

SMALL FARM MECHANIZATION THROUGH GROUP TRACTOR OWNERSHIP: A LESSON FROM JAPAN'S EXPERIENCE

ROHANA ULLUWISHEWA
Department of Geography
University of Sri Jayewardenepura
and

JUN SAKAI
Professor of Agricultural Machinery
Department of Agricultural Engineering
University of Kyushu
Japan

Synopsis

Tractor utilization for paddy land preparation is often criticized by farmers for its poor quality of work performance and for the ever increasing tractor hire rates. Its adverse impact on income distribution is also widely documented. All these are to a greater extent, attributable to the prevailing tractor ownership pattern: concentrated private ownership to a few. This paper points out some adverse effects of this tractor ownership pattern, and observes the potential significance of the group ownership, in the light of Japan's experience.

INTRODUCTION

It is a widely documented fact that the agricultural mechanization does not yield expected benefits in the low-income countries. Due to high prices and high cost of maintenance of farm machines, millions of small farmers in these countries are incapable of acquiring farm machines. However, they use farm machines hired from machine-owners who are involved in hiring out farm machines as a profit making business. This is the situation in Sri Lanka too. This paper intends to observe some major problems faced by the non - tractor owning farmers who depend on hired tractors and to evaluate the group tractor ownership as a possible solution to these problems.

Present Tractor Ownership Pattern : Concentrated Private Ownership

Under the prevailing higher prices of tractors and also under the increasing fuel prices, acquisition and maintenance of tractors lie far beyond the average farmers' financial capacity. Therefore, tractor ownership is concentrated into a few rich people whose objective is making profits. They provide their tractors with operators to the small farmers and charge them on the basis of the area tilled. This contract cultivating system is common among tractor-use farmers in Sri Lanka.

This particular ownership pattern stemmed from some policy measures adopted by the state in early 1950s. Achievement of self sufficiency in paddy cultivation has been a declared aim of policy since the national independence in 1948. The concept of self sufficiency has been the important economic and political issue because the nations export earnings were hardly adequate to pay for food imports. Consequently, all policy measures taken by the government for economic development has been basically designed to raise the national paddy production. In view of the development of the available arable land in the dry zone, and the possibility of relieving population pressure on the land in the wet zone, the government's policy was aimed at the establishment of new settlement schemes in the dry zone by providing irrigation water, which is the major constraining factor. For this purpose, medium and large scale new settlement schemes have been built up on the basis of the renovated ancient irrigation tanks and newly constructed large scale water reservoirs. All development plans mainly focussed on tapping the potential of paddy cultivation in the dry zone by establishing new irrigated settlement schemes. This policy stimulated the tractorization due to two reasons:

- (1) Those allotments given to the settlers in the new settlement schemes of some three hectares was too large for the available family labour especially during the peak periods. Besides, jungle clearing and primary land levelling required machines with greater horsepower.
- (2) In view of the greater cost incurred in irrigation water, utilization of water for pre-softening of paddy soil was perceived as a waste. Tractorization of paddy land preparation as means of advancing and synchronizing cultivation to permit increase in the productivity of water had occurred.

In response to increasing demand, tractorization of paddy land preparation was started with about 150 tractors left by the departing British military authorities and 112 tractors given as a gift by Australia. In order to make use of these tractors to the settlers in the new settlement schemes the government had established a number of tractor hire stations which provided tractors for ploughing and threshing at rates lower than the cost of buffalo ploughing and threshing. Later, Co-operative Agricultural Production and Sales Societies and their unions also joined the government's effort by establishing more tractor hire stations. They imported tractors from the United Kingdom. But all these state owned and co-operative-owned tractor hire stations failed to stay in operation due to heavy financial losses and management difficulties, and consequently most of them were forced to close down in late 1950s. Since then, tractor ownership was gradually transferred to the private hands. The government also provided incentives in various forms to encourage the private ownership and to popularize tractors usage among small farmers (Ulluwishewa and Tsuchiya, 1985).

