

This wheat seed holds much promise

Sandip Das | October 01, 2019

HD3226, an indigenously developed seed, has higher protein and is more resistant to pest attack than other varieties

A new variety of wheat seed developed by the country's premier Indian Agricultural Research Institute (IARI) comes at a critical time when farmers, mostly across northern India, have to deal with increasing incidents of pest attacks which threaten to impact yield.

Two of the key wheat varieties — HD2967 and HD3086 — also developed by IARI a few years back and grown widely by farmers mostly in the north-western plains, have become susceptible to yellow and brown rust along with Karnal bunt (a fungal disease) in recent years. IARI has released a new wheat seed, HD3226, which has shown resistance to these pests and is reported to have higher protein content than the existing varieties.

In the next rabi (winter) season for which sowing is expected to commence in November, farmers are expected to sow HD3226, also referred as Pusa Yashasvi, whose protein content (average 12.6 per cent) is higher than those of the two prevalent varieties — HD2967 (12.3 per cent) and HD3086 (11.3 per cent).

According to scientists at IARI, a key institute under India Council for Agricultural Research (ICAR) especially in development of rice and wheat varieties, the new wheat variety is superior to others varieties in terms of dry and wet gluten content. HD3226, developed after three years of field trials at various locations, has also shown potential for higher yield compared to other varieties.

To deal with rusts that affect yield, HD3226 was released by the central sub-committee of crop standards (under the Agriculture Ministry) in April 2019. This variety is recommended for cultivation in the north-western plains — Punjab, Haryana and parts of Rajasthan, western Uttar Pradesh, Jammu and Kashmir, Himachal Pradesh and Uttarakhand — and in the coming rabi season, farmers are expected to take up the new variety for cultivation in larger areas.

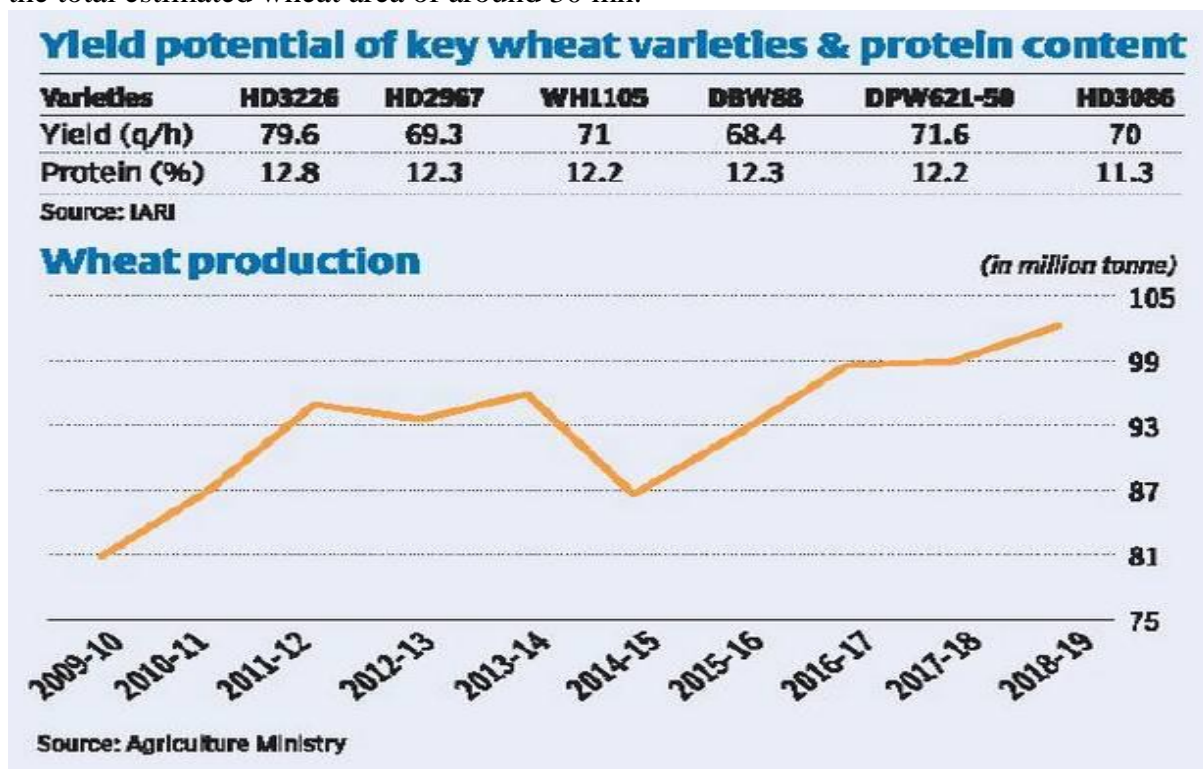
IARI has signed MOUs with 40 private seed producers in Haryana and Punjab who would multiply the seeds for the farmers in the next rabi season. “The new variety, because of higher protein content, could push up exports of wheat from India,” Rajbir Yadav, Principal Scientist, Division of Genetics, IARI, said.

