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THE IMPACT OF GREEN REVOLUTION ON THE SRI LANKAN PEASANTRY

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Introduction

The green revolution could be basically regarded as an upsurge in agricultural production resulting from the use of high yielding varieties (HYVs), increased fertiliser and agro-chemical inputs, improved cropping patterns and a certain degree of mechanisation.

Many sociologists, agricultural economists and political scientists have extensively discussed the green revolution and its impact on the third world countries. The green revolution has taken place in Sri Lanka in both types of agrarian structures - irrigated and non irrigated. As in most other countries, the major objective for introducing the green revolution in Sri Lanka was to increase the total agricultural production, particularly to make the country self-sufficient in rice. By increasing production it was expected to improve the living standards of the rural population.

Therefore in this paper, we would explore how far these objectives have been achieved due to the introduction of the new technology. In other words, we would examine the impact the green revolution has made on the Sri Lankan peasantry.

The above objective will be explored in the light of socio-anthropological data collected from two socio-economic situations - irrigated and non irrigated, during the periods of September 1982 to August 1983, February 1985 to June 1985 and October 1985 to December 1985.

The Setting

The non-irrigated village, Ihalavitiyala is situated in the Southern province in the district of Matara. Ihalavitiyala is a comparatively large village in the Kamburupitiya AGA division. It has a large population of 2991 and 621 households (1981 Census Report). Thunkama, being the irrigated village, is in the dry zone, situated on the boundary of Ratnapura district in the Sabaragamuwa province. It falls under the Embilipitiya AGA division. Thunkama is composed of both the *Purana* villagers and the new settlers. The agricultural activities in the settlement take place under the Uda Walawe Multi-purpose Reservoir Project. The village tanks irrigate the paddy lands in the *Purana* village.

Green Revolution in Sri Lanka

The green revolution in Sri Lanka was a result of a long process. In fact, many of the institutional arrangements which facilitate the adoption of the agricultural

package was introduced since independence in 1948. However, the key element in the green revolution, the agricultural package was introduced in the mid 1960s.

The green revolution in Sri Lanka could be discussed under three aspects - agricultural package, double cropping and mechanisation and institutional arrangements.

The agricultural package consists of six elements. (1) Improved and certified seeds, (2) fertilisers, (3) insecticides, (4) weedicides (5) transplanting, (6) weeding. These elements could be categorised under four headings - improved seeds, fertilisers, agro-chemicals and labour intensive methods (Fladby, 1983: 39-54).

In Sri Lanka, since the 1940s, efforts were taken to improve seeds. In fact, Sri Lanka was successful in developing improved varieties of paddy several years prior to the setting up of the International Rice Research Institute (IRRI) in the Philippines in 1962. Therefore, the introduction of the HYV into paddy cultivation took place much earlier than the period usually designated as the 'Green Revolution' period.

Although the beginning of research into rice breeding and development of HYV occurred much before the classical green revolution period of the 60s, the major initiative to the spread of HYVs came with the "Food Drive" programme of 1967. The "Food Drive" programme included a new agricultural credit scheme as well as improvements in production through the use of HYVs and fertilisers (Bastian, 1985: 142).

The statistics reveal the increasing usage of HYVs. A report published in 1974, gives the extent under HYVs in general at 83% of the total acreage for the period 1973/74. Out of this, 52% was estimated to be under the old improved varieties and 31% under new varieties (Gunawardena, 1971). More recent statistics (1980) also confirm the increasing importance of the NHYVs. Around 60% of the toatal rice extent has been covered by NHYVs (Senadhira 1980).

The adoption of the HYVs has increased the use of fertilisers. Timely application of fertilizers is imperative to get a good yield. It is also necessary to apply the correct quantity of various types of fertilizers.

Initially, fertilizers were made available to the cultivators through cooperatives and Agrarian Service centres. Since 1977, peasants could purchase fertilizers from Cooperatives, Agrarian Service centres and authorised private dealers.