Since the small farmers are unable to raise funds to purchase tractors they tended to hire tractors from the rich owners which resulted in the presently practising contract cultivating system. However this system has serious disadvantages.

One of the major disadvantages is the higher tractor charges that the non-tractor owning farmers have to pay. Since tractor ownership is concentrated into the hands of a few, the owners are in a position to raise the hire charges to enjoy substantial profits. 'Recent tractor rates reflect the oligopolistic market, and non-tractors owning farmers are in extremely weak bargaining position' (Harris, B 1976). Therefore, as Farrington and Abeyratna (1983) states 'Tractor owners have been able to pass on rising fuel and capital cost to hirers leaving themselves with substantial profits'. The greater profits that tractor owners get, has already been pointed out by Harris B. (1976). Having estimated the tractor owners profit she states that 'it is currently possible to average 4 wheel tractor to pay for itself within about two years, and the average 2 wheel tractor to pay for itself within 18 months'. Since tractor hire charges include both cost and the owner's profit the greater profit that the tractor owners get, is obviously a major contributory factor for the higher tractor charges.

Secondly, poor quality of tillage operation undertaken by tractors is often mentioned by the farmers. Many farmers point out the inferiority of tractor ploughing; unploughed strips and corners, poor levelling with large clods of soil, irregular depth of ploughing and leaving broken bunds are common complaints against the tractor ploughing. Commenting on this problem a ARTI report states that 'Perhaps in situations where hired tractors are employed for land preparation the farmer cannot exert much control over the quality of work and chances of ending up with a sub-standard work are greater' (ARTI, 1980). Field experience of the first author of this paper too supports this opinion. The operator, who is employed by the tractor owner is not responsible to the farmer but to the tractor owner, and therefore the operator always makes full efforts to please his employer. Therefore, he is often inclined to finish undertaken contract in haste in order to economise the running cost. As a result, the quality of the work will become poor. Though there is no scientific evidence, it can be said that the tractor hiring system stemmed from the concentrated private ownership of tractors, may be a contributory factor for the poor quality of tractor ploughing.

Thirdly, delay in getting tractor services is a common problem faced by the farmers who depend on hired tractors. Farrington and Abeyratne (1980) points out that 'Although ploughing itself takes less time with tractors, it appears that when there is heavy demand for tractors, farmers have to wait a long time to hire one.' They further states that when the majority of farm power owners are involved in the operations of their own land.

non-owners are unable to obtain tractor services leads to delay in commencing all other operations which will result in poor harvest.

Optional Tractor Ownership Systems: Widespread Private Ownership and State Ownership

The widespread private ownership which is prevailing in the developed countries has important advantages. Under this system, all farmers possess tractors, and operate by themselves. Therefore the machines are available at any time when they are required. All farmers get the opportunity to operate their own machines on their own farms so that they could enjoy enough time to get the work performance to their own level of acceptability. These factors enhance the quality of work output which results in high level of productivity. Ownership right provides incentives to use the machinery more intensively.

However though this system is practical in the developed countries, where the farmers are rich, farm size is large and almost all farmers are technical minded, it is less practical in the low-income countries like Sri Lanka where the opposite characteristics are existent. While the low income situation incapacitates the small farmers to acquire expensive machinery the small farms fail to provide work load to meet the yearly operating requirements of the machines. Besides, majority of the small and unskilled farmers find difficult to operate and maintain the technically sophisticated machines by themselves.

The state ownership is an another optional tractor ownership system which is common in the socialist countries. Under this system, the state-owned tractor hire stations provide machines at reasonable rates. This, type of machinery hire stations which were established in Sri Lanka, as described earlier, failed to stay in operation. Whatever the reasons for the failure were, the state owned machinery hire stations too, cannot solve the problems of the existing system of concentrated private ownership. However, since profit making is not the major objective of the state - owned tractor hire stations, they can be anticipated to provide custom services at a reasonable rate. Nevertheless, from such tractor stations which are managed by the bureaucracy, farmers perhaps would not be able to obtain machinery services on time, and also if machinery are provided together with operators, the quality of work performance would be poor.

