBW 757	PBW550/YR15/ 6*AVOCET/3/2*P BW550/4/PBW56 8+YR36/3*PBW5 50	PAU, Ludhiana	1498(E), 01.04.2019	36.7	44.9	High degree of resistance to yellow and brown rusts, Good chapatti quality (8.07), high Zn content (42.3ppm)

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Very late sown conditions</b>							
9.	HD 3298	CL1449/PBW343/ /CL882/HD2009	ICAR-IARI, New Delhi	500(E), 29.01.2021	39.0	47.4	Grain protein (12.12 %); Good amount of Iron content (43.1ppm), Chapatti quality (7.78/10) and Bread quality (7.27)

**Table 2.2: Wheat Varieties for North Western Plains Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Early sown, high fertility, irrigated conditions</b>							
1.	DBW 370 (Karan Vaidehi)	PREMIO/4/CROC _1/AE.SUARRO SA (205)//KAUZ/3/PI FED/5/2*BORL14	ICAR-IIWBR, Karnal	1056(E), 06.03.2023	74.9	86.9	Resistance to leaf rust, good chapati quality score, high protein content(12.0%)
2.	WH 1270	SHA7//PRL/VEE# 6/3/FASAN/4/HA AS8446/2*TRCH/ 4/WHEAT//2*FAS AN/5/CBRD/KAU Z/6/MILAN/AMSE L/7/FRET2*KUKU NA/8/2*WHEAT/S OKOLL	CCSHAU, Hisar	500(E), 29.01.2021	75.9	91.5	Resistance to Yellow rust (HS 40S, ACI 13.8) and Brown rust (HS 20S, ACI 4.4); Good Chapati quality (7.66/10)
3.	DBW 327 (Karan Shivani)	NELOKI//SOKOLL /EXCALIBUR	ICAR-IIWBR, Karnal	8(E), 24.12.2021	79.4	87.7	Highly resistant to stripe and leaf rust, tolerant to heat (HSI=0.81) and drought stresses (0.78), good chapati score(7.67)and Zinc (40.6 ppm)
4.	DBW 332 (Karan Aditya)	MUTUS/ROLF07/ /MUCUY	ICAR-IIWBR, Karnal	8(E), 24.12.2021	78.3	83	Resistant to stripe and leaf rust, high protein content (12.2%)
<b>Timely sown, irrigated conditions</b>							
1.	PBW 826	WBLL1*2/KKTS// PASTOR/KUKUNA /3/KINGBIRD#1// INQALAB 91*2/TUKURU/5/ KAUZ//ALTAR 84/AOS/3/MILAN /KAUZ/4/SAUAL	PAU, Ludhiana	1056(E), 06.03.2023	63.6	84.0	High hectolitre weight
2.	DBW 222 (Karan Narendra)	KACHU/SAUAL/8 /ATTILA*2/PBW6 5/6/PVN//CAR42 2/ANA/5/BOW/C ROW// BUC/PVN/3/YR/4 /TRAP#1/7/ATTIL A/2*PASTOR	ICAR-IIWBR, Karnal	99(E), 06.01.2020	61.3	82.1	Resistant to brown rust, only 18.4% reduction in yield was recorded when sown late, good chapatti quality (7.5/10), bread quality (8.24)

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
3.	HD 3226 (Pusa Yashasvi)	GRACKLE/HD 2894	ICAR-IARI, New Delhi	1498(E), 01.04.2019	57.5	79.6	Resistance to yellow and brown rust, high wet gluten content (30.85%)
<b>Late sown, irrigated conditions</b>							
1.	JKW 261 (Birsra Gehun-4) (Shaurya)	ISENGRAIN/KBIR D//MUNAL#1	BAU, Ranchi	8(E), 24.12.2021	51.72	66.6	Drought (DSI=0.93) and Heat tolerant genotype (HSI=0.88) genotype, resistant to yellow and brown rust
<b>Very late sown, irrigated conditions</b>							
1.	HI 1621 (Pusa Wheat 1621)	W15.92/4/PASTOR//HXL7573/2*B AU/3/WBLL1	ICAR-IARI RS, Indore	99(E), 06.01.2020	37.0	46.1	Matures in 102 days when sown late
2.	HD 3271 (Pusa Wheat 3271)	CHIRIYA 7/ HD2824	ICAR-IARI, New Delhi	99(E), 06.01.2020	36.6	45.5	Suitable for very late sown conditions
<b>Timely sown, restricted irrigation conditions</b>							
1.	HI 1654 (Pusa Aditi)	SOKOLL/3/PASTOR//HXL7573/2*B AU/4/PANDION//FILIN/2*PASTOR/3/BERKUT	ICAR-IARI RS, Indore	1056(E), 06.03.2023	51.8	78.2	Tolerant to wheat blast and leaf rust; good biscuit spread factor
2.	HI 1653 (Pusa Jagrati)	NADI/COPIO//NADI	ICAR-IARI RS, Indore	1056(E), 06.03.2023	51.1	69.3	Resistant to wheat blast and leaf rust; high sedimentation value
3.	HD 3369 (Pusa Wheat 3369)	NADI/COPIO//NADI HD3070/HD3078	ICAR-IARI RS, Indore	1056(E), 06.03.2023	50.6	71.4	Resistance to yellow and brown rust, Fe content (40.6 ppm)
4.	HUW 838	WBLL1*2/BRAMB LING/4/BABAX/L R42//BABAX*2/3/SHAMA*2/5/PBW 343*2/KUKUNA* 2//FRTL/PIFED	IAS, BHU, Varanasi	8(E), 24.12.2021	51.3	77.7	Resistant to wheat blast and all the three rusts, better agronomic adaptability under different irrigation level, rich in zinc (41.8 ppm)
5.	DBW 296 (Karan Aishwaraya)	SOKOLL/3/PASTOR//HXL7573/2*B AU/4/MASSIV/PP R47.89C (23rd SAWYT Entry No. 321)	ICAR-IIWBR, Karnal	8(E), 24.12.2021	56.1	83.3	Tolerant to heat (HSI=1.02) and drought stresses (0.75), high biscuit spread factor(score 9.5/10), high bread quality score(8.2), chapatiscore(7.6)
6.	NIAW 3170 (Phule Satwik)	SKOLL/ROLF07	MPKV, ARS, Niphad	3482(E), 07.10.2020	51.1	71.7	Soft grains, Good Biscuit spread factor (NWPZ:10.18)
7.	HI 1628 (Pusa Wheat 1628)	FRET2*2/4/SNI/T RAP#1/3/KAUZ*2 /TRAP//KAUZ/5/P FAU/WEAVER//BR AMBLING	ICAR-IARI RS, Indore	99(E), 06.01.2020	50.4	65.1	Highly resistant to brown rust under artificial epiphytotic condition; Hard grains (81.9)

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
8.	HD 3237 (Pusa wheat 3237)	HD 3016/HD 2967	ICAR-IARI, New Delhi	1498(E), 01.04.2019	48.4	63.1	Resistance to yellow and brown rust, less reduction in yield at zero irrigation, good chapati quality (7.98)
9.	HI 1620 (Pusa wheat 1620)	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR/5/K ACHU/6/KACHU	ICAR-IARI RS, Indore	1498(E), 01.04.2019	49.1	61.8	Resistance to yellow and brown rust, tolerance to lodging

