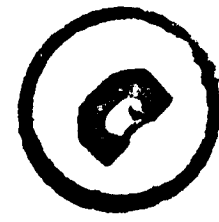


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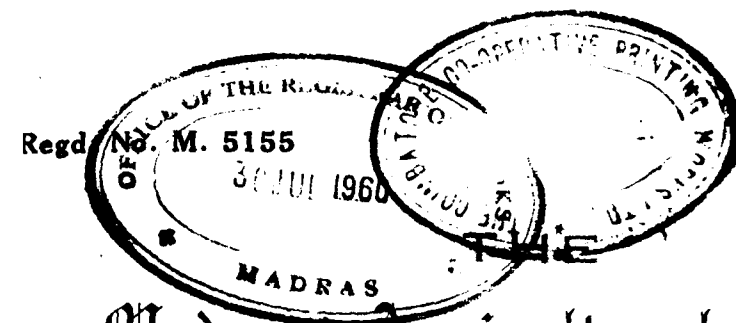
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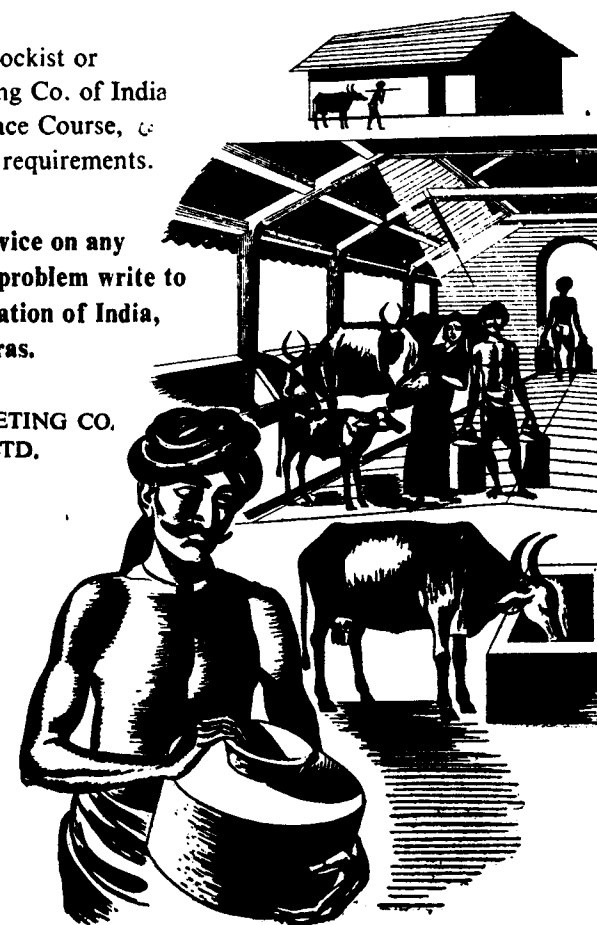
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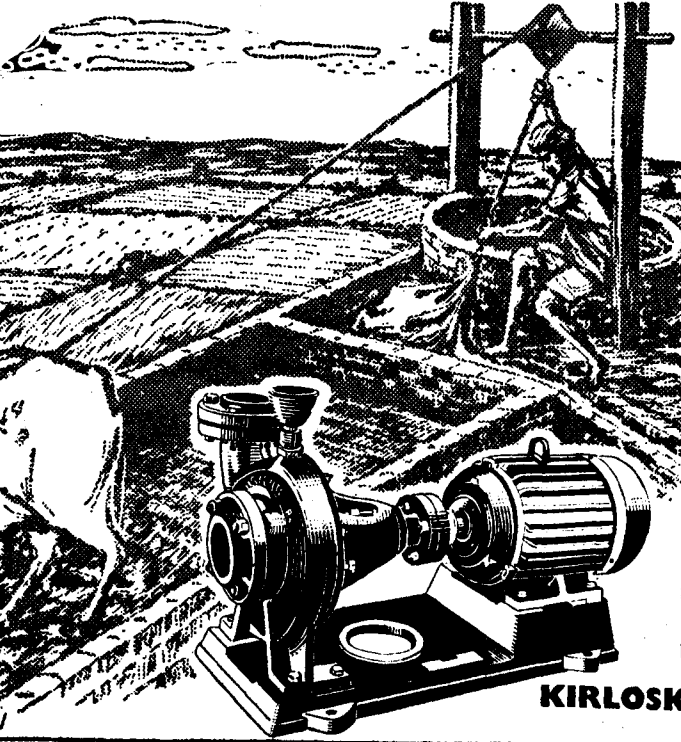
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Editorial

The Indo-American Food Agreement: The finalisation of the Indo-American food agreement by Sri S. K. Patil, Union Minister for Food and Agriculture, at Washington during the month is a matter of great significance to India. Under the agreement, India will obtain 16 million metric tons of wheat and one million metric tons of rice from the United States of America spread over 4 years from next July onwards. The cost of these supplies will amount to roughly 607.4 crores of which 512 crores will be available for India's economic development plans, half as grant and half as loan, repayable over a long period.

India is short annually in food grain production to the tune of three million tons, to feed her growing population. Food production programmes in the Five Year national plans improved production but could not cope up with the increasing population. In bad years of droughts or floods the situation became serious and prices spiralled. The commercial circles took advantage and put up prices of these essential commodities. This necessitated introduction of control over prices and opening of fair price shops, causing anxiety to State and Central Governments. This agreement therefore, which provides 4 million tons of wheat and 2.5 lakhs tons of rice annually, will not only meet the deficit but will enable building up of buffer stocks for release in bad years to stabilise prices. To a great extent, this agreement has removed the anxieties of the Government on the Food front and with the financial accommodation, also accorded under the deal, India can proceed with her development programmes in the Third National Plan.

The Indian Union has also agreed, to continue to purchase 4 lakh metric tons of wheat and 4 lakh metric tons of rice in the world's commercial markets so that the present agreement with the United States of America does not upset international trade conditions in wheat exporting countries as Canada and Australia and rice exporting countries as Burma, Siam, Vietnam and U. A. R.

The food grains pact is welcome to the public at large as they can now be free from anxiety regarding their food needs at reasonable prices. Besides the loan and grants involved in the pact is likely to reduce deficit financing in the Third Plan and may help to lower taxation levels. Foreign exchange position may also ease. Yet several problems connected with the pact have to be carefully solved. The agreement implies receipt of a ship load of food grains each day during the four year period. These have to be promptly unloaded, moved, stocked without deterioration in suitable warehouses and released for consumption as required, evidently through the existing trade (distribution) channels. Prompt action at all levels will avert wastage and help to build up of reserves which alone will help to hold the price line.

While the agreement removes our short term food deficits, the problem of chronic shortage, can be solved permanently only by increased food production. Without being complacent, this aspect should continue to receive unalloyed attention by all concerned. Greater and vigorous efforts are needed to increase food grain production in the large number of small farm holdings producing food. This is not an easy task, as past experience indicates, unless help to the agriculturists to increase their production—credit, seeds, manures, implements, pesticides and technical advice as envisaged in “package scheme” is made easily and readily available. At the same time, a remunerative price should also be assured to enthuse the cultivators. The large imports of food grains are likely to cause price drops and hamper local production programmes. In this context, the schemes on co-operative farming and land ceilings have to be carefully reconsidered and implemented so as not to disrupt agricultural production plans.

Variations in juice quality in top-borer affected canes

by

H. DAVID and V. RANGANATHAN,
Central Sugarcane Research Station, Cuddalore.

100

Introduction : The top-borer *Scirpophaga nivella* Fabr. is a major pest of sugarcane which has assumed a serious form in the sugarcane areas in Madras state. Of late this pest has increased in alarming proportions in the Pugalur Factory Zone and is also increasing in intensity of attack in the South Arcot District. The very young canes affected by this pest die out and do not survive till harvest. The canes affected at later stages survive but give juice of varying quality. This varies according to the variety and the period of harvest.

In this tract (South Arcot District) there are three popular varieties of sugarcane namely Co. 419, Co. 449 and Co. 527. The three varieties mature at different stages in the crushing period. The varieties Co. 449 and 527 mature early in the season while the variety Co. 419 matures late in the season. It has been observed that in the grown up canes the top-borer attack induces early maturing since the vegetative growth is arrested. This results in variations in the quality of the juice of the affected canes, depending on the time of attack of the borer.

Materials and Methods : To study the extent of variation in juice quality, the analysis of the juice of the affected and healthy canes was taken up in the different promising varieties prior to harvest in successive years at the Central Sugarcane Research Station, Cuddalore. In the first three years of this study, the affected and healthy canes were separated, crushed and the juice analysed separately. In the first year the juice analysis was taken up in the month of March at the age of ten months of the crop. In the second year the analysis was taken up in the month of January at the age of twelve months. In the third year the analysis was taken up in the month of March at the age of twelve months.

In the fourth year the analysis was conducted in the months of December and January at the age of eleven and twelve months respectively.

Results and Discussion : The juice analysis data obtained during the years 1955-56 showed that the healthy canes yielded juice of slightly lower quality in Co. 419 and Co. 449 while it was slightly higher in Co. 527. In the years 1956-57, 1957-58 and 1958-59 the quality was low in the affected canes in all the varieties examined at the time of harvest. The analysis of juice taken up during the month of December 1958 revealed that there was considerable decrease in quality in the early affected than the healthy canes while there was slight increase in quality in the late affected canes.

In the first year of the trial (1955-'56 season) the canes were harvested at the age of ten months. The harvest was taken up two months earlier. There was no significant decrease in the quality of the juice between the healthy and affected canes. This is probably due to the affected canes maturing early as consequence of the arrest of the vegetative growth. The healthy canes recorded slightly lower juice quality because of the early harvest of the canes. (The crop generally matures in eleven to twelve months in this tract.) The juice analysis data are given in Table No. I.

In the 1956-'57 and 1957-'58 season the canes were harvested at the age of twelve months when all the canes have become mature. The top-borer affected canes in these cases yielded juice of lower quality than the healthy canes. The difference was statistically significant in both the years. This lowering in quality is the direct result of the early maturing of the top-borer affected canes, which become overmature at the time of harvest when the healthy canes are just fully mature. The juice analysis data are furnished in Table No. II and III.

To find out the cause of variation in the results so far obtained, in the 1958-'59 season the juice analysis was taken up at the age of eleven months in the three standard varieties. The top-borer affected canes were separated as early affected (before 9 months) and late affected (after 9 months). The healthy canes were also analysed. The data are furnished in Table No. V. The figures reveal that there is significant lowering of quality in the early affected canes, while in the late affected canes, there is no lowering of juice quality. In the varieties Co. 419 and Co. 527 a slightly higher C. C. S % was recorded in the late affected canes, though not significantly, than the healthy canes. In Co. 449 there was little difference in the quality between the healthy and affected canes.

In the month of January 1959 regular juice analysis as in previous years was taken up in all the varieties when the crop was twelve months old. It was noticed that there was no significant lowering of juice quality in all the varieties examined in the top-borer affected canes. This fully conforms with the results obtained in previous years. The data are given in Table No. IV.

Variation in quality in the different varieties: It is seen from the figures in the different years that the variation in juice quality due to top-borer attack bears no relationship to the susceptibility of the varieties. Among the varieties examined, the varieties Co. 419, Co. 740 and Co. 785 have been found to be more susceptible to top-borer attack than the other varieties. Co. 449 is fairly resistant. But the variation, as it occurs in different periods, between the quality of juice in the healthy and top-borer affected canes, is uniform in all the varieties irrespective of the susceptibility of the variety to top-borer incidence (Gupta 1954). The

variations in the difference in juice quality between the healthy and affected canes among the different varieties was not statistically significant. The results are furnished in Table No. VI.

Conclusions: (1) The results indicate that the top-borer attack in sugarcane induces early maturity in grown up canes.

2. The canes affected by top-borer till about the ninth month show much lower quality in juice while the canes affected in the later stages do not show significant difference in juice quality.

3. The variation in quality depends on the age and maturity of the cane crop at the time of harvest.

4. The variation in quality of juice in top-borer affected canes is uniform in all varieties. There is no relationship between the susceptibility or resistance of the variety and the loss in quality of the juice due to top-borer infestation.