It is widely accepted that the NHYVs are less resistant to plant diseases than the traditional varieties. Therefore, timely application of insecticides is of great importance. Weed control is equally important because the new varieties are short and application of fertilizers increased weed growth. Therefore, weedicides have

been introduced in order to kill the weeds chemically. Hand weeding has been also promoted to get a higher yield. Transplanting has been also introduced to the Sri Lankan cultivators as a way of increasing yield. But, this is not a widespread cultivation practice.

Before the introduction of HYVs, it was possible to cultivate paddy only once a year as it took a longer time to mature. But since HYVs take only three to four months for maturation and with improved irrigation facilities, today, paddy is cultivated twice a year and in a few places even thrice a year.

Today, paddy cultivation is mechanised. Tractors are used for land preparation, threshing and winnowing and for transport purposes. Recently, even for reaping paddy, a machine has been introduced.

The state has been responsible for taking many initiatives to encourage and promote new technology among the cultivators. These initiatives come as institutional arrangements.

The Guaranteed Price Scheme (GPS) which was introduced in 1948 is one of the initiatives taken by the state to promote paddy production. According to Fladby (1983:47), there are two main objectives behind this scheme. They are,

(1) To assure the producers a regular market and prices unaffected by market fluctuations.

(2) To stimulate local production .

Today, other than the state, private traders could also purchase paddy from the cultivators. Cultivators are attracted to the buyers who pay them more. This is very clear from the statistics given by Hameed (1977: 25). He says that during the period from 1952 to 1966, where the GPS price was higher than the free market price, the proportion sold to the government through the cooperatives was high, reaching a peak of 61.1% (28 million bushels) in 1966. But in 1969 the percentage declined to 21.1%. This was because the GPS price was lower than the price in the open market. At present too, the GPS price is lower than in the open market. Therefore, one cannot expect the government to purhcase much paddy from the cultivators. But, although the government has not been successful in purchasing the produce from the cultivators, it nevertheless provides a function by setting a norm fixing prices in the open market.

The paddy fertilizer subsidy scheme was introduced in 1952, but the size of the subsidy has varied from time to time. According to Fladby (1983: 49), a general state subsidy of 50% was introduced in 1968, but the sharp price increase on imported fertilisers due to the oil crisis, resulted in an entire removal of subsidies in July 1974. However, it was re-introduced in October the same year at the rate of 33% and

subsequently it was increased once again to 50% in November 1975. In 1979, a differentiated system of subsidies was introduced. According to the present system, the most important nitrogen source (urea) carries a state subsidy of 85%. While the subsidy on sulphate of ammonia is 55%, for all other fertilisers it is 75% .

Agricultural credit was available to Sri Lankan peasants long before independence. It is in 1912 that the Cooperative Credit Institution, one of the most significant institutional credit sources was established. Since then many new schemes have been implemented by the state in providing credit facilities to the peasants. However, today, many of the cultivators are not eligible to obtain loans from institutional credit sources due to their being defaulters.

The crop insurance scheme, another initiative taken by the state was introduced in 1958 on a pilot basis, covering approximately 26,000 acres in 5 of the 22 districts. The area was later extended.

This scheme was introduced as an incentive to the cultivators to adopt new cultivation methods to overcome the uncertainties in cultivation due to damage caused by nature such as drought, floods and pests. This scheme has not been a success.

Agricultural extension work is another institutional arrangement for the promotion of the new technology among the peasants. Although being performed for a long time, the extension work first became effective after 1973 when the District Agricultural Extension Officers (DAEOs) were given the responsibility of supervising the extension work in their districts. Each district is divided into small units, each headed by an Agricultural Instructor (AI). Within this unit, several field workers, so called Agricultural Overseers (AOs or *Krushikarma Vyapthi Sevakas* (KVSs) operate.

Green Revolution in Ihalavitiyala and Thunkama

In both villages - Ihalavitiyala and Thunkama, NHYVs are used by many cultivators. The status of the peasant whether rich or poor has no significance in adopting NHYVs. Before adopting NHYVs, H varieties of paddy were grown in both villages. But today, only NHYVs are available in the market as it is capable of giving a higher yield.