Group Ownership

At last, group ownership which is popular among the small farmers in Japan, deserve attention because it seems that group ownership is capable of solving some problems which are inherent in the existing system of concentrated private ownership. The way that the group ownership could solve these problems is observed here in the light of a fact - finding survey

conducted in such a group organization in a Japanese village. It is the Dimon Wheat - Barley Producing Group Farming Organization in Maibaru Town in the Itoshima County of the Fukuoka Prefecture. This survey entailed two personal visits to the village in which a interview with the group leader and an informal discussion with five members of the group were conducted.

Group ownership is defined here as an organized body of farmers which jointly purchase and jointly utilize farm machines. (Kanazawa 1977) The concerned group was established in 1974 with a view to reduce the cost of machinery, to obtain government's subsidies for farm machinery and facility and to expand the farm scale. Its membership consisted of 7 full-time farmers and 2 part-time farmers. The total farm land under the control of this group is 17 ha. All farm operations were performed according to a properly planned work schedule, and all operations except transplanting were done by jointly-owned farm machines. Some group members served as machine operators, and they were paid according to the number of days they worked. When the machines were free from the group members farm operations, machines were hired out to non-members, but in such a case the hired machine was operated by an operator appointed by the group. Most probably that operator was a member of the group.

It has been realized that the performance of the group was successful. The leader as well as other members expressed their satisfaction with the joint ownership and joint-use of farm machines. According to them although there were some serious problems, in the cause of time, they managed to overcome these problems, and at present everything is going on smoothly. Frequent discussions, once a month at the beginning and once in every two months now, considerably assisted to promote the mutual understanding. As a result, now they work together like a family. However, the successful performance of the group activities in this organization seems to be considerably attributable to its leadership. It has been realized from the personal discussions with the leader and with other members that the leader's managerial capacity is considerably responsible for the present success of the group organization.

It seems that the problems involved in the concentrated private ownership system would not arise under the group ownership. Group ownership provides the opportunity of availing ownership rights to all farmers which enables the small farmers to enjoy the benefits of mechanization. When machines are purchased by organized groups, the cost of each machine is distributed among all members. Therefore, the initial cost that each member has to pay would be considerably low. In such a case, if the groups are supported by bank loans, the initial cost per each member would be substantially low which would then be financially manageable by small farmers. Furthermore, for the utilization of jointly owned machines the group members

have to pay only the running cost which is considerably lower than the hire rates that they otherwise would have to pay to the private tractor owners. In Japanese case, it covers only the cost of fuel, operator's wage and estimated cost of depreciation. These low charges would reduce the cost of production and it indirectly raises the family income. This would to a some extent, relieve the small farmers' heavy burden of cost of production.

It has been understood from the above mentioned survey conducted in Japan that the jointly owned farm machines are utilized by individual farmers according to a work programme prepared at a meeting attended by all group members. Therefore, all members know in advance the dates on which they are entitled to use the machine. This tradition avoids the unnecessary delay in obtaining custom services. This machinery work programme spells out the number of days or hours allocated for each member for the utilization of machines. The number of hours allocated for each member is dependent on the size of holdings. The charges for utilization of machines are determined by the size of area to be covered, number of hours that the particular machine is required and the quality of work performance needed. If ploughing is the case the depth of tillage is also considered. Therefore, this method allows all members to get the work done in the field as specified.