Acknowledgment: Our thanks are due to the Sugarcane Specialist, Cuddalore for his keen interest in this study and also to the Indian Central Sugarcane Committee for partly financing the scheme.

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- Gupta, B. D., and Avasthy, P. N., 1954 Proc. Sec. Bien. Conf. Sug. Res. Workers.
Do. 1954 Ind. Sug. Vol. IV.

TABLE I.

The results of top-borer studies 1955-'56.

Variety	C. C. S %		Statistical results
	Healthy canes	Affected canes	
Co. 419	9.55	9.62	Main Effects (Healthy x Affected) Z test not satisfied.
Co. 449	11.58	11.77	S. E. 0.7186.
Co. 527	11.66	11.49	Minor effects (Varieties) Z test satisfied. Significant at $P = 0.05$ S. E. 0.3228. Interactions: Z test not satisfied. S. E. 0.4565.

TABLE II.

The results of top-borer studies 1956-'57.

Variety	C. C. S %		Statistical results
	Healthy canes	Affected canes	
Co. 419	7.74	4.97	Main effects (Healthy and Affected) Z test satisfied: significant at 0.05 S. E. 0.4244.
Co. 449	8.34	6.06	Minor effects (Varieties) Z test satisfied, significant at $P = 0.05$ S. E. 0.3942 C. D. 0.8590.
Co. 527	10.59	8.81	Interactions Z test not satisfied S. E. 0.5575.

TABLE III.

The results of top-borer studies 1957—'58.

Variety	C. C. S%		Statistical results
	Healthy canes	Affected canes	
Co. 419	10.98	10.13	Main effects (Healthy & Affected) Z test satisfied, significant at $P=0.05$. C. D. 0.5738.
Co. 449	13.48	12.17	
Co. 527	12.36	11.90	
Co. 658	14.19	13.15	Minor effects (varieties) Z test satisfied S. E. 0.3722 C. D. 0.7457. Significant at $P=0.05$.
Co. 719	14.32	11.88	
Co. 758	13.84	12.04	
Co. 785	13.73	13.29	Interactions Z test not satisfied S. E. 0.7442.
Co. 799	12.83	11.73	

TABLE IV.

The results of top-borer studies 1958—'59.

Variety	C. C. S%		Statistical results
	Healthy	Affected	
Co. 449	10.83	6.78	Main effects (Healthy & Affected) Z test satisfied. Significant at $P=0.05$. S. E. 0.6040 C. D. 1.48.
Co. 527	11.42	9.83	
Co. 658	13.03	11.72	
Co. 726	9.30	6.51	Minor effects (Varieties) Z test satisfied. Significant at $P=0.05$. S. E. 0.9968 C. D. 1.9936.
Co. 740	9.91	8.00	
Co. 785	11.57	8.19	
Co. 997	13.79	13.31	Interactions. Z test not satisfied S. E. 1.727.
Co. 1001	11.02	8.90	

TABLE V.

Top-borer studies - with references to the time of top-borer affection.

Age at harvest 11 months.

December 1958.

Variety	C. C. S%		
	Healthy Canes	Late affected Canes	Early affected Canes
Co. 419	9.10 $\pm$ 0.3614	9.79 $\pm$ 0.2619	8.00 $\pm$ 0.5016
Co. 449	9.41 $\pm$ 0.6436	9.40 $\pm$ 0.3889	5.29 $\pm$ 0.3283
Co. 527	11.04 $\pm$ 0.4015	11.45 $\pm$ 0.2226	7.08 $\pm$ 0.2639
<i>Statistical analysis — Significance.</i>			
	Co. 419	Co. 449	Co. 527
Healthy X Late affected canes	No	No	No
Healthy X early affected	Yes. $P=0.05$	Yes. $P=0.05$	Yes. $P=0.05$
Late affected X early affected	Yes. $P=0.05$	Yes. $P=0.05$	Yes. $P=0.05$

TABLE VI.

Difference in C. C. S. of healthy and affected canes.

	Average of four Replications 1955—'56	Average of four Replications 1956—'57	Average of four Replications 1957—'58
Co. 419	+ 0.08	— 2.87	— 0.85
Co. 449	+ 0.19	— 2.28	— 1.31
Co. 527	— 0.18	— 1.78	— 0.46
Co. 658	—	—	— 1.04
Co. 719	—	—	— 2.43
Co. 758	—	—	— 1.80
Co. 785	—	—	— 0.44
Co. 799	—	—	— 1.10
	Z test not satisfied S. E. 0.6078	Z test not satisfied S. E. 0.74	Z test not satisfied S. E. 0.6403

Towards Self Sufficiency in Cotton

by
C. K. RAMACHANDRAN and S. KAMALANATHAN,
(Madras Agricultural Department)

Introduction: The Indian Union continues to import annually, about six to seven lakh bales of long staple cotton to meet her internal demand. The requirement of cotton in the coming years will largely depend on the per capita consumption of cloth by the ever growing population. The other factors contributing to the demand for cotton are the exports of cloth and the extra-factory consumption within the country.

Estimated Requirements of Cotton in the First and Second Five Year Plan Periods: To meet the growing internal demand and as to aim at an exportable surplus, it is proposed to increase the production of long staple cotton in the country by stages. Accordingly, the target of cotton production was fixed for the Indian Union at 42.29 lakh bales of lint by the end of the First Five Year Plan and at 65 lakh bales, by the end of the Second Five Year Plan, showing an increase of 53.7% over that of the First Plan target.

The basis for fixing the targets of cotton production for the country under the First and Second Five Year Plans were worked out on the following basis taking into account the population, consumption of cloth and possible exports (Appendix I).

Share of Madras State: The targetted production of 65 lakh bales of lint at the end of the Second Five Year Plan (1960-'61) is split up according to the potentialities for cotton development and increased production available in the various states of the the Union. Accordingly, the share of Madras State is fixed at 4.5 lakh bales at the end of the Second Five Year Plan. Proposals to increase this target to six lakh bales of lint are under examination of the State Government to fall in line with the Government of India who have estimated our requirements of 72 lakh bales by the Third Plan period.

Potentialities of increasing cotton production: Production of cotton could be increased by (a) extension of area and (b) intensive cultivation to increase the yield per unit area.

A stage has already been reached when further expansion of area under cotton would not be possible owing to the limited availability of land and the necessity for increasing the production under food crops. However, the cotton acreage could be increased to a small extent by the reclamation of cultivable waste lands, by adopting suitable crop rotation in the tracts served by irrigation projects and by the utilisation of rice-fallows during summer where they are left uncultivated.

The most important trend in the increase of production is the increase in yield of cotton per acre. As it may not be possible to increase the area indefinitely, our aim should be to concentrate in adopting measures which give higher yield per unit area. Inter-cropping cotton with other crops, use of improved seed, application of fertilizers, adoption of improved agricultural practices, irrigation and contour bunding offer potentialities for increasing production per unit area.

Methods of step up cotton production in Madras State: The target of production of 4.5 lakh bales fixed for Madras State at the end of the Second Five Year Plan is proposed to be achieved by adopting the various measures of cotton improvement, based on the potentialities available in the State, as indicated below:

1. **Reclamation of cultivable waste lands:** It is estimated that 1,917,143 acres of cultivable lands are lying waste (Season and Crop Report 1956-'57) in Madras State. These are being slowly reclaimed by the use of tractors and bull-dozers. Further, with the completion of irrigation projects, new areas are to be brought under cropping, where cotton will be a crop in the rotation. Taking the yield of lint at 75 lb. per acre for the rainfed cotton and 200 lb. for the irrigated cotton, we can estimate the additional production of one third of bale for every new acre brought under cotton.

Moco, a perennial cotton would be successfully grown in home steads, waste lands, vacant uncropped spaces and as hedges in permanent gardens and in areas where the labour is scarce to take up intensive cultivation. Its staple length is 15/16 of an inch and is found suitable for hand spinning. If its cultivation is taken up extensively in house compound, in vacant sites and waste lands, the produce would meet the demand of *Khadi* industry and other extra-factory consumption.

2. **Replacement of other crops:** This includes the replacement of crops like *Tenai*, *Varagu* and *Horse-gram* etc., by a more remunerative crop like cotton. With the completion of irrigation projects like Lower Bhavani Project, Amaravathi and Krishnagiri Reservoir Projects the cultivation of minor millets has given place to other useful and more profit yielding crops including cotton.

In areas where rice is planted under garden land conditions, cultivation of cotton is found to be more paying in seasons of poor rainfall. MCU. 1 cotton could be profitably grown when the water supply in the tanks and wells would not be sufficient to maintain a rice crop. For every acre of paddy cultivated we can raise a three acre crop of cotton with better success and greater profit. About half a bale of lint will accrue per acre, by such a replacement.

3. Double cropping: Immense scope exists for successfully utilising rice-fallows of single cropped wet lands in the Cauvery delta, tank and canal-fed regions of the State possessing good under-ground water supply and where the conditions for ripening and harvest of cotton crop will be congenial. The experiments conducted for the past one decade have clearly demonstrated that the short duration P. 216 F cotton with a cropping period of five months could be profitably cultivated as an off-seasonal crop in rice-fallows. Its cultivation in rice-fallows yields, on an average 200 to 250 lbs. lint per acre resulting in a net profit of Rs. 180/- per acre. The cultivation of cotton does not have any deleterious effect on the succeeding paddy crop. On the other hand, the plant residues of cotton help to augment the supply of green matter to the paddy crop. Here is an opportunity for the rice farmers of Tanjore, Tiruchirapalli, South Arcot, North Arcot and Chingleput districts to grow cotton as an off-seasonal crop to enrich themselves and to add to national wealth of the country.

4. Inter-cropping: This includes cropping of cotton as a mixture with ragi, groundnut and pulses, under both irrigated and rainfed conditions. The extra yield depends largely on the proportion of cotton to other crops and whether irrigated or rain grown. The inter-cropping of cotton is estimated to yield on an average, about 50 lb lint per acre.

The advantage of mixed cropping have been widely recognised. The cultivators of our State fully realise the importance of mixed and inter-cropping. A major area in Madras State is being cropped continuously to groundnut on the same land without any rotation while a minor area is being sown mixed with other crops like redgram, gingelly, castor, cotton or millets. A cotton crop will suit such mixed cropping, since the feeding zones of the shallow rooted groundnut and the deep rooted cotton are at different soil depths and no competitive or depressed effects have been noticed. Cotton can be sown mixed with groundnut in the proportion of 1 to 10 or 12.

In mixed cropping of ragi and cotton practised largely in South Arcot district, they are planted simultaneously in the months of August or September. Ragi seedlings are transplanted in beds while the seeds of Uganda cotton are dibbled in both beds and on the sides or ridges at regular spacings. Sometimes, it is also usual to broadcast the cotton seeds, form beds and transplant ragi seedlings at the time of irrigating the beds. There is no difference between the two methods except in the ultimate seed rates. Hand dibbling requires about 6 lb of cotton seed while broadcasting needs double this quantity. The ragi crop which outgrows cotton rapidly is harvested by January when a hoeing and earthing up is given to cotton. The cotton crop responds well and yields a good harvest by the end of March.

In the districts of South and North Arcot, cotton seeds are dibbled in the standing crop of ragi at the time of first hoeing and irrigated. After the harvest of ragi, the cotton crop pulls up, giving good yields.

In the coastal districts of South Arcot and Chingleput, there is a practice to inter-cropping of MCU. 1 cotton in casuarina plantations. Cotton is also inter-cropped with chillies and onions in irrigated areas.

Mixed cropping with cotton is not only the most remunerative practice, but is also an effective insurance against the vagaries of monsoon and risks from damage by pests and diseases.

5. Use of improved seed: The seed plays an important part in crop production. It improves the quality of the produce and increases the yield. The advantages of growing improved strains are well known. The ryots are benefitted not only by the increased outturn, but also by the higher price offered to their produce, on account of its higher ginning percentage and superior qualities. Large quantities of pure seeds of the recommended variety are made available in sealed bags, from the seed multiplication and distribution schemes run in the State for each of the strains.