Double cropping is practised in both villages, except in the *Purana* village in Thunkama, where cultivation takes place by village tanks which are not capable of providing water for double cropping.

After the introduction of HYVs, the use of fertilisers and agro-chemicals are considered as essential in the cultivation process. Every cultivator understands the

importance of using fertilisers and insecticides and pesticides in order to get a good harvest.

Ihalavitiyala and Thunkama cultivators are able to purchase fertilisers and agro-chemicals from the cooperative stores, Agricultural Service Centres and private traders. However, in both villages private traders have captured the market as they provide these items on credit. The cultivators have to pay 20% interest on the agro-chemicals bought on credit.

Mechanisation of agriculture in the two villages was evident at two stages - ploughing and threshing-in the cultivation process. The tractors for cultivation were introduced in both villages in the 1960s. The two wheel tractor which is very popular today, came into use about four to five years back.

In both villages, only a few peasants own tractors. Tractor owners are either *Mudalalies* in the village or nearby towns. Many of the poor and middle level peasants do not pay the tractor owner immediately but the payment is made after the harvest. Here the peasant has to pay an interest of 20%.

In both villages, paddy is threshed mainly by threshers. Before tractors came into use, paddy was threshed by manual labour. But after late 1960s four wheel tractors came into use, which were followed by two wheel tractors. A few years back, a new type of thresher, has been introduced to the Sri Lankan peasants. Today, in both villages, this is the most common way of threshing paddy.

As mentioned earlier, it is clearly evident that the green revolution has taken place in both villages. Before analysing the consequences of the green revolution in the two villages, it is proper to refer to the ongoing debate on the impact of the green revolution on the peasantry.

There are two major view points regarding the impact of the green revolution. The optimistic view advocates the green revolution as necessary and good. The green revolution is considered as modernizing the backward agriculture, where food production could be increased, by which hunger and poverty could be removed. Scientists promoting this view point feel that although certain peasants are able to improve their conditions substantially, the poor too have benefitted from it. But, they failed to understand that, although overall production would increase it would not erase poverty unless the production is equally distributed.

The pessimistic view considers the green revolution as a capitalist answer to the food crisis, which necessarily leads to increased economic differentiation and rise of proletarianization in rural areas. Therefore, the green revolution is seen as a mechanism whereby some cultivators are lifted up whereas others are down graded.

The polarization which is observed by the introduction of the new technology made Keith Griffin (1979:214) to express, the impact of the parallel increase of commercialisation in clear terms of class formation .

Patnaik (1972:15), in the discussion on the mode of production in Indian agriculture conceives the new technology as the strongest stimulant for a capitalist transformation of the mode of production .

Byres (1972:105) elaborates this view point further by pointing to two important features of the impact of the green revolution. He says,

(a) the emergence of a class of rich peasants whose interests are sharply at variance with those of small peasants and share-croppers,

(b) a tendency for the size of the operational holding to rise, even in circumstances of increasing pressure on the land.

Byres (1981: 416) in another article has stressed the importance of considering the social environment to which the new technology is introduced. He says, "technology does not exist in a social and a political vacuum. It is used by specific classes and used to further class interests" .

P.C. Joshi (1985:322) explains the contradiction and the paradox arising from the use of new technology. He says that on the one hand modern scientific knowledge and technology are capable of the initial reduction and eventual eradication of poverty. But, on the other hand the actual utilization of new technology within the given class structure and power balance serves as a means of widening the gap between the haves and have-nots.

Although the green revolution took place in both villages, it has not been a success because it neither brought the expected yield nor wiped out poverty. Although the NHYVs are capable of producing 120 to 140 bushels per acre, in Ihalavitiyala the yield per acre is 80 bushels, while it is 90 to 100 bushels in Thunkama. In Ihalavitiyala even this yield is not certain because of crop failures due to unfavourable weather conditions. Therefore, the optimistic view of the green revolution does not hold true in the Sri Lankan situation.

