

THE INTRODUCTION.

Rice is the staple diet of over one half of the world's population. The teeming millions of South East Asia exist almost entirely upon rice. The total average of rice under cultivation per year exceeds 200 million acres, 90% of which is grown in Asia. Yet the demands of Asia to-day exceed the present world production, and they are continually rising. It has been estimated that an annual increase of 1,300,000 tons of rice is needed to meet the needs of an ever increasing rice-eating population. }

Grist (Grist 1955) points out that whereas the ultimate solution of the problem of meeting the growing demand is some form of limitation of the population, the immediate solution must be one of increased average and increased yields.

He lists four main methods leading to the improvement in yield which are, in order of importance (according to Grist) :-

1. improved water control - drainage and irrigation
2. more effective control of pests and diseases
3. addition of humus to the land
4. selection and breeding of varieties.

As to the increased acreage, Grist maintains that if the price of rice stays high then it will increase naturally. I cannot fully agree with this because one of the limiting factors of large scale rice cultivation is labour. Rice has a high labour demand at transplanting and harvesting, if traditional methods of cultivation are used. It is very difficult to visualize how the acreage can increase greatly if transplanting methods are still to be used, unless there is a more widespread use of a transplanting machine of the type used in Italy. This would be impossible in many areas due to "bottomless" paddy fields and also for economic reasons.



Much has been written about the advantages and disadvantages of broadcasting but precious little critical work has been done. Broadcasting or direct seeding of rice has, for a long time, been carried out in parts of India, Ceylon and Japan. In the U.S.A. it has been practiced since 1930 but only recently has the idea received much sympathy in other parts of the world. Many workers have compared broadcasting and transplanting often using the same varieties, but no one, as yet, has worked solely on the broadcasting of rice. Only very recently has it been realized that the success or otherwise of direct seeding methods depends upon a multiplicity of factors some of which are known and some of which are not known.

The work reported in this paper is aimed at trying to cast some light upon one of these factors: the oxygen content of the water into which the rice is directly seeded. It is not really known if this is a factor or not, but some circumstantial evidence seems to point to the fact that at least it might be. (Roshar 1956 (b)) and yields of that order have been obtained from broadcast rice at the I.C.T.A. (Roshar 1956 (a)). It appears that directly seeded rice can give equal yields to that transplanted under certain conditions.

In order to grow rice on a large scale the direct seeding methods have to be used as the labour requirement and cost of transplanting is too high. Under Trinidad conditions between 25% and 34% of the total labour required to grow one acre of rice is taken up by preparation of the nursery and transplanting (Ramesay 1951) (Dept. of Agric. Trinidad and Tobago 1953). If mechanized harvesting was introduced then one can envisage a time when half of the labour requirement would be devoted to planting the rice.

In contrast, a survey of 347 Louisiana rice farms in 1945 showed that the cost of drilling rice was only 1.3%