



## Research Article

# ADOPTION OF WHEAT VARIETY HD-3059 IN DISTRICT BIJNOR WITH THE SPECIAL REFERENCE TO ANALYSIS OF YIELD GAP AND THEIR PERFORMANCE

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**Abstract-** Wheat variety HD-3059 was disseminated through on farm Testing and Front-Line Demonstrations at farmer's field in Bijnor district. The demonstrations conducted during last three years (2014 & 2015), were considered for the study. The result indicated that average yield of wheat variety HD-3059 in IP practices ranged between 42.50 to 47.50 q/ha in different blocks of district Bijnor. The adoption of wheat variety HD-3059 was significantly increased in farmers due to higher product, which ultimately resulted in more net return.

**Keywords-** HD-3059, yield gap, performance and adoption

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## Introduction

Wheat is the pre-eminent among the world's crops with regards to its antiquity and its importance as a staple food of mankind. India one of the greatest success stories of green revolution is the second largest producer of wheat in the world after china and contributes more than 12% to the global wheat basket. Wheat is the second most important crop after rice in India. In India wheat is grown in about 31 m. ha area with an average productivity of 3.2t/ha, out of which around one-third (11.0m ha) lies in the state of Uttar Pradesh alone. The productivity of the state is close to the national average as the major constraints are cultivation of old low yielding and disease susceptible varieties, and adoption of poor wheat production technologies. In Bijnor district, total area under wheat is about 1, 18,000 to 1, 20,000ha, out of that 55% ha area is under Late sown condition. Sugarcane-Wheat is the most common rotation in the district, which leads to Late sowing of wheat. The choice of right varieties under Late sown condition is one of the crucial points determining the yield of wheat. The yield and productivity of Late sown wheat varieties is less or stagnant due to farmers unawareness about high yielding varieties and also non-availability of varieties having significantly higher yield as compared to the existing varieties under changing climatic conditions. Commonly grown late sown wheat varieties are PBW-226, DBW-16, PBW-373, PBW-154, PBW-175, Pusa Gold, and Raj-3765 in district. Old and outdated late sown wheat varieties are prone to lodging, affected by disease and very low yielding. An improvement over timely sown wheat variety, HD-3059 is released by IARI, New Delhi during 2013. The plant stature is medium dwarf (93 cm), crop duration 121 days, and resistant against rust. In terms of grain quality traits HD 3059 has excellent chapatti making quality and high protein content [1].

## Materials and Methods

The On farm Testing and front line demonstrations were conducted during 2014, and 2015 in Kotwali, Afjalgarh, Nehtor, Kiratpur, Haldaur, Dhampur, and Noorpur

blocks of district Bijnor, at 30 farmers field for evaluation of performance, effectiveness and adoption of HD-3059 in comparison to farmers practice. The yield data from front line demonstration, as well as farmers practice were recorded by representative samples from different locations. The following formulae have been used for estimation of technology gap, extension gap and technology index (as per methods of Samui, *et al.*, 2000 and Sagar and Chandra 2004 [2,3].

- 1- Technology gap = Potential yield – Demonstration yield
- 2- Extension gap = Demonstration yield – farmers yield
- 3- Technology index = [(Potential yield – Demonstration yield) / Potential yield] x 100

## Results and Discussion

The field performance and yield gap of the HD-3059 along with the local check, were evaluated and data are given in [Table-1]. From the data given in [Table-1] it is quite clear that seed yield increased significantly in the range of 42.50 to 47.50 qt./ha in different blocks of Bijnor district, as compared to local check. In 2006, Singh and Rana reported seed yield increase up to 20.70 qt. / ha by Pusa Barani Variety of mustard crop under irrigation condition [4]. In 1998, Biswas, *et al.*, reported varietal differences of grain yield in scented rice [5]. The benefit cost ratio of HD-3059 was also higher in all the blocks in comparison to local check. It varied from 2.22 to 2.87. In 2006, Hedge reported that mustard crop by nature is hardy and mostly grown under rainfed condition and can impart stability of production system under harsh condition [6,7]. The benefit cost ratio of HD-3059 was also higher in all the blocks in comparison to local check in district Saharanpur of Uttar Pradesh [8]. The result obtained clearly indicate the technology gap range between 11.90 to 16.90 with an overall mean difference of 7.60 qt. / ha. In 1997, Kadian, *et al.*, reported that technology gap can be narrowed down only by location specific technology-based recommendations [9]. Adoption of HD-3059 has significant impact on seed yield vis a vis yield gap. Yield increased in

demonstration field due to adoption of newly released variety. Adoption percentage ranged between 7.50 to 17.50 with a mean percent increase of 11.42 % as compare to local check. Rana *et al.*, (2002) reported that the demonstration is quite successful in farmer practice [10]. In 2011 Singh, *et al.*, 2011, also

reported that the adoption of basmati variety Pusa Basmati-1401 in farmers practice [11].

**Table-1** Yield, Extension Gap, Technology gap, Adoption and Economics of Wheat variety HD-3059.

Name of Block	No. Of Demo.	Duration study (Years)	Avg. Yield (qt/ha)			% Yield increased	Net Return (Rs/ha)	BCR	Technology gap (qt/ha)	Extension gap (qt/ha)	Technological index	Adoption % within 3 years
			P	IP	FP							
Kotwali	12	2	59.40	47.50	39.29	20.89	56318.63	2.42	11.90	8.21	12.45	17.00
Ajmalgarh	07	2	59.40	45.71	40.53	12.78	52900.00	2.33	13.69	5.18	23.04	14.00
Nehtor	02	2	59.40	45.00	38.75	16.12	54725.00	2.39	14.40	6.25	24.24	9.50
Kiratpur	02	2	59.40	42.50	36.87	15.26	47562.50	2.22	16.90	5.63	28.45	10.00
Haldaur	02	2	59.40	47.50	42.50	11.76	55937.50	2.39	11.90	5.00	12.45	8.50
Dhampur	02	2	59.40	45.00	41.25	9.00	51625.00	2.32	14.40	3.75	24.24	7.50
Noorpur	03	2	59.40	46.20	32.40	42.50	63100.00	2.87	13.20	13.80	22.22	13.50
<b>Mean</b>	<b>30</b>	<b>2</b>	<b>59.40</b>	<b>45.63</b>	<b>38.79</b>	<b>18.33</b>	<b>54595.52</b>	<b>2.42</b>	<b>13.77</b>	<b>6.84</b>	<b>21.01</b>	<b>11.42</b>

P = Potential yield, IP= Improved practice, FP = Farmers practice

### Conclusions

The wheat variety HD-3059 led to higher adoption due to higher yield and higher cost benefit ratio in late sown condition. The area under this variety has now spread to more than 5500 ha in just three years and successfully 100% area of PBW-373 was replaced in district by this variety. The demand of quality seed of this variety is also increasing which has led to participatory seed production at farmer's field.

**Application of research:** This research is helpful for increasing income of the farmers as selection appropriate technology (variety) play a vital role to increase production and productivity.

**Research Category:** Technology evaluation and dissemination

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