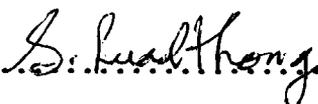THESIS TITLE   PEDIGREE SELECTION ON F_3 - F_5 FROM THREE CROSSES OF SOYBEAN

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ABSTRACT

The objectives of this study were 1) to select lines for high yield and study some agronomic characters relating to yield of soybean lines in F_3 - F_5 generations. 2) to compare the selection lines with standard varieties, KKU.35 and SJ.5. 3) to study correlation between yield and other agronomic characters of soybean for breeding program. In this study 3 crosses of soybean cultivars i.e. KKU.35 x Hourei, AGS65-2-2-1 x Hourei and KKU.35 x AGS65-2-2-1 were used. The lines selected from F_3, F_4, and F_5 generations were grown in single plant selection. The uniformity lines from F_4 generation were selected to preliminary yield trial. The following characters percent of germination, days to 50 % flowering, nodes per plant, branches

per plant, plant height, days to maturity, pods per plant, seeds per pod, 100 seeds weight, and yield per plant were record and correlation coefficients between these characters were computed.

The selected lines from F_3 generation*were 124 plants from cross 1, 34 plants from cross 2, and 57 plants from cross 3 and selected lines from F_4 generation were 131 plants from cross 1, 7 plants from cross 2, and 14 plants from cross 3 respectively. The lines from the cross between KKU.35 x Hourei had good characters for examples, early maturity, high seed weight, high yield per plant, and lodging resistant than those cross between AGS65-2-2-1 x Hourei and KKU.35 x AGS65-2-2-1 in all F_4 and F_5 generations.   Correlation between characters in F_4 in all 3 crosses indicated that pods per plant had positive and the highest correlation coefficient (r) with yield when compare with the other characters. The other characters from cross 1 and cross 3 which had positive correlation with yield were nodes per plant, seeds per pod, plant height and days to maturity, and branches per plant, days to 50 % flowering (in cross 1), and 100 seeds weight (in cross 3).

Correlation between characters in F_5 in all 3 crosses showed that nodes per plant, branches per plant, plant height and pods per plant, and 100 seeds weight (in cross1 and cross 3), days to 50 % flowering (in cross 3), and days to maturity (in cross 2) had positive correlation with yield, but pods per plant had the highest correlation coefficient.

Result of preliminary yield trial showed that yield of lines 1018-1, 1037-2, 1022-22 and 1022-15 were not different from

KKU.35, but significantly higher than SJ.5. Yield of lines 2002-9 and 2022-14 were not different from SJ.5, but significantly lower than KKU.35. It should be noted that although the yield of these lines were not different from KKU.35, but the lines 2022-22 and 1022-15 had matured significantly early than KKU.35. Correlations between characters in this experiment indicated that seed yield had significantly positive correlation with these characters, days to maturity, plant height, nodes per plant, and seeds per pod. The days to 50 % flowering, lodging score, pods per plant, percent of purple seeds, and 100 seeds weight had no correlation with yield.