

AGRICULTURAL PRODUCTIVITY IN PURANA VILLAGES

OF THE KALA OYA BASIN

H. N. C. FONSEKA

A socio economic study of four *purana* villages in the right bank of the Kala Oya : Palugaswewa, Kele Amunukole, Ihala Hamillewa and Ipalogama was carried out in 1974 in order to ascertain the productivity levels of agriculture in peasant holdings. The principal method of investigation followed in this study was questioning the heads of farmer households. 54 heads of households selected on the basis of a random sample were questioned. The results of the analysis are presented in this article.

Since 1975, these villages have come under the purview of the Mahaweli Development Project and now forms a part of System H. All private land was acquired by the Mahaweli Authority to carry out a programme of land consolidation. Thereafter land was distributed to the villagers in standard size holdings of $2\frac{1}{2}$ acres of irrigable land and $\frac{1}{2}$ acre of homestead. As far as possible the people were allowed to retain their old holdings but the principle adopted was one of redistributive land reform.

Size of Holdings and Tenure

Of the 54 households interviewed, 51 cultivated paddy. Table 1 shows the distributional pattern of lowland holdings. These figures include both lowlands owned by the households as well as lowlands held on various forms of tenure. There was unevenness in the distribution of lowland holdings cultivated by the households. While no household had less than .25 acres, 18 households or 35 percent had less than 2 acres. 24 of the 51 households or 46 percent had holdings ranging from 2 acres to less than 6 acres, and the total farm area in this category amounted to 51 percent. The remaining 9 households had lowland holdings of 6 acres or more and the farm area in this group added upto 38 percent. In other words, less than one fifth of the sample had more than one third of the total farm lands. One household had as much as 20 acres. The mean size of a lowland holding was 3.26 acres. The majority of the lowland holdings were in 3 or 4 separate plots. There was one holding in 9 plots and another in 14 plots. The different plots were under separate tanks and the distance from residences were up to 4 miles.

Of the 51 households who cultivated paddy, 14 did not own lowland holdings. These households were often compelled to rent in land on *ande* tenancy or lease for cultivation of paddy. Some of them hold encroachments of Crown forests. Of the total extent of 166 acres of lowlands, 88 acres or 53 percent were owned by households and the remaining 78 acres or 47 percent were held on various forms of lease or constituted encroachments.

Table 2 shows the ownership pattern of the lowland holdings. 37 of the 51 households or 74 percent owned lowlands. Of these households nearly three fourths owned extents of less than 4 acres and the farm area in this group amounted

to 47 acres or 53 percent of the total acreage. The remaining 7 households owned 6 acres or more but the total farm area amounted to 41 acres. Thus it is seen that about half the total acreage was owned by a fifth of the households. The average size of a lowland holding owned was 2.4 acres.

22 households or 43 percent had taken lowlands on *ande* tenancy, 9 of these were households who owned land of varying sizes. The average size of a lowland taken on *ande* tenancy was 1.8 acres per household, reporting such land

Not all lowland holdings were cultivated in any given season. This was chiefly due to insufficient water. Insufficient capital or non-availability of labour or tractors or draught animals were other reasons responsible for non-cultivation of lowland holdings.

Highlands possessed by the households are smaller than the lowland holdings. These consisted of land obtained under the *L.D.O.* for village expansion, and encroachments. The extent under the traditional village highland or *gangoda* has not been included here. Table 3 shows the distributional pattern of the highlands. 34 out of the 54 households in the sample or 63 percent had highlands in this category which together amounted to 56 acres. The average size per household reporting highland works out to 1.6 acres.

Table 4 shows the distributional pattern of *chenas*. 34 out of the 54 households had *chena* holdings which together amounted to 52.25 acres. The average size per household reporting *chena* works out to 1.5 acres.

Cropping Patterns

The land use was of the simple three-fold pattern. The lowland holdings formed the paddy lands which were normally irrigated from the village tanks. The lowland holdings were cultivated in both *maha* and *yala* seasons. The *maha* paddy crop was usually rainfed, but when rainfall was inadequate it was supplemented by irrigation water. The *yala* paddy was entirely irrigated.

