PARLIAMENT QUESTION: DEVELOPMENT OF CROP VARIETIES USING RADIATION TECHNOLOGY

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In the last 5 years (i.e. from 2020-2025), by employing radiation techniques, Department of Atomic Energy (DAE) has developed and released a total of 23 varieties for cultivation by farmers. These include (a) 7 rice varieties (b) 5 mustard varieties (c) 3 black gram (urad) varieties (d) 3 sorghum (jowar) varieties (e) 2 groundnut varieties (f) one mung bean variety (g) one sesamum (til) variety and (h) one banana variety. Till date Bhabha Atomic Research Centre (BARC) has developed and released 72 improved crop varieties for cultivation.

The new varieties are released for different agroclimatic conditions of various states and different growing seasons (rainy, post-rainy and summer). In addition to these specific suitability and adaptability, these new varieties have key desirable traits like increased yield, larger seed size, seed dormancy, early maturity, higher nutrient content, resistance to lodging, improved disease resistance and wider adaptability to abiotic stresses. These characteristics of the newly developed crop varieties distinguish them from the earlier varieties.

All varieties are absolutely safe for consumption. Radiation based mutagenesis only accelerates the natural process of mutation induction. It may be noted that only seeds are exposed to radiation for inducing mutations in their DNA. This process does not make the seeds radioactive, and particularly, radiation-induced mutagenesis has been safely used for the last 8-9 decades worldwide to improve crop varieties.

The newly developed BARC breeding lines or mutants are thoroughly evaluated in the Indian Council of Agricultural Research (ICAR) / State Agricultural University (SAU) evaluation system to test their superiority and adaptability over the existing local, zonal and national check varieties in station, multi-location and adaptive trials in the field of actual farmers. The highest-performing genotypes are also evaluated for their nutritional-quality parameters such as oil content, carbohydrate content, protein and fat content etc. After this rigorous testing, based on its superiority (over check varieties), the newly developed mutant line is recommended for release by the varietal identification committees of ICAR/SAU.

All these crop varieties are officially released for cultivation by farmers following successful field trials and evaluations conducted by ICAR or SAUs at multiple locations. In this regard, gazette notifications for release of newly developed crop varieties have been issued by Ministry of Agriculture and Farmers Welfare (MoAFW).

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