

crop was harvested at full bloom. The samples were air dried and were analysed for total and true proteins, crude fibre, ether extractives, ash content and lime and phosphoric acid in the ash adopting routine procedures. The results were presented in the Table.

The various constituents analysed were found influenced by the application of manures and/or inorganic fertilizers. Application of 10 tons of farm yard manure in combination with 30 kg phosphoric acid as bonemeal recorded highest dry matter yield and ash phosphoric acid and lime in its dry matter Kandaswamy *et al.* (1973) have also obtained similar results for *Cenchrus ciliaris*.

Application of ammonium sulphate at 30 kg. nitrogen yielded the maximum amount of both total and true protein. Chatterjee (1937) and Mukerjee and Agarwal (1942) also obtained increased yields of protein by the application of ammonium sulphate to pastures and grasses. Varadarajan *et al.* (1959) also concluded that ammonium sulphate increased the protein content of

Kolukottai and Rhodes grasses. They have also stated that a judicious combination of both ammonium sulphate and cattle manure resulted in good quality pastures.

A combination of ammonium sulphate (30 kg N) and super phosphate (50 kg  $P_2O_5$ ) yielded maximum percentage of ether extractives and crude fibre contents.

P. K. MAHALINGAM and  
K. K. KRISHNAMOORTHY

Department of Soil Science and  
Agricultural Chemistry, Coimbatore-641003.

#### REFERENCES

- CHATTERJEE, I. B. 1937. Fodder grasses and their quality *Ann. Rep. Physiol. Chemist. Bengal*.
- KANDASWAMY, P., G. V. KOTHANDARAMAN and T. S. MANICKAM. 1973. Nutritive value of a fodder grass as influenced by manuring *Madras agric. J.* 60: 401-2.
- MUKHERJEE, B. K. and Agarwal, R. R. 1942 *Animal Nutrition Research in India* (1953). Macmillan Company, Bombay.
- VARADARAJAN, S., M. SUNDARAM and P. VENKATARAMAIAH. 1959. Effect of Manuring on the quality of grasses. *Indian J. Agric. Sci.* 29: 35-44.

*Madras agric. J.* 62 (9) : 587—588, September, 1975.

### Effect of Moisture Stress at Different Growth stages of Groundnut

A field trial was conducted at the Agricultural College and Research Institute, Madurai, under the I. C. A. R. Scheme on New Cropping Patterns and Water Use to study the optimum moisture stress at different growth stages of groundnut using climatological approach. The treatments consisted of two levels of moisture stress

on the ratio between irrigation water and cumulative pan evaporation. The two levels  $\frac{IW}{CPE} = 0.9 (I_1)$  and  $0.6 (I_2)$  were tried at three stages of crop growth viz., (i) sowing to flowering (30 days), (ii) effective pegging (30 days), and (iii) pod formation and maturity (45 days).

The eight treatments were replicated three times in a randomised block design. Groundnut TMV 7 was sown on 31—1—1974 with a spacing of  $22.5 \times 10$  cm and harvested on 14—5—1974. The crop was manured with 25 kg. N, 50 kg.  $P_2O_5$  and 75 kg.  $K_2O$ /ha. as basal dressing. The soil was sandy loam with low available N and medium availability of P and K. The pan evaporation readings were recorded from an U. S. A. open pan evaporimeter. The irrigation water

was measured through a  $90^\circ$  V notch. The depth of each irrigation was maintained at 6 cm.

The pod yield and water use efficiency are presented in Table 1. The irrigation regimen tried inflicted significant changes on the pod yield of groundnut. Irrespective of  $\frac{IW}{CPE} = 0.9$  or 0.6 during the first and second stages, irrigation at 0.9 ratio during pod formation and maturity phase

TABLE 1. Yield and water use for groundnut (1974—Summer)

Treatment	Yield of pod kg/ha.	Water consumption (cm.)	Yield/unit of water kg/ha/cm.	Number of Irrigations
$I_1 I_1 I_1$	2070	54	37	9
$I_1 I_1 I_2$	1857	48	38	8
$I_1 I_2 I_1$	2286	48	48	8
$I_1 I_2 I_2$	1428	42	30	7
$I_2 I_1 I_1$	2144	48	45	8
$I_2 I_1 I_2$	1428	42	30	7
$I_2 I_2 I_1$	2214	42	53	7
$I_2 I_2 I_2$	1428	36	40	6
C, D. at 5%	607			

recorded significantly higher yield (2178 kg./ha) over 0.6 ratio (1535 kg./ha). Similar results have been recorded at Bhavanisagar, Tamil Nadu, where 60 per cent available moisture during the third stage irrespective of irrigation at 0 per cent or 60 per cent available moisture at the first two stages (Anon, 1973). The irrigation efficiency was maximum (53 kg./ha./cm.) with the treatment receiving irrigation at 0.6 ratio during the first two stages and 0.9 during pod formation and maturity stage. The efficiency was the least when irrigation at 0.9 was given upto flowering and 0.6 thereafter as well as the treatment

0.9 during active pegging stage and 0.6 during rest of the period. It is evident from the result that moisture stress during pod formation and maturity stage will be at the expense of pod yield.

S. SUBRAMANIAN  
S. D. SUNDARSINGH  
K. P. RAMASWAMY  
S. P. PACKIARAJ  
K. RAJAGOPALAN

Agricultural College and  
Research Institute, Madurai.

## REFERENCE

- ANONYMOUS 1973. Ann. Rep. of the water Management and Soil Salinity Scheme, Tamil Nadu Agricultural University, Coimbatore. 1972-73.