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Recurrent selection for grain yield improvement in soybean

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For quantitative traits such as grain yield it is impossible to obtain in a single cycle lines with high favorable allele's frequency. Therefore, the main alternative is the recurrent selection. In this context, the purpose of this study was to estimate the genetic and phenotypic parameters of soybean progenies obtained by recurrent selection. The work was carried out in an experimental area in Brazil in four different environments and two crop seasons, 2015/2016 and 2016/2017. The experimental design was incomplete block design (lattice), adopting of one row with one or three meters' length. The following traits were evaluated: flowering time; maturity; height of the lowest pod; plant height, lodging score and grain yield. The genetic / statistical analysis was performed using the Statistical Analysis System (SAS). Heritability estimates ranged from 0.06 (height of the lowest pod) to 0.74 (flowering time). The estimates of the variance components and the frequency distributions of the BLUP averages showed the existence of variability among the progenies. The BLUP averages for the maturity presented a variation from 121 to 146 days, and 39% of the progenies evaluated presented values lower than 130 days. For the grain yield, BLUP averages ranged from 52 to 85 scs.ha$^{-1}$. However, it is important to note that 98.4% of the progenies evaluated had a grain yield higher than the national average of 56 scs.ha$^{-1}$ in the 2016/2017 harvest.