

Genetic variability studies of germplasm accessions in Indian mustard under protected and unprotected conditions at Bijapur, Karnataka

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ABSTRACT

At Regional Agricultural Research Station (RARS), Bijapur, 118 germplasm accessions from three years (2004-2006) study 46 Indian mustard genotypes were found promising. These promising genotypes were further tested vigorously with a view to identify best performing genotypes for this region especially from released varieties belonging to NRCRM, Bharatpur. An experiment comprising of 46 germplasm accessions was laid out in RBD with two replications separately under protected (against pests and diseases) and unprotected conditions under rainfed condition at RARS, Bijapur during *Rabi* season of 2007. Observations were recorded for 14 traits including aphid and powdery mildew reaction. The genetic variability parameters were computed. Seed yield per meter and seed yield per plant showed higher phenotypic and genotypic coefficient of variability in both conditions followed by biological yield per plant. Heritability and genetic advances were higher for seed yield per meter followed by number of siliquae per plant in both conditions.

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Key words : Indian mustard, Variability, Heritability, Germplasm, Resistance

INTRODUCTION

Indian mustard [*B. juncea* (Linn) Czern and Coss] popularly known as rai, raya or laha is one of the most important oil seed crops of the country and it occupies considerably large acreage among the *Brassica* group of oil seed crops. India stands first both in acreage and production of rapeseed and mustard in Asia. The crops are cultivated in an area of 70 lakh ha with a production of 81 lakh tonnes and with an average yield of 1149 kg/ha (Anonymous, 2006). In India, mustard and rape seed are being grown largely in states like, Uttar Pradesh, Rajasthan, Haryana, Assam, Gujarat, Punjab, West Bengal and Madhya Pradesh. However, in Karnataka state, it is grown sporadically as a mixed crop in less acreage with mainly growing local varieties.

However, seed yield, a complex character is usually controlled by non-additive gene actions and it is not only influenced by a number of other morphological characters which are governed by a large numbers of genes, but also environment to a great extent. Thereby, the heritable variation creates difficulty in a selection programme. Therefore, it is necessary for the partition of overall variability into heritable and non-heritable components which enables the breeders to adopt suitable breeding procedure for further improvement of genetic stocks.

At Regional Agricultural Research Station, Bijapur,

out of 118 germplasm accessions from three years study, (2004-2006), 46 Indian mustard genotypes were found promising. These promising genotypes were further tested vigorously under protected and unprotected conditions separately with view of to identify best performing genotypes for this region especially varieties from NRCRM, Bharatpur, which were popular recently.

A comprehensive knowledge of genetic parameters with pathological and entomology aspects is indispensable for this region in a mustard improvement programme. The amount of work done on the genetic variability in some of the important quantitative and qualitative characters and breeding for improvement in rapeseed and mustard is very rare in southern parts of India. The present study was, therefore, envisaged with the objectives, to study the genetic variability the performance of different mustard germplasm accessions for yield, yield components and diseases and pests resistance under protected and unprotected condition of Bijapur district.

MATERIALS AND METHODS

An experiment comprising of 46 germplasm lines in Indian mustard received from NRCRM, Bharatpur was laid out in a Randomized Block Design with two replications separately under protected and unprotected conditions. Both the experiments were conducted under

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