

Symposium on Paddy.

WHAT THE RYOT WANTS.

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The paddy ryot wants good crops and a sufficient return to enable him to obtain the necessities of life and a certain surplus to devote to things which he may desire after his necessary wants are satisfied.

The paddy ryot deserves a certain amount of sympathy. In swamp paddy areas which constitute the greater part of the total paddy area he is largely tied down to a type of cultivation which affords little opportunity for growing other and more profitable crops, while the garden land ryot on the other hand has great opportunities for varying his crops and taking fuller advantage of market fluctuations. At the same time rice is one of the staple food crops and there is always a steady demand for it.

In the second place he deserves our sympathy for the amount of rent which he has to pay. Land in this country is extremely expensive and the size of the population and the paucity of industries tend to make it more so. The result is over-capitalisation and very small holdings and these causes together with fragmentation tend to limit the possibilities of even the most industrious. Were there more industries to absorb surplus capital and population there would be more scope for those left on the land.

It is therefore seen that the solution of agricultural poverty lies not wholly in the hands of the Agricultural Department although a great deal is being done to mitigate it.

After land, the first necessity for the ryot is water. The great deltas, where the greater part of the paddy growing area lies, are comparatively well supplied with water and the attention of the Department has been largely turned to the production of strains which will make the best use of the water supplies and in most cases they are of the same duration as the varieties now being grown by the ryots.

In other cases where supplies of water fail owing to paucity of rain attention is turned to the production of shorter duration strains which in their yielding capacities will equal those of longer duration which they are designed to replace, e. g., in Tanjore a strain of 10 days shorter duration is replacing a local variety and these 10 days saved are of the utmost importance in realising a full crop. In the Salem District last year a short duration variety yielded 1200—1500 lb. of grain in various cases where the longer duration local variety failed to ripen up any grain worth mentioning.

The quest for high yielding strains of "dry" paddy has also started. In the case of these the amount of water required will be more of the order of that required by ragi and so they will be most suitable for growing under wells and in places where water supplies have to be conserved.

Thus although the Department cannot tackle the problem of water supply directly it is doing so indirectly and meeting the needs of the ryot by the production of strains capable of producing economic crops by the use of such supplies as there are. More will be heard in later papers on the subject of breeding not only for quantity but also for quality and disease resistance.

One point which may be mentioned here is the necessity for keeping strains pure, after they have been produced. Some ryots are careless, others make mistakes and the new strains often get mixed with the local strains. Hence there is a necessity on our part to take steps to ensure that the ryot can obtain pure seed of any given strain when required.

The next necessity for the production of good crops is cultivation and manuring. Cultivation practice varies from district to district according to the conditions and the type of soil. This question is one of extreme importance; for, the growing of a green manure crop, for instance, done at the wrong time may greatly interfere with the following paddy crop even though by itself it is a good thing. As regards manuring the ryot is generally willing to spend considerable sums of money in manuring to the best of his knowledge and ability. Cattle manure, green leaf manure, and the poonacs were in the past his main standbys but the

quantity and quality of these are often insufficient except in favoured spots to maintain fertility. Bulky organic manures are a necessity for swamp cultivation not only for the supply of plant food but also, and, more important still, from the point of view of maintaining the physical condition of the soil. If green leaf or cattle manure is not available in sufficient quantity, the growing of green manure crops is advocated to supply the necessary organic matter and the use of chemical fertilisers, to increase the supply of available plant food. These points will be dealt with in greater detail by the Chemist.

Meantime I would point out that while the principles of cultivation and manuring may be well understood, the application of these principles varies according to the conditions met with in different localities. In all demonstration experiments which we carry out the extra cost, if any, involved in the improved method is put against the value of the extra yield obtained on the experimental plots over the control plots. This gives us a fair idea as to whether the improvements suggested are economic or not—a most important point in commercial crop production.

The simplest type of manuring improvement which is met is that where one element is definitely lacking in the soil, e. g., at Mettupalayam last year it was found that an application of 2 cwt. superphosphate raised the crop from 8 salagais per acre to 14 salagais per acre—a 75 per cent increase. While 2 cwt. may have been the optimum dose it is quite probable that a dose of 5 cwt. or more per acre would have been economic. For although the law of diminishing returns comes into operation yet the price of the manure is comparatively low and a very much smaller increase than 75 per cent for the third cwt. would have left a considerable profit per acre after deducting the cost of manure.

In another part of my district of Coimbatore I found the ryots were top-dressing with Sulphate of Ammonia one month or more after transplanting and were using 100 lb. Sulphate of Ammonia per acre. Knowing that early application should give the best results I offered to demonstrate this point to them and to show that a greater yield could be obtained by early application. I accordingly laid out 3 plots, each receiving a basic dressing of green leaf and phosphates. To the first I gave the same dressing of

Sulphate of Ammonia as the ryots had used for top dressing viz. 100 lb. per acre and that was applied at the time of transplanting. To the second I gave the same dose 15 days later and to the third 30 days later.

The grain yield results are as follows :—

	1st plot. lb.	2nd plot. lb.	3rd plot lb.
	2842	3784	8043
Showing a profit over the control of	Rs. -9½	Rs. 53	Rs. 4.

From a casual consideration of these results one would come to the conclusion that the best time of application was at 15 days after transplanting but an examination of the crop just before harvest showed that the earliest application had the greatest effect on vegetative growth. The crop was so heavy that it lodged at an early stage and so reduced the yield of grain. During the coming season the effect of a smaller early dose against a larger later dose will be tried, and if the results are equal a definite saving in expenditure on manures will be shown.

These points are mentioned to bring out the importance of the proper selection of varieties and manures and method of cultivation to get the best out of any soil. The ryot is generally illiterate for acquiring and using the knowledge which is available as a result of modern research. Such knowledge has got to be brought to his notice but before it can be put into practice successfully a correct diagnosis of the limiting factor or factors of yield in each place has got to be made. What the ryot really wants then is a friend who can interpret to him modern scientific reasoning in connection with his local practices, introduce new improvements to him and educate him in their proper use and energise him sufficiently to take advantage of them.

The next item in the production of crops is labour both human and bovine and the paddy crop is wasteful of this factor. At planting time and at harvest time there is a great rush of work whereas during the remainder of the year there is comparative idleness.

Where labour is at all scarce, both at harvest and transplanting high wages are paid and are detrimental to the ultimate profits from the crop. In comparison with garden land cultivation, where labour is kept regularly employed for the greater part of the year, paddy cultivation is at a distinct disadvantage. The solution of this problem is not yet. It may lie in part time industries or it may lie in a complete revolution of the present methods of growing paddy. Were dry paddies evolved which could, under conditions similar to ordinary garden cultivation, successfully compete with paddy grown under swamp conditions then the day might come when areas now under swamp conditions will be thoroughly drained and paddy grown in rotation with other crops.

Finally there is the question of getting the best possible return on the crops produced. Very little can be done at the present time in districts where the produce is used mainly for local consumption. In large exporting areas like the great deltas however the position is markedly different. Condition being similar over large areas, a standard type of grain for export could be produced and then it is only a question of finding markets. At present the merchants in view of their expert knowledge have control of these, and if producers' organisations have to find their markets, expert marketing officers will have to be found to take the place of the merchants.