## North Eastern Plains Zone (NEPZ)

- **Area:** North Eastern Plains Zone (NEPZ) is an important zone for wheat production covers Eastern Uttar Pradesh, Bihar, Jharkhand, Odisha, West Bengal, Assam and plains of NE states.
- **Area under cultivation:** In NEPZ, wheat is cultivated under highly diverse situation in around 8.85 million ha area and estimated production was 22.20 mt the average productivity of NEPZ is around 2509 kg/ha which is far lower than the national productivity of 3424 kg/ha registering a yield gap of around 30-35% indicating low level of realised productivity at farmer field. Among different wheat growing zones, this is the second largest wheat producing zone of India which occupies 29.95% of total wheat area and accounts for 22.20% of the total wheat production in the country.
- **Cropping system:** The winter is short and climate is normally humid in NEPZ. Rice-wheat system is the most common cropping pattern followed in this zone. In Bihar, the rice-wheat, maize-wheat and pulse-wheat cropping patterns are followed, whereas rice-wheat and potato-wheat cropping patterns occupy most of the area in Bengal.
- **Major constraints:** In NEPZ, wheat faces harsh environment and cultivated under highly diverse environmental conditions. The major constraints that responsible for low productivity of wheat in this zone are small land holdings, inadequacy of seeds of newly released variety, lack of information among the farmers about recently developed new technologies, late sowing, temperature fluctuations during crop growth period, high-priced inputs, poor quality of seeds, non-availability of labour, low organic matter in the soil, non-availability of farm machinery, major disease (spot blotch and brown rust), moisture stress due to lack of proper irrigation facility, micro-element deficiencies and toxicities in soil, water-logged situation due to excess rains in some parts. Although this zone contribute significantly in total wheat cultivated area but there is a large difference in average productivity of NEPZ and national productivity of wheat at farmer field.
- **Major research institute/ university:** Development of multiple stress resilient genotypes is the major goal of wheat improvement programmes for NEPZ. Various research institute/ universities such as CSAU&T, Kanpur, NDU&T, Faizabad, BHU-Varanasi working on wheat impovement work in this region.
- **Mega varieties of wheat:** At one point of time, wheat varieties such as UP 262 and HUW 234 were quite popular among the farmers of NEPZ due to their wider adaptability and input responsiveness. Recently released varieties such as HD 2967, DBW 14, DBW 39, CBW 38, K 0307, K 1006, HD 2733 and NW 5054 occupy sizeable area in the zone. Wheat productivity came near to the 5 t/ha threshold only after the release of DBW 187 in the year 2017.
- **Number of Wheat Varieties developed for different production conditions of NEPZ during 2018-2023**
  - Biofortified wheat varieties: 2 (Table 2.3)
  - Timely sown, irrigated conditions: 2 (Table 2.4)
  - Late sown, irrigated conditions: 2 (Table 2.4)
  - Very late sown, irrigated conditions: 2 (Table 2.4)
  - Timely sown, restricted irrigation conditions: 2 (Table 2.4)

**Table 2.3: Biofortified Wheat Varieties for North Eastern Plains Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Timely sown, High Fertility, Irrigated conditions</b>							
1.	HD 3249 (Pusa Wheat 3249)	PBW343*2/KUKU NA//SRTU/3/PBW 343*2KHV/AKI	ICAR-IARI, New Delhi	99(E), 06.01.2020	48.8	65.7	High iron content (42.5 ppm); less sensitive to heat stress (only 20% reduction in yield under heat stress)
2.	DBW 187 (Karan Vandana)	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR/5/KACHU/6/KACHU (45th IBWSN-1316)	ICAR-IIWBR, Karnal	1498(E), 01.04.2019	48.8	64.7	Resistance to yellow and brown rust, good biscuit spread factor (8.6 cm), High Fe content (43.1 ppm)



**Table 2.4: Wheat Varieties for North Eastern Plains Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Timely sown, irrigated conditions</b>							
1.	PBW 826	WBLL1*2/KKTS//PASTOR/KUKUNA/3/KINGBIRD#1//INQALAB 91*2/TUKURU/5/KAUZ//ALTAR 84/AOS/3/MILAN/KAUZ/4/SAUAL	PAU, Ludhiana	1056(E), 06.03.2023	49.7	70.5	High hectolitre weight, resistant to wheat blast
2.	DBW 222 (Karan Narendra)	KACHU/SAUAL/8/ATTILA*2/PBW6 5/6/PVN//CAR42/ANA/5/BOW/C R O W / / BUC/PVN/3/YR/4/TRAP#1/7/ATTIL A/2*PASTOR	ICAR-IIWBR, Karnal	8(E), 24.12.2021	48.9	62.0	Resistant to brown rust, good chapatti quality (7.5/10), bread quality (8.24)
<b>Late sown, irrigated conditions</b>							
1.	DBW 316 (Karan Prema)	DBW 18/DBW 66	ICAR-IIWBR, Karnal	1056(E), 06.03.2023	41.0	68.0	Resistant to wheat blast and all the three rusts, protein content (13.2%), tolerant to drought (DSI0.88) and heat stress (HSI0.19)
2.	PBW 833	BWL0762/PBW62 1//HD3086	PAU, Ludhiana	1056(E), 06.03.2023	42.75	58.8	Highly resistant to leaf rust, good chapatti quality (score 8.2) and protein content (12.9%)
<b>Very late sown, irrigated conditions</b>							
1.	HI 1621 (Pusa Wheat 1621)	W15.92/4/PASTOR//HXL7573/2*BAU/3/WBLL1	ICAR-IARI RS, Indore	99(E), 06.01.2020	28.3	40.7	Matures in 102 days when sown late
2.	HD 3271 (Pusa Wheat 3271)	CHIRIYA 7/HD2824	ICAR-IARI, New Delhi	99(E), 06.01.2020	28.1	37.2	Suitable for very late sown conditions
<b>Timely sown, restricted irrigation</b>							
1.	HD 3293 (Pusa Purvika)	HD2967/DBW46	ICAR-IARI, New Delhi	500(E), 29.01.2021	39.3	60.7	High level of resistance to blast; better adaptability against moisture stress, tolerance to heat stress
2.	DBW 252 (Karan Shreya)	PFAU/MILAN/5/C HEN/AEGILOPS SQUARROSA (TAUS)//BCN/3/V EE#7/BOW/4/PASTOR	ICAR-IIWBR, Karnal	99(E), 06.01.2020	36.7	55.6	Highly resistant to wheat blast (Av. 2.5%) in Bangladesh; drought resistant (DSI: 0.74) and good sedimentation value (61.2ml)

