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Morphological Characterization of Teosinte Derived Maize Population

Sneha Adhikari*, Anjali Joshi and N.K. Singh

Department of Genetics and Plant Breeding,
G. B. P. U. A. & T. Pantnagar, U. S. Nagar,
Uttarakhand 263145, India

Abstract—*Maize is the world's most widely grown cereal and it is ranked third among major cereal crops. Cultivated maize (Zea mays) is derived from teosinte (Zea mays parviglumis) and their morphological differences resulted from human selection during the course of domestication (Wang et al., 1999; Matsuoka et al., 2002; Doebley, 2004; Vigouroux et al., 2005). Wild species are very important sources of genetic variability and can be exploited by utilizing breeding programs. Pasztor & Borsos (1990) and Srinivasan & Brewbaker, (1999) reported the existence of genetic variability for different important agronomic traits in teosinte, like genes for diseases and insects resistance. As maize and teosinte differ in various aspects like morphology of plant, plant height, tillering behavior, number of cobs per plant etc., therefore the aim of present investigation is to develop large number of teosinte derived maize population with diverse characters so that these can be utilized in further maize breeding programme. The objective of the present study was to create creating genetic variability or broadening of genetic background of maize. Parental maize inbred was nonprolific one having single cob per plant where as in case of teosinte cobs per plant ranges from 100-600. Most of the lines in both the generations are showing prolific nature i.e., number of cobs ranges from 2-7. SA-2, SA-4, SA-5 and SA-12 have 5 ears, SA-30, SA-33, SA-34, SA-46 and SA-57 have 4 ears and SA-79, SA-80, SA-81, SA-83, SA-91, SA-94, SA-99, SA-104, SA-108, SA-112, SA-113, SA-114 have 3 ears per plant. Among 126 lines 76 lines were showing protogynous behavior in both BC_1F_3 and BC_1F_4 generations.Domestication may leads to reduction in genetic diversity in modern maize compared to teosinte, which leads to limited productivity of maize. Easy crossing between maize and teosinte make it feasible for modern maize breeders to use alleles that were lost during domestication. By utilizing prolificacy baby corn varieties can be developed that is a valuable product for several food industries. Likewise protogynous lines reported to be drought tolerant so such lines can be utilized for development drought tolerant varieties.*