

GROWTH AND YIELD OF COWPEA (VIGNA UNGUICULATA) CULTIVARS
AS AFFECTED BY SOIL MOISTURE

By

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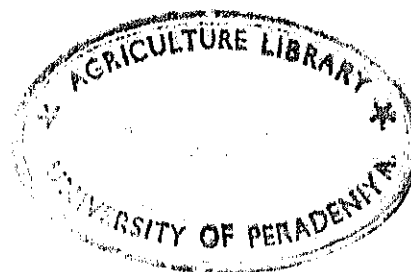
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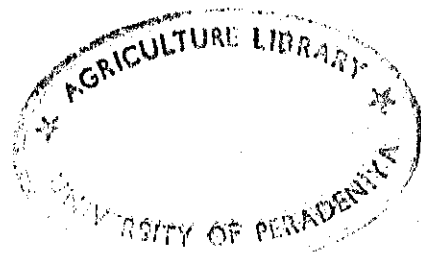
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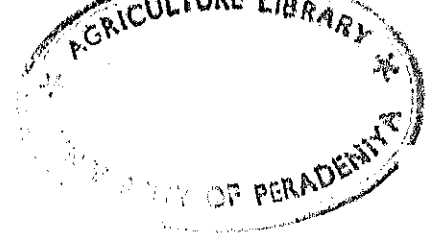


ABSTRACT

Experiments were carried out to identify plant characters associated with drought tolerant capability of cowpea (*Vigna unguiculata*) at the Field Crops Research and Development Institute, Maha Illuppallama. The first experiment was carried out in the Glass house during the Maha season 1993/94 while the second experiment was carried out in a rain out shelter during the yala season 1994. Eight cowpea varieties were used in the first experiment, and were subjected to three irrigation levels, namely daily irrigation to field capacity, irrigate to field capacity at 10 day intervals and irrigate to field capacity at 15 day intervals. Four cowpea varieties and the same irrigation levels were used in the second experiment.

Several plant characters were identified as desirable for drought tolerant/resistant varieties. Varieties that maintain relatively higher leaf area with low specific leaf area under moisture stress conditions are better adapted to drought. Increased root dry weights under moisture stress condition were observed and this was mainly due to an increase in number of primary roots and root length or by thickening of roots. A reduction in shoot : root ratio with increased moisture stress was also observed. Adaxial and abaxial stomatal frequency was reduced under the moisture stress condition. High recovery ability and low reduction in relative water content was one of the drought tolerant plant characteristic of cowpea varieties that had some tolerance to water stress.

Cp 479 was identified to be the most drought resistant. In



addition to this CP 454 and CP 461 were more drought resistant than the locally recommended cowpea varieties when subjected to water stress.