## Central Zone (CZ)

- **Area:** The Central Zone comprises Madhya Pradesh, Chhattisgarh, Gujarat, Rajasthan (Kota and Udaipur divisions) and Uttar Pradesh (Jhansi division).
- **Area under cultivation:** In CZ wheat is cultivated in around 6.84 million ha area and estimated production was 22.37 mt with productivity of 2978 kg/ha and this zone is also having sizeable area under durum wheat. CZ is the third largest wheat producing zone of India which occupies 23.15% of total area and accounts for 20.37% of the total production of wheat in the country.
- **Cropping system:** Wheat crop in CZ often face soil moisture stress and high temperature as climate is hot and dry in this part of India. Soybean-wheat has emerged as most prevalent cropping system after 1980.
- **Major constraints:** In Central Zone of India, the major constraints are characterized by the non-availability of labour, imbalanced use of fertilizer, high temperature at maturity, limited accessibility to seed of newly released variety, temperature fluctuation during crop growth, high cost of inputs, lack of irrigation facilities, small land holding, decline in water table, untimely rain limit the wheat productivity. The CZ of wheat is known for premium quality bread wheat having typically hard lustrous grains with high gluten strength. Thus the need to focus research on new emerging issues like change in the dynamics of diseases and pests under changing climatic condition as well as improvement in quality traits of wheat in Central Zone of India.
- **Major research institute/ university:** Development of water use efficient high yielding varieties having tolerance to early and late heat and product specific varieties are the major objectives in both bread and durum wheat improvement programme in CZ. Various research institute/ universities such as IARI-RS Indore, JNKVV-RS Powarkheda, SDAU-Vijapur, JAU-Junagadh, and JNKVV-Jabalpur are the major research centres working on development of high yielding varieties in CZ.
- **Mega varieties of wheat:** In CZ, Lok 1 was the most preferred wheat variety by the farmers of this zone till 2005 developed by Lokbharti Gramvidyapith. Three varieties viz., GW 322, GW 366 & HI 1544 under timely-sown condition harvested the wheat yield up to 51.2 q/ha. Similarly, under late-sown category four varieties viz., HD 2932, HD 2864, MP 3336, CG 1029 and HI 1634 could provide productivity boost up to 45.6 q/ha in the region (2008-2020).
- **Number of Wheat Varieties developed for different production conditions of CZ during 2018-2023**
  - Biofortified wheat varieties: 4 (1 durum wheat and 3 bread wheat) (Table 2.5)
  - Timely sown, irrigated conditions: 3 (Table 2.6)
  - Late sown, irrigated conditions: 2 (Table 2.6)
  - Timely sown, restricted irrigation conditions: 6 (2 bread wheat and 4 durum) (Table 2.6)

**Table 2.5: Biofortified Wheat Varieties for Central Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Durum wheat for timely sown, restricted irrigated conditions</b>							
1.	DDW 47	PBW34/RAJ1555/ /PDW314	ICAR-IIWBR, Karnal	99(E), 06.01.2020	37.3	74.1	Very high yellow pigment content (7.57 ppm); high pasta acceptability score (7.9)
<b>Timely sown, High Fertility, Irrigated conditions</b>							
2.	DBW 303 (Karan Vaishnavi)	WBL1*2/BRAMB LING/4/BABAX/L R42//BABAX*2/3/ SHAMA*2/5/PBW 343*2/KUKUNA* 2//FRTL/PIFED	ICAR-IIWBR, Karnal	1056(E), 06.03.2023	58.3	80.3	Resistance to yellow and brown rust
3.	DBW 187 (Karan Vandana)	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR/5/K ACHU/6/KACHU (45th IBWSN- 1316)	ICAR-IIWBR, Karnal	8(E), 24.12.2021	60.3	75.4	Resistance to yellow and brown rust, good biscuit spread factor (8.6cm), High Fe content (43.1 ppm)
<b>Timely sown, Irrigated conditions</b>							
4.	MACS 6768 (MACS Sakas)	MACS 6221*2 // Raj 4037	ARI, Pune	1056(E), 06.03.2023	56.6	92.4	Protein (12.0%), Fe (41.2ppm), Zn (45.1 ppm); good chapati quality (8.3)

**Table 2.6: Biofortified Wheat Varieties for Central Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Timely sown, High Fertility, Irrigated conditions</b>							
1.	HI 1650 (Pusa Ojaswi)	Giant-3/Hi 1395	ICAR-IARI RS, Indore	1056(E), 06.03.2023	57.2	73.8	Highly resistance to leaf and stem rust, high zinc content (42.7 ppm)
2.	HI 1636 (Pusa Vakula)	DL788-2/HW4032	ICAR-IARI RS, Indore	8(E), 24.12.2021	56.6	78.8	Resistance to stem and leaf rust, good amount of zinc content (44.4 ppm)
3.	GW 513 (Gujarat Wheat 513)	PBW 559/WR 1873	WRS, SDAU, Vijapur	8(E), 24.12.2021	58.5	77.4	Resistance to leaf and stem rust, good chapatti quality score (8.36/10)
<b>Late sown, irrigated</b>							
1.	CG 1029 (Kanishka)	HW 2004/ PHS 725	IGKV RS, Bilaspur	500(E), 29.01.2021	52.1	94.9	Resistant to Black rust (HS 10MS, ACI 4.2) & Brown rusts (HS 20MS, ACI 2.7); Good Chapatti quality; Wider adaptability for different sowing date, tolerance to heat stress
2.	HI 1634 (Pusa Ahilya)	GW 322/PBW 498	ICAR-IARI RS, Indore	500(E), 29.01.2021	51.6	95.7	Good Chapatti quality and high grain hardness index; Highly resistance to stem and leaf rust
<b>Bread wheat for Timely sown, restricted irrigation</b>							
1.	CG 1036 (Vidhya)	HW2004/PHS832	IGKV RS, Bilaspur	1056(E), 06.03.2023	39.3	60.4	Hard grain, Good chapatti score (8.5), resistance to leaf and stem rust
2.	HI 1655 (Pusa Harsha)	MACS 2496 / HI 1531	ICAR-IARI RS, Indore	1056(E), 06.03.2023	38.8	59.8	Hard grain, Good chapatti score (8.4), resistance to leaf and stem rust
<b>Durum wheat for Timely sown, restricted irrigation</b>							
1.	HI 8830 (Pusa Kirti)	HI 8713/Hi 8663	ICAR-IARI RS, Indore	1056(E), 06.03.2023	40.4	65.3	Resistance to leaf and stem rust, good amount of yellow pigment (7.4)
2.	DDW 55 (Karan Manjari)	PDW274/PDW314//HI8498	ICAR-IIWBR, Karnal	1056(E), 06.03.2023	35.6	56.5	Zn (43.3 ppm), hard grains. Good hectolitre weight
3.	HI 8823 (Pusa Prabhat)	HI 8709/HD 4676	ICAR-IARI RS, Indore	8(E), 24.12.2021	38.5	65.6	Resistance to brown rust High Z inc (40.1 ppm)
4.	UAS 466	Amruth/Bijaga Yellow//AKDW 2997-16	UAS, Dharwad	99(E), 06.01.2020	38.8	62.5	Resistance to brown rust (HS:10S; ACI:1.36)