At present, about 65% of the total area under cotton is covered by improved variety and the aim is to saturate the entire area. The additional production by the use of improved strains is estimated to be, on an average, 16 lb of lint per acre. By co-ordinating the Cotton Extension and the Cotton Seed Multiplication and Distribution schemes, it is expected that besides the spread of improved seed, the purity of the strain is also ensured.

6. Application of fertilizers: This is another potential measure, by which the yield could be increased to an extent of 40 lb lint per acre. The cultivators of Madras State have become increasingly fertilizer minded. The fertilizer is recommended only in areas with an annual rainfall of over 30 inches and for the crop raised under irrigation.

A basal dressing of five tons of farm yard manure is recommended for rainfed cottons in areas with less than 30 inches of rainfall. In areas receiving more than 30 inches of rainfall, application of 150 lb of standard mixture I per acre is recommended.

For irrigated cottons, application of 40 lb Nitrogen at the time of maximum flowering over a basal dressing of 15 lbs. P_2O_5 & 12 lbs K_2O and 5 tons of farm yard manure is recommended. This could also be modified by the application of 350 to 450 lb of standard mixture No II.

In the Lower Bhavani project area where MCU. 1 cotton is normally expected to be planted over an area of one lakh of acres, the yield is low, due to the shallow and porous nature of the soils with low water holding

capacity. The soils are of low fertility status being deficient in all the plant nutrients. Their tilth and fertility status can be built up by growing a suitable leguminous green manure crop and by the application of large quantity of compost and other organic manures.

7. Plant protection measures: The loss in cotton crop is estimated to range from 5 to 25% due to pests and diseases, depending on the severity and time of incidence. Boll-worms, stem-weevil, jassids, aphids and leaf-rollers among insect pests and black-arm among the diseases are the major problems in our State. Control of these pests and diseases by plant protection measures are the best means, to keep them under check. All the pests affecting cotton viz., jassids, boll-worms, aphids, mites and leaf-rollers are easily controlled by the use of "Folidol" "Endrex" and B. H. C. compounds. Treating the cotton seeds before sowing with "organo" mercuric compounds like "agrosan" controls the primary infection of black-arm disease.

8. Improved agricultural practices: Correct crop rotation, field sanitation, optimum time of sowing, line sowing, proper spacing, use of improved agricultural implements, clean pickings, and proper storing of kapas would result in clean and better grade of cotton, besides, giving the optimum conditions to get the maximum. The cost of cultivation is considerably reduced.

9. Contour bunding: Contour bunding is advocated in dry areas to prevent soil erosion. It is expected that by the adoption of this measure, yield would increase by about 25 lb of lint per acre. Since more than half the area under cotton in Madras State is rainfed, the problem of preventing soil erosion and conservation of soil moisture assume an important status. In such areas the production of cotton is increased on account of better utilisation of the rain water.

10. Irrigation: The importance of irrigation to step up production of crops has been well recognised and a large number of irrigation schemes are in operation. In a crop like, cotton, irrigation offers tremendous potentiality for growing long staple American cottons, besides increasing the yield of the existing variety, so urgently needed to-day.

Conclusion: Cultivation of cotton in Madras State is peculiar in that cotton is sown during almost all the months of the year in one part of the state or other, being conditioned, mainly by seasonal rains at sowing and harvest or by availability of water for irrigation. It is not unusual to find cotton being grown in different seasons under both rainfed and irrigated conditions in one and the same district. In any national drive for self sufficiency, the gaps in supply have to be made up either through increase in yield per acre or through rise in planted area. The different measures suggested, will go a long way to step up cotton production and result in an exportable surplus.

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APPENDIX I

The estimated requirements of cotton at the end of the First and Second Five Year Plans.

Plan period	Population (millions)	Per capita consumption of cloth (yards)	Total consumption of cloth for domestic use (million yards)	Export of cloth (million yards)	Cotton required for producing the cloth at col. 4 & 5 @ 36 yards per lb. (lakh bales)	Export of cotton (lakh bales)	Extra-Factory consumption (lakh bales)	Import of cotton (lakh bales)	Net requirements of cotton (col. 6+7+8-9) lakh bales.
1	2	3	4	5	6	7	8	9	10
I Plan : (1951-'56)	381	14	5334	805	43.40	6.12	2.70	6.10	46.12
II Plan : (1956-'61)	410	17.5	7175	1000	58.07	6.00	2.70	6.00	60.77

Age of Seedlings Experiment in Ragi.

by
K. DIVAKARAN AND L. SIVAGNANAM.

Introduction: Ragi (*Eleusine coracana* Gaertn) is one of the three major millets cultivated in Madras State occupying an area of about 10 lakhs of acres in the districts of Salem, Coimbatore, Ramanathapuram, Mathurai, Tirunelveli, Chingleput, South Arcot and Tiruchirapally. Over 60 percent of the area is grown under irrigated conditions in gardenlands. The crop is first sown in nursery and latter on transplanted in the main field. The period the plants are allowed to remain in the nursery varies with the duration of the varieties grown. Generally the ryots allow a week in the nursery for every month's duration of the crop. The care of the nursery being easy and economical, the maximum period that the seedlings can remain in the nursery without adversely affecting the ultimate yield of the crop is of significance to the cultivators.

Materials and Methods: To find out the optimum number of days, the seedlings have to remain in the nursery prior to transplanting so as to obtain the highest yield and also to determine the maximum period the seedlings may be allowed to remain in the nursery without any adverse effect on the ultimate yield of the crop, an experiment was laid out at the Millet Breeding Station, Coimbatore during the years 1954-55 and 1955-56. with the three strains viz., Co. 1. (120 days), Co. 2. (110 days). and Co. 7. (100 days) representing the long, medium and short duration varieties that are under spread in Madras State. Sowing of the three strains was done in the nursery on the same date and transplanting the seedlings was done 20, 25, 30, 35, 40 and 45 days after sowing. The planting was done in randomised plots replicated four times with 9" x 9" spacing. The harvest was taken up as and when the crop reached maturity.

Results: The yield data is presented in table I.

TABLE No. I.

Age of seedlings (in days)	Serial No.	Strain No.	1954 Acre yield of grain in lb.	1955 Acre yield of grain in lb.	Average
20th day	1	Co. 1	1367	2000	1683
	2	Co. 2	1683	4667	3175
	3	Co. 7	1889	3889	2869
Average			1646	3519	2582

Age of Seedlings Experiment in Ragi

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TABLE No. I. (Contd.)

Age of seedlings (in days)	Serial No.	Strain No.	1954 Acre yield of grain in lb.	1955 Acre yield of grain in lb.	Average
25th day	4	Co. 1	1367	4056	2711
	5	Co. 2	1711	3889	2800
	6	Co. 7	1722	3778	2750
Average			1600	3908	2754
30th day	7	Co. 1	1628	3778	2703
	8	Co. 2	2083	4056	3069
	9	Co. 7	2407	3056	2731
Average			2039	3630	2834
35th day	10	Co. 1	1417	3667	2542
	11	Co. 2	1683	3056	2369
	12	Co. 7	1833	3778	2805
Average			1644	3500	2572
40th day	13	Co. 1	1028	3111	2069
	14	Co. 2	1906	2667	2786
	15	Co. 7	1306	2222	1764
Average			1413	2667	2206
45th day	16	Co. 1	1294	1986	1640
	17	Co. 2	1139	1944	1542
	18	Co. 7	750	1556	1153
Average			1061	1829	1445
Critical Difference			399.4	833	
Whether differences are significant or not by "Z" test (P=0.05)			Yes.	Yes.	

From the data presented above it may be observed that in both the years of trial there is a trend towards considerable reduction in yield of grain in the case of all the three strains, when the seedlings are kept for more than 40 days in the nursery. In the case of Co. 1. which is of longer duration, planting 20 days after sowing resulted in poor yield in both the years while there is no appreciable reduction in yields in the case of Co. 2. and Co. 7. strains, even upto the 40th day. From these observations it may be concluded that planting of short and medium duration strains viz., Co. 2. and Co. 7. can be done from the 20th day

onwards upto the 35th day. For long duration strain Co. 1. planting should be done only after the 25th day as earlier planting affects the yield of grain adversely. In short, there is a considerable reduction in yield both in grain and straw in all the three strains when they are planted after 35 days. The maximum reduction in height and yield of straw is more marked in the case of the short duration strain Co. 7. than the other two strains. The seedlings that remain in the nursery longer than the optimum period are not fit for transplanting. Elongation of nodes of the seedlings in the nursery is characteristic of over aged seedlings. Nodes start to elongate 35 days after sowing in short and medium duration strains and 40 days in the longer duration strain. When these seedlings are transplanted, the vegetative growth is poor and soon after establishing they put forth very small earheads and tiller freely. The tillers are reduced in size and bear small earheads. The poor yield obtained when over aged seedlings are transplanted may thus be attributed, to sub-normal growth after transplanting.

Summary: Ragi unlike the other millets is mainly a transplanted crop in gardenlands in the Madras State. In a study to determine the optimum age at which ragi seedlings should be transplanted, it is observed that planting of short duration and medium duration strains viz., Co. 7 and Co. 2 can be done from the 20th day onwards upto the 35th day, whilst in the long duration strain viz., Co. 1 planting should be done only after the 25th day. Further it is found that the strain Co. 1 when planted after the 25th day, recorded the maximum yield of both grain and straw. As regards the medium and short duration strains viz., Co. 2 and Co. 7 there is appreciable reduction not only in the yield of grain but also in the yield of straw when the seedlings are planted after the 35th day.

Acknowledgment: The help and guidance given by Dr. B. W. X. Ponnaiya, B. Sc., (Ag.), M. Sc., Ph. D., Professor of Genetics and Plant Breeding, Regional Post-Graduate Institute, Coimbatore in the preparation of this paper are gratefully acknowledged.

Announcement

The last date for the receipt of the articles for the various College Day and Conference awards has been extended upto 15-7-1960.

Secretary,
M. A. S. U.

Soil erosion and its control in the plantations with special reference to Nilgiris

by

Y. B. MORACHAN,

Post Graduate Student in Agronomy, Agricultural College, Coimbatore-3.

Introduction: The Nilgiris district in the Madras State though in size with an area of 989 square miles (6,32,960 acres) has focussed attention of Government on the problem of soil erosion and control. indiscriminate denudation of forests and cultivation in steep slopes during the period of Second World War had largely contributed to the increase of soil erosion in this district. Worst examples of soil erosion are seen in the leased lands under 'Grow More Food' campaign besides the managed plantations of the district.

Position of Plantations in Nilgiris: The area under plantation crops, especially Tea, is increasing year by year mostly by the small growers, who were formerly depending on potatoes and cereal crops for their livelihood. It is estimated that there are about 5000 holdings ranging from half-an acre to ten acres in the district. The extent of plantation crops found in the district is shown below as seen from season and crop report 1957-58.

The area of the district	6,32,960 Acres
Net area cultivated	1,11,777 "
Area under Coffee	22,315 "
" " Tea	42,101 "
" " Cinchona	1,810 "
" " Rubber	782 "
" " Wattle	1,485 "
" " Bluegum	2,000 " (Estimated)
Total Area under Plantation crops	70,464 Acres.

Thus it can be seen that the plantation crops occupy more than 60% of the area cultivated.

Among the plantation crops, Tea occupies the first place. The area under Tea is increasing rapidly due to the following contributing factors:—

1. The extension of the Madras Hill Station (Preservation of Trees Act 1954) to the two taluks of Coonoor and Ootacamund. According to this act fields with a slope of more than 33% have to be planted with only tree crops which includes Tea also.

2. The liberal issues of permits by Tea Board, in recent years for the extension of areas both for new-comers and others.

3. The liberal issues of Takkavi loans by Government for establishing tea-estates upto Rs. 1,000/- per acre.

4. The gambling nature of potato crop on the the vagaries of monsoon had reduced its area and swing over to Tea which is not affected by timely rains is found in recent times.

5. Above all, the assured income from plantation crops especially Tea at about Rs. 500/- per acre per year.

These factors had influenced the ryots to switch over to Tea cultivation reducing the area under potatoes and thousands of small estates are springing up throughout the district especially in Coonoor taluk and Kundah firka of Ootacamund taluk.

