



RESEARCH PAPER

Study of principal component analyses for pod traits in soybean

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Abstract : Yield being a complex entity influenced by several components and environments. PCA is a well-known method of dimension reduction that can be used to reduce a large set of variables to a small set that still contains most of the information in the large set (Massay, 1965 and Jolliffe, 1986). In present study, PCA performed for pod and yield traits revealed that out of fourteen, only five principal components (PCs) exhibited more than 1.0 eigen value and showed about 70.44% total variability among the traits. PC1 showed 23.83% variability with eigen value 3.33 indicating the maximum variation in comparison to other four PCs. The PC1 was more related to traits viz., days to 50% flowering, total number of pods per plant, number of seeds per plant, biological yield per plant and seed yield per plant. Thus, PC1 allowed for simultaneous selection of yield related traits and it can be regarded as yield factor. PC2 exhibited positive effect for days to maturity, number of primary branches per plant and number of nodes per plant, The PC3 was more related to number of two seeded pods per plant, 100 seed weight and harvest index traits, whereas PC4 was more loaded with three seeded pods per plant. PC5 was more related to plant height and number of one seeded pods per plant. A high value of PC score of a particular advanced line in a particular PC denotes high value for those variables. Genotypes namely KS 103, JS 20-15, PS 1423, Cat 1957, Cat 1958, JS 20-06 and JS 20-66 can be considered an ideotype breeding material for selection and for further utilization in precise breeding programme.

Key Words : Eigen values, Principal component analysis, Soybean

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