## Peninsular Zone (PZ)

- **Area:** Peninsular Zone primarily comprises Maharashtra, Karnataka, Andhra Pradesh, Telangana, Goa and Tamil Nadu.
- **Area under cultivation:** In PZ, wheat is cultivated in around 0.71 million ha area and estimated production was 1.00 mt with productivity of 1404 kg/ha. All the three species of wheat viz., *aestivum*, *durum*, and *dicoccum* are cultivated in this zone.
- **Cropping system:** In this zone, bread wheat is cultivated under irrigated environment and durum and dicoccum wheat is generally cultivated under rain-fed/restricted irrigation situation. Sorghum-wheat is one of the most prevalent cropping systems in Western Marathwada and Vidarbha regions of Maharashtra and Northern parts of Karnataka. Maize-wheat and sunflower-wheat cropping sequence are being practiced in some parts of Karnataka. Sugarcane-wheat cropping system is also gaining importance in Ahmednagar and Kolhapur districts of Maharashtra and Belgaum district of Karnataka.
- **Major constraints:** In PZ, high temperature during crop cycle is limiting of wheat yield due to which crop mature in around 90-100 days as compared to 140-150 days in the NWPZ. The other major factor are low price of wheat, irregular power supply, high cost of inputs, non-availability of labour, non-availability of electricity, higher rate of custom hiring, untimely rain, lack of facilities of canal irrigation, poor accessibility to seeds of newly released variety, temperature fluctuation during crop growth.
- **Major research institute/ university:** To increase the production and productivity of wheat in PZ, various research institute/ universities such as MPKV-Research station Niphad, UAS, Dharwad and Agharkar Research Institute Pune are having strong breeding programmes and developed many popular wheat varieties.
- **Mega varieties of wheat:** In PZ, the productivity of old cultivars under timely-sown condition i.e. HD 2189 and MACS 2496 was below 40 q/ha. Yield increased by a good margin when NIAW 917, RAJ 4037 and GW 322 were released during 2001-2012 (44 q/ha. Under late-sown condition also, the productivity of early phase varieties (DWR 195 and HD 2501; yield 33.3q/ha) was improved when HI 977 and NIAW 34 were released during 2001-2005 (36.4q/ha).
- **Number of Wheat Varieties developed for different production conditions of PZ during 2018-2023**
  - Biofortified wheat varieties: 5 (4 durum wheat and 1 bread wheat)(Table 2.7)
  - Timely sown, irrigated conditions: 2 durum wheat (Table 2.8)
  - Timely sown, restricted irrigation conditions: 4 (2 bread wheat and 2 durum) (Table 2.8)

**Table 2.7: Bio- fortified Wheat Varieties for Peninsular Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Durum wheat for timely sown, restricted irrigated condition</b>							
1.	HI 8802 (Pusa Wheat 8802)	HI8627/HI8653	ICAR-IARI RS, Indore	99(E), 06.01.2020	29.1	36.0	Resistant to black rust (HS 20MS, ACI 9.6) and brown rust (HS 30MS, ACI 7.5); high protein content (13.0%), high yellow pigment (5.7 ppm)
2.	HI 8805 (Pusa Wheat 8805)	IWP 5070 / HI 8638// HI 8663	ICAR-IARI RS, Indore	99(E), 06.01.2020	30.4	35.4	High iron content (40.4 ppm)
3.	MACS 4058	MACS3125/AKD W2997-16//MACS3125	ARI, Pune	3482(E), 07.10.2020	30.6	37.1	Highly resistance to leaf and stem rusts, Protein content (12.8%)
<b>Durum wheat for timely sown, irrigated conditions</b>							
4.	DDW 48	HI8498/PDW233/ /PDW291	ICAR-IIWBR, Karnal	500(E), 29.01.2021	47.4	72.0	Rich in grain protein (12.1 %), high yellow pigment content (5.6 ppm), high pasta acceptability, resistance to brown rust
<b>Bread wheat for late sown, irrigated condition</b>							
5.	HI 1633 (Pusa Vani)	GW 322 / PBW 498	ICAR-IARI RS, Indore	500(E), 29.01.2021	41.7	65.8	Nutritionally rich variety (Grain protein (12.4 %), Iron (41.66ppm) and Zinc (41.1ppm), Highly resistant to blackrust

**Table 2.8: Wheat Varieties for Peninsular Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Durum wheat for timely sown, irrigated</b>							
1.	HI 8826 (Pusa Poshtik)	HI 8713/HI 8663	ICAR-IARI RS, Indore	1056(E), 06.03.2023	48.8	73.7	Resistance to leaf and stem rust, hard grains
2.	MACS 4100 (MACS Jejuri)	CBC 509 CHILE/6/ECO/CM H76A.722//BIT/3/ ALTAR84/4/AJAIA _2/5/KJOVE_1/7/ AJAIA_12/F3LOC AL(SELETHIO.13 5.85)//PLATA_13/ 8/SOOTY_9/RAS CON_37//WODU CK/CHAM_3	ARI, Pune	1056(E), 06.03.2023	46	61.8	Resistance to leaf rust, hard grains and good amount of yellow pigment (7.1); good pasta acceptability(6.6)
<b>Bread wheat for timely sown, restricted irrigation</b>							
1.	MP (JW)1358	KACHU*2/MUNAL#1/K1215	JNKVV, ZARS, Powarkheda	8(E), 24.12.2021	30.9	43.6	Tolerant to heat (HSI=0.78) and drought stresses (0.90), resistant to leaf and stem rust, better agronomic adaptability under different agronomic trials, rich in protein 12.1%, Fe (40.6 ppm)
2.	NIAW 3170 (Phule Satwik)	SKOLL/ROLF07	MPKV, ARS, Niphad	3482(E), 07.10.2020	33.7	44.3	Soft grains, Good Biscuit spread factor (PZ:9.34)
<b>Durum wheat for timely sown, restricted irrigation</b>							
1.	NIDW 1149	NIDW 295 (Godavari) X NIDW 15 (Panchavati)	MPKV, ARS, Niphad	500(E), 29.01.2021	27.4	36.8	Resistance to Brown rust (HS 20S, ACI 2.8) and Yellow rust (HS 15S, ACI 4.1); attractive grains
2.	GW 1346 (Gujarat Wheat 1346)	GW 1236/ AR-06-3	ARS, AAU, Dhandhuka	99(E), 06.01.2020	28.5	40.4	Resistant to brown and blackrust

## Northern Hill Zone (NHZ)

- **Area:** Northern Hill Zone comprises the Western Himalayan regions of J&K (except Jammu and Kathua distt.); Himachal Pradesh (except Una and Paonta Valley); Uttarakhand (except Tarai area); Sikkim and hills of West Bengal and North Eastern states.
- **Area under cultivation:** The estimated area under wheat cultivation in NHZ is 0.82mha, and estimated production was 1.81 mt with the productivity of 2203 kg/ha.
- **Cropping system:** Wheat is cultivated in the hills at different altitude under different crop rotation adapted at different elevations. In NHZ, sowing is generally done under rainfed conditions in October/November with residual moisture and harvesting takes place in May/June. In higher hills of Leh (J&K) and Lahaul and Spiti(H.P.), the winter is severe, causing the crop is to be raised between May and September.
- **Major constraints:** The major factor which are responsible for low productivity in NHZ are lack of accessibility of seed of newly released varieties, *Phalaris minor*, small land holdings, high cost of inputs, non-availability of farm machinery, yellow rust, birds, lack of knowledge among the farmers about recent technologies, imbalanced use of fertilizer, lack of irrigation facilities and frost damage etc.
- **Major research institute/ university:** Development of high yielding varieties for moisture stress condition is the major objective of wheat improvement programmes in NHZ. State Agricultural universities namely SKUAS&T-Kashmir, CSK HPKVV- Palampur and its regional research station located in Malan and Bajaura, GBPUA&T- Pantnagar and ICAR institutes namely ICAR-VPKAS, Almora and ICAR-IARI, Regional Station, Shimla are working on development of high yielding varieties for NHZ to enhance the productivity of wheat.

**Mega varieties of wheat:** In NHZ the varieties viz., VL 738, VL 907, HS 507 & HPW 349 developed (1994-2014 ) reached wheat yield up to 44.2 q /ha in timely-sown condition. Further wheat productivity has crossed the 49.1 q/ha benchmark with the release of HS 562 in recent time (2015-2020).

