DEPARTMENTAL NOTES

A SHORT REVIEW OF THE PADDY WORK DONE BY THE ECONOMIC BOTANIST

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THE efforts that have been made now for over ten years to improve the paddy are beginning to be rewarded. It may be interesting to give some little idea of the amount of work that has been put into those years of investigation. Research work has taken the form of isolation of pure races of paddy from the very mixed populations growing in cultivator's fields, and the testing of those pure races against the local paddy. Selections that gave more than 15 per cent over the local variety were looked upon as promising and were retained for further trial, while the rest were discarded. It has even happened occasionally that none of the selections have reached the desired standard, and in this event it has been necessary to discard all the material and to start again. There are at present about 120 pure lines that are either established or in process of being tested, and it is estimated that they are the relics of something like 3,500 selections that have been isolated and tested since 1920. The rest have been discarded at some time during the four years that are necessary to establish a selection as being definitely superior to its fellows. During those four years the plants are subjected to repeated and strict tests, and the results are treated by complicated mathematical calculations that enable us to eradicate the influences caused by soil, water supply and the thousand and one things that make up a plant's surroundings and to leave only the differences that belong to the plants themselves. At the end of these rigorous tests, any survivors are sent to the field to be tested under ordinary conditions, and if they are still successful they are multiplied for distribution to cultivators.

It must be obvious that if it is necessary to extract a pure line from the cultivator's paddy in order to get higher yields, it is equally necessary to keep that line pure if the increased yields are to be maintained. If the pure line, once obtained, is merely sown and harvested year after year without precautions, it will very soon become contaminated with the poorer varieties from which it has been selected and in a short time will be lost. Thus it is necessary to maintain the purity of the selected pure strains. This is done by covering with muslin bags the flowers of single plants so that they are protected from the pollen of outside plants, for a pure line will remain pure so long as it is protected from contamination at flowering time. The seeds from these protected plants are grown and multiplied, and by making the process continuous we can ensure that fresh, pure seed is available every year.

In addition to the attempts to improve yield by purifying the mixed strains grown by cultivators, attention has been given to methods of cultivation. The practices of the cultivator have been studied,

and those that were thought capable of improvement have been tested. For example, the common practice at sowing time is to broadcast the seed, although transplanting is done by more careful cultivators. The two systems have been tested side by side on the Experiment Stations of the Department, and quite definite results have been obtained. With long-aged paddies an increase in yield of 20 per cent and more has been obtained and it has been shown that the value of the increase of yield is more than enough to compensate for the cost of transplanting. Apart from the actual increase in yield there are other advantages to be gained; the amount of seed required is less than half that necessary for broadcasting, the cultivator has an extra month (while the plants are in the nursery) in which to prepare his fields and to get rid of weeds, and transplanted paddy does not lodge so badly as the more thickly sown broadcasted paddy. It is realised that extra labour is required where transplanting is practised, and the availability of labour in any particular district is no doubt a limiting factor.

Another practice which in Ceylon is not so widely practised as could be desired is that of weeding. It has again been shown by experiment that weeding gives an increase of yield of 20 to 25 per cent and that the value of extra paddy obtained is more than enough to pay for the weeding. Of course it is assumed here that the value of the extra paddy goes to the cultivator; where, as so often happens, the produce has to be shared with the landlord (and the cost of weeding paid for by the cultivator) the profit will be less, or may even vanish altogether as far as the grower is concerned. Some of the more progressive landlords are beginning to see the value of encouraging their tenants to weed and to take steps to encourage it.

Another way in which the yield can be increased is by the use of manure. Here again is a method by which definite and profitable increases of yield can be obtained, but the prevalence of the share system proves a handicap unless encouragement comes from the landlord.

The above questions may be considered as fundamental ones in paddy cultivation, but the activities of the Department are not confined to fundamental problems. There are among the varieties of paddy in Ceylon some that have a red seed coat and some in which the seed coat is white, but the former are much more common. There are also people who prefer the red rice and many others who prefer the white. The Department is trying to produce a white rice that is equal in yielding power to popular red strains. The task is a difficult one, but the Department is confident of success.