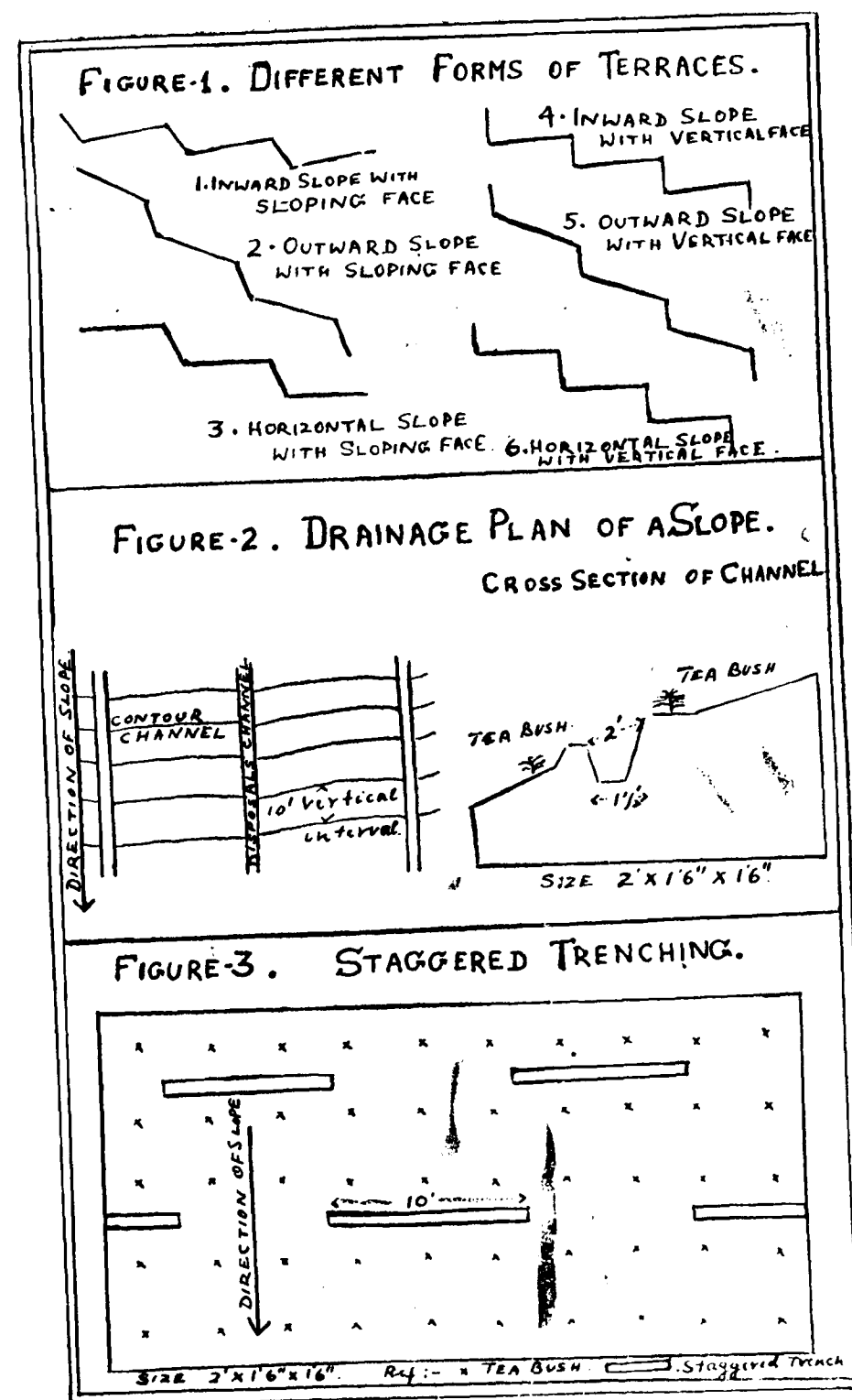
Erosion Problem in Estates: In his report to the Royal Commission of Agriculture in India (1928) Mr. Rudolph Anstead, the then Director of Agriculture, Madras, had reported that on the hills big companies are growing Tea, Rubber and Coffee and they have been taught to stop soil erosion. But the position is not so at present.

In a newly opened Tea estate, until the plants are established and cover the ground, soil erosion does great havoc. Even in a well managed estate until the bushes are able to cover the ground for which a period of about 10 years is necessary, a great portion of top soil is lost by erosion. Among the factors influencing soil erosion the slope of land, intensity of rainfall and farming practices play a prominent part. In the newly started estates, both rill and gully erosion are seen in steep slopes during the north-east monsoon period.

Remedial Measures: To combat the above menace, the following control measures are advocated by the State Department of Agriculture in the plantations.

1. **Bench terracing:** These are of six different types as shown in the sketch. (figure I) Types No. 5 & 6 are usually followed in the newly opened estates. Here suitable stone rivetments are used as vertical faces with terraces either sloping outwards or horizontal. Unlike the bench terraces adopted for potato cultivation, wherein a vertical interval of five feet is given, between the terraces, here a vertical interval of one foot is conveniently adopted giving a terrace breadth of about 3-4 feet. Terrace grade that should be followed is 1 in 400 along the terrace. These lengths are connected to vertical disposal channel to which regular contour trenches join. The tea seedlings are planted in the terraces at 3 to 4 feet distance both vertically and along the contour.

2. **Contour trenching:** Besides the above terraces, contour trenches form an essential feature for any new plantation including Eucalyptus and Wattle. By contour trenching it is meant the excavation of trenches along a uniform level at a particular contour across steep slopy



areas. In Nilgiris, the trenches are excavated at a verticle intereval of 10 feet and the trenches are graded 1 in 400. The trenches are of 2' x 1' 6" x 1' 6" size as shown in the sketch (figure 2) and the dug out soil is thrown in the lower side of the channel with embankment. By this method rainwater is held up for a long time and slowly drained to the disposal channel. The disposal channel is dug up along the slope vertically in the natural gully portion of the hillock. In these disposal channels, drop pits are excavated at the meeting places of contour channels. These drop pits are of 2' x 2' x 2' size. The drop pits besides collecting the silt washed by the contour channels, reduce the erosive velocity of run-off water thus minimising erosion. The silt collected in the drop pits are periodically dug up and applied to the bushes. Both in the contour channels and disposals channels grass slips are planted to reduce the erosive velocity besides supplying fodder to cattle. The execution of contour channels cost about Rs. 60/- to 80/- per acre.

3. *Staggered trenching*: After the seedlings are planted and established, after a period of 3 to 4 years these trenches are dug up as shown in the sketch (figure 3). The trenches are usually of 10' in length and 2 x 1' 6" x 1' 6" in breadth and depth and are excavated in between the tea seedlings on contour. The execution of above work costs about Rs. 100/- per acre.

Method of Execution: Both contour trenching and staggered trenching are now being carried out by the Department of Agriculture in the district while the ryot is advised to carry out the bench terracing in his newly opened estates. These works are executed under the Special Comprehensive Scheme sanctioned by the Government which is applicable for the entire District. According to the existing rules, the soil conservation works are executed by the Department after executing agreements from the ryots in non-judicial stamp paper to the value of Rs. 150. The ryot has to pay 75% of the cost of soil conservation works and 10% of the cost of the machinery and equipment and the entire cost of establishment of the staff in the Soil conservation schemes. This amount is collected from the ryots after 3 years in 20 annual equated instalments.

Soil conservation measures in hundreds of acres have been completed both by the Department as well as by the ryots in their small estates. It is hoped that the entire plantation area under small growers will be covered soon in the fight against the menace of soil erosion.

* Description and Biology of a New Species of Weevil Damaging Snake Gourd (*Trichosanthes anguina*) in South India (Part I)

by

T. R. SUBRAMANIAN, M. Sc.,

Agricultural College and Research Institute, Coimbatore.

Introduction: Snake gourd (*Trichosanthes anguina*) is a creeper belonging to the family *Cucurbitaceae*, the fruits of which are used as vegetable in every household in South India. Apart from leaf caterpillars, fruit flies and other insect pests, a dark tiny weevil belonging to the genus *Baris* causes appreciable damage to the creeper, the grubs of which tunnel through the tender shoots and leaf petioles and cause withering of the same. Ramakrishana Ayyar (1932, 1940) has recorded this weevil (Plate II) at Tanjore. But in recent years it is noted in serious proportions in Coimbatore also. Ever since the record of the weevil the specific name has remained undetermined. Hence the author made attempts to identify the species from all the available literature and collections; but it was found different from all the species described in this genus so far. Therefore the weevil has been described by the author as new species and further the detailed studies on the biology and early stages of the insect were also studied by him. The detailed description of the adult and the details on the biology and early stages are presented in this paper.

Subfamily: *Baridinae* — † *Baris trichosanthis* NEW SPECIES

Female: Entirely dull black with tarsi piceous, bare; underside with a minute pale seta in each puncture.

Head separated from the rostrum by a distinct impression, broader than long with rather small scattered shallow punctures, but no median fovea. **Rostrum** nearly cylindrical, strongly bent near the base and gently curved beyond, slightly dilated above the insertion of antennae and the apex; longer than prothorax and a little shorter than head and pronotum put together, coarsely punctate to beyond the middle, the punctures on the apical portion rather smaller, no median carina. **Eyes** vertically elongate oval, separated above and below by the width of rostrum. **Antennae** inserted well beyond the middle of the rostrum, black, except the narrow part of the scape which is red; scape a little longer than funicle and clubbed at the base; **funicle** seven jointed, gradually widening to apex, joint 1 equal to 2 to 5 inclusive, 3 to 7 transverse, 2 scarcely longer than 3; club 4 segmented, basal segment a little longer than the rest put together and with numerous whorls of pale setae.

Prothorax broader than long, broadest at the base, sides almost parallel from the base to middle then gradually narrowing with a curve to the apical constriction; apex truncate; dorsum gently convex

* Forms part of thesis submitted for M. Sc. degree of Madras University.

† Referred to as *Baris* sp. in the thesis.

longitudinally, highest at the middle and evenly set with large shallow punctures, the intervals between which form a regular raised network without any trace of median line. *Scutellum* subtriangular with shallow median impression. *Elytra* broadly ovate, evidently broader at the sloping shoulders than the base of the prothorax and thence narrow to the apex, each elytron twice as long as broad, striae fairly deep with deep distinct punctures, broader and deeper near the apex where 9 and 10 unite to form a deep furrow in elytra; intervals broader than striae, faint, with irregular row of very shallow punctures, which are larger and closer on the basal half, becoming small and widely separated behind. *Legs* dull, with coarse subconfluent punctation and short recumbent pale setae; femora sunlinear, coarsely punctate and without a tooth in the middle; tibia gradually widening distally, shallowly sulcate, mucronate in all the pairs; tarsi small, spongy at the base with pale white pubescence, segment elongate and ending in two distinct curved claws.

Sternum with close punctures each with a pale white seta and with the front intercoxal space narrower than the middle one. *Pygidium* exposed long and rugosely punctate at the apical two thirds.

Length of body excluding rostrum 2.5–2.8 mm.; width 1.2–1.4 mm.

Length of rostrum 0.94–0.96 mm.

Male Similar to female in general characters but averaging slightly smaller than females. *Rostrum* shorter, thicker with dense punctures throughout, less dilated at the middle and apex; the pygidium is convex with small separate punctures.

Length of body excluding rostrum 2.2–2.4 mm.; width 1.0–1.2 mm.

Length of rostrum 0.91–0.93 mm.

Holotype one female, allotype one male and paratypes kept at the Agricultural College and Research Institute collections Coimbatore.

Distribution and host plants: The weevil has been so far recorded only in Coimbatore and Tanjore. It has been noted to attack only snake gourd. A search for alternative host plants did not reveal anything during this study.

Nature of injury: Both adults and grubs damage the crop. Adult makes a number of punctures on the leaf petioles and at the nodal region during egg laying, with the result a gummy fluid exudes from the place of injury which on drying forms a sort of white encrustation. The grubs tunnel the leaf petioles and the tender stem especially at the nodal region and feed on the inner contents with the result the vigour of the creeper is seriously affected and in serious case the crop becomes stunted and appears sickly. An infested creeper can be made out by the presence of gummy encrustation at the nodal region and petioles and by the swollen condition of the nodes.