- **Number of Wheat Varieties developed for different production conditions of NHZ during 2018-2023**

Rainfed, timely sown conditions: 01 (Table 2.9)

**Table 2.9: Wheat Varieties for Northern Hills Zone**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Timely sown, rainfed conditions</b>							
1.	VL 2041 (VL Cookies)	NESSER/SAULSK U32/MACS6240//HS507	ICAR-VPKAS, Almora	1056(E), 06.03.2023	29.6	44.4	Soft grain (GHI22.6), excellent biscuit quality, Biscuit spread factor (11.7)



## Marker Assisted Backcross Breeding

The ICAR has developed norms and guidelines for testing promising material in uniform manner at a large number of locations including material developed through marker assisted back cross breeding. Normally near isogenic lines (NILs) developed by the breeders would be inducted into the testing system at the IVT level. However, specially developed NILs (using specially selected notified varieties) can be inducted into the first year of AVT as per the procedure given in the guideline for testing crop varieties under All India Coordinated Crop Improvement Programmes. During 2018-2023, marker assisted backcross breeding was strengthened by various cooperating centers, this led to development and release of four varieties (Table 2.10)

<b>Table 2.10: Varieties developed through Markers Assisted Backcross Breeding</b>							
S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Timely sown, irrigated conditions for North Western Plains Zone</b>							
1.	HD 3406 (Unnat HD 2967)	HD2967*3/Trina kriya (LrTrk/YrTrk)	ICAR-IARI, New Delhi	1056(E), 06.03.2023	54.7	70.4	3.26% superior in yield to recurrent parent HD2967, higher protein than HD 2967
<b>Timely sown, irrigated conditions of North Eastern Plains Zone</b>							
2.	HD 3411 (NICRA Pusa Wheat 3411)	HD2733*2t C306	ICAR-IARI, New Delhi	1056(E), 06.03.2023	46.8	65.8	1.5 percent superior in yield to recurrent parent HD2733
<b>Late sown, irrigated conditions of Central Zone</b>							
3.	HD 3407 (Unnat HD 2932)	HD2932*3/3/HD 2687*3//Cook*6/C80-1/4/ HD2932*3/3/HD 2687*3//TR380-14*7/3Ag#14/5/ HD2932*3//Avoc et S*6/Yr10	ICAR-IARI, New Delhi	1056(E), 06.03.2023	46.8	69.6	Better resistance to leaf and stem rust as compared to recurrent parent
<b>Timely sown, irrigated conditions of Punjab</b>							
4.	PBW 761 (Unnat PBW 550)	PBW 550/Yr15/6*Avoc et/3*PBW550	PAU, Ludhiana	1498(E), 01.04.2019	60.4	73.6	Highly resistant to yellow and brown rust, escapes terminal heat stress due to early maturity

### 3. SVRC Released Wheat Varieties

Every state has its own state Seed Sub- Committee for the release of crop varieties. The research centres located in the states developed locally adapted varieties in the state through organised varietal testing programmes which are generally conducted under the state agricultural departments. The CVRC recommends the varieties. A total of 37 wheat varieties (36 in bread wheat and 1 in durum) have been notified for various states during 2018-2023 (Table 3.1).

**Table 3.1: Wheat Varieties released by SVRC**

State name	Production condition					Total
	TS,IR	TS,RF	TS,RIR	LS,IR	Others	
Chattisgarh			2			2
Gujarat (aestivum)				1		1
Gujarat (Durum)	1					1
Himachal Pradesh		1			1(LS, RF)	2
Haryana	2					2
J&K (Jammu region)	1		1			2
J&K (Kashmir region)		1				1
Madhya Pradesh	2					2
Maharashtra			1			1
Punjab	4				1 (TS, IR with happy seeder in conservation agriculture)	5
Uttar Pradesh	2	2	1		1	6
Uttarakhand (Plains)	4				5	9
Uttarakhand (Hills)		3				3

TS, IR: Timely sown, irrigated; TS, RF: Timely sown, rainfed; TS, RIR: Timely sown, restricted irrigation; LS, IR: Late sown, irrigated; LS, RF: Late sown, rainfed

**Table 3.2: Wheat varieties released by SVRC**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Bread wheat for timely sown, restricted irrigated condition of Chattisgarh</b>							
1.	CG 1023 (Chattisgarh Hansa Wheat)	BOW/VEE/5/ND /VG9144//KAL/BB/3/YACO/4/CHIL/6/CASKO R/3/CROC_1/A E SQUARROSA (224)/OPATA/P ASTOR//MILAN /KAUZ/3/BAV92	IGKV RS, Bilaspur	500(E), 29.01.2021	32.14	42	Good Chapati quality (8.06) and higher amount of zinc content (40.4 ppm)
2.	CG 1018 (Chhattisgarh Amber Wheat)	HW 2004/PBN 1662-2	IGKV RS, Bilaspur	1498(E), 01.04.2019	35.1	58.2	Resistant to brown and blackrust
<b>Durum Wheat for timely sown, irrigated production conditions of Gujarat</b>							
3.	GW 1339	DDW04/4/MEMO /YAV//AVK/3/RD 214	WRS, SDAU, Vijapur	500(E), 29.01.2021	49.6	67.6	Good amount of yellow pigment (5.5ppm)
<b>Late sown, irrigated conditions of Gujarat</b>							
4.	GW 499	CLN 3/PHR 1007 // GW 336	WRS, SDAU, Vijapur	500(E), 29.01.2021	46.2	59.9	Resistance to leaf and stem rust
<b>Timely sown, irrigated/rainfed production conditions for low and mid hills of Himachal Pradesh</b>							
5.	HPW 368 (Him Palam Gehun 2)	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR	CSK HPKV, Palampur	99(E), 06.01.2020	26.0 (RF), 50.9 (IR)	38.7 (RF), 58.6 (IR)	Resistant to yellow and brown rust
<b>Late sown, rainfed production conditions for low and mid hills of Himachal Pradesh</b>							
6.	HPW 373 (Him Palam Gehun 3)	MILAN//BUC/CH RC/3/METSO	CSK HPKV, Palampur	4065(E), 31.08.2022	27.6	36.2	Resistance to yellow and brown rust
<b>Timely sown, irrigated production conditions of Haryana</b>							
7.	DBWH 221	36 IBWSN 284/22ESWYT 28 (36 IBWSN 284: MUNIA/CHTO/3/PFAU/BOW//VEE #9/4/ CHEN/Ae. sq (Taus)//BCN 22ESWYT 28: CHEN/Ae. sq (TAUS)//BCN/3/K AUZ)	ICAR-IIWBR, Karnal and CCS HAU, Hisar	2986(E), 20.07.2021	62.8	76.1	Highly tolerant to heat stress, resistance to yellow rust
8.	WH 1184	HD 2850/WH1147	CCSHAU, Hisar	3220(E), 05.09.2019	61.3	65.7	Highly resistant to yellow and brown rust, protein content (13.02%), sedimentation value (60 ml)

