

PROCEEDINGS
1st National Brassica Conference
Production Barriers & Technological Options in Oilseed Brassica
(March 02-04, 2012)
CCSHAU, Hisar

The 1st National Brassica Conference, held at the CCS Haryana Agricultural University, Hisar, March 02-04, 2012, was jointly organized by the Society for Rapeseed-Mustard Research, Bharatpur, CCS HAU, Hisar and the Indian Council of Agricultural Research, New Delhi. The Chief Guest, Dr. Arvind Kumar, Deputy Director General (Education), ICAR, New Delhi inaugurated the conference NBC 2012. Dr. Krishna Kokhar, Vice Chancellor, CCS HAU, presided over the function. The inaugural session was graced by very senior personalities, viz., Dr PS Lamba (Ex-VC, CCSHAU), Dr DP Singh (Ex-VC, JNKVV, Jabalpur), Dr Deepak Pental (Ex-VC, Delhi Univ.), Dr. P.R. Kumar, Ex-ADG, ICAR, Dr. P.R. Verma, Ex- Plant Pathologist, Agriculture Canada, Research Station, Saskatoon, Dr DK Sharma (Director, CCSRI, Karnal), Dr KC Bansal (Director, NBPGR, New Delhi), Deans, Directors of CCS HAU and many other dignitaries and researchers involved in Brassica crop commodity. Dr. R.P. Narwal, Director Research, CCS HAU welcomed the dignitaries and participants to the conference. He highlighted the contribution of University in the field of rapeseed-mustard research. In his address, the VC (CCS HAU), Dr. KS Khokhar lauded the contribution of University and the state Haryana in oilseeds production. The productivity (~1869 kg/ha) of Rapeseed-Mustard of the state is the highest in the country. Dr. Khokhar also highlighted the gap between production of oilseed and consumption. Rapeseed-Mustard has the potential to bridge this gap and meet the future demand.

In his inaugural speech, Dr. Arvind Kumar, DDG (Education), ICAR, New Delhi appreciated the contribution of CCS HAU in oilseeds production in general and oilseeds Brassica in particular. He expressed his concern at the neglect towards toria, which could be an important donor source for high temperature stress at seedling stage. He stressed that the crop is gaining importance globally due to its advantage over other oilseeds, viz., higher yield potential, low moisture requirement, higher return at low cost of production, wider adaptability for various farming conditions, etc., which hold promise towards having the next yellow revolution. Despite these positives, the area, production and yield of the crop is fluctuating due to various biotic and abiotic stresses coupled with India's domestic price support.

After the Inaugural Session, the Society recognised the contributions of luminaries in the field of Brassica Research by **Lifetime Achievement Awards** to Dr Dharampal Singh, Dr Bhupendra Rai, Dr Prithvi Raj Verma and Dr Priya Ranjan Kumar. **Dr PR Kumar Outstanding Brassica Scientist Award** was conferred to Dr P.D. Meena for the year 2011 and Dr Vinod Kumar for 2012.

Highlights of Five Technical Sessions

Theme I: Exploiting wider diversity for Brassica improvement

The session comprising eight presentations was Chaired by Dr Deepak Pental, Co-Chaired by Dr SR Bhat with Dr Ram Bhajan as convenor. These presentations emphasised the benefits of transgenics and marker assisted selection for desired traits. Potential of *Barnase-Barstar* based mustard hybrid was highlighted. Using the process of super-domestication of oilseeds Brassicas with current breeding tools led to determinant and early-maturing types. Strategies to breed for resistance to biotic and abiotic stresses, use and validation of identified molecular markers in development of high-value Brassica cultivars were also discussed along with breeding Taramira for higher productivity and stress tolerance. Induced mutagenesis was found to be successful in developing several novel variants eg., non-locular and dwarf types. Identification and use of *rapa* landraces using variability for extra-early-maturing *toria* and fully-filled sinks in yellow sarson was also reported.

Theme II: Biotechnological interventions for stress management & Quality Improvement and value-added products in Brassica

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The session comprising eight presentations, was Chaired by Dr S.S. Banga, Co-Chaired by Dr (Mrs) Santosh Dhillon with Dr P K Rai, as convenor. Speakers highlighted the successful integration of conventional and molecular approaches to broaden genetic base in oilseeds Brassica. Available male-sterility systems in *Brassica juncea* and the development of single fertility restorer for more than one CMS system were also reported. Physiological, biochemical and molecular understanding of pathogenesis of *Alternaria*, *Myb* transcription factor for salt and drought stress tolerance were discussed. NIRS equation for rapid and non destructive determination of fatty acid profile was discussed.