The highlands constituted the traditional *gangodas* and their expansion was due to population increase, lands given under the *L.D.O.* and Crown forest encroachments. The highlands contained the dwellings of the peasants, and tree crops such as coconut, mango, jak and plantains were raised under rainfed conditions.

Chena cultivation constituted the third element in the three-fold land use pattern. Out of the 34 households engaged in *chena* cultivation, 30 were practising it along with permanent lowland holdings. The greater part of the extents of the *chena* holdings were devoted to the cultivation of chillie, while the traditional *chena* crops were of lesser importance. Over the last two years the extent under *chenas* had increased due to the increasing cultivation of chillie. There were a few *chenas* devoted entirely to chillie.

Cultivation Techniques

Table 5 shows the methods of tillage employed by the peasant households interviewed. Generally the 20—40 HP size 4 wheel tractor was used in preparatory tillage. 50 percent of the households used the tractor for ploughing

paddy fields while another 6 percent used the tractor and buffaloes. The farmers considered that working with tractors was more convenient and quicker but work done by animals was cheaper and better. Government tractors at Maha Illuppalama were available only to a limited extent. Hence private tractors had to be hired. At peak times of ploughing there was a shortage of tractors ; hence rates of hire were pushed up. At the time of the survey the rate for ploughing an acre was Rs. 65/- to Rs. 70/-.

The Sri Lanka-bred hybrid H_4 (4 months) was by far the most popular seed variety used, and its yield potential had been estimated to be quite high. Over half the households used this variety. The majority of the households used the H_3 variety in the *maha* season. In the *yala* preference was for a short aged variety such as *Indian samba*. Two farmers had tried out IR 8 and met with little success. Other improved varieties in use were BG 11, MI 273 while *Kokkaliyan* and *Sudumadel* were the local varieties.

Although a large number of cultivators reported using H_4 and other improved varieties, it is doubtful whether these seed varieties in use had in fact the approved minimum quality and purity. Cultivators were generally advised to renew their seed paddy once in three years, but hardly any cultivator paid heed to this useful advice. Instead, most of the cultivators in the area used the seed paddy from each year's harvest. For instance in 1972—73 none of the cultivators interviewed reported purchasing fresh seed paddy from the co-operatives. It is therefore probable that a large proportion of the seed varieties then in use was old and must have deteriorated in quality due to long admixture with weeds and other village varieties. It is also important to note that certified seed varieties available for distribution to cultivators were inadequate and in consequence the cultivators often faced difficulties in obtaining the necessary seed varieties at the time of cultivation.

The seed paddy was usually sown broadcast. Only two farmers practised transplanting. The cost of hiring trained labour for transplanting prevented the others from following this practice. Three farmers practiced the Japanese method of row seeding.

Five farmers used organic manure. The decline in the cattle population due to inadequate facilities for maintenance and thefts had resulted in a shortage of organic manure.

Nine households were applying chemical fertilizer to their fields. During the two seasons of 1972—73 cultivation year, 24 cwts. had been used on 52.5 acres. The quantity applied worked out to about .5 cwt. per acre, while the quantity recommended was 3.5 cwt. per acre. Several factors were responsible for the highly limited use of fertiliser : Insufficient water supply and uncertain weather conditions and risk. Weeding and control of pests and diseases were also practised by the cultivators. Chemical weed killers were generally used to control weed growth. Farmers did not generally hand-weed their crop by using family labour. Although cultivators claimed a high degree of control of weeds with chemicals hardly any cultivator adhered strictly to the recommended dosage or to the precise time of spraying. Field experience showed that weed control

measures practised by cultivators were unsatisfactory. Various types of pesticides and fungicides were also used by cultivators to control the hazards caused by diseases (blast, blight, etc.) and pests (stem borer, gall fly etc.).

