

GOVERNMENT OF INDIA  
MINISTRY OF AGRICULTURE AND FARMERS WELFARE  
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION

**LOK SABHA**  
**UNSTARRED QUESTION NO. 5232**  
TO BE ANSWERED ON 27/03/2018

**DEVELOPMENT OF NEW VARIOUS VARIETIES OF CROPS**

5232. SHRI PANKAJ CHAUDHARY:

Will the Minister of AGRICULTURE AND FARMERS WELFARE  
कृषि और किसान कल्याण मंत्री be pleased to state:

- (a) whether the scientists of Indian Agricultural Research Council have developed many new varieties of rice, maize, millet, wheat, sesame, mustard, vegetables and fruits enriched with high protein and nutrients;
- (b) if so, the details thereof and whether it is a fact that farming of these varieties is not getting promoted due to lack of incentives;
- (c) if so, whether the Government has any proposal to make a market chain of special crops, fruits and vegetables and to increase production and to give incentives to farmers; and
- (d) the measures taken by the Government to provide nutrient rich agricultural products, fruits and vegetables to the poor?

**A N S W E R**

MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE AND FARMERS WELFARE  
कृषि और किसान कल्याण मंत्रालय में राज्य मंत्री  
**(SHRI GAJENDRA SINGH SHEKHAWAT)**

- (a) Yes, Madam.
- (b) **Details of various bio-fortified varieties developed by ICAR during last three years**

**Rice**

1. **CR Dhan 310:** Contains 10.3% protein in polished grain as compared to 7.0-8.0% in popular varieties
2. **DRR Dhan 45:** High in zinc content (22.6 ppm) in polished grains in comparison to 12.0-16.0 ppm in popular varieties

### **Wheat**

3. **WB – 2:** Rich in zinc (42.0 ppm) and iron (40.0 ppm) in comparison to 32.0 ppm zinc and 28.0-32.0 ppm iron in popular varieties
4. **HPBW 01:** Contains high iron (40.0 ppm) and zinc (40.6 ppm) in comparison to 28.0-32.0 ppm iron and 32.0 ppm zinc in popular varieties

### **Maize**

5. **Pusa Vivek QPM9 Improved:** High provitamin-A (8.15 ppm), lysine (2.67%) and tryptophan (0.74%) as compared to 1.0-2.0 ppm provitamin-A, 1.5-2.0% lysine and 0.3-0.4% tryptophan content in popular hybrids
6. **Pusa HM4 Improved:** Contains 0.91% tryptophan and 3.62% lysine which is significantly higher than popular hybrids (0.3-0.4% tryptophan and 1.5-2.0% lysine)
7. **Pusa HM8 Improved:** Rich in tryptophan (1.06%) and lysine (4.18%) as compared to 0.3-0.4% tryptophan and 1.5-2.0% lysine in popular hybrids
8. **Pusa HM9 Improved:** Contains 0.68% tryptophan and 2.97% lysine compared to 0.3-0.4% tryptophan and 1.5-2.0% lysine in popular hybrids

### **Pearl millet**

9. **HHB-299:** High iron (73.0 ppm) and zinc (41.0 ppm) as compared to 45.0-50.0 ppm iron and 30.0-35.0 ppm zinc in popular varieties/hybrids
10. **AHB-1200:** Rich in iron (73.0 ppm) in comparison to 45.0-50.0 ppm in popular varieties/hybrids

### **Lentil**

11. **Pusa Ageti Masoor L 4717:** Contains 65.0 ppm iron as compared to 55.0 ppm iron in popular varieties

### **Indian mustard**

12. **Pusa Mustard 30:** Contains low erucic acid (<2.0%) in oil as compared to >40% erucic acid in popular varieties
13. **Pusa Double Zero Mustard 31:** Low erucic acid (<2.0%) in oil and glucosinolates (<30.0 ppm) in seed meal as compared to >40.0% erucic acid and >120.0 ppm glucosinolates

### **Cauliflower**

14. **Pusa Beta Kesari-1:** Contains high  $\beta$ -carotene (8.0-10.0 ppm) in comparison to negligible  $\beta$ -carotene content in popular varieties

### **Sweet potato**

15. **Bhu Sona:** High  $\beta$ -carotene (14.0 mg/100 g) content as compared to 2.0-3.0 mg/100 g  $\beta$ - carotene in popular varieties
16. **Bhu Krishna:** High anthocyanin (90.0 mg/100g) content in comparison to popular varieties which have negligible anthocyanin content

## **Pomegranate**

17. **Solapur Lal (NRCP H-6):** High iron (5.6-6.1 mg/100g), zinc (0.64-0.69 mg/100g) and vitamin C (19.4 -19.8 mg/100 g) in fresh arils in comparison to 2.7-3.2 mg/ 100g, 0.50-0.54 mg/100g and 14.2-14.6 mg/100g, respectively in popular variety Ganesh

All these varieties have been released during last three varieties and have been put in the seed chain which may take 2-3 years in production of certified/ quality seed in sufficient quantity for commercial cultivation by the farmers. Presently promotion of farming of these varieties is not affected due to incentives, though, incentives for such farm produce will definitely help in growing of such materials on larger areas helping in providing nutri-rich agriproducts to the masses.

(c) ICAR is mandated to produce the breeder seed of the varieties notified in the gazette of India. As per the breeder seed indent provided by GOI, ICAR produces the breeder seed which is further used for production of foundation and certified classes of seed as per seed production chain being followed in India. For facilitating the on farm demonstrations and faster dissemination of newly released varieties, test stock seeds are produced by National Seed Corporation Limited and these are demonstrated through Front Line Demonstrations by KVKs/ICAR Institutes/ SAUs and other agencies. Following quantity of seed/planting material was produced/made available for seed multiplication/ commercial cultivation during 2017-18:

Rice-CR Dhan 310: Breeder seed - 16.5 q, TL seed – 13.12.q

Rice-DRR Dhan 45: Breeder seed: 25.9 q

Wheat-WB-2: Breeder seed-52.95 q, TL seed - 60.0 q

Wheat-HPBW-01: TL seed - 300.0 q

Pusa Mustard 30: Breeder seed-2.0 q, TL seed-3.1 q

Pusa Double Zero Mustard-31: Breeder seed-1.0 q, TL seed-3.0 q

Pusa Ageti Masoor (L 4717): Breeder seed-5.0 q

Sweet potato-Bhu Sona: 155000 vine cuttings

Sweet potato-Bhu Krishna: 82000 vine cuttings

Pomegranate-Solapur Lal: 24000 planting materials

At present there is no price difference between the biofortified and conventional varieties. A request has already been made to the Chairman, Commission for Agricultural Costs and Prices and Secretary, DAC&FW, MOA&FW, Govt. of India for separate minimum support price of such biofortified varieties so that the farmers are attracted towards production of these varieties for easy availability to the consumers in larger areas.

(d) Inclusion of biofortified varieties of various crops in the public distribution system (PDS) and mid-day meal schemes in the schools will help in availability of such products to poor for fighting the problem of malnutrition. A communication has already been made to Secretary, Department of Food and Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution, GOI. Issue has also been taken up at NITI Ayog during the consultations on Leveraging Agriculture for Nutrition and inclusion of millets in PDS.

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