

**Thesis Title** Correlation between Leaf Area Index , Leaf Angle in  $F_3$  and  
Yield of the Derived  $F_5$  Line in Soybean

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### Abstract

Selections for high yield in the Pedigree Method have been emphasized mainly on the individual plant yield and its component. Since, yield is the final product of all physiological processes performed during plant growth, therefore ,these processes must affect the accumulation of total dry matter and yield of a plant .

In this study, correlations between the characters concerning physiological processes (Leaf Area Index), Leaf Angle ) of  $F_3$  with a total dry matter and a yield of the derived  $F_5$  line in soybean were investigated.

The results showed that LAI and pod per plants of the  $F_3$  were correlated significantly with seed yield of the derived  $F_5$  line but such the correlations have not been found among other characters . In addition , In  $F_3$  generation LAI was correlated with yield and pod per plant . However , path coefficient analysis of correlation among LAI and yield in  $F_3$  revealed that LAI had only indirect effect on yield but, instead, the effect

was through the number of pod per plant, suggesting that a high LAI encouraged the high number of pod per plant and in consequence produced the high yield .

The result also showed that LG of  $F_3$  plant did not have any relationship with the yield and total dry matter of  $F_5$  , indicating that LG does not involve in any processes in plant growth , on the other hand, it only improves the plant canopy to be in well structure in order to enhance the activities of such the processes .

The comparison between the derived  $F_5$  yield and yield of parents indicated that the lines which showed a higher yield than their parents were found in the hybrids between SJ5 x SK1 and its reciprocal. These lines also showed a high number of pods per plant and a high LAI in  $F_3$  .

It is therefore,concluded that LAI could be used as a selection criterion for yield in the early generations apart from an individual plant yield.