

## Genetic variability, character association and path analysis for yield, its component traits and late leaf spot, *Phaeoisariopsis personata* (Berk and curt), in groundnut

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Accepted : June, 2009

### SUMMARY

High estimates of PCV, GCV, heritability and genetic advance as per cent of mean were observed for late leaf spot disease severity, reducing sugar, kernel yield per plant and pod yield per plant. It indicated the role of additive gene action and hence, the usefulness of phenotypic selection for bringing improvement. Pod yield showed positive significant associations with days to 50 per cent flowering, days to maturity, kernel yield, test weight and oil content, where as negative significant associations with late leaf spot disease severity and reducing sugar indicated that they could be used as selection criteria for developing high yielding late leaf spot disease resistance varieties. The path analysis revealed that high positive direct effect of kernel yield exerted on pod yield as well as indirect effect of oil content, strong mature kernel, days to 50 per cent flowering, test weight, days to maturity, and non reducing sugar through kernel yield. Therefore, it would be rewarding to lay due emphasis on the selection of these characters for rapid improvement in pod yield.

**Key words :** Groundnut, Correlation coefficient, Path analysis and leaf spot

Groundnut (*Arachis hypogaea* L.) is a major oilseed crop grown predominantly during rainy season. The average productivity in rainy season is below one tonne per hectare. This is mainly because the crop is subjected to varieties of rainfall and is also damaged due to pests and diseases. Among several diseases attacking groundnut, late leaf spot caused by *Phaeoisariopsis personata* resulting reduction in pod and haulm yield of 25.3 and 53.0 per cent, respectively (Eswara Reedy and Venkateshwara Rao, 1999). The success of any crop improvement programme essentially depends on the genetic variability present in the crop. Information on phenotypic and genotypic interrelationship of pod yield with its components characters and also among the characters themselves would be very much useful to the plant breeder in developing an appropriate breeding strategy. But yield is a complex character and is influenced by number of traits which in turn are interrelated. The interdependence of these characters will influence pod yield either directly or indirectly and as a result the information obtained on the association of these traits become unreliable. Therefore, path coefficient analysis permits the separation of direct effects from indirect

effects and gives more realistic relationship of the characters and help in effective selection. Therefore, the study was undertaken to find out extent of variability, heritability genetic advance, correlation and path analysis for various traits in groundnut.

### MATERIALS AND METHODS

The experimental material comprising of 20 genotypes including four checks viz., JL-24, TAG-24, LGN-1 and GPBD-4 were studied in three replicated randomized block design during *kharif* 2006 at Oilseeds Research Station, Latur. The observations were recorded on selected five plants for twelve characters viz., days to 50 per cent flowering, days to maturity, kernel yield per plant, test weight, shelling percentage, oil content, strong mature kernel, harvest index, late leaf spot severity (%), non reducing sugar, reducing sugar and pod yield per plant. The phenotypic and genotypic correlations were worked out by following Falconer (1964) and path analysis as suggested by Dewey and Lu (1959).

### RESULTS AND DISCUSSION

The mean performance of an individual genotype showed significant differences for all the characters (Table 1). The pod yield per plant ranged from 10.40 g (LGN-125) to 4.06 g (LGN-124). Maximum oil content (48.76%) was recorded in genotype (LGN 126) while minimum (40.00%) was reported in LGN-105. Check TAG-24 was found to be early among the all genotypes. The genotype

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