(To be Continued)

Research Notes

Induction of Roots in the Cuttings of *Hibiscus rosasinensis* with Plant Growth Regulators

The effect of plant growth regulators on the hardwood cuttings of *Hibiscus rosasinensis* L., is being reported elsewhere (Shanmugavelu, 1960). The anatomical responses of the softwood cuttings of *H. rosasinensis* L., to one of the plant growth regulators, viz., indolebutyric acid has recently been reported (Shanmugavelu, 1959). In the present studies the effect of plant regulators on the semi-hardwood cuttings of *H. rosasinensis* L., is reported,

Fresh cuttings, carefully selected for age and thickness, were treated with various concentrations of indolebutyric acid (IBA), and naphthalene acetic acid (NAA), by adopting three methods, viz., (1) soak method in which the bottom end of the cutting was soaked for 24 hrs. in aqueous preparation of the plant growth regulators; (2) quick dip method, in which the basal ends of the cuttings were dipped for five seconds in aqueous concentrated preparations of the chemicals; and (3) the dust method in which the basal end of the cuttings were dipped upto one inch in the dust of plant growth regulators. After treatment the cuttings were washed thoroughly with tap water in the soak method and in the other methods they were directly planted in the well prepared sandbeds, which

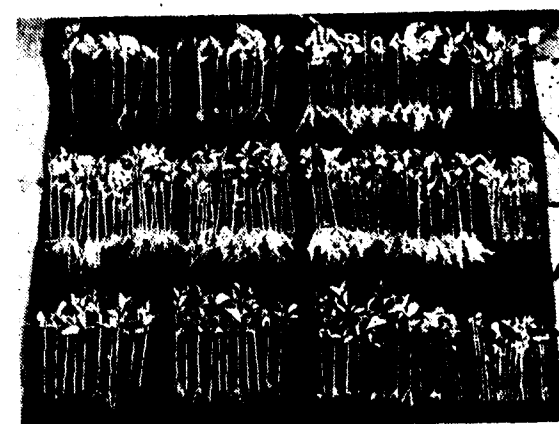


Fig. 1.

Effect of NAA on rooting of Hibiscus stem cuttings:
1st row: soak method; 2nd row dip method;
3rd row: dust method. C. control in each row.

were periodically watered to keep them sufficiently moist. There were twenty cuttings under each treatment and concentration. Proper controls were maintained in each case. The effect of the two plant regulators on

root formation in the cuttings was examined by pulling out the cuttings carefully after an interval of six weeks and the length and number of roots in each of the cuttings counted and recorded. The results are summarized in Table 1.

TABLE I

Effect of IBA and NAA on rooting of *Hibiscus rosasinensis* L., stem cuttings.

(20 cuttings included under each treatment)

Treatments		Percentage of cuttings rooted		Average No. of roots per cutting		Average length of roots per rooted cutting in cms.	
Method	Concn.	IBA	NAA	IBA	NAA	IBA	NAA
Soak	40	25	35	3	4	15.2	18.5
	60	30	35	5	7	16.7	24.4
	80	0	75	0	15	0	54.1
Quick dip	4000	90	95	8	7	54.2	31.0
	5000	95	80	14	9	53.6	46.4
	6000	100	100	12	14	71.6	86.6
Dust	1000	75	...	6	...	24.6	...
	2000	75	50	7	3	31.5	10.0
	3000	70	55	6	4	18.7	15.6
	4000	...	70	...	6	...	15.4
Control		10		1		3.7	

As against a rooting of 10 per cent of the cuttings in the control, with an average of one root 3.7 cm. in length, all the other treatments induced much better rooting in the cuttings. The highest percentage was obtained with 80 ppm. of NAA by the soak method and also by the quick dip method at 6000 ppm. of either IBA or NAA (Figure 1.) However, in some cases high concentrations of IBA proved to be toxic to the cuttings and relatively NAA was more effective, as it induced better and more root formation. The dust method gave comparatively poor results.

On the basis of the results obtained it could be easily recommended to the propagators that treating the semi-hardwood cuttings of *H. rosasinensis* L., with 40 to 80 ppm. of NAA by the soak method for 24 hrs. or 6000 ppm. of either IBA or NAA by the quick dip method for five seconds would help in inducing better and more rooting of the cuttings.

Acknowledgment: The author wishes to express his grateful thanks and deep sense of gratitude to Dr. S. Krishnamurthy, the then Professor of Agriculture, Annamalai University, under whose guidance

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Department of Agriculture,
Annamalai University,
Annamalainagar.

K. G. SHANMUGAVELU.

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Further Observations on Chlorophyll Deficient *Striga* Plants

The occurrence of *Striga* plants with yellow leaves which dried without reaching the reproductive phase was recorded in 1952. In the monsoon season of 1957, in a field of Sorghum heavily infested with the root parasite, *Striga*, eight *Striga lutea* plants which were completely white in colour were observed. In spite of being completely devoid of chlorophyll, these plants were vigorous and healthy and fruited profusely like the normal plants which are green in colour and partially parasitic on the host. These plants which might have arisen as a result of mutation indicate physiological adaptation from a partially parasitic mode of nutrition towards a higher level of parasitism resulting in total dependence on the host plant.

Agricultural College & Research
Institute, Coimbatore.

K. MEENAKSHI.

Selected Article

CZECHOSLOVAK AGRICULTURE

The territory of Czechoslovakia is almost completely exploited for agricultural and forestry production. If the area of settlements, communications and rivers is deducted, only a few tens of thousands of hectares of peat-bogs, salt containing or mountainous, stony soils remain, which cannot be cultivated. There are roughly 5 1/4 million hectares of arable land, 4 1/4 million hectares of forests, almost 2 million hectares of permanent meadows and pastures and more than 50,000 hectares of water surfaces economically exploited.

Vegetative Production: Agricultural land therefore covers almost 60% of the territory. The climate is transitional between maritime and inland, and all types of soil are represented which occur in this mild belt. Mainly cereals / wheat, barely, corn, oat, maize /, potatoes, sugar beet, vegetables, flax, hops, but also vine and other thermophilic crops are cultivated. About one fifth to one quarter of arable land is sown with fodder-plants, mainly with clover and lucerne.

Hectar yields are above European average and therefore above world average. Hectar yields of cereals have increased from the pre-war average of 16 to 17 quintals to 20-22 quintals. This increase is due to improved agrotechnics which has been made possible by the development of mechanization and a greater use of mineral fertilizers.

Three Czechoslovak produces are of importance for world agricultural production: Barely-used for malt, hops and sugar beet. The first two raw materials are used in the brewing industry and are regarded as the best in the world because of their quality. Czechoslovakia belongs in the export of beet sugar among the leading countries in the world. In addition also great quantities of first-class seed potatoes and certain special seeds are being exported.

Animal Production: The increase of the marketing quantity of animal products - meat, milk and eggs - is the final target of all endeavour for the improvement of Czechoslovak agriculture. The requirements of the consumption of these first quality food stuffs grow so quickly in connection with the rising standard of living that home production cannot keep pace, although for example the number of heads of pigs was doubled as compared with the pre-war state. The difference between production and consumption must be secured by the import of these products.

Czechoslovak farmers breed mainly cattle, pigs, sheep and fowl. The number of these animals in comparison with the area of cultivated land are an expressive sign of the intensity of Czechoslovak agriculture. Sixtyfour heads of cattle are bred to 100 hectares of agricultural land, 103 pigs and about 500 chickens to 100 hectares of arable land and about 55 sheep to 100 hectares of meadows and pastures. In addition, several million geese and ducks are bred every year.

The number of heads of cattle is relatively low and an increase of its numbers is a foremost task in animal production. On the other hand the number of sheep was reduced because sheep are animals characterizing

Czechoslovak Agriculture

extensive agricultural production. Their numbers as compared with the pre-war state decreased roughly to two thirds. Approximately equal is the decrease in the number of horses. At present something more than half a million are bred and by the influence of the rising mechanization in agriculture, their breeding shows a further downward trend.

Mechanization: Before the war only 1.5 tractors operated in Czechoslovak agriculture per 1,000 hectares of land, in 1948 as many as 3 and in 1959 more than 8 tractors / in relation to machines of 15 HP. traction /. Combines for the harvesting of cereals, flax, sugar beet, potatoes, fodder plants for ensilage, etc. are new features on Czechoslovak fields in the post-war period. Grain blowers and hay blowers, cutters, slicers and other machines for the preparation of fodder can be found in every agricultural co-operative. Whereas in 1937 not quite 60% of all villages were electrified, in 1960 all villages will be electrified.

Forests: Of the total of afforested area, 71% are coniferous forests, mostly monocultures of spruce, pines, to a lesser degree of fir and only the remaining part are leafy woods mostly mixed ones. At present forests undergo regeneration which only a socialist economy can give them. Production is being limited to the lowest possible extent. The general plan of improvement of agriculture, forestry and water conservancy in Czechoslovakia, based on scientific research determined areas which have to be kept permanently afforested; this delimitation of land fixes in harmony with the recreation of the countryside also the afforestation of certain non-forest land. The general plan keeps in mind also the change of monoculture to healthier mixed growths with multi-storeyed crowns.

Agriculture and forestry are the second most important branch of the national economy in Czechoslovakia. Almost as many persons are employed in this branch as in industry, more than one third of the productive forces of the population. Although productivity of work in agriculture has increased in the past ten years by 93%, the share of agriculture and forestry in the creation of the national income at present is five times lower than in industrial production and shows a steady downward trend.* This phenomenon, a general occurrence in countries with a highly developed industry, does not signify a low standard of farming in Czechoslovak fields. On the contrary, intensity of agricultural production in recent years attained almost the standard of countries such as France, Sweden or Austria.

Changes after 1945: Changes which affected agricultural production and the village in general, doubtlessly belong among the greatest which the people's democratic system brought to the people of Czechoslovakia after the Second World War. Working farmers received land, which in the past they demanded in vain. This came about by the partition of big estates. Since 1949 farmers have begun to unite in co-operatives in order to be able to make better use of big-scale production, especially of mechanization. And at present, when this process is about to be

* In 1948, when 1,686,000 persons were employed in industry and 2,337,000 persons in agriculture, the share of industry in the national income was 36% and of agriculture 26%; in 1955, however, the state was the following: 2,613,000 persons and 65% employed in industry and 2,027,000 persons and 15 % in agriculture and forestry.

completed, farmers prepare to complete these revolutionary changes by the improvement of their co-operative farms, so that they equal with this increase in production the most advanced countries in Europe, the German Federal Republic, Denmark, Belgium. Hand in hand with these changes in the methods of work, also the way of life of farmers changes in gradually, the standard of living rises, the distinguished differences between town and village disappear.

During the carrying out of the land reform in the years 1945 to 1948 the following slogan became reality: "The Land Belongs to Those who Work on it!" One fifth of agricultural land, almost one and a half million hectares passed into the ownership of small farmers and landless persons living in the village. This land belonged in the past to big farmers and estate owners, part to traitors of the Czech and Slovak nation in the time of the fascist occupation. Forests of which in the past only half belonged to the State, passed almost completely into the ownership of the State.

In 1948, there existed in the whole Republic only 28 villages where farmers worked collectively. In the following year there were 1,441, in 1950, 3,747, etc. At present co-operatives exist in more than 83% of all villages. To-day co-operatives cultivate about 79% of land which comes under consideration for the co-operative movement.

In addition to unified agricultural co-operatives, there exists a relatively extensive state socialist sector which cultivates more than 17% of all agricultural land in the country. These are mainly state farms which were founded in places where farmers were not interested in acquiring land which was intended for seizure. The number of areas of special farms for agricultural research and schools increased considerably.

New Life in the Village: Co-operatives deeply influenced life in every village, where they began to operate. The creation of new relations between farmers who for centuries were accustomed to work individually, was and is not an easy process. Especially the pioneer co-operatives had to search with great difficulties for correct forms of organization of work and just reward for work done. Even the rich experience of leading officials from small holdings were not sufficient. Tens of thousands had to pass through specialized courses and hundreds of thousands of regular co-operative members had to raise and are still raising their qualifications in co-operative works schools.

