

On Some Aspects of the Cropping Behaviour in the Sandy Soils of Bapatla

By

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Introduction: Vast stretches of deep sandy areas occupying nearly 103 square miles exist in the Eastern and Southern portions of Bapatla taluk. There is no large scale cropping excepting raising of paddy and tobacco nurseries in the period June to December under splash irrigation. The water source is from 20' x 20' x 12' deep dug outs or *deruvu*. As the water table is high water always exist 6' to 9' below ground level during the 'Punasa' season. Each '*doruvu*' commands an area of 15 cents for splash watering and a ryot depending on his family takes up ragi or vegetables in small holdings and cultivates the same with the family labour — Casuarine plantation and cashewnut gardens exist in isolated patches and are generally maintained by land-lords who can invest some money till they get return in way of harvest. The soils are very poor in fertility and have very low powers of retaining moisture. Large quantities of ammonium sulphate up to 6 cwts. per acre are generally applied to tobacco nurseries at weekly intervals closely followed by profuse splash watering. With the inception of the college farm in 1950 the study on the performance of crops suitable to such areas under rainfed conditions was launched and promising results are recorded for the benefit of the cultivators in the locality — feasibility to tap the sub-soil springs by fixing filter points for growing vegetable crops in summer was also studied.

Materials and Method: The first step taken tackling the problem was sowing and planting of crops early in the monsoon and fit in certain cultural practices adopted in similar tracts of Visag District.

The next step was to sow or plant crops that are drought resistant and mature before November. Departmental strains that are of high yielding and draught resistant quality were introduced and studied with local varieties grown in the district. Quick sowing and covering with guntaka to prevent loss of moisture by evaporation was adopted.

Farm Yard Manure at 10 cart loads per acre was applied to all crops besides one cwt of ammonium sulphate to commercial crops.

Data in Natural Sequence:

1. *Sugarcane*: 5 CO varieties were tried under *doruvu* irrigation. CO 449 recorded maximum yield of 29.7 tons per acre with a Jaggery recovery of 11.16.

2. *Ragi*: AKP 2 and AKP 6 were compared with local in 25 cents plots and the planting was done behind country plough in the Punasa season under rainfed conditions and in the Pyru seasons under splash irrigation. The results of trials for two years indicated that in 'Punasa' season. AKP 2 was early by 50 days to local and recorded the maximum yield of 2,450 lb. In the Pyru season AKP 6 gave the maximum yield of 2,769 lb. of grain per acre.

TABLE I.
Yield of grain in lb. per acre.

Variety.	1950—51.		1951—52.		1951—52.	
	Pyru season.	Duration.	Punasa season.	Duration.	Pyru season.	Duration.
AKP 2	850	95	2,450	98	2,747	92
AKP 6	2,016	102	1,533	127	2,788	107
Local	1,541	118	135	159	2,227	114

Korra: Korra grown as mixture with cotton in the Punasa season under rainfed conditions gave on acre yield of 546 and 292 lb. of grain per acre.

Arika: Guntur Local Arika grown under rainfed conditions as a mixture with redgram gave 207 lb. of grain and 1,453 lb. of straw.

Redgram: Four strains 2,900, 2,745, 1,723, 3,009 were compared with local under rainfed conditions, 2 strains 2,900 and 2,745 gave 41.5% increased yield over local.

Strain 2,900 sown as pure crop gave 570 lb. of pulse per acre. Redgram strain 2,900 mixed with arika and korra gave 379 lb. and 250 lb. of pulse respectively.

Horsegram: In spite of severe drought conditions with less than an inch of rainfall during the crop growth strain No. 116 gave 30% increase over local in the yield trial with 5 strains and local variety.

Gogu: Four varieties of gogu, local tella-gogu, yerra-gogu, kaki-gogu and pusa-gogu were under observation trial in 25 cent plots. Pusa-gogu recorded 1,600 lb. fibre closely followed by, kaki-gogu with 1,100 lb. per acre under rainfed conditions.

TABLE II.
Yield of Fibre in lbs. per acre.