If some group members possess the necessary skills to operate a given farm machine, they are entitled to operate it by themselves on their farms. This opportunity permits them to bring out the level of work quality to their own standard. Even if the jointly owned machines are operated by some permanently appointed group members or an outsider employed by the group, the member - farmers' ownership right enables them to force the operators to do the job properly. In Japan, normally, a number of skilled group members are assigned to operate the jointly owned machines, and they are paid by the funds maintained by that particular group. In such a situation, it has been realized that due to the deep understanding among the group members and their adherence to their responsibility to each other, the machine operators do their job properly. Besides, the ownership right and the opportunity to operate by themselves would make them mechanical-minded. Though various operation-specific and location-specific attachments, which could considerably contribute to enhance the quality of work performance, are available, tractor owners do not keep these attachments, because keeping such quality-improving attachments adds more cost but no sufficient extra income. Tractor-owned businessmen can not be anticipated to keep such attachments. But in the case of group ownership, since all members are interested in improving the quality of work performance in their own fields, if the group could raise sufficient fund, they could be anticipated to improve the quality of work performance by using specific attachments. Furthermore, the group members could earn some extra income by hiring out the machines to non-members if extra time is available. It is a common

phenomenon in Japan to hire out farm machines by farmers groups to non - members. For the low - income small farmers in Sri Lanka, it is desirable to have such an extra source of income. Thus, it seems that the group ownership could solve the most the problems involved in the presently existing concentrated private tractor ownership.

Some basic principles in adopting group ownership

If the group ownership is to be functioned properly the size of groups must be reasonably small so that all members could use the jointly owned machines on time. In the case of ploughing, all members are keen in obtaining tractor service as early as possible because any delay in land preparation will cause heavy loss to the harvest. Small groups make it easy to minimize the disagreements among the members. It has been realized from the discussions with some members of the groups that the smaller the size, the lesser the internal problems. In Japan, the average size of farmers groups varies from 2 to 20 members. When members are chosen to groups, attention has to be paid to minimize the distance between the farm holdings of the individual farmers as it will create the unproductive inter - farm travelling time and unnecessary running cost.

However, success of such group formation mostly depend on the degree of trust and mutual understanding among group members. When one selects partners for his group, care must be given to select trustworthy and reliable persons. In the case of a traditional village, kinship, friendship and nearness have to be considered when members are recruited to groups. Legal recognition to groups is absolutely imperative. Groups must be given legal recognition, and group leaders must be given legal authority to take action on behalf of group members. In Japan, farmers groups are legally recognized and group leaders have authority to deal with other institutions and individuals on behalf of their groups. In the absence of such a recognition in Sri Lanka, any voluntary emergence of farmers groups is highly unlikely.

Another effective incentive to encourage farmers to organize themselves into groups is to adopt a policy of providing loans and subsidies for purchasing and maintaining tractors to the organized groups not to individuals. In Japan, since the inception of the progress of group ownership of machinery, subsidies have considerably stimulated farmers to organize themselves into groups. For instance, subsidies on machinery provided by the central and prefectural governments were both given to farmers groups, not to individuals. So, the farmers desire to get the benefit of subsidies for mechanization induced them to organize themselves into groups. This Japanese experience suggests that if the Sri Lankan farmers are to be encouraged to organize themselves into groups, government should give priority in providing loans and subsidies to farmers groups for the purchase of machinery.

Apart from this, it is important to give a reasonable knowledge and training about machines and machine operation to the farmers. If hired operators are employed to operate the jointly - owned machines, it is inevitable to give them not only a proper training in the operation and maintenance of machines but also a knowledge of farming. Such a knowledge is necessary to minimize the conflicts between the machine operators and the farmers.

Conclusion

It can be said that the group ownership holds a substantial potential to solve many of the problems arising from the prevailing system of concentrated private tractor ownership and its resulting contract cultivating system. However, at the beginning of its implementation, group organization would be confronted by many problems as it happened in Japan too, but in the course of time, with the growing mutual understanding among group members many of the problems could be solved. In view of the Japan's experience in group ownership of farm machines, it is suggested here that the group approach to machinery ownership is worthwhile to be tried out in Sri Lanka.

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