The adoption of the new technology has two important consequences for the cultivators. Firstly, there is an increased yield potential. Secondly, the cost of production has increased substantially because of the high prices of the new inputs.

There are some cultivators who have been able to overcome the high cost of production by increasing yield. Such cultivators have been able to make maximum use of the existing institutional arrangements. Therefore for such peasants, cultiva-

tion has been profitable. But, there are many cultivators who are unable to obtain yields of a size that can justify the more costly cultivation methods.

In both villages, the poor and middle peasants preferred to cultivate the old varieties of paddy as cost of production is very much less. A common complaint made by these peasants was the high cost of production which was beyond their means.

However, in both villages, irrespective of the economic position, all peasants used NHYVs. Therefore an obvious question would be, why do these peasants continue to use the new technology when it obviously seems to be irrational from a cost benefit point of view. There are many reasons for the widespread use of NHYVs in the villages.

In the case of Thunkama, it is not incorrect to say, the use of NHYVs in the cultivation is made compulsory to peasants as water is allocated according to the requirements of the new varieties. Therefore, even though some cultivators would prefer to use the old varieties, they are unable to do so, because of not getting water at the appropriate time.

Being not only compelled to use NHYVs, these peasants also have no other choice but to use these NHYVs as only these varieties of seed paddy are available in the market. B.H. Farmer (1979: 911) has also stressed this point, when discussing, the higher levels of adoption of NHYVs in South East Sri Lanka compared to North Arcot in India .

Although Ihalavitiyala cultivators do not have irrigation facilities, and though they are not forced by bureaucrats to use NHYVs, they still adopted the new technology. Here the cultivators take collective decisions because each one in a *Yaya* has to follow the same cultivation practice. If not, pest diseases and other poblems would arise because of the different time periods of the maturation of paddy. Therefore, in both villages, whether the cultivator likes it or not, he is compelled to adopt the new technology.

This compulsion of adopting the new technology by cultivators who do not possess the necessary financial resources, has not in any way helped them to improve their economic conditions, but, in fact, it has worsened their positions.

As mentioned before, to receive the full benefit of using the NHYVs, it is absolutely necessary to use the correct quantity of fertilisers and agro-chemicals at various stages in the cultivation process. The cultivator who does not have sufficient finances to purchase fertilisers and agro-chemicals has three alternatives before him. That is either he could purchase fertilisers, insecticides etc. on credit or he could use less of these items or he could lease out his lands or abandon cultivation and sell his labour.

Ihalavitiyala's poor peasants very often were unable to use the recommended technology. The full benefits of the new technology were beyond their reach and they could get only low yields which have pushed them to a situation of chronic debt. Things become worse for Ihalavitiyala peasants because cultivation is dependent entirely on weather conditions. Ihalavitiyala peasants are very often exposed to heavy rains and floods. Therefore, the risks involvd in cultivation for the poor peasants become extremely high, which lead them to abandon cultivation.

Unlike at Thunkama, it is not easy for poor peasants in Ihalavitiyala to lease out lands. Since cultivation depends on the uncertainties of nature, leasing in land is not attractive. Therefore these peasants either have to cultivate land without gaining profits or abandon cultivation. Either way, these peasants are pushed into a state of perpetual indebtedness.

Some scientists have argued that the green revolution was a stimulant for capitalist transformation, where some are able to accumulate land while others would be led to disown land. Such a process is not evident in Ihalavitiyala. We could not see any kind of concentration of land due to the green revolution, however, the pauperisation of the peasantry was clearly evident.

In this process, although there was no concentration of land, some *Mudalalies* have improved their economic positions immensely due to the green revolution by expanding their entrepreneurial activities. They indulge in activities such as hiring tractors and other agricultural implements, selling seed paddy on interest, selling fertilisers, and agro-chemicals on credit, purchasing and selling paddy. Thus in such a system it is hard to think that agriculture would develop as no capital investment on land is evident.

