

## INTRODUCTION.

### The Place of Mechanisation in Rice Cultivation.

It is obvious that mechanisation is highly desirable in all forms of agriculture, (Barger, Carleton, McKibben, Bainer, (1952)) and particularly so in swamp rice culture in order to reduce the high man-hour requirement and fatigue, and to facilitate increased production by 'timeliness' of operations, better cultivation, etc. This is especially important where rice is grown on a part time basis, i.e., the peasant works for most of the time on an estate or plantation and cultivates his rice plots in his own time, as is widely practised in Malaya.

Where mechanisation is concerned, however, great difficulties are encountered, both agronomic and economic. The agronomic problems are mostly peculiar to the crop, i.e., for swamp rice, traction, sinkage of vehicles, etc., but these have largely been overcome for relatively large machines, that is tractors of 30 HP or more. Unfortunately, these problems have not yet been overcome completely for the smaller machines, that is, the sort of machine that would prove most useful to the peasant farmer. The economics of the situation prevent the farmer from having large machines of his own, so at first glance, the problem seems insuperable.

In this situation, therefore, alternative systems must be sought. Firstly, there is the place of the contractor who can provide services for cultivation and spraying, etc., using machinery suitable for the local conditions. This also has the advantage that the peasant farmer is not involved in any capital expenditure. Unfortunately, this is not a complete answer, for although the

contractor could fulfil cultivation and spraying requirements, he could not help with harvesting as every farmer would want the machinery at the same time. There is also the danger that cultivations would be poorly done, especially in the absence of the farmer.

Another way is to "collectivise" the peasant farmers, and so make possible the use of heavy machinery for cultivation and harvest. Although it is possible to do this in theory, in practice it would be well-nigh impossible to achieve.

Co-operation is another possible answer but this suffers exactly the same drawbacks as the contractor system, insofar as the harvest is concerned.

It seems, therefore, that each of these methods can be ruled out as an answer on some point or other, and so we are again faced with the possibility of developing small machines specially for peasant use. As already mentioned, problems of traction and sinkage were at first very serious, but with the newer types of small two-wheeled tractors being developed it now seems that this problem may be overcome. If this is so, then a range of machinery can be manufactured to be used as attachments to such a power unit, for land preparation, planting, after-cultivation, water control (i.e. pumping), spraying, harvesting and threshing. The mechanisation of each of these sections in this way is faced with tremendous agronomic problems but there seems no reason to believe that they could not be overcome.

Within this framework, therefore, one section which requires investigation is threshing. Hand threshing involves a great deal of time and manual effort e.g., 69.3 man hours per acre for threshing and winnowing in Trinidad (Steer and Benson (1953)).