3rd National Brassica Conference (NBC-2017)

on

'Enhancing Oilseed *Brassica* Production Through Climate-Smart Technologies'

Held at

ICAR-Indian Agricultural Research Institute (IARI), New Delhi from February 16-18, 2017

Recommendations 3rd National Brassica Conference - 2017

Climate change has far reaching consequences for national food and nutritional security. Like other winter crops, rapeseed and mustards are going to be impacted strongly due rising average temperatures and early onset of temperatures. New crop varieties, cropping systems, and rapeseed-mustard based agricultural management strategies are needed to provide multiple options to farmers. 3rd National Brassica conference was held from February 16-18,2017.The conference calls for enhanced Interdisciplinary research and science-based actions to improve climate resilience of rapeseed-mustard crops. The conference statement was discussed during plenary session under the Chairmanship of Dr T. Mohapatra, Secretary, DARE and DG ICAR. Prof. R.B. Singh was the chief guest. Conference statement broadly defines challenges that are required to be addressed to adapt cropping systems to climate change in the short-term. However, uncertainties over long term climate scenario require policies and infrastructure to drive innovation in a sustainable manner. In particular, research investments are required to be upgraded significantly.

1. Emphasis on sustainable mustard productivity and crop quality in scenario of enhanced temperatures, moisture stresses and CO2 levels, especially hybrid development.

2. Establishing environment analogues in the country and evolutionary mustard breeding populations in such analogues. Precision phenotyping for abiotic stresses like drought, high temperatures and salinity.

3. Wider exploration of genetic diversity, through introduction of germplasm from wild-type crop relatives, land races from a wide range of climates and growing conditions. Identify rapeseed-mustard germplasm that tolerates drought, heat, and water-logging.

4. Massive pre-breeding programmes- resynthesis of *B. juncea* and introgression of resistance for sclerotinia stem rot,alternaria blight and mustard aphid from wild and weedy relatives.

5. Developing early flowering mustard to escape end season high temperatures, drought; enhanced root growth in deeper soil layers to access water and reduced leaf growth to minimize the transpiring.

6. Refining pest forecasting models based on historical data to ensure better projection with special reference to extinction, emergence and re-emergence of pathogens and insects. Special emphasis on powdery mildew, white rust, sclerotinia stem rot and mustard aphids.

7. Nutrient use efficiency: Use of modern tools including nano-technology for better nutrient management, exploitation of germplasm with better nutrient uptake.

8. National registry of fixed diversity sets for mustard; phenotyping and genotyping datasets for data mining and validation by mustard breeders for developing molecular markers to facilitate marker assisted selection.

9. Use of crop models, remote sensing in decision-making.

10. Participatory breeding by farmers and other stakeholders. Public private partnership.

11. Establishing the metabolic costs of desired adaptions and nutritional modifications like oil content and quality. Defining trait specific trade-offs in consultation with stake holders, differential price policy for quality product.