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Cultivation of cotton in the rice-fallows of Madras State — The need for a proper approach

by

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Cotton in rice-fallows: The cultivation of Cambodia cotton as off—seasonal crop in the rice-fallows of Madras State is of recent origin. The experiments conducted in Madras state from the year 1948 (Balasubramanian, 1952) have shown that cotton crop planted after the harvest of paddy in rice-fallows grows well, flowers normally, sets fruits freely and yields upto 1,700 lb. of seed cotton per acre, by the middle of July i. e., within five months from the date of sowing, if properly attended to. It is reported (Neelakantan *et al*, 1959) that by judicious application of fertilizers and by adopting suitable spacing the yield of P. 216 F Cotton could be increased considerably. It has been established (Kesava Iyengar *et al*, 1958) that the cultivation of cotton as an off-seasonal crop in the rice-fallows does not depress the yield of paddy, provided the paddy crop receives the manurial doses normally given to it and the available cotton residue only helps to augment the supply of green matter to the paddy crop. With all the proved merits for the successful utilization of rice-fallows for growing cotton, the cultivation of cotton in rice-fallows has not made much progress.

If any substantial increase in the production of cotton is to be achieved, the rice-fallows offer the only scope of extending the area under cotton.

Reasons for short fall in the extension of area: The factors that have contributed for the low acreage under cotton in rice-fallows (4,143 acres as per Season and Crop Report of the Madras State 1957—'58) may be enumerated as follows:

1. Lack of irrigation facilities in the summer season:
2. Marketing facilities; and
3. The need for proper approach.

Discussion and suggestions: Cotton is raised in rice-fallows after the harvest of paddy and grown essentially as an irrigated summer crop. Though the cotton crop comes up well with the available soil moisture, it suffers from drought at the crucial periods of flowering and bolling.

The cotton crop would thus require four or five irrigations for successful cultivation. As a large part of the rice-fields are in the delta area and fed by canal from the rivers they are devoid of any wells and would not afford the necessary irrigation facilities during the summer months. This problem of irrigation needs to be solved by sinking bore-wells, filter points or even open wells.

Regarding marketing facilities, it is a vicious circle. Unless there is a ready market locally, for the agricultural commodity produced, the area under the particular commodity will show a downward trend. Unless and until a larger area is grown increasing the production to a large marketable surplus, it is difficult for the market to get established. This is the case with cotton also in new areas recently brought under cotton in the districts of Thanjavur, North Arcot and Chingleput. To overcome the problem in marketing of cotton in Thanjavur District, a Co-operative Ginning Factory has been established and is functioning at Aduthurai. As the area under P. 216 — F Cotton is increasing in Manaparai area of the adjoining Tiruchirapalli District, a branch of the Thanjavur District Co-operative Cotton Marketing Society Ltd., is being established at Manaparai. The South Arcot District Market Committee with its branches spread throughout the District is dealing in cotton along with groundnut and gingelly. Any cotton grown in the district or in the adjacent districts of North Arcot and Chingleput could be easily marketed through this Committee at its Villupuram branch, which is the main centre of cotton trade, in South Arcot District. The cotton grown may also be arranged to be disposed of through the Cotton Market Committee, Tirupur. Many of the cotton brokers and agents are periodically visiting the important cotton growing villages and the needy ryots may avail of their services. Further, when larger areas of rice-fallows are brought under cotton, the production of cotton increases and the problem of marketing would also get solved automatically.

When both the problems of irrigation and marketing are thus solved, what is left over is the proper approach. This may be classified under three heads or classes of people interested in cotton cultivation. They are (i) the Grower; (ii) the Research Worker and (iii) the Extension Worker.

The Grower: The rice grower is conservative and has been accustomed to raise paddy which yields him without much labour, care and intense cultivation. He finds it hard to change over his

habit. He should try to adjust himself to the changing needs of the society. The demands are many and varied and are ever increasing, not only for himself but for the country at large. The rice grower should change his outlook and take up to better and improved farming system. The maxim "He who grows two blades of grass where one grew before does more service to humanity" shall be true in the case of the rice-farmer who raises cotton as an off-seasonal crop in the rice-fallows.

A few of the enterprising ryots try to raise cotton in wet lands after the harvest of paddy and if the cotton crop is not successful, they naturally give up cotton cultivation. The failure of the cotton crop not only disheartens the grower but also discourages others in the vicinity from taking to cotton cultivation. The failure of cotton crop is mainly due to lack of care and proper attention. The ryot who takes up to cotton cultivation for the first time should acquaint himself with the methods of cultivation and any lack of knowledge in this regard is bound to seriously handicap the grower resulting in the failure of the crop. The ryot is requested to contact often the agricultural extension worker and get his guidance. This free consultation will go a long way in the successful cultivation of cotton.

The stiff clayey soil and the peculiar conditions prevailing after the harvest of paddy in the delta area present certain problems in the cultivation of cotton, in ensuring efficient germination and good stand which is the primary step in the successful cultivation of a crop. To get over this, the following practical hints are suggested.

It is not unusual to leave stubbles 4" to 6" high, while harvesting the paddy crop. This will interfere with the germination of seed and subsequent growth of seedlings. It is essential, therefore, that the paddy crop has to be harvested close to the ground, leaving as short a stubble as possible.

It is always desirable to plant paddy in lines, so that after the harvest of paddy, the cotton seeds could be dibbled in lines between the paddy stubbles, without much difficulty or extra labour.

It is advisable to plan the raising of paddy in such a way that its harvest is over before the end of January or the middle of February at the latest.

Do not wait to plough the land after the harvest of paddy. Early planting of cotton gives better yields. So. sow cotton early.

The soil should not be too wet at the time of sowing cotton and should be in a stage of gradual drying.