At present co-operatives are taking over also the organisation of the cultural life of the village. They establish village clubs, support theatrical amateur companies and other hobby groups of the village inhabitants. They organize from their own financial means visits to theatres in towns, excursions to historical places or known beauty spots, but also instructive excursions.

In villages where co-operatives farm with average good results motor cars, motor-cycles, new furniture, various machines and apparatuses for the household, television sets, etc., are quite a normal occurrence among their members. Life in the village is made more agreeable by the fact that 95% of villages have at least once daily bus connections with neighbouring towns.

Perspectives for the Third Five Year Plan: The Third Five Year Plan of the development of the national economy/1961—1965/sets for agriculture the target to increase the total volume of production by almost 40% as compared with 1957. This is a great goal which can be fulfilled, however, because co-operative farmers will receive extensive assistance from the Government. By 1965, agriculture will receive thousands of new machines, so that one tractor will be to every 36 hectares of arable land, one combine for every 58 hectares of cereals, one ensilage combine to 13 hectares of fodder plants, etc. Many operations will be completely mechanized. A system of machines has been prepared for all works necessary for individual crops, beginning with their sowing and ending with their harvesting. The increase in hectar yields will be helped by mineral fertilizers, the production of which will increase two and a half times.



Large-Scale Co-operative Farming in Czechoslovakia

The new Czechoslovakia, which came into being on May 9th, 1945, has been gradually changing over from inefficient small scale production in agriculture to big-scale co-operative farming. The former 1,500,000 private farms have merged into 12,500 co-operative farms which are now working about of all the agricultural land. Co-operative and big investment by the State in agriculture, have made possible not only the use of machinery on a large scale, but also the construction of expensive structures like those shown on the picture, belonging to the agricultural co-operative at Partyzanska Lupca in Slovakia. As a result, Czechoslovak agriculture has been able to spare many workers needed by industry and at the same time to increase agricultural production, while the income of the farmers has risen conspicuously.

The main trend to which the attention is concentrated during the creation of conditions for the increase of vegetative production, is the reclaiming of land. This concerns mainly the drainage of water-bogged territory and the building of irrigation system on land suffering from drought. The regulation of smaller rivers and the drainage of 192,000 hectares is secured in the plan by investment allocations of Kcs. 5 milliards.

A swifter rise of vegetative production it should increase by 44% is a condition for the expansion of animal production. The increase of the number of heads of domestic animals and especially of their productivity is unthinkable without a greater production of fodder. This is also taken into account by the new, big-scale technology of animal production, which in the past three years passed through a stage of experiments and which at present is being gradually introduced into praxis.

The new technology signifies in principle the departure from existing care of the tender for each separate animal and a transition to the tending of the herd as a whole. The increase of productivity of work is manifold. In a number of pig-sties world primacy was achieved with the automatic fattening of pigs-1.25 hours of actual work were necessary for 100 kg. of produced meat. In the USA a similar fattening of pigs shows a requirement for about 6 hours.

Czechoslovakia belongs among the countries which have very little land per one inhabitant-0.56 hectares of agricultural and 0.39 hectares of arable land. This is the reason why agriculture, the growth of its production and the raising of hectar yields is of nation-wide interest. Co-operative farmers with the aid of workers who supply them with machines and fertilizers, year by year increase production of their large enterprises and there cannot exist any doubt that to-day when co-operative big-scale production has arrived to stay, the increase will be swifter than up to now.

Weather Review — for April, 1960.

RAINFALL DATA (IN INCHES)

Region	Station	Total rainfall for the month	Departure from normal	Total since 1st January
North	Madras (Meenambakkam) ...	...	— 0.6	1.0
	Tirurkuppam* ...	...	— 0.5	1.1
	Vellore ...	...	— 1.0	...
	Gudiyatham* ...	...	— 1.0	0.7
East Coast	Palur* ...	...	— 1.0	0.5
	Tindivanam* ...	0.4	— 0.6	0.5
	Cuddalore ...	0.1	— 1.0	1.0
	Nagapattinam ...	1.2	+ 0.1	4.7
	Aduthurai* ...	...	— 1.4	0.7
	Pattukkottai* ...	6.1	+ 4.3	8.9
Central	Salem ...	1.3	— 0.4	1.3
	Coimbatore (A. M. O.) * ...	1.2	— 1.2	7.8
	Coimbatore ...	2.6	+ 1.1	3.0
	Tiruchirapalli ...	1.5	— 0.9	2.3
South	Madurai ...	3.4	— 1.2	3.8
	Pamban ...	3.0	+ 1.2	6.3
	Koilpatti* ...	7.0	+ 3.9	8.3
	Palayamcottai ...	5.4	+ 3.1	9.9
	Ambasamudram* ...	5.1	+ 1.7	9.9
	Nagercoil* ...	3.1	+ 0.4	4.3
Hills	Kodaikanal ...	14.6	+ 9.8	17.1
	Coonoor* ...	11.4	+ 6.3	26.1
	Ootacamund* ...	3.2	— 0.2	3.5
	Nanjanad* ...	3.8	— 0.6	4.4

1. * Meteorological Stations of the Madras Agricultural Department.

‡ Actual rainfall 0.04".

The month began with a dry weather throughout the State. On 2—4—'60, the weather continued to be dry, but the South Madras State had very heavy and localised showers, particularly in Ramanathapuram District. During the period 3—4—'60 to 6—4—'60, both the days inclusive, Madras State had either localised or scattered rains, mainly in the South and interior parts. On 7—4—'60, the South Madras State had fairly widespread rain. The weather again became dry on 8—4—'60 and continued to be so for 6 days. On 14—4—'60 thundershowers occurred in South Madras State. On the next day, scattered showers were received.

Localised rains in South Madras State and scattered rains in North Madras State were recorded on 16—4—'60. In the subsequent two days, localised thundershowers were received in South Madras State only. For the third time in the month under report the weather became dry on 19—4—'60. From 20—4—'60 to 23—4—'60 either scattered or localised thundershowers were received, mainly in the interior parts of the State. The weather again became dry on 24—4—'60. In the next two days scattered showers with thunders were recorded in South Madras State. From 27—4—'60 to the end of the month, the weather remained mainly dry in Madras State.

The day temperatures were generally below normal practically throughout the State, especially in the Southern and interior parts till 25—4—'60. Thereafter the day temperatures were near about normal throughout the State till the end of the month.

The noteworthy rainfalls and zonal rainfall for the month of April 1960 are furnished hereunder:—

Noteworthy rainfalls.

No.	Date	Name of Place	Rainfall in inches
1.	2-4-1960	Arupukottai	5.12
2.	3-4-1960	Pattukottai	3.10
3.	3-4-1960	Coonoor	4.90
4.	14-4-1960	Tuticorin	1.58
5.	15-4-1960 } 26-4-1960 }	Kodaikanal	2.36 each day

Zonal rainfall (in inches)

Name of the Zone	Rainfall for April, 1960	Departure from normal	Remarks
North	0.0"	- 1.1	Far below normal
East Coast	1.3"	+ 0.1	Just above normal
Central	1.7"	- 0.5	Below normal
South	4.5"	+ 1.9	Above normal
Hills	8.3"	+ 3.8	Far above normal

Agricultural Meteorology Section,
Lawley Road Post, Coimbatore-3.
9th May, 1960.

C. B. M., K. P. N. & M. V. J.

Departmental Notification

Gazetted Officers—Agricultural Department
Posting and Transfers During the month of May, 1960

Name and Designation	Posted or Transferred to
Sri C. K. Ramachandran, Cotton Extension Officer, Coimbatore	Cotton Specialist, Coimbatore
„ N. G. Narayanan, Certification Officer, Rajapalayam.	Cotton Extension Officer, Coimbatore.
„ B. Srinivasa Rao, Dist. Agrl. Officer, on other duty	Earned leave for 45 days from the date of expiry of survey work
„ P. S. Narayanaswamy, Asst. Entomologist, (Sugarcane Insect Pests scheme) Coimbatore	L. A. P. for 2 months from date of relief

Name and Designation	Posted or Transferred to
Smt. A. Leela David, Asst. in Ent.	Asst. Entomologist (Sugarcane Insect Pests Scheme) Coimbatore
„ Girija Balasubramaniam, Lecturer in Botany, Coimbatore	Earned leave for 30 days from 2-5-'60
Sri J. Sakharama Rao, Addl. Lecturer in Botany, Coimbatore	To be in addl. charge of Lecturer in Botany, Coimbatore
„ T. R. Narasimhalu, Asst. Agrl. Engineer Soil Con. Scheme, Kodaikanal	Asst. Agrl. Engineer, Soil Con. Scheme, Manaparai
„ K. C. Chandy, Asst. in Entomology, Coimbatore	Asst. Entomologist, Vegetable Scheme, Coimbatore
„ S. Venugopal, Asst. Ent. Vegetable Scheme, Coimbatore	Addl. Lecturer in Ent, Coimbatore
„ K. Gopalakrishnan, A. A. E. Tractor Workshop, Coimbatore	Earned leave for 13 days from 7-5-'60
„ A. M. Mohamed Ali, A. A. E., Research, Coimbatore	To be in Addl. charge of the post of A. A. E. Tractor Workshop
„ S. Varadarajan, Lecturer in Chemistry, Coimbatore	Earned leave for 30 days from 2-5-'60
„ K. H. Subramania Ayyar, D. A. O., Coimbatore	L. A. P. for 20 days from 16-5-'60 to 4-6-'60
District Agrl. Officer, Erode	To be in addl. charge
Sri Md. Basheer, Entomologist and Asso. Prof. of Ent. Coimbatore	Earned leave for 30 days from date of relief
„ K. R. Nagaraja Rao, Lecturer in Ent. Coimbatore	To be in addl. charge of Entomologist and Asso. Prof. of Ent. Coimbatore
„ T. Santhanaraman, Lecturer in Ent. Coimbatore.	Earned leave for 30 days from 16-5-'60
„ S. Venugopal, Addl. Lecturer in Ent. A. C. & R. I.	To be in addl. charge of the post of Lecturer in Ent. held by Sri T. Santhanaraman

Upper Subordinates—Agricultural Department
Postings and Transfers during the month of May, 1960

Name and Designation	Posted or Transferred to
Sri S. Subramaniam, Agrl. Demonstrator, Coonoor	Farm Manager, State Seed Farm, Vilpatti, Kodaikanal
„ R. Subramania Pillai, (new appointment)	Asst. Lecturer in Mycology, A.C. & R.I., Coimbatore
„ M. Balachandran, Asst. Lecturer in Mycology, Coimbatore	Resignation accepted from date of relief.
„ P. V. Rajappan, Upper subordinate on leave	Asst. in Horticulture, A. C. & R. I.,

Name and Designation	Posted or Transferred to
Kumari Thangamani Ganapathi, (new appointment)	Assistant in Mycology A. C. & R. I., Coimbatore
Sri N. Shanmugam, Plant protection Asst. Dindigul.	Asst. in Mycology, A. C. & R. I.,
„ Rajamannar, Extension Officer for Agri. Kalayarkoil, Ramnad Dt.	Analytical Asst. Soil Testing Laboratory, Aduthurai
„ A. Chandrasekaran, Extension Officer for Agri. Namagiripet, Salem Dt.	Do. Do.
„ K. P. Srinivasan, Upper subordinate (on leave)	Do. Do.
„ P. Narayanasamy (new appointment)	Asst. in Paddy, A. R. S. Pattukottai

**Upper Subordinates Transferred to the Package Programme
In Tanjore District.**

Name and Designation	Block to which transferred
Sri D. Lawrence Alexander, Spl. A. D., cotton, Aduthurai	Kodavasal
„ S. Sithapathi, A. D. Mannargudi	Do.
„ K. Ramamoorthy, A. D. Tiruvarur	Kottur
„ S. Ramakrishnan, Extn. Officer (Agri) Musiri	Do.
„ A. K. Ranganathan Do. Thottiyum, Trichy Dt.	Budalur
„ V. Ratnasabapathi Do. Lalgudi, Trichy Dt.	Do.
„ D. Ganapathi Do. Thanthoni, Trichy Dt.	Thiruthuraipundi
„ V. Seetharamam, A. D. Manaparai, Trichy Dt.	Do.
„ N. Ganesan, Extn. Officer (Agriculture) Trichy Dt.	Nagapatanam
„ M. Arumugam Do. Madurai	Do.
„ Syed Fazullah Do. Karmbakudi, Trichy Dt	Avadayarkoil
„ M. Palanivelu, Hort. Dev. Assistant Pattukottai	Do.
„ S. Srirangaswamy, A. D. Tirupattur (Ramnad Dt.)	Vedaranyam
„ T. Kannian, Extn. Officer (Agriculture) (Kamudi Ramnad Dt.)	Do.
„ N. K. Ganapathi Extn. Officer (Agri.) Valliyoor, Tirunelveli Dt.	Pattukottai
„ T. Dharmarajan Extn. Officer (Agri.) Valliyoor, Tirunelveli Dt.	Do.
„ C. Ranganathan, Extn. Officer (Agri.) Seidunganallur Tirunelveli Dt.	Muthupet
„ I. Mariappan, Extn. Officer (Agri.) Kadalady, Ramnad Dt.	Do.

