

# #015

## Two decades of rapeseed and mustard cyto-genetic and breeding research at ARS, Mandor, Jodhpur

ADDRESS

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PLENARY TALKS

Since establishment of Agricultural Research Station (ARS), Mandor, Jodhpur, the breeding work on Rapeseed and Mustard was initiated. Numerous collections of different species of Brassica i.e., *B. juncea*, *B. tournefortii*, *B. rapa* etc. were made and characterised for different traits. Promising genotypes of these species were evaluated for variability and diversity. Besides intraspecific crosses, interspecific and intergeneric hybridization in different Brassica and allied species were attempted to study crossability between different species, create variability and transfer useful traits to target genotype/species. Interspecific hybrids such as *B. juncea* (AABB,  $2n=36$ )  $\times$  *B. rapa* (AA,  $2n=20$ ), *B. napus* (AACC,  $2n=38$ )  $\times$  *B. rapa*, *B. carinata* (BBCC,  $2n=34$ )  $\times$  *B. rapa*, *B. juncea*  $\times$  *B. napus*, *B. tournefortii* (TT,  $2n=20$ )  $\times$  *B. rapa*, *B. carinata* (BBCC,  $2n=34$ )  $\times$  *B. tournefortii*, and intergeneric hybrids i.e., *B. tournefortii* (TT,  $2n=20$ )  $\times$  *Raphanus caudatus* (RR,  $2n=18$ ) and *Sinapis alba* (SS,  $2n=24$ )  $\times$  *B. nigra* (BB,  $2n=16$ ) were obtained through sexual hybridization. All these interspecific and intergeneric hybrids were studied in for their cyto-morphological observations. The crossability of *B. rapa* with amphidiploid species was in order of *B. napus* > *B. juncea* > *B. carinata*. Occurrence of ten bivalents in higher frequency in *B. juncea* (AABB,  $2n=36$ )  $\times$  *B. rapa* (AA,  $2n=20$ ) and *B. napus* (AACC,  $2n=38$ )  $\times$  *B. rapa* hybrids was attributed to pairing between A-A genome chromosomes of different species confirming that *B. rapa* is one of the parents of amphidiploid species *B. juncea* and *B. napus*. Multivalent associations in the form of trivalent and quadrivalent in the interspecific hybrids confirmed the hypothesis of a secondary polyploid origin of the A, B and C genomes. Further occurrence of 11 bivalents instead of expected 27 univalents in trigenomic trihaploid ABC hybrid of *B. carinata* (BBCC,  $2n=34$ )  $\times$  *B. rapa* (AA,  $2n=20$ ) revealed that some of them were due to allosyndesis among A, B and C genomes.

Inheritance of characters such as seed coat colour, siliqua orientation, siliqua locule number in Brassica was also reported.

Plants selected from different segregants were advanced for future breeding programme.

ORALS

POSTERS

WORKSHOPS