

## New wheat release: DBW 88 for irrigated and timely sown condition of north western plains zone of India

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### Abstract

DBW 88, a bread wheat (*Triticum aestivum*) variety has been released in 2014 for commercial cultivation under irrigated and timely sown conditions of Punjab, Haryana, Delhi, Rajasthan (except Kota and Udaipur divisions), West Uttar Pradesh (except Jhansi division), Tarai region of Uttarakhand, Una district and Paonta valley of Himachal Pradesh and Jammu and Kathua districts of Jammu & Kashmir. The variety DBW 88 has average yield of 53.9 q/ha with yield potential upto 69.9 q/ha. It has seedling resistance against the most prevalent pathotypes of yellow and brown rusts and tolerance to Karnal bunt disease. It has high biomass (straw yield) and high grain protein content.

**Keywords:** Bread wheat, high yield, disease resistance, quality traits

India achieved wheat production of 93.5 million tons during 2012-13 (DES, 2014). The North Western Plains Zone (NWPZ) of the India, the largest wheat producing zone has been the seat of the historical green revolution, and at present, it contributes substantially to the total wheat production and also contributes maximum to the buffer stock in the country.

The major requirement of this zone is disease resistance in the varieties against fungi, particularly strip rust, yellow rust and Karnal Bunt. The wheat varieties having better yield potential and tolerance to terminal heat are desirable for NWPZ to attain highest production level. At present, major varieties under irrigated timely sown conditions are PBW 343, DBW 17, PBW 550, DPW 621-50, HD 2967 and WH 1105. Among these, PBW 343 has become highly susceptible to the yellow rust. Varieties DBW 17 & PBW 550, although popular in sizeable area, have also become susceptible to yellow rust races and thereby showing a decline in yield.

Other varieties namely DPW 621-50, HD 2967 & WH 1105 are yet to be adopted on larger area in the zone and recently some susceptibility was also observed in these genotypes against yellow rust. As yellow rust resistance is priority in the zone in addition to higher yield potential, a new wheat variety is needed by the farmers of the zone. The variety DBW 88 (KAUZ//ALTAR84/

AOS/3MILAN/KAUZ/4/HUITES), developed by the Crop Improvement division of the Directorate of Wheat Research, Karnal, was released by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops and notified vide S.O. 244 (E)-dated 24 January, 2014 for commercial cultivation under irrigated, timely sown conditions of the states of Punjab, Haryana, Delhi, Rajasthan (except Kota and Udaipur divisions), West Uttar Pradesh (except Jhansi division), Jammu & Kathua districts of Jammu & Kashmir, Una district & Paonta valley of Himachal Pradesh and Tarai region of Uttarakhand.

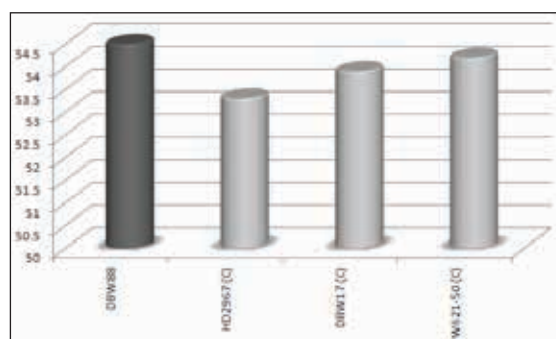


Fig 1. Grain yield (q/ha) under the AVT trials in final two years (2011-12 & 2012-13) of testing

This variety was evaluated first under the National Initial Varietal Trial (NIVT1B) during 2010-11. During testing in the coordinated trials of AICW&BIP, DBW 88 was evaluated at 55 locations during 2010-11 to 2012-13, out of which it occurred 26 times in 1<sup>st</sup> non-significant group indicating its wider adaptability and stable yielding features with an average yield of 53.9 q/ha.

However in advance varietal trials, DBW 88 has produced an average yield of 54.5q/ha and showed yield superiority over all the checks namely DBW 17, DPW 621-50 and HD 2967 (Fig 1). It recorded yield potential upto 69.9 q/ha at Shikopur in 2011-12 under timely sown conditions (Anonymous, 2013).

**Table 1.** Yield performance (q/ha) of DBW 88 in agronomical evaluation

Agronomic condition	DBW 88	HD2967(C)	DBW17(C)	DPW621-50(C)	WH1105 (C)	PBW343 (C)
Timely sown	54.32	51.88	55.06	53.33	53.43	54.33
Late sown	44.69	42.36	44.83	44.28	42.06	42.55
% decrease under LS	17.7	18.4	18.6	16.96	21.28	21.3
CD (P=0.05)	DOS = 0.52	Var = 1.28	Var. within DOS = NS	DOS within Var. = NS		

In the agronomical trials of NWPZ, conducted under timely sown conditions, DBW 88 showed superior performance (54.32q/ha) over latest check varieties HD 2967, DPW 621-50 and WH 1105. Similarly, DBW 88 also yielded higher than all the checks except DBW 17 under late sown condition that reflects its better adaptation for tolerance to terminal heat stress (Table 1).

As yellow rust is the major threat for the wheat production in NWPZ, the varieties were evaluated for the resistance under natural and artificial conditions. In addition, resistance to leaf rust and powdery mildew are also important to realize higher yields. DBW 88 has shown resistance against prevalent pathotypes of stripe rust (including 78S84 under natural as well as artificial conditions). The race specific response under controlled condition at Regional Station, Directorate of Wheat Research, Flowerdale, Shimla indicated resistance in DBW 88 against most virulent races of stripe (78S84 & 46S119) and leaf rusts (77-5 & 104-2). It is also moderately resistant to Karnal Bunt as shown by average incidence (4.6%) of KB as compared to the checks.

DBW 88 possesses better quality parameters as indicated by grain appearance (score 6.0), chapati score (7.66 ),

protein content (13.8%) and perfect 10/10 Glu-1 score. It meets all desirable components of better bread making qualities that makes it favourable for industrial purposes.

In nutshell, the high yield potential of the variety DBW 88 coupled with terminal heat stress tolerance and plasticity for sowing time makes this variety a suitable choice of the farmers of the NWPZ in present climatic conditions under predominant rice-wheat cropping system. The better disease resistance and quality traits are additional advantages fulfilling the requirements of the farmers.

## References

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