Name and Designation	Posted or Transferred to
Sri K. Subramaniam, Extn. Officer (Agri.) Sankarankoil	Orthanad
„ A. Abdul Jabar, Extn. Officer (Agri.) Tirumangalam, Madurai	Do.
„ M. Mahalingam, A. D. Kattumannarkoil, S. A. Dt.	Kivalur
„ A. V. Kalyanaraman, A. D. Vaniyambadi, N. A. Dt.	Do.
„ N. R. Srinivasan, Extn. Officer (Agri.), Uttukottai, Chinglepet Dt.	Sethubavachatram
„ Muhamad Sathuramuddin, Extn. Officer (Agri.), Uttiramerur, Chinglepet Dt.	Do.
„ T. R. Jayaraman, A. D. Vegetables, Madras	Mayuram
„ R. N. Bhadrachalam, A. D. Kaniambadi, N. A. Dt.	Sembanarkoil
„ P. Shanmugam, Extn. Officer (Agri.), Tirupur	Kuttalam
„ S. K. Murugayyan Do. Sular	Sirkali
„ V. Srinivasan, Extn. Officer (Agri.), Thukkanaikanpalayam, CBE. Dt.	Anaikaranchatram
„ V. Shanmugam, A. D. Trichengode, Salem Dt.	Do.
„ T. P. Balasubramaniam, Extn. Officer (Agri.), Valapady	Kumbakonam
„ N. V. Krishnamurthy, Extn. Officer (Agri.), Kaveripattanam Salem Dt.	Tiruvidamaruthur.
„ R. Srinivasan, Extn. Officer (Agri.), Pongalar, Coimbatore Dt.	Tirupandal
„ T. M. Borian, Spl. A. D. (Cotton), Tiruppur	Papanasam

Upper Subordinates Appointed under Emergency Provisions

Name and Designation	Posted or transferred to
Sri V. C. Antony	Marketing Asst. Tirunelveli
„ V. M. Somesekaran	Extn. Officer (Agri.), Lalgudi
„ G. Gopinathan	Do. Musiri
„ K. G. Krishna Panikar	Agri. Dem. Manaparai
„ N. Bageerathan,	Extn. Officer, Madurai
„ E. Velappan	Spl. A. D. (Sugarcane), Karur
„ K. K. Ravindran Nair	Paddy Asst. Tirur
„ M. V. George	Farm Manager, Livestock Farm, Orthanad



Review of market conditions of commercial crops in the notified areas of Madras State for the month of April, 1960.

Cotton: In this Section Cotton Kapas: Pothis of 280 lbs.
Cotton lint: Candy of 784 lbs.

Coimbatore District: Season: The rainfall received during the month was normal in all the places and reported to be beneficial to the second crop of Karunganni cotton:

Harvest of cambodia cotton was almost complete in Palladam, Coimbatore, Pollachi and Avanashi taluks.

Lint: The market opened with a stock of 6315 candys of Cambodia and 56 candys of Karunganni lint in Tiruppur market area. The total arrivals into Tiruppur were 11838 candys of cambodia and 190 candys of Karunganni which included 4013 candys of Cambodia and 104 candys of Karunganni lint locally ginned. Despatches from Tiruppur were 9438 candys of cambodia and 228 candys of Karunganni lint. There was a closing stock of 8715 candys of cambodia and 18 candys of Karunganni lint.

Kapas: The kapas market started with an opening balance of 22143 pothis of cambodia and 250 pothis of Karunganni kapas in Tiruppur market area. The total arrivals into Tiruppur were 66033 pothis of cambodia and 10218 pothis of Karunganni kapas. The disposals during the month were 56440 pothis of cambodia and 5483 pothis of Karunganni kapas. At the end of the month there was a closing stock of 31736 pothis of cambodia and 4985 pothis of Karunganni kapas.

Prices: The price ranges of cotton lint and kapas during the month as compared to that of previous month were as hereunder:

Lint		April, 1960	March, 1960
Cambodia superior quality	Rs.	915 to 981	935 to 981
Cambodia average quality	"	886	886
Karunganni		No transactions	

Kapas			
Cambodia superior quality	Rs.	131 to 149	113 to 153
Cambodia average quality	"	107 to 130	116 to 132-50
Karunganni superior quality	"	125 to 134	124 to 136
Karunganni average quality	"	104 to 122	115-50

During the month under report, cotton market continued to be steady. Enquiries by mills were more for medium types of cotton.

Ramanathapuram District: Season: There were good rains during the month throughout the district and the same was beneficial to Karunganni kar crop.

Arrivals and Transactions: The arrivals and sales of cotton in three markets of Virudhunagar, Sattur and Rajapalayam during the month were as follows:

Kapas					
		Name of Markets	Opening Stock	Receipts	Disposals Closing Stock
1.	Virudhunagar	...	2000	28000	24000 4000
2.	Sattur	...	...	11500	11500 ...
3.	Rajapalayam	...	...	8000	8000 ...
Total Kapas			2000	45500	43500 4000

Lint					
		Name of Markets	Opening Stock	Receipts	Disposals Closing Stock
1.	Virudhunagar	...	140	1700	1750 90
2.	Sattur	...	...	1200	1200 ...
3.	Rajapalayam	...	1300	1050	1050 1300
Total Kapas			1440	3950	4000 1390

Prices: The following were the prices of cotton kapas and lint that prevailed in the markets during this month as compared to that of previous month.

Kapas.		April, 1960	March, 1960
Karunganni	Rs.	122 to 132	Rs. 117 to 131
Tinny Karunganni	"	115 to 125	" 110 to 112
Tinny	"	100 to 115	" 102 to 118
Inferior quality	"	100 to 106	" ...

Lint.

Karunganni seed farm	...	Rs. 1001 to 1076	Rs. ...
Karunganni	...	„ 952 to 1020	„ 896 to 981
Tinny Karunganni	...	„ 921 to 966	„ 880 to 936
Tinny	...	„ 926 to 946	„ ...
Certified Uganda	...	„ ...	„ ...
Uncertified Uganda	...	„ ...	„ ...

Cotton Seeds. (Prices per standard maund)

Karunganni	...	Rs. 11.64 to 12.12	Rs. 11.42 to 14.03
Tinny	...	„ 13.06	„ 11.74 to 15.01

South Arcot District: Season: There was no rainfall during the month under report.

Arrivals of cotton amounted to 458 pothis of kapas while despatches to other districts came to 1173 pothis. A quantity of 3 pothies was ginned in the cotton mills. A stock of 69 pothies was left with the trade at the end of the month.

The average price per pothi of 280 lb. kapas varied from Rs. 90 to 110.10.

Tirunelveli District: Season: There was about 2" of rainfall during the month under report and the same was beneficial to Uganda cotton crop.

Arrivals and Transactions: The Koilpatti market started with an opening balance of 80 candys of Karunganni lint. The arrivals amounted to 450 candys. Disposals amounted to 520 candys. The market closed with a balance of 210 candys.

The prices of lint was up to Rs. 1060 - per candy of 784 lb. during the month.

Groundnut: (In this section a candy of Groundnut kernel is 531 lbs.)

South Arcot District: During the moth the arrivals of groundnut crops from summer crop amounted to 3780 tons. About 25 per cent of the arrivals came from neighbouring districts. Despatches to other districts amounted to 571 while exports to other states came to 79 tons. Consumption by mills and chekkus was 1526 tons and 520 tons respectively. Wastage in handling and drying was calculated at 294 tons. The stock with the trade at the end of the month stood at 1400 tons.

Prices declined slightly due to increased arrivals of new crop and the average prices in the several markets ranged from Rs. 180—200.99 per candy of 531 lbs according to quality.

North Arcot District: Season: There were no rains during the month in the district under report.

The arrivals, disposals, stocks etc., of groundnut during the month were as follows:

Quantity in tons				
Name of crops	Opening Stock	Arrivals	Sales	Closing Stock
Groundnut pods in tons	120.211	1628.567	1692.852	45.926
Groundnut kernels in tons	301.589	2054.873	2112.362	244.100

Arrivals of groundnuts at all centres in the district continued to be moderate and purchases were mostly local crushers.

The following were the price ranges of groundnut pods, kernels and oils in various markets in the district during the month as compared to that of previous month:

Prices in Rs./nP.			
		April, 1960	March, 1960
Groundnut pods (bag of 80 lbs).	Rs.	20 to 24	19 to 24
Groundnut kernels (candies of 531 lbs.)	„	198 to 212	198 to 210
Groundnut oil (candies of 500 lbs.)	„	375 to 400	348 to 397

Ramanathapuram District: During the month the arrivals, sales and stock of pods, kernels of groundnut in the district were as follows:

Quantity in tons				
	Opening Stock	Arrivals	Sales	Closing Stock
Groundnut kernels	Rs. 1,500	700	1,600	600

The following were the prices that prevailed for groundnut pods, kernels, oils and cake in the district during the month as compared to previous month:

		April, 1960	March, 1960
Groundnut pods (per st. maund)	Rs.	...	Rs. 21 to 22
Groundnut kernels (candies of 531 lbs.)	„	206 to 220	„ 198 to 215
Groundnut oil (candies of 500 lbs.)	„	350 to 360	„ 367
Groundnut oil cake (st. maund)	„	11.70 to 13.88	„ 11.70 to 13.88

Tiruchirapalli District: Season: There was light to moderate showers in some places during the month under report and the standing summer groundnut crop was reported to be affected for want of adequate rain.

Arrivals and Transactions: The arrivals of groundnut and kernel at Jayankondan market amounted to 2560 bags during the month. The prices of groundnut kernel ruled between Rs. 179 to 213 as against Rs. 220 to 230 per candy of 531 lbs during the previous month.

Gingelly: (In this section Bag: 168 lbs.)

South Arcot District: The arrivals of gingelly amounted to 1324 bags. About 2/3 of this quantity was received from neighbouring districts and States. The quantity crushed for extraction of oil amounted to 1131 bags while despatches to other districts came to 113 bags. The trade had a stock of 886 bags at the close of the month.

Prices decreased slightly and the average prices in the several markets ranged between Rs. 71.87 to 76.96 per bag of 168 lbs. according to quality.

Tobacco: (A candy of 500 lbs).

Coimbatore District: At the end of the month under report, there was a stock of 12885 candys of chewing and 1840 candys of cheroot tobacco. About 3630 candys of chewing and 860 candys of cheroot tobacco were despatched to districts of Madurai, Ramanathapuram, Salem, Trichy, Kanyakumari, North Arcot and Tanjore Districts in Madras State and to places in Kerala, Mysore and Bombay States.

The prices of tobacco were steady around the level of the previous month:

Prices per candy of 500 lbs.

