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### **Phenotyping sorghum lines for phosphorus efficiency**

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This study aimed to identify and classify sorghum lines for P efficiency in environments with high and low P, to identify the relative importance of acquisition efficiency and utilization efficiency in relation to P use efficiency, to obtain the estimates of correlation coefficients and evaluate genetic and phenotypic path analyzes through the development of the direct and indirect effects of independent variables on the dependent variables and identify the major components. Two hundred forty-three sorghum lines and two additional controls were divided into three 9x9 lattices with three replications. Flowering, plant height and grain yield were evaluated in low and high P environments. Phosphorus content in the grain, P acquisition efficiency, P utilization efficiency of internal P, P use efficiency, harvest index and P utilization quotient were evaluated in the low P environment. One hundred and seven lines were identified and classified as P efficient and 138 lines as P inefficient. The relative efficiency of the P acquisition index was the most highly correlated with the efficiency of phosphorus use. These results suggest that the phenotypic correlation index of phosphorus use efficiency can be evaluated indirectly by the assessment of grain yield in P environments, total P content in plant was the variable that best explained the direct effects, in the path analysis, of variables in the basic efficiency of acquisition and use. Three main components; 1, 2 and 3, together explained 81% of the variation of the original data.