

RESPONSES OF GROUNDNUTS TO DIFFERENT

MOISTURE REGIMES IN THE

NORTHERN DRYZONE OF SRI LANKA

BY

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Approved.

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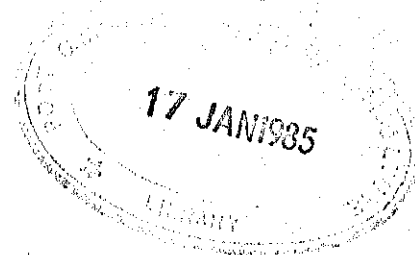
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ABSTRACT

Groundnut is widely cultivated as a rainfed crop during Maha season where there is large variation in pod yields due to the effect of rainfall. However the pod yields are much higher when it is grown in Yala season with supplementary irrigation. Trials were conducted to study the effects of different moisture regimes on the growth and yield of erect, semispreading and spreading types of groundnuts.

The results indicated that irrigation at 20% depletion level (25 irrigations applied at 4 days interval to a depth of 2.4 cm per irrigation) was superior to irrigation at zero, 50 or 70% depletion levels. The pod yields were 4.4, 4.2, 3.3 and 2.3 t ha⁻¹ at zero, 20, 50 and 70% depletion of available soil moisture. The water use efficiency increased and the pod yields decreased when moisture depletion level increased from zero to 70%. At 20% depletion level the WUE increased to 262% and the pod yield dropped to 95% compared to the corresponding values at zero depletion. When the depletion increased to 50% the WUE increased to 410% and the pod yield dropped to 75%. When the depletion was further increased to 70% the WUE increased only to 413% and the yield dropped to 52%.

Considering the overall cost of cultivation and benefit by sale of pods it is concluded that the optimum

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benefit is obtained for 20% depletion level.

As the erect variety K.I.1 and the semispreading variety S.F gave higher overall yield of pods at varied moisture regimes these varieties are found better than the spreading variety Komari for cultivation under irrigated conditions.

There are considerable variations in the growth and yield parameters of groundnut varieties. The elongation of main stem and branching were more rapid in the case of erect and semi-spreading varieties resulting in higher pod yields of above 3.8 t ha^{-1} . The relatively lower number of branches in erect and semi-spreading varieties may permit planting at higher densities to increase yield further. The larger number of unproductive pegs and lower shelling percentage of spreading varieties make them unsuitable for profitable cultivation but they may be useful for cultivation in areas and seasons where the rainfall is scattered over a longer period. The nondormancy of erect and semi-spreading varieties make them unsuitable for cultivation under such conditions as the seeds which mature first tend to germinate at the time of harvest when the soil is wet.