**Table 3.2 contd...**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Early sown/Timely sown, restricted irrigation production conditions of Jammu region of Jammu &amp; Kashmir</b>							
9.	JAUW 672 (Jammu Wheat 672)	SERI.18*2/3KA UZ*2/BOW//KA UZ/4/CROC	SKUAS&T, Jammu	4065(E), 31.08.2022	44.13	54.5	Resistance to yellow rust
<b>Timely sown, irrigated production conditions of Jammu region of Jammu &amp; Kashmir</b>							
10.	JAUW 584	PDW 233/Ae.crassa/PB W 343	SKUAS&T, Jammu	1498(E), 01.04.2019	37.6	46.3	Resistance to yellow and brown rusts,
<b>Timely sown, rainfed production conditions of mid hills of Kashmir Region J&amp;K</b>							
11.	SKW 356 (Shalimar wheat 3)	Material derived using base population VL-968	SKUAS&T, Srinagar	1056(E), 06.03.2023	32.3	38.6	Fe (40.5ppm), Zn (43.8ppm)
<b>Timely sown, irrigated production conditions of Madhya Pradesh</b>							
12.	MP 3465	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR/5/K ACHU/6/KACHU	JNKVV, Jabalpur	500(E), 29.01.2021	59.41	73.2	Resistant to leaf and yellow rust, Good amount of protein
13.	MP (JW) 1323	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR/5/K ACHU/6/KACHU	JNKVV, ZARS, Powarkheda	8(E), 24.12.2021	61.52	76.06	Resistant against brown and black rusts, higher protein content (14.5%)
<b>Restricted Irrigation production conditions of Maharashtra</b>							
14.	NIAW 3624 (Phule Anupam)	DL 1022 /NIAW 1415	MPKV, ARS, Niphad	1056(E), 06.03.2023	30.56		Resistant to brown and blackrusts
<b>Timely sown, Irrigated production conditions of Punjab</b>							
15.	PBW 1 chapati	WL711- Ae. ovata/CS(S)//WL7 11NN/3/3*PBW 175	PAU, Ludhiana	8(E), 24.12.2021	45.1	48.4	Resistant to brown rust and moderately resistant to stripe rust pathotypes, Good chapati quality, higher protein content (12.72%) , tolerant to lodging
16.	PBW 766 (Sunehri)	NAC/TH.AC//3*P VN/3/MIRLO/BUC /4/2*PASTOR/5/K ACHU/6/KACHU	PAU, Ludhiana	8(E), 24.12.2021	64.3	79.2	Resistant to leaf rust and moderate resistance to stripe rust

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
17.	PBW 824	WAXWING//INQ ALAB91*2/KUKU NA/3/WBLL1*2/T UKURU/8/2*NG8 201/KAUZ/4/SHA 7//PRL/VEE#6/3/ FASAN/5/MILAN/ KAUZ/6/ACHYU TA/7/PBW343*2/ KUKUNA	PAU, Ludhiana	8(E), 24.12.2021	63	92.1	Resistant to brown rust
<b>Timely sown, Irrigated production conditions for sowing with Happy Seeder/ Super Seeder in conservation agriculture of Punjab</b>							
18.	PBW 869	QUAIU #1//2*WHEAR/KR ONSTAD F2004	PAU, Ludhiana	8(E), 24.12.2021	63.1	80.2	High level of resistance to leaf rust under natural and artificial conditions over the years.
<b>Timely sown, Irrigated production conditions for South western region of Punjab</b>							
19.	PBW 803	BWL0762/PBW62 1//HD3086	PAU, Ludhiana	8(E), 24.12.2021	62.02	90.2	Resistant to brown rust and moderately resistant to stripe rust
<b>Timely sown, Irrigated production conditions of Uttar Pradesh</b>							
20.	AAI-W13 (SHUATS-W13)	ESW23 x MRD x ESW 23 (BC-3)	SHUAT&S, Prayagraj	3220(E), 05.09.2019	34.84	52.11	Resistant to brown rust, karnal bunt
21.	AAI-W10 (SHIATS-W10)	WELLI/KAMBI/PA STOR	SHUAT&S, Prayagraj	6318(E), 26.12.2018	43.07	57.78	Resistance to brown rust, leaf blight, karnal bunt and lodging, tolerant to high temperature
<b>Timely sown, Rainfed production conditions of Uttar Pradesh</b>							
22.	K 1616	HD 2711/K 711	CSAUA&T, Kanpur	4065(E), 31.08.2022	23.96	49.5	Resistance to brown rust and good hectolitre weight
23.	AAI-W15 (SHUATS-W15)	SAW95/GW0-3- 12/3/SAW95	SHUAT&S, Prayagraj	2986(E), 20.07.2021	19.86	26.26	Terminal heat tolerant at grain filling stage, resistance to brown and blackrust
<b>Timely sown, Rainfed/Restricted irrigation production conditions of Uttar Pradesh</b>							
24.	HUW 711 (Malviya 711)	T. DICOCCON CI9309/AE.SQUARE ROSA(409)//MU TUS/3/2* MUTUS	IAS, BHU, Varanasi	8(E), 24.12.2021	21.85	43.15	Higher level of zinc (40.9 ppm) and iron content (40.2 ppm)
<b>Late sown, Irrigated production conditions of Uttar Pradesh</b>							
25.	AAI-W9 (SHIATS-W9)	TOBA97/PASTOR	SHUAT&S, Prayagraj	6318(E), 26.12.2018	38.37	50.52	Resistance to brown rust, leaf blight, karnal bunt and lodging, Tolerant to high temperature and water logging, Lodging resistance

**Table 3.2 contd...**

S.N.	Name of variety	Parentage	Developed by	Notification number and date	Yield (q/ha)		Special features
					Av.	Pot.	
<b>Timely sown, Irrigated production conditions for plains of Uttarakhand</b>							
26.	UP 2938	W15.92/4/PASTOR//HXL7573/2*BAU/3/WBLL1	GBPUA&T, Pantnagar	2986(E), 20.07.2021	53.81	92.75	Tolerant to rust
27.	UP 2903	(MILAN/S87230//BABAX)//PBW 550	GBPUA&T, Pantnagar	2986(E), 20.07.2021	50.59	70.05	Higher amount of protein content (12.68%), highly resistance to brown rust
28.	UP 2855	PBW 565/UP2565	GBPUA&T, Pantnagar	1498(E), 01.04.2019	52.52	100	Resistance to leaf rust, Protein content (11.8%)
29.	VL Gehun 2014	Raj4132/AKAW4006	ICAR-VPKAS, Almora	1498(E), 01.04.2019	52.06	71.01	Highly resistant to yellow and brown rust
<b>Timely sown, rainfed (organic cultivation) conditions of hills of Uttarakhand</b>							
30.	VL Gehun 2028	FRANCOLIN #1*2/MUU	ICAR-VPKAS, Almora	4065(E), 31.08.2022	22.7	30.7	Resistance to yellow and brown rust
31.	VL Gehun 2015	Sale 6	ICAR-VPKAS, Almora	500(E), 29.01.2021	19.88	36.67	Good sedimentation value (60ml), resistance to yellow and brown rust
32.	VL Gehun 967	SHARP/3/PRL/SARAJ/TSIA/EE#5/5/VEE/LIRNIBOWI31 BCNI4IKAUZ#4	ICAR-VPKAS, Almora	1498(E), 01.04.2019	19.86	35.44	Highly resistant to yellow and brown rust, Adaptability to adjust under late sown condition
<b>Late sown, Irrigated production conditions for plains of Uttarakhand</b>							
33.	VL Gehun 3010	RAJ 4083/NESSER/SAULES:KU 32	ICAR-VPKAS, Almora	4065(E), 31.08.2022	58.19	85.2	Higher iron content (44.9 ppm)
34.	UP 2944	(ATTILA*2/STAR) x DBW 39	GBPUA&T, Pantnagar	2986(E), 20.07.2021	50.71	73.95	High protein content (14.5%), highly resistance to brown rust
35.	UP 2844	HD2844/FRTL/AGRI/NAC	GBPUA&T, Pantnagar	1498(E), 01.04.2019	42.04	69.81	Resistance to yellow and brown rust
36.	UP 2865	HP1749/PBW 564	GBPUA&T, Pantnagar	1498(E), 01.04.2019	45.82	68.89	Resistance to leaf rust, Protein content (12.5%)
37.	VL Gehun 3004	HD2844/PBW486	ICAR-VPKAS, Almora	1498(E), 01.04.2019	43.88	70.31	Highly resistant to yellow and brown rust,