Farm Households and Labour Supply

The membership of peasant households was large. This is evident from Table 7 which shows the size distribution of the households interviewed. There were no one-member households. 37 percent of the households had 2 to 5 members, while 63 percent had 6 or more members. The mean size of a household was 6.2. One important characteristic in family composition was that although the average household was large, the number of working members was small. Only 39.10 percent of the total members of households were family workers. Table 8 shows the distribution of family labour. About 85 percent of the households had one to four family workers including part-time workers. Only 15 percent had five or more working members.

On the basis that a full-time worker in Sri Lanka could do 260 man-days of eight hours and a part-time worker 130 days, the available labour in the average household would have amounted to 451.10 man-days as shown in Table 9. 226 man-days were available per season. The estimated labour input to cultivate an acre of paddy is 85 man-days. This would mean that with the available family labour in each household 2.65 acres of paddy could be conveniently handled. But cultivators had either hired labour or used *attan*. 63 percent of the cultivators had employed hired labour and another 12 percent had used *attan*. It is seen that family labour had been under-utilised.

Credit and Indebtedness

About 39 percent of the households had obtained loans for cultivation. The loans obtained for this purpose averaged Rs. 358.97 per household in the sample or Rs. 110.45 per cultivated acre. The estimated cost of cultivation per acre of paddy land was Rs. 250/- in 1974.

The majority of the households depended on non-institutional private sources for cultivation loans. One of the reasons for the increased borrowing from private sources is the inefficient cooperative credit system.

Farm Costs and Production

The average cost of production works out to Rs. 571.40 per household or Rs. 212.40 per cultivated acre of paddy. The total production of paddy from 155 acres cultivated in 1972-73 amounted to 3,982 bushels. This gives an average yield of 25.0 bushels per acre which was well below the then national average of 42 bushels.

Incomes and Productivity

The average gross farm income per cultivated acre works out to Rs. 350.00 while the net farm income is Rs. 138.60. The low net income was due to the relatively high farm operating costs. Moreover the productivity levels were quite low. The average net farm income from paddy per household amounted to Rs. 562.60. All the allottees interviewed received incomes from non-paddy sources as outside employment, trading and highland products. On an average incomes from non-paddy sources amounted to Rs. 804.33 per household which helped to raise the net family income to Rs. 1,367.93.

TABLE 1

Distributional Pattern of Lowland Holdings

	Number of Households	Farm area in each group (Acres)	Percentage of Households	Percentage of total farm area
Less than 2 acres	18	17	35.30	10.21
2 and less than 4 acres	13	36.50	25.50	21.92
4 and less than 6 acres	11	48.75	21.56	29.29
6 and less than 8 acres	4	25.50	7.84	15.31
8 acres and over	5	38.75	9.80	23.27
	51	166.50	100.00	100.00

Mean size of a lowland holding : 3.26 acres

TABLE 2

Ownership Pattern of Lowland Holding

	Number of Households	Farm area in each group (Acres)	Percentage of Households	Percentage of total farm area
Less than 2 acres	18	15.25	48.65	17.18
2 and less than 4 acres	12	32.50	32.43	36.63
4 and less than 6 acres	6	28.50	16.22	32.11
6 and less than 8 acres	0	0	0	0
8 acres and over	1	12.50	2.70	14.08
	37	88.75	100.00	100.00

Mean size of a lowland holding owned; 2.4 acres

TABLE 3

Distributional Pattern of Highland Holdings

	Number of Households	Extent in each group (acres)	Percentage of Households	Percentage of extent
0.25 and less than 1 acre	12	4.75	32.29	8.35
1 and less than 2 acre	12	13.12	35.29	23.07
2 acres and over	10	39.00	29.42	68.58
	34	56.87	100.00	100.00

Mean size of highland holding: 1.6 acres

TABLE 4

Distributional Patterns of Chena Holdings

	Number of Households	Extent in each group (acres)	Percentage of Households	Percentage of extent
0.50 and less than 2 acres	22	21.25	64.71	40.39
2 acres and less than 4 acres	10	21	29.41	40.38
4 acres and over	2	10	5.88	19.23
	34	52.25	100.00	100.00

Mean size of a chena holding : 1.5 acres

TABLE 5

Methods of Tillage

	Number of Households	Percentage of Households
By Tractor	25	49.02
By Tractor and Buffaloes	3	5.89
By Buffaloes	23	45.09
	51	100.00