Variety	I Grade		II Grade		III Grade	
	April 1960 Rs. nP.	March 1960 Rs. nP.	April 1960 Rs. nP.	March 1960 Rs. nP.	April 1960 Rs. nP.	March 1960 Rs. nP.
1. Chewing tobacco						
(Sun cured):						
(a) Meenampalayam	430 - 500	450 - 510	335 - 410	325 - 425	230 - 280	200 - 250
(b) Other varieties	395 - 460	375 - 490	290 - 360	295 - 380	200 - 260	220 - 280
2. Cheroot varieties						
(Sun cured):						
(grown in Erode and Bhavani taluks)	300 - 350	280 - 340	250 - 290	210 - 270	200 - 240	160 - 200
3. Chewing tobacco:						
Pit cured (grown in Palladam & Sullur areas)	200 - 260	200 - 275	150 - 195	150 - 190	80 - 140	80 - 130

Cardamom: During the month arrivals of Cardamom in the important assembling markets like Bodinaickanur, Pattiveeranpatti, Thevaram etc. are furnished below.

Despatches: The following were the opening stock, arrivals and despatches of cardamom during the month:

Names of Markets	Opening Stock	Arrivals	Sales	Closing Stock
(Quantity in lbs.)				
1. Bodinaickanoor	20,000	33,000	32,000	21,000
2. Thevaram	10,000	1,500	3,500	8,500
3. Pannaipuram	8,000	1,000	1,000	8,000
4. Kombai	7,000	2,000	1,500	7,500
5. Uthamapalayam	3,000	2,000	1,000	4,000
6. Cumbum	55,000	20,000	15,000	60,000
7. Gudalur	...	...	...	...
8. Pattiveeranpatti	5,000	32,000	33,000	4,000
9. Virudhunagar	43,000	30,000	28,000	45,000

Prices: The price ranges of cardamom in different markets, during the month were as hereunder:

1. **Bodinaickanoor:**

Name of quality.	Price in Rs./nP. per lb.
(1) Extra Green	10.01—10.30
(2) Green	9.01— 9.80
(3) Medium	8.06— 9.50
(4) Inferior	6.24—11.00
(5) Seeds	10.02—11.05

2. **Pattiveeranpatti:**

(1) Superior and bold	10.46—10.92
(2) Medium and bulk	... — ...
(3) Inferior and small	9.37— 9.78
(4) Seeds	11.20—11.02

3. **Virudhunagar:**

(1) Store green	10.50—10.75
(2) Bulk green	4.50— 9.63
(3) Smalls	8.50— 8.75

Crop and Trade Reports — Madras State

Review of administrative activities of Market Committees during March, 1960

The Market Committees of South Arcot, North Arcot, Coimbatore, Tiruchy, Ramanathapuram and Tirunelveli continued to function during the month.

Enforcement: The progress of enforcement during the month was as detailed below :

Name of Committees	Section 5 (1)		Section 5 (3)		Weighment	
	A	B	A	B	A	B
South Arcot Market Committee	83	999	51	654	47	616
North Arcot Market Committee	N. R.	N. R.	N. R.	N. R.	N. R.	N. R.
Coimbatore Market Committee	163	1008	105	770	48	470
Trichy Market Committee	174	776	131	624	119	537
Ramanathapuram Market Committee	12	12	13	13	5	5
Tirunelveli Market Committee	1	1	1	1	—	—

A = Licences issued during the month.

B = „ „ up to the end of the month.

Quality Analysis: Nil.

Quality Competition: Nil.

Final forecast 1959—'60.

PEPPER: The total area under pepper in 1959-'60 in the districts of the Nilgiris and Kanyakumari is estimated at 540 acres (219 hectares) comprising 130 acres (73 hectares) in the Nilgiris district and 360 acres (146 hectares) in Kanyakumari district as against the provisional area of 530 acres (214 hectares) according to the Season and Crop report for the previous year, comprising 170 acres (68 hectares) in the Nilgiris district and 360 acres (148 hectares) in Kanyakumari district representing an increase of 1.9 percent. Compared with the average area of 580 acres (235 hectares) comprising 170 acres (68 hectares) for the Nilgiris district and 410 acres (167 hectares) for Kanyakumari district, the current year's estimate shows a decrease of 6.9 percent. The seasonal factor is estimated to be 99 percent of the normal for both the Nilgiris and Kanyakumari districts as against 98 percent of the normal for the Nilgiris district and 94 percent for Kanyakumari district for the previous year. On this basis, the yield in the current year is estimated at 40 tons (41 tonne) of black pepper for both the districts, comprising 10 tons (10 tonne) in the Nilgiris district and 30 tons (34 tonne) in Kanyakumari district, the same as those provisionally estimated for the two districts according to the Season and Crop Report for the previous year and the average yield calculated for the five years ended with 1958-'59.

GINGER: The area under ginger in the districts of Madurai, the Nilgiris and Kanyakumari in 1959-'60 is estimated at 1,150 acres (465 hectares) compared with the area of 1,200 acres (486 hectares) estimated for the corresponding period of the previous year, the present estimate shows a decrease of 4.2 percent. Compared with the average area of 930 acres (376 hectares) calculated for the five years ending 1958-'59, the current year's estimate reveals an increase of 23.7 percent. The area estimated under the crop is the same as that for the previous year in the districts of Madurai and Kanyakumari, while a decrease in area is estimated in the district of the Nilgiris. The total yield is estimated at 400 tons (406 tonne) estimated for the corresponding period of the previous year, representing a decrease of 2.4 percent. Compared with the average yield of 320 tons (325 tonne) of dry ginger calculated for the five years ending 1958-'59, the current year's estimate shows an increase of 25.0 percent.

POTATO: Potato is mainly grown in the Nilgiris district and to a small extent in the districts of Salem and Madurai. The area under the winter crop upto 25-12-1959 is estimated at 2,450 acres (991 hectare) as against 2,250 (911 hectare) estimated for the corresponding period of the previous year, representing an increase of 8.9 percent.

The figures of estimated area by districts are given below :

District	Estimated area in 1959-'60		Estimated area in 1958-'59		Percentage by which col. 2 exceeds(+) or is less (-) than col. 3
	Acres	Hectare	Acres	Hectare	
1	2	2(a)	3	3(a)	4
Salem	250	100	150	61	+66.7
Madurai	550	223	500	202	+10.0
The Nilgiris	650	668	1,600	648	+ 3.1
Total	2,450	991	2,250	911	+ 8.9

The condition of the crop is reported to be generally satisfactory except in the Nilgiris district where it is reported to be slightly below normal due to insufficient rains at the sowing period. The wholesale price of potato per maund of 82 2/7 lbs. or 3,200 tolas at Mettupalayam on 15-1-1960 was Rs. 12.75 (Rs. 34.16 per quintal). Compared with the price of Rs. 16.87 (Rs. 45.20 per quintal) for the corresponding period of the previous year, this is a decrease of 24.4 percent.

HORSEGRAM: The area sown with horsegram in the Madras State in 1959-60 is estimated at 5,60,000 acres (or 2,26,600 hectare). Compared with the provisional area of 5,41,900 acres (or 2,19,300 hectare) according to the Season and Crop Report for the previous year, the current estimate shows an increase of 3.3 per cent. Compared with the average area of 5,87,000 acres (or 2,37,600 hectare) calculated for the preceding five years, this shows a decrease of 4.6 per cent. The area estimated is the same as that of the previous years in Thanjavur district. A decrease in area is estimated in the districts of Chingleput and Tirunelveli and an increase in other districts of the State except the Nilgiris where the area under the crop is nil or negligible.

The yield per acre is expected to be slightly below normal in all the districts of the State. The Seasonal Factor for the State as a whole works out to 98 per cent of the normal as against 97 per cent of the normal estimated for the previous year. On this basis the total yield of horsegram works out to 48,600 tons (or 49,400 tonne) as against the provisional yield of 47,000 tons (or 47,800 tonne) estimated for the previous year; representing an increase of 3.4 per cent. Compared with the average yield of 50,500 tons (or 51,300 tonne) calculated for the preceding five years, this shows a decrease of 3.8 per cent. The wholesale price of horsegram per standard maund of 82 2/7 lb as reported from certain important market centres on 1-1-1960 was Rs. 11.13 (Rs. 29.82 per quintal) at Coimbatore, Rs. 11.25 (Rs. 30.76 per quintal) at Tiruchirapalli and Rs. 12.04 (Rs. 35.26 per quintal) at Madurai. Compared with the prices which prevailed during the corresponding period of the previous years, the current prices reveal a fall of 6.7 per cent at Coimbatore, 11.8 per cent at Tiruchirapalli, 13.5 per cent at Vellore, and 18.9 per cent at Madurai.

GREENGRAM: The area sown with greengram in the Madras State in 1959-60 is estimated at 89,800 acres (or 36,300 hectare). Compared with the provisional area of 84,900 acres (or 34,400 hectare) according to the Season and Crop Report for the previous year, the current year's estimate shows an increase of 5.8 per cent. Compared with the average area of 96,800 acres (or 39,200 hectare) calculated for the preceding five years, this is a decrease of 7.2 per cent. The crop is mainly grown in the districts of Coimbatore, Thanjavur and Tirunelveli. The area estimated is the same as that for the previous years in the districts of Chingleput and Kanyakumari. A decrease in area is estimated in Tirunelveli district and an increase in all the other districts of the State except the Nilgiris where the area under the crop is nil or negligible.

The crop has been harvested in some districts of the State. The yield per acre is expected to be slightly below the normal in all the districts of the State. The Seasonal Factor for the State as a whole works out to 97 percent of the normal which is the same as that estimated for the previous year. On this basis the total yield works out to 7,100 tons (or 7,200 tonne) of cleaned gram which shows an increase of 4.4 percent when compared with the provisional yield of 6,800 tons (or 6,900 tonne) of cleaned gram according to the Season and Crop Report of the previous year. Compared with the average yield of 7,200 tons (or 7,300 tonne) of cleaned gram calculated for the preceding five years this shows a decrease of 1.4 percent. The average wholesale price of green gram dhall per standard maund of 82 2/7 lb reported from certain important market centres on 1-1-1960 was Rs. 23.33

(Rs. 62.51 per quintal) at Salem, Rs. 24.08 (Rs. 64.52 per quintal) at Madurai, Rs. 24.38 (Rs. 65.32 per quintal) at Vellore and Rs. 24.89 (Rs. 66.69 per quintal) at Tiruchirapalli. Compared with the prices which prevailed on 2-1-1959, the current prices show an increase of 5.7 percent at Salem and a decrease of 3.1 percent at Tiruchirapalli, 5.1 percent at Vellore and 6.3 percent at Madurai.

GROUNDNUT: The area sown with groundnut in the Madras State in the year 1959-60 is estimated at 18,56,100 acres (7,51,100 hectare). Compared with the provisional area of 18,47,600 acres (7,47,700 hectares) according to the Season and Crop Report for the previous year, the current year's estimate shows an increase of 0.5 percent. This is an increase of 0.4 percent when compared with the average area of 18,49,600 acres (7,47,700 hectare) calculated for the five years ending 1958-59. The area under the crop is negligible in the Nilgiris district. A decrease in area as compared with the previous year is estimated in the districts of South Arcot and Madurai and an increase in area in all the other districts of the State except Chingleput district, where the area estimated is the same as that for the previous year.

The harvesting of winter or main crop is reported to be in progress. The Seasonal Factor for the State as a whole works out to 97 percent of the normal, as against 96 percent estimated for the previous year. On this basis, the total yield in terms of unshelled nuts works out to 8,96,000 tons (9,10,400 tonne) as against the provisional yield of 8,88,100 tons (9,02,400 tonne) of unshelled nuts according to the Season and Crop Report for the previous year representing an increase of 0.9 percent. This is an increase of 3.0 percent when compared with the average yield of 8,69,900 tons (8,83,900 tonne) of unshelled nuts calculated for the five years ending 1958-1959. The average wholesale price of groundnut (machine shelled) per standard maund of 82 2/7 lb. or 3,200 tolas as reported from certain important market centres on 5-2-1960 was Rs. 30.98 (Rs. 83.00 per quintal) at Vellore, Rs. 31.76 (Rs. 85.09 per quintal) at Coimbatore and Madurai and Rs. 31.77 (Rs. 85.12 per quintal) at Cuddalore. Compared with the prices which prevailed during the corresponding period of the previous year, the current year's prices reveal a rise of 17.1 percent at Cuddalore and Coimbatore, 17.6 percent at Vellore and 20.5 percent at Madurai.



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