



NATIONAL RESEARCH CENTRE ON PLANT BIOTECHNOLOGY



PUSA JAI KISAN A SUCCESS STORY

Introduction

Among the edible oilseed crops, rapeseed-mustard occupies a prominent position in India accounting nearly 6 million hectares of land under cultivation which produces approximately 5.8 million tonnes of oil seeds annually. In India, it is an important cooking medium and a source of dietary fat for majority of the population inhabiting northern, western and north-eastern states.

Among the salient achievements of this centre, a high yielding mustard variety, named, 'Pusa Jai Kisan' has been developed through tissue culture technique, called somaclonal variation. A popular commercially released variety, Varuna (Type 59) was used as a donor parent for generating somaclonal variation.



Technique used

The tissues from hypocotyl region of young seedlings were cultured on artificial medium supplemented with growth hormones. As a result of the culture, a number of calli were formed, which upon subculture produced plantlets. Subsequently, R2 generation was examined for variation and the variants were selected individually and some selected lines were tested in the field.

One such selection (Selection Bio-902) showed consistent superiority (15-20%) in yield over its parent in replicated field trials..

Performance in coordinated trials

Bio-902 performed best for seed yield and other important traits like maturity, seed size and oil content in Zone IV, comprising Rajasthan, Gujarat and parts of Maharashtra. On the basis of three year's tests (1990-1993), it showed 17.4 and 19.7% yield superiority over the best performing national varieties, Varuna and Kranti, respectively. Bio-902 was also assessed for its yield potentiality under late sown conditions under AICRP in Zone-II and Zone-III, which recorded the highest yield too. After Bio-902 showed most promising performance in coordinated (AICRP) trials, it was subjected to extensive trials in farmer fields to confirm its yield potential and also to popularize it amongst the farming community. In the minikit trial conducted by Krishi Vigyan Kendra, Shikohpur (Gurgaon) during 1992-1993, Pusa Jai Kisan not only out-yielded all the six commercially released varieties but also showed a yield gain upto 800 kg per hectare. **Bio902** was released in the year 1994 for commercial cultivation as **Pusa Jai Kisan**.

Demand of breeders seed of Pusa Jai Kisan

Generally, a variety is released on the basis of superior performance for three successive years under coordinated trials. But the merit and popularity of it are adjudged by the annual demand of its breeder's seed, which is continuously increasing for Pusa Jai Kisan. It is relevant here to mention that even today, Pusa Jai Kisan topped the list of breeders seed demand even after 20 years of its release.