According to Agricultural and Processed Food Development Authority (APEDA), in 2018-19, India exported 44 lakh tonne of basmati rice and 75 lakh tonne of non-basmati rice while wheat export was only to the tune of 2.36 lakh tonne.

At present, around 95 per cent of the wheat produced in the country is suitable for ‘bread’ quality, which requires less than 12 per cent protein content, while only about 4 per cent is of ‘durum’ quality (with protein content of more than 12 per cent), which is mostly grown in central India.

According to Indian Institute of Wheat and Barley Research (IIWBR), affiliated to ICAR, ‘durum’ wheat, which is extensively used for making instant foods such as macaroni, noodles and snack foods, have export potential. With the HD3226 variety giving a protein content of more than 12 per cent in field trials, this could boost India’s wheat exports in the next few years.

IIWBR, over the last few years, has been cautioning farmers against the spread of fungus that causes yellow rust in wheat crop. The widely cultivated HD2967 and HD3086, grown mostly in the north-western plains, have become susceptible to yellow and brown rust. These two varieties are estimated to occupy around 12 million hectare (mh) out of the total estimated wheat area of around 30 mh.



Fungus attack

Yellow rust disease in wheat crop is caused by fungus Puccinia found in cold wheat-growing regions such as the north-western plains and northern hills. This infection, which causes reduction of kernel numbers per spike and decreases the weight of wheat kernels, is capable of causing a huge decline in wheat yields.

Fungicides such as propiconazole, tebuconazole and triadimefoan are being used to combat yellow rust in wheat crop — the building of inherent genetic resistance in plants to fight diseases is a method which lead to the development of HD3226.

The new wheat variety is found to be resistant to Karnal bunt, a disease which results in yield reduction and decrease in quality of grains by imparting a fishy odour and taste to the wheat crop.

Yadav of IARI said that in field trials HD3226 was found to be resistant to Karnal bunt, with its incidence being 63.67 per cent lower than in HD3086. Its grains possess high protein (12.8 per cent) content, high wet (30.85 per cent) and dry gluten (10.10 per cent) content and a perfect Glu-1 score (10). This variety is thus suitable for both bread and chapatti-making. The new variety is also suitable for early seeding under zero till condition.

Meanwhile, the IARI, in major breakthrough, has also developed two other wheat varieties — HD-CSW18 and HD3117 — which can be transplanted directly to the soil (in northern India) soon after the harvesting of kharif paddy. Yadav said that this would prevent farmers from burning their field post paddy harvest and, thereby, help in dealing with environmental pollution.

IARI, in the last three decades, has developed more than 45 varieties of wheat seed and 20 varieties of basmati rice varieties. The basmati rice variety, Pusa Basmati 1121, developed by the institute, has earned a cumulative value of ₹50 lakh crore during 2008-2016. Last year, an improved version, Pusa Basmati 1718, was developed with inbuilt resistance to bacterial blight disease.

The writer is a senior consultant with ICRIER. Views are personal

Source: <https://www.thehindubusinessline.com/opinion/this-wheat-seed-holds-much-promise/article29559452.ece>