Theme III: Resource utilisation through integrated cropping systems

The session comprising five presentations, was Chaired by Dr D. P. Singh, Co-Chaired by Dr D.K. Sharma with Dr B. K Kandpal as convenor. Speakers highlighted different aspects on on-farm crop management for enhancement of productivity in oilseeds Brassica, salinity and alkalinity management using salt-tolerant cultivars vis-à-vis their development. Alternative agriculture systems for sustaining and improving oilseeds productivity, *Orobanche* management and new paradigms for meeting the future oilseed demands were discussed.

Theme IV: Biotic stress management and technological interventions in changing climate

The session comprising five presentations was Chaired by Dr P.R. Verma, Co-Chaired by Dr R. C. Yadav with Dr C. Chattopadhyay as convenor. Dr. P.R. Verma reviewed the work done on *Albugo candida*, particularly on its oospore germination and availability in seed. He also stressed the need to initiate work on oospore germination and host differential study to understand the racial profile of *Albugo* in India. Speakers indicated availability of several eco-friendly options for management of diseases and insect-pest of oilseed brassica. Genomic studies have allowed some insight into *Brassica-Alternaria* interaction. Necessary research and adoption strategies are required to combat the new emerging diseases and insect-pest scenario in oilseed brassica as related to climate change.

Theme V: ICT, Public-Private Partnership and policy framework for oilseed brassica

The session comprising five presentations was Chaired by Dr P.R. Kumar with Dr S.P. Singh as Convenor. Speakers highlighted different aspects on development of effective mechanism for public-private partnership for rapeseed-mustard research and development. Greater application of information technology was stressed for effective transfer of technology and management of information. Need of farmer friendly Government policies for sustaining the crop was also felt.

Plenary Session: This Session was chaired by Dr. Arvind Kumar, DDG (Education), ICAR, New Delhi. The convenors of different Sessions presented the highlights and recommendations of their respective Sessions.

The Society also **conferred Fellowship(s)** to Drs Dhiraj Singh, S.S. Banga, Mahak Singh, Chakresh Kumar, Anil Pandey, Y.P. Singh, Ram Bhajan, R.P. Awasthi, R.K. Arora and Abha Agnihotri. The **Outstanding Brassica Research Award** for Ph.D. Student went to Dr. Poonam Sharma, CCS HAU, Hisar. The presentation made by Dr. Gohartaj was selected as **the best oral presentation and awards** for best paper presentations in each session were also given.

The Conference witnessed 206 oral and poster presentations from about 250 participants. Many of the presentations witnessed good interactive discussions. The participants were benefitted with the field visit of the experimental farm on 04 March 2012.

Annual General Body Meeting of the Society

The Annual General Body Meeting of the Society for Rapeseed-Mustard was also held under the Chairman of Dr. Arvind Kumar, President, SRMR and DDG (Edn), ICAR, New Delhi in which various issues were discussed. It was decided that Dr. S.S. Banga, National Professor, PAU, Ludhiana will be the Chief Editor of the Journal of Oilseed Brassica, henceforth. It was also decided that the Annual General Body Meeting of the Society should be held every year, at the time of the Annual Rapeseed-Mustard Research Workers' Workshop, as is the practice in other crops. The I.C.A.R. may be informed, accordingly.

Major Recommendations

- To compete in global market, there is need to develop high oleic-low linolenic varieties.
- Application of mutation techniques should be emphasized for the genetic improvement of Indian mustard.
- Restructuring plant architecture in oilseed Brassica should be done
- Strategies to breed for resistance to biotic and abiotic stresses keeping in view changing climatic pattern in rapeseed-mustard cropping ecology apart from emerging disease and insect-pest scenario under future climate, use and validation of identified molecular markers in development of high-value *Brassica* cultivars with breeding Taramira for higher productivity and stress tolerance.
- Efforts should be made to enhance the heterosis level to make the hybrid technology more competitive and remunerative.
- Exploitation of molecular breeding and transformation technology for improvement of oilseed Brassica for several traits such as herbicide resistance, insect resistance, salt tolerance, oil quality improvement etc.
- Improve the productivity and profitability of cropping systems in rapeseed-mustard production and help in increasing demand by accelerating the adoption and diffusion of resource conservation technologies.
- Introgression of desirable genes/traits for the genetic bases or inheritance of traits for disease resistance.
- Emphasis should be given on oospore germination and host differential study to understand the racial profile of *Albugo candida*.
- Physiological, biochemical and molecular understanding of pathogenesis of *Alternaria* and *Sclerotinia*, and *Myb* transcription factor for salt and drought stress tolerance.
- Effective mechanism for public-private partnership for rapeseed-mustard research and development.
- Application of information technology for effective transfer of technology and management of information, including information management related to changing climate in rapeseed-mustard cropping system for better coping strategies towards improved crop health management.
- Expansion of area by introducing the rapeseed-mustard crop in north-eastern parts of the country.
- Necessary research and adoption strategies are required to combat the new emerging diseases and insect-pest scenario in oilseed brassica