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Grain and fodder yields of early-maturity cowpea (*Vigna unguiculata* L. Walp) lines in Niger Republic

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ABSTRACT

Objective: In areas with short rainfall duration, the production of cowpea under rainfed conditions is affected by high incidence of terminal drought together with late season insects' infestation. The objective of the present work is to identify early maturing cowpea lines with high grain and fodder yields.

Methodology and results: Thirty-seven newly developed early maturing lines and three checks were evaluated at three research stations for grain and fodder yields. Data collected were subjected to anova and correlation analysis using R version 3.6.3. The genotypes and environments were highly significant for grain and fodder yields ($p > 0.001$). Significant differences were also observed with respect to genotype by environment interactions for all the traits except grain yield. Mean grain yield across locations is 407.6 kg/ha and the winning genotypes per site are IN17_104 with 889.3 kg/ha at Maradi, IN17_95 with 846.5 kg/ha at Tara and IN17_114 with 576.0 kg/ha at Magaria. In terms of fodder yield the mean is 2242.3 kg/ha and the best cultivars are IN17_58 at Magaria, TN5_78 at Maradi and IN17_143 at Tara with mean yield of 4663.0, 4885.0 and 3603.0 kg/ha. Mean number of days to 50 % maturity across the locations is 61.6 and ranges from 54.0 to 76.8. Grain yield is inversely related to fodder yield (-0.49) and days to 50 % maturity (-0.62).

Conclusions and application of results: Most of the top fodder yielding genotypes recorded lower grain yield. IN17_114 is the only line that was among the best performing lines with respect to both grain and fodder yields. However promising lines in terms of grain yield, fodder yield and early maturity were detected from the present results. Their registration as new improved varieties as well as their adoption by farmers may not only boost cowpea production in Niger but also improve the resilience of small-scale holders.

Key words: cowpea, early maturity, grain, fodder, yield