Type of gogu.	Height of plant in ft.	Duration.	Yield of fibre per acre.	Profit per acre.
Pusa-gogu	8.1	189	1,600	242
Kaki-gogu	6.3	151	1,100	68
Tella-gogu	4.5	131	432	51
Yerra-gogu	4.3	130	400	38

Tomato: Seven Hybrids were compared with Deshi type besides the study on the performance of 16 varieties along with local under splash irrigation in the 'punasa' season in two consecutive years.

In the last year Deshi gave the maximum yield of 14,835 lb. per acre and in the second year Hybrid 9 and Deshi recorded maximum yields of 4,381 lb. and 3,726 lb. respectively. Of the 16 varieties under observation along with local, local gave maximum yield of 23,390 lb. in the first year and Hybrid 3 followed by local with 7,639 lb. and 6,131 lb. per acre respectively in the 2nd year.

Groundnut: TMV 1, 2, 3 were studied in comparison with local in the 'punasa' season and local was found to be more resistant to draught and gave 1,560 lb. as against 1,550 of TMV 3 and 1,210 of TMV 1 1,000 lb. of TMV 2 per acre. One month early sowing in June 2nd week, resulted in an increased yield of 300 lb. over the late sowing in July 2nd week.

Gingelly: TMV 1 and TMV 3 grown under rainfed conditions sunnhemp recorded acre yields of 150 lb. and 286 lb. of grain and 5,000 lb. of green sunnhemp fodder.

Sweet Potato: 14 varieties were tried under splash irrigation and B 4,304 and Nancy Hall recorded 10,000 lb. and 9,350 lb. tubers per acre. Jercy big stem gave 1,600 lb. of tubers and 10,500 lb. of vines per acre.

Cucumber: Wynad cucumber was compared with local in the punasa season. Wynad cucumber recorded 11,500 lb. as against 5,550 lb. of local.

Fodders: Cowpea sown under rainfed conditions gave more yields ranging from 7,003 lb. to 16,500 lb. This crop is a good drought resister and serves as a good fodder and green manure.

Sunn hemp: It comes next to cowpea and gave 5,000 lb. to 7,000 lb. of green fodder per acre.

Buffalo Grass: Though a moisture loving type of grass it gave 8,000 lb. per acre. Splash irrigation was given in the hot weather period.

Tapping sub soil water: A 3" filter point was successfully driven up to a depth of 30' and a discharge of 4,300 gallons per hour was recorded in the hottest period of the year. With the help of a 2 H. P. petrol engine, filter points will be driven in suitable places in the next season to tide over the water scarcity in the summer months for bringing more area under vegetables.

Summary and Conclusions: Large scale cultivation of several types of crops was done for the first time in the locality and the results indicate that:—

1. Sugarcane can be successfully cultivated in sandy soils with restricted irrigation.

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2. AKP 2 in 'punasa' and AKP 6 in 'Pyrus' will replace the local ragi. Planting behind country plough in 'punasa' season brings down the cost of cultivation.

3. Redgram can be grown with success in the sandy areas provided the sowings are done early in the season.

4. Pusa-gogu and kaki-gogu with their high yields are a sure source of income with low initial expenditure. The leaf of kaki-gogu can be used for culinary purpose besides using the stems for fibre extraction.

5. Wynad cucumber due to its high yielding nature will evidently spread in the locality.

6. Cowpea raised as a fodder and green manure crop gives good returns and improves the soil fertility and water holding capacity of the soil if it is grown under rotation.

7. Sunhemp grown as mixture with other dry crops will serve as a good source of supply of green manure and fodder in the locality.

8. Departmental strains out yielded the local types in most of the cases and the performance of all the crops will have to be studied for two more seasons for extension.

9. The success attained in tapping under ground water by driving filter points will facilitate large scale growing of vegetables and fruit nurseries.

OBITUARY

We deeply regret to record the demise of Sri K. C. Ramakrishnan on 9—7—1953 who was lately the Lecturer in Agricultural Economics, Agricultural College, Coimbatore for about 6 years. He was for a long time working as a Lecturer in Economics in the University of Madras and joined this Department in 1943 when Agricultural Economics was made a separate subject for B. Sc. (Ag.) Course. He was an active member of the Madras Agricultural Students' Union. We offer our condolences to the members of the bereaved family.