TABLE 6

Seed Varieties

	Number of Households	Percentage of Households
H4	28	54.91
India Samba	10	19.60
Other recommended and local varieties	13	25.49
	51	100.00

GLOSSARY TABLE 7 AL TERMS

Size Distribution of Households

Number of Members in Households	Number of Households	Percentage of Households
1	11	0
2 — 3	4	9.26
4 — 5	15	27.78
6 — 7	13	24.07
8 — 9	15	27.78
10 — 11	5	9.26
12 — 13	1	1.85
	<u>54</u>	<u>100.00</u>

TABLE 8
Distribution of Family Labour
(Full-time and Part-time)

	Number of Households	Percentage of Households
2 or Less family workers	26	48.15
3 to 4 family workers	20	37.04
5 to 6 family workers	7	12.96
7 to more family workers	1	1.85

TABLE 9
Labour Units per Farm Households

	Number of workers	Number of man-days
Full-time workers (average of all farms)	1.07	278.20
Part-time workers (average of all farms)	1.33	172.90
	<u>2.40</u>	<u>451.10</u>

TABLE 10

Sources of Credit

Percentage of Households	Number of Households	Number of Households	Percentage of Households
Loans from private sources	11	21-25	55-0
Loans from co-operatives	4	7-11	20-0
Loans from private sources and co-operatives	5	10-14	25-0
Total :	20	38-46	100-0

TABLE 11

Farm Costs and Production

Average cost of production of paddy per household ...	Rs.	571-40
Average cost of production of paddy per cultivated acre ...	Rs.	212-40
Total production of paddy from 155 acres in 1971—72 ...	Bushels	3982
Average yield of paddy per acre ...	Bushels	25-0

TABLE 12

Incomes and Productivity

Average gross farm income per cultivated acre of paddy ...	Rs.	350-00
Average net farm income per cultivated acre of paddy ...	Rs.	138-60
Average gross income from paddy per household ...	Rs.	1,134-00
Average net farm income from paddy per household ...	Rs.	562-60
Average income from non-paddy sources per household ...	Rs.	804-33
Net Family Income	Rs.	1,367-93

Number of workers	Percentage of Households
1-07	18-20
1-33	17-90
2-40	42-10

GLOSSARY OF LOCAL TERMS

- ande* — share cropping
- attan* — exchange of labour
- Chena* — patch cultivated under shifting cultivation
- gangoda* — the site of village settlements
- L.D.O. — Land Development Ordinance 1935.
- maha* — great : the period of paddy cultivation during the northeast monsoon.
- oya* — river
- purana* — old, traditional
- yala* — little ; the period of paddy cultivation during the southwest monsoon.

Abstract

This paper focuses on breast-feeding and contraception and assesses their roles in determining the fertility levels and variation between urban and rural estate women in Sri Lanka, utilizing data from the Sri Lanka Fertility Survey held in 1975. The methodology adopted is based on the framework proposed by Bongaarts (1978). The study reveals that breast-feeding and contraception alone do not sufficiently explain the levels and variation in marital fertility between the three groups, and points to the existence of at least one unidentified fertility depressing factor, more effective among the urban and estate women. Lower coital frequency or terminal abstinence at longer marriage durations or higher ages, induced abortion and conditions conducive to sub-fertility and sterility are the more likely among those factors not yet identified.

BREASTFEEDING, CONTRACEPTION AND FERTILITY IN SRI LANKA

Introduction :

Socio-economic, cultural and environmental factors affect fertility through several biological and behavioural factors referred to as intermediate fertility variables. Biological factors such as stability of the ovum and sperm, spontaneous intra-uterine mortality, minimum post-partum amenorrhoea and natural sterility interact with behavioural factors such as duration of breast-feeding and abstinence, coital frequency, induced abortion and contraception to reduce fertility well below the biological maximum. Several historical populations bear evidence : their completed fertility even in the absence of contraception and abortion ranges between 6 and 11 children per woman compared to 20 that a woman would have during 30 years if she were to have a child every 12