Dibble the cotton seeds in lines. Line sowing requires lower seed rate and effects a saving in seed requirement. It facilitates the proper placement of the seed ensuring uniform germination and good stand of the crop. It enables easy filling up blanks, thinning, irrigation, and intercultural operations and also admits the use of labour saving implements and thus saves cost of cultivation.

Dibble the seeds in between the rows of paddy stubbles.

It is essential to secure a uniform germination and good stand. The soils of the delta area are usually clayey. To ensure a good stand, dibble three or four seeds in small holes of one inch depth made with the finger or a small peg. The seeds may be convered with earth if it is soft or with silt or wet sand or even saw dust if the soil is of stiff clay and hard.

Sowing of three or four seeds per hole, no doubt increases the stand considerably. Blanks, if any should be filled up within a week after sowing. Filling up blanks later has proved to be of little benefit and does not contribute to increased yields. Dibbling the seeds at uniform depth ensures good germination and placing the seeds within an inch from top soil enhances the germination capacity.

Thin early the unwanted plants. Plants are removed easily when young. Late thinning affects the other standing plants by disturbing their root system and also causes the loss of soil moisture.

On account of very hot and dry weather and lack of sufficient moisture during the summer months, plants may show signs of temporary or permanent wilting. Wilting causes intense shedding. If too severe, it may lead to death. Irrigate the crop when it shows signs of such temporary wilting.

In low lying areas, and in poorly drained or badly irrigated lands, the soil is often saturated with water. In such conditions, the cotton crop puts forth profuse and excessive vegetative growth with

a limited number of flowers and bolls which are subject to shedding on account of excessive soil moisture. In such cases, proper drainage and regulated irrigation are very necessary. Topping plants may prove beneficial when they put on heavy vegetative growth.

The Research Worker: If properly planned, it is possible to grow cotton in wet lands after the harvest of *Thalady* or the "second crop" also. It is advisable to evolve a paddy strain shorter in duration for the *Thalady* crop. Similarly, a cotton strain shorter in duration than the present P. 216–F cotton will prove to be useful in such areas.

The manurial trials hitherto conducted on P. 216–F cotton in the rice-fallows were confined only to the application of nitrogen in varying doses. The requirements of phosphoric acid and potash have not been ascertained. It is essential, therefore, to conduct systematic trials to find out the optimum manurial schedule for cotton in rice-fallows. Similarly, the agronomic practices best suited for increasing the yields and the monetary return therefrom, should be conducted and made known.

It is also advisable that the Research workers contact the cotton growers and inspect their fields personally, so that they can have a better appreciation of the field problems. The problems and difficulties of the growers should guide their attitude towards research. Only by observation of the work in the field they would be able to improve the farmers' agronomic practices.

The Extension Worker: The extension workers form a vital link between the research workers and the farmers. The extension workers should move with the ryots closely and should possess initiative and tact. They should contact the ryots often and inspect their fields giving technical advice and guidance. They should be posted with the latest development in cotton cultivation. There are a number of findings of research workers which are of the practical value and which have not reached many of the farmers. The extension workers should transmit the fruits of research to the cultivators on a field scale and at the same time study their problems and transmit them to the research workers for solution.

The extension workers should ascertain from the farmers their requirements of cotton seeds and stock them sufficiently in advance of the sowing season, so that the seeds are readily available at the

sowing time. Failure to do so has compelled the farmers to go in for the seeds from unselected bulks and in new areas where there are no cotton seed merchants, many of the ryots have even abondoned the idea of growing cotton for want of seeds during the season.

The cotton seed is likely to deteriorate in viability, if kept in an excessively moist condition or for long periods. It is essential, therefore, to dry the seeds periodically and store them free from pests and rodents.

In addition to supplying the seeds and pesticides and arranging for application of fertilizers and marketing of cotton and giving technical advice and guidance, the extension workers should also demonstrate the improved methods of cultivation. A few of the progressive ryots may be selected in each village and the improved methods of cultivation and the performance of the cotton crop in the newly introduced area should be demonstrated in their fields. Such demonstrations of successful cultivation of cotton in new areas will induce the fellow farmers to take up cotton cultivation and the area under cotton will gradually and spontaneously increase.

The extension workers instead of concentrating their efforts in the known tracts should also explore new areas where cotton could be cultivated successfully, as an off-seasonal crop. While the attention was concentrated in Thanjavur Delta for growing P-216 F cotton, the area under the short duration cotton gradually increased in and around Manaparai of Tiruchirapalli District. This is an example to show the necessity for exploring new areas and regions. The regions irrigated by the rivers and rivulets which are filled and flooded during the North-East Monsoon like Vellar, South Pennar, Gadilam, Palar etc., may be explored. Anicuts have been constructed across these rivers, feeding the wet lands direct through canal irrigation or filling up a chain of tanks and helping indirectly the tank-fed wet lands. On account of the vagaries of monsoon only one rice crop is taken normally in these regions. The water in the tanks and in the canals is not sufficient to raise a second paddy crop. Such areas afford immense potentiality for raising short duration cotton crop after the harvest of paddy.

Thus, the extension worker should concentrate on the two-fold problem of establishing the cotton crop in new areas and to increase the production of cotton in the already existing areas.

Conclusion : When all the three categories, the Farmer, the Research Worker and the Extension Worker connected with cotton cultivation follow the proper approach, then the problem of cotton cultivation as an off-seasonal crop in the rice-fallows of Madras State could be easily solved and the production of 4·5 lakhs of bales of cotton by the Second Five Year Plan period will be well within our reach.

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OBITUARY

We deeply regret to announce the sudden demise of **Sri K. P. Ananthanarayanan, M. A.,** Retired Government Entomologist on 28-7-1960. We convey our heartfelt condolences and deep sympathies to the members of the bereaved family.