## 4. Synonym of Released Varieties

The names, generally abbreviated, are prefixed before a numbered series to identify the developing institutes/ centre. The prefix is well defined and assigned to university or institute. These prefix are used by the university/research institutes while nominating entries for testing in coordinated trials. However at the time of notification, popular names are being assigned by the developing institutets. These names are considered as synonyms of variety. Sometimes, synonym causes confusion to farmers as well as to scientific community, whether the variety they are referring is same or different. In this chapter, name of the variety and other synonym name or vice-versa is presented on alphabetic order.

Variety name	Synonym name	Variety name	Synonym name
AAI-W9	SHIATS-W9	HD 3237	Pusa Wheat 3237
AAI-W10	SHIATS-W10	HD 3249	Pusa Wheat 3249
AAI-W13	SHUATS-W13	HD 3271	Pusa Wheat 3271
AAI-W15	SHUATS-W15	HD 3293	Pusa Purvika
Birsa Gehun-4	Shaurya	HD 3369	Pusa Wheat 3369
Birsa Gehun-4	JKW 261	HD 3406	Unnat HD 2967
CG 1018	Chattisgarh Amber Wheat	HD 3407	Unnat HD 2932
CG 1023	Chattisgarh Hansa Wheat	HD 3411	NICRA Pusa Wheat 3411
CG 1029	Kanishka	HI 1620	Pusa wheat 1620
CG 1036	Vidhya	HI 1621	Pusa Wheat 1621
Chattisgarh Hansa Wheat	CG 1023	HI 1621	Pusa Wheat 1621
Chattisgarh Amber Wheat	CG 1018	HI 1628	Pusa Wheat 1628
DBW 187	Karan Vandana	HI 1633	Pusa Vani
DBW 222	Karan Narendra	HI 1634	Pusa Ahilya
DBW 252	Karan Shreya	HI 1636	Pusa Vakula
DBW 296	Karan Aishwaraya	HI 1650	Pusa Ojaswi
DBW 303	Karan Vaishnavi	HI 1653	Pusa Jagrati
DBW 316	Karan Prema	HI 1654	Pusa Aditi
DBW 327	Karan Shivani	HI 1655	Pusa Harsha
DBW 332	Karan Aditya	HI 8802	Pusa Wheat 8802
DBW 370	Karan Vaidehi	HI 8805	Pusa Wheat 8805

Variety name	Synonym name	Variety name	Synonym name
DBW 371	Karan Vrinda	HI 8823	Pusa Prabhat
DBW 372	Karan Varuna	HI 8826	Pusa Poshtik
DDW 55	Karan Manjari	HI 8830	Pusa Kirti
Gujarat Wheat 1346	GW 1346	Him Palam Gehun 2	HPW 368
Gujarat Wheat 513	GW 513	Him Palam Gehun 3	HPW 373
GW 1346	Gujarat Wheat 1346	HPW 368	Him Palam Gehun 2
GW 513	Gujarat Wheat 513	HPW 373	Him Palam Gehun 3
HD 3226	Pusa Yashasvi	HUW 711	Malviya 711
Jammu Wheat 672	JAUW 672	Pusa Jagrati	HI 1653
JAUW 672	Jammu Wheat 672	Pusa Kirti	HI 8830
JKW 261	Birsa Gehun-4	Pusa Ojaswi	HI 1650
JKW 261	Shaurya	Pusa Poshtik	HI 8826
Kanishka	CG 1029	Pusa Prabhat	HI 8823
Karan Aditya	DBW 332	Pusa Purvika	HD 3293
Karan Aishwaraya	DBW 296	Pusa Vakula	HI 1636
Karan Manjari	DDW 55	Pusa Vani	HI 1633
Karan Narendra	DBW 222	Pusa Wheat 1620	HI 1620
Karan Prema	DBW 316	Pusa Wheat 1621	HI 1621
Karan Shivani	DBW 327	Pusa Wheat 1621	HI 1621
Karan Shreya	DBW 252	Pusa Wheat 1628	HI 1628
Karan Vaidehi	DBW 370	Pusa wheat 3237	HD 3237
Karan Vaishnavi	DBW 303	Pusa Wheat 3249	HD 3249
Karan Vandana	DBW 187	Pusa Wheat 3271	HD 3271
Karan Varuna	DBW 372	Pusa Wheat 3369	HD 3369
Karan Vrinda	DBW 371	Pusa Wheat 8802	HI 8802
MACS 4100	MACS Jejuri	Pusa Wheat 8805	HI 8805
MACS 6768	MACS Sakas	Pusa Yashasvi	HD 3226
MACS Jejuri	MACS 4100	Shalimar wheat 3	SKW 356
MACS Sakas	MACS 6768	SHIATS-W9	AAI-W9
Malviya 711	HUW 711	SHIATS-W10	AAI-W10
NIAW 3170	Phule Satwik	SHUATS-W13	AAI-W13
NIAW 3624	Phule Anupam	SHUATS-W15	AAI-W15
NICRA Pusa Wheat 3411	HD 3411 PBW 761	SKW 356 Unnat PBW 550	Shalimar wheat 3 SunehriPBW 766



Variety name	Synonym name	Variety name	Synonym name
PBW 766	Sunehri	Unnat HD 2932	HD 3407
Phule Anupam	NIAW 3624	Unnat HD 2967	HD 3406
Phule Satwik	NIAW 3170	Unnat PBW 550	PBW 761
Pusa Aditi	HI 1654	Vidhya	CG 1036
Pusa Ahilya	HI 1634	VL 2041	VL Cookies
Pusa Harsha	HI 1655	VL Cookies	VL 2041

