828/D

Impact of seasonal variations on the seed yield of mustard (*Brassica juncea* L.) genotypes in Sri Lanka

S.R.Weerakoon[1], S.Somaratne[1] and L.A.D.D.Chaminda[2]
[1] *Department of Botany, The Open University of Sri Lanka, Nugegoda*
[2] *Department of Agricultural and Plantation Engineering, The Open University of Sri Lanka, Nugegoda*

Seasonal variations affect growth and yield of crops, primarily by changing its phenological development processes. Sri Lanka has a rich mustard (*Brassica juncea*) germplasm collection of over sixty accessions with a significantly high genetic variation. A preliminary study was conducted to establish the relationship between mustard yield and seasonal variations using ten mustard accessions obtained from the Plant Genetic Resource Centre. Mustard accessions, 501, 515, 580, 790, 1099, 1814, 2122, 5088, 7788 and 8831 were selected based on a previous study on their agro-morphological characters. The present field study was conducted in a site at Nagollagama in the Kurunegala District from October 2007 to September 2008 (Maha and Yala seasons). There were ten replicates in each accession and planting was done using random block design. Thirty four agro-morphological characters, four climatic parameters, four physical and two chemical properties of soil were taken into consideration to determine the relationship between seasonal variations and seed yield in mustard accessions. All comparisons were made at $\alpha = 0.05$ level. The study clearly indicated that there was a significant variation in agro-morphological characters such as days to flowering, days to maturity, plant height at maturity, number of primary branches at maturity and seed yield in different mustard accessions between two seasons and among the accessions grown in Maha or Yala. Plant growth was considerably affected by variation of seasonal climates. Fluctuation of soil moisture during two seasons and variation of soil nutrient content which is directly related to the depletion of soil organic carbon, variation of C:N ratio and macronutrients during Maha and Yala may also have contributed to the variation in plant growth. Significantly high yield was observed for all mustard accessions during Maha than in Yala (low rainfall and relative humidity, high temperature). There is a substantial variability of yield potential in different mustard genotypes. Mustard accessions 7788, 5088 and 580 produced significantly high yield (13.4, 12.8 and 12.0 seedyield(g)/plant) in Maha than other accessions. Accession 7788 gave the highest yield in Yala (11.0 seedyield (g/plant), showing better adaptability to seasonal variations than others. However, more field trials for 3-4 yrs in different areas are required to confirm present findings. Screening the entire mustard germplasm in Sri Lanka is worthwhile for its variability in yield potential and adaptability to seasonal changes to select a few prospective mustard genotypes.

Keywords: *Brassica juncea*, seasonal variations, yield potential