In Thunkama, the poor peasants who are unable to face the challenge of cultivating the entire piece of land (3.00 acres) due to heavy cost of production have been led to lease out lands. The majority of the poor peasants, cultivate only 1.00 acre while 2.00 acres are leased out. There were a few who leased out the entire land and worked as labourers. The peasants who cultivated 1.00 acre of land generally purchased the necessary inputs on credit. Unlike in Ihalavitiyala, there were several traders and bureaucrats who sold agricultural inputs on credit. These traders are outsiders who have come for business activities after the settlement scheme came into operation.

These traders do not consider leasing in land as their primary economic activity, as they find other entrepreneurial activities such as selling agricultural inputs, buying and milling paddy, hiring out tractors and other agricultural implements more profitable.

Therefore, land is leased mainly by the rich peasants and the encroachers. Encroachers of course lease small pieces of land as they are not economically well

off. Thus unlike in Ihalavitiyala, there is a tendency of land getting concentrated in the hands of a few settlers.

Other than the differentiation occuring among the settlers, there is a new category - *Mudalalies,* outsiders to the village who have profited immensely from the conditions that are prevalent.

Thus in a system which is characterised by social, economic and political inequalities, it is hard to believe that the poorer sections of the society would benefit from the new technology. Therefore, Oommen (1984:107) is correct to say that the culprit is not the new technology but the socio-economic fabric into which it is introduced. Therefore some basic changes in the rural social structure are necessary for any betterment of the poor peasants .

Conclusions

This paper has analysed the impact of the green revolution on Ihalavitiyala and Thunkama, a non-irrigated and an irrigated village in Sri Lanka. The analysis, clearly reveals that the green revolution is responsible for differentiating the peasantry and pauperising the poor peasants. It is also clear that, it is the entrepreneurs who have gained immensely through this process. Therefore, it is difficult to believe that an increase in agricultural production would take place as capital is invested more on entrepreneurial activities rather than on land.

References

Bastian, S., (1985) "Technological change in Paddy Agriculture and International Linkages" inCharles Abeysekara (ed.)*Capital and Peasant Production*, Trumpet Publishers (Pvt.) Ltd., Colombo.

Byres, T.J. (1972) "The Dialectic of India's Green Revolution, " *South Asian Review*. Vol. 5 No. 2 Jan.
(1981) "The New Technology, Class Formation and class Action in the Indian countryside," *Journal of Peasant Studies*, Vol. 8(4)

Farmer, B.H. (1979) *Green Revolution,* The Macmillan Press Ltd. London.

Fladby, B. (1983) *Household viability and Economic Differentiation in Gama, Sri Lanka.* Bergen Occasional Papers in Social Anthropology No. 28, University of Bergen, Bergen.

Griffin, K. (1979)*The Political Economy of Agrarian Change*, The 1979 Macmillan Press Ltd., London.

Gunawardena, I.E. (1974) "Rice varieties in the context of the present fertilizer shortage", *Social Science Society of Ceylon, Proceedings of Annual Sessions, 21st July.*

Hameed, N.D. Abdul, (1977) *Rice Revolution in Sri Lanka,* United Nations Research Institute for Social Development, Geneva.

Joshi, P.C. (1985) "Technology and Agricultural Transformation Problems of Capitalistic vs Peasant Agriculture", in Y.K. Rao, G. Parthasarthi, C. Rajeshwara Rao, N. Yadava Reddy, W. Khan (eds.)., *Peasant Farming and Growth of Capitalism in Indian Agriculture*, Vissulandra Publishing House, Vijayawada.

Oommen, T.K., (1984) *Social Transformation in Rural India: Modernisation and State Intervention*, Vikas Publishing House Pvt. Ltd., Delhi.

Patnaik, U. (1972) "The Development of Capitalism in Agriculture", *Social Scientist,* Vol. I, No. 2, September.

Senadhira, D. (1980) "Recent Trends in Breeding of Improved Varieties of Rice", *Ceylon Daily News*, 25th September.