**Prefix assigned to the varieties developed by different research institutes and their address**

<b>Prefix used</b>	<b>Centre name and address</b>
CG	IGKV RS, Bilaspur: Indira Gandhi Krishi Vishwavidyalaya Research Station, Bilaspur
DBW, DDW	ICAR-IIWBR, Karnal: Indian Council of Agricultural Research-Indian Institute of Wheat and Barley Research, Karnal
GW	ARS, AAU, Dhandhuka: Agricultural Research Station, Anand Agricultural University, Dhandhuka
GW	WRS, SDAU, Vijapur: Wheat Research Station, Sardarkrushinagar Dantiwada Agricultural University, Vijapur
HD	ICAR-IARI, New Delhi: Indian Council of Agricultural Research-Indian Agricultural Research Institute, New Delhi
HI	ICAR-IARI RS, Indore: Indian Council of Agricultural Research-Indian Agricultural Research Institute Regional Station, Indore
HPW	CSK HPKV, Palampur: Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Palampur
HUW	IAS, BHU, Varanasi: Institute of Agricultural Sciences, Banaras Hindu University, Varanasi
JAU	SKUAS&T(J) : Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu
JKW	BAU, Ranchi: Birsa Agricultural University, Ranchi
K	CSAUA&T, Kanpur: Chandra Shekhar Azad University of Agriculture & Technology, Kanpur
MACS	ARI, Pune: Agharkar Research Institute, Pune
MP (JW)	JNKVV, Jabalpur: Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur
MP(JW)	JNKVV, ZARS, Powarkheda: Jawaharlal Nehru Krishi Vishwa Vidyalaya, Zonal Agricultural Research Station, Powarkheda
NIAW, NIDW	MPKV, ARS, Niphad: Mahatma Phule Krishi Vidyapeeth, Agricultural Research Station, Niphad
PAU	PAU, Ludhiana: Punjab Agricultural University, Ludhiana
SHIATS, AAI, SHUATS	SHUAT&S, Prayagraj: Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj
SK	SKUAS&T (K): Sher-e-Kashmir University of Agricultural Sciences and Technology, Srinagar
UAS	UAS, Dharwad: University of Agricultural Sciences, Dharwad
UP	GBPUA&T, Pantnagar: Govind Ballabh Pant University of

	Agriculture and Technology, Pantnagar
VL	ICAR-VPKAS, Almora: Indian Council of Agricultural Research-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora
WH	CCSHAU, Hisar: Chaudhary Charan Singh Haryana Agricultural University, Hisar

## Index

## APPENDIX- II

Variety name	Pg. No.	Variety name	Pg. No.
AAI-W10	23	Gujarat Wheat 1346	17
AAI-W13	23	Gujarat Wheat 513	14
AAI-W15	23	GW 1339	21
AAI-W9	23	GW 1346	17
Birsa Gehun-4	7	GW 273	1
C 306	1	GW 322	1, 12
C273	1	GW 322	15
C281	1	GW 366	12
C286	1	GW 496	1
CBW 38	9	GW 499	21
CG 1018	21	GW 513	14
CG 1023	21	HD 2009	1
CG 1029	12, 14	HD 2189	1, 15
CG 1036	14	HD 2285	1
Chattisgarh Hansa Wheat	21	HD 2329	1, 4
Chhattisgarh Amber Wheat	21	HD 2501	15
DBW 14	9	HD 2733	1, 9
DBW 17	1, 4	HD 2864	12
DBW 173	4	HD 2932	12
DBW 187	4, 5, 9, 10, 13	HD 2967	1, 4, 9
DBW 222	4	HD 3059	4
DBW 222	6, 11	HD 3086	1, 4
DBW 252	11	HD 3226	4, 7
DBW 296	7	HD 3237	8
DBW 303	5, 13	HD 3249	10
DBW 316	11	HD 3271	7, 11
DBW 327	9	HD 3293	11
DBW 332	9	HD 3298	6
DBW 370	9	HD 3369	7
DBW 371	5	HD 3406	19
DBW 372	5	HD 3407	19
DBW 39	9	HD 3411	19
DBW 88	4	HI 1544	12
DBW 90	4	HI 1620	8
DBW187	1	HI 1621	7, 11
DBWH 221	21	HI 1628	7
DDW 47	13	HI 1633	16
DDW 48	16	HI 1634	12, 14
DDW 55	14	HI 1636	14
DWR 195	15	HI 1650	14

Variety name	Pg. No.	Variety name	Pg. No.
HI 1653	7	Lok 1	1, 12
HI 1654	7	MACS 2496	15
HI 1655	14	MACS 4058	16
HI 617	1	MACS 4100	17
HI 8498	1	MACS 6768	13
HI 8802	16	MACS Jejuri	17
HI 8805	16	MACS Sakas	13
HI 8823	14	Malviya 711	23
HI 8826	17	MP (JW) 1323	22
HI 8830	14	MP (JW)1358	17
HI 977	15	MP 3336	13
Him Palam Gehun 2	21	MP 3465	22
Him Palam Gehun 3	21	NIAW 3170	7, 17
HPW 349	18	NIAW 34	15
HPW 368	21	NIAW 3624	22
HPW 373	21	NIAW 917,	15
HS 507	18	NICRA Pusa Wheat 3411	19
HS 562	18	NIDW 1149	17
HUW 234	1, 9	NP783	1
HUW 711	23	NP784	1
HUW 838	7	NP785	1
Jammu Wheat 672	22	NP786	1
JAUW 584	22	NP789	1
JAUW 672	22	NP790	1
JKW 261	7	NP809	1
K 0307	9	NW 5054	9
K 1006	9	PbC518	1
K 1616	23	PbC591	1
Kanishka	14	PBW 1 chapati	22
Karan Aditya	9	PBW 34	1
Karan Aishwaraya	7	PBW 343	1, 4
Karan Manjari	14	PBW 343	4
Karan Narendra	6, 11	PBW 550	1
Karan Prema	11	PBW 550	4
Karan Shivani	9	PBW 752	5
Karan Shreya	11	PBW 757	5
Karan Vaidehi	9	PBW 761	19
Karan Vaishnavi	5, 13	PBW 766	22
Karan Vandana	5, 10, 13	PBW 771	4, 5
Karan Varuna	5	PBW 803	23
Karan Vrinda	5	PBW 824	23

<b>Variety name</b>	<b>Pg. No.</b>	<b>SHUATS-W13</b>	<b>23</b>
PBW 826	9, 11	SHUATS-W15	23
PBW 833	11	SKW 356	22
PBW 869	23	Sunehri	22
PBW 872	5	UAS 466	14
PDW 233	1	Unnat HD 2932	19
Phule Anupam	22	<b>Variety name</b>	<b>Pg. No.</b>
Phule Satwik	7, 17	Unnat HD 2967	19
Pusa Aditi	7	Unnat PBW 550	19
Pusa Ahilya	14	UP 2338	4
Pusa Harsha	14	UP 262	1, 9
Pusa Jagrati	7	UP 2844	24
Pusa Kirti	14	UP 2855	24
Pusa Ojaswi	14	UP 2865	24
Pusa Poshtik	17	UP 2903	24
Pusa Prabhat	14	UP 2938	24
Pusa Purvika	11	UP 2944	24
Pusa Vakula	14	Vidhya	14
Pusa Vani	16	VL 2041	18
Pusa wheat 1620	8	VL 738	18
Pusa Wheat 1621	7, 11	VL 907	18
Pusa Wheat 1628	7	VL Cookies	18
Pusa wheat 3237	8	VL Gehun 2014	24
Pusa Wheat 3249	10	VL Gehun 2015	24
Pusa Wheat 3271	7, 11	VL Gehun 2028	24
Pusa Wheat 3369	7	VL Gehun 3004	24
Pusa Wheat 8802	16	VL Gehun 3010	24
Pusa Wheat 8805	16	VL Gehun 967	24
Pusa Yashasvi	7	WB 2	1
Raj 1555	1	WH 1105	4
Raj 3765	1	WH 1124	4
RAJ 4037	15	WH 1184	21
Shalimar wheat 3	22	WH 1270	9
Shaurya	7	WH 147	1
SHIATS-W10	23	WH 542	4
SHIATS-W9	23	WL 711	1



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