

Social Welfare Programmes, Improved Agricultural Practices and their Impact on the Role of Women and on Fertility in Sri Lanka

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The decline in fertility rates in Sri Lanka¹ has been sharper than in most other Asian developing countries. As elsewhere, in general, the broad spectrum of influences² affecting fertility have played a major role. But quite distinct from these factors the social welfare programmes that were in operation in the country over a period of more than thirty years, particularly free medical care and free education, have had a greater impact on the social and economic status of women and ultimately on population growth. Unlike in Sri Lanka, in other developing countries, these services have not been given free continuously to all segments of the population.

Since the bulk of the people, more than 75 per cent, live in the rural sector the population in the latter, in general, have been the greatest beneficiaries of social welfare even though qualitatively medical care and educational facilities in the rural sector have not been as good as they are in the principal towns and urban areas. These free services have helped to increase real income and the quality of life. In addition, the continuing efforts made by the government to improve domestic agriculture through a wide variety of strategies and policy packages have

1. The crude birth rate has been declining steadily since 1960. In 1978 it was 28.4. Marital fertility declined very little during the intercensal period 1953-1963 but between 1963 and 1975 the decline in fertility has been more significant. Starting from 1952 the Registrar General, who is the authority responsible for the maintenance of vital statistics has furnished statistics of live births registered annually by maternal age. The numerators for the computation of fertility indices for the calendar years are obtained from the Registrar General's Department while the population censuses have given information that yield the corresponding denominators for the preparation of these indices.

2. These include the age at marriage, the level and the duration of education, the increasing participation of women in economic activity, the amenities for recreation available in the home and outside, improvements in medical care, the rising levels of income resulting in increase in productivity in agriculture and accessibility to contraceptive techniques.

also contributed to improve the incomes and social position of rural people and induced the greater participation of women in economic activity which in turn would have had a favourable impact on fertility.

Although new agricultural practices and rural development in general have had an impact on fertility, socio-economic surveys conducted so far have not been able to throw light on these aspects by obtaining specific and related information on the impact of each or a combination of these factors on fertility levels. Many general socio-economic surveys³ have found it difficult to include questions on fertility in the investigations partly because it is difficult to combine the collection of general socio-economic information with data on fertility. In particular, the collection of information on fertility is a specialised task. In this context, the only way of establishing a relationship between fertility and improvements in agricultural practices and rural development is to endeavour to see whether in areas where rural development has taken place and where new agricultural practices have been used extensively whether there has been a trend towards a decline in fertility.

The main source of more recent information on fertility is the World Fertility Survey⁴ undertaken in 1975.

TABLE 1
Age Specific Fertility Rates and Marital Fertility Rates for 1963,
1970 (Registration Data) and 1974 (WFS)

Age Group	Age Specific Fertility Rates			Age Specific Marital Fertility Rates		
	1963	1970	1974	1963	1970	1974
15 — 19	52	38	31	354	449	339
20 — 24	228	172	146	396	408	357
25 — 29	278	238	161	344	323	240
30 — 34	240	219	158	270	253	189
35 — 39	157	134	126	175	151	139
40 — 44	46	38	43	53	42	53
45 — 49	7	6	6	8	7	7
TFR	5.04	4.22	3.35	—	—	—

Source: World Fertility Survey—Sri Lanka 1975

3. The Central Bank of Ceylon in September 1978 concluded field work on a Socio-Economic and Consumer Finance Survey, in four rounds, spread over a twelve month period. For the reasons given above this survey did not collect data on fertility.

4. World Fertility Survey of Sri Lanka 1975, First Report, Department of Census and Statistics, Ministry of Plan Implementation, March 1978.

Table 1 shows the changes in the age specific and marital fertility rates respectively for 1963, 1970 and 1974. In the decade 1963 to 1973 there has been a fairly significant fall in the total fertility rate from 5.04 in 1963 to 3.35 in 1974. The drop in the age specific fertility rate has been quite sharp in all segments of the child-bearing span particularly 15—19, 20—24, 25—29 and 30—34 years. The decline seems to be most significant in the age groups 20—29 years and may perhaps be explained by the sharp decline in proportions marrying.

Other than the effectiveness of family planning programmes, many factors have contributed to the decline in fertility. The most important of these are the higher levels of education achieved by women, the increasing entry of women into the labour market and a high rate of unemployment among males in the 20—29 age group. All these factors which have been a deterrent to early marriage and hence have contributed to the lower fertility levels are stated below.

1. Education and Increasing Participation of Women

The difference in the fertility levels between the different ethnic groups that constitute the population is also quite marked and this is primarily due to sociological and cultural factors. While the national average in 1971 was 30.1, the fertility rate for Moors was 39.0, 38.8 for Sri Lanka Tamils, 29.9 for Sinhalese and 25.7 for Indian Tamils in the plantation sector. In so far as agriculture is concerned the bulk of the women employed in domestic agriculture are Sinhala women and the fertility rate among this ethnic group is lower than among all others barring the Indian Tamils who are confined to the plantations.⁵ Indian Tamil workers especially the women, largely do hard and arduous tasks on the plantations, mostly in tea, such as plucking, weeding and preparation. This has not only induced Indian women workers on the plantations to be heavily occupied but has also contributed to low fertility. Technological improvements in tea have helped to slightly reduce the ratio of labour per acre of tea and Wages Boards which are

5. The World Fertility Survey Sri Lanka report indicates that women on estates have the lowest completed mean parity (which is the accumulated number of live births a woman has had) of 5.2. Rural women have the highest mean 6.2 and urban women come in between with 5.5. The wives of professional, technical and managerial workers have a relatively low fertility with a combined mean of 4.5 children. The agricultural sector as a whole has a mean of 6.5 and in the case of self employed farmers and fishermen the mean is 6.8. Unskilled workers have a high mean of 6.5 while service workers and craftsmen have a mean parity of about 5.6 which is the same as that for clerical and sales workers.

responsible for the fixing of minimum wages have made upward adjustments in the wage rates of plantation workers. These have contributed to raise family incomes and in turn tended to reduce fertility.

TABLE 2
Sri Lanka Female Participation Rates
1946-1973

Age Group	1946 Census	1953 Census	1963 Census	1973 Survey
10 - 14	11.8	9.8	4.3	2.3
15 - 19	24.3	27.8	24.2	28.2
20 - 24	23.8	28.7	32.4	49.9
25 - 29	26.3	28.5	30.1	33.8
30 - 34	28.8	30.2	27.4	38.3
35 - 39	31.1	32.2	28.1	29.7
40 - 44	33.7	34.6	28.5	29.9
45 - 49	33.4	35.6	29.3	28.2
50 - 54		35.9	28.1	26.7
55 - 59	30.1	34.1	17.5	21.8
60 - 64		30.1	11.4	7.3
65	26.0	23.2	8.9	5.6

Sources: The Determinants of Labour Force Participation Rates in Sri Lanka 1973, Economic Research Department Central Bank of Ceylon Colombo 1974 and Census of Population 1946, 1953 and 1963, Dept. of Census & Statistics

The foregoing observations more or less tally with the picture given in Table 2 which depicts the female participation rates for the period 1946 to 1973. Here it is evident that the level of female participation in the labour force has risen considerably in the age groups between 20-34 years; the sharpest increases taking place between 1963 and 1973. In the age groups 35-49 years it has more or less remained constant or decreased slightly between 1946 and 1973. The most remarkable feature is a very sharp increase in the labour force participation of women in the age group 20-24 years, which implies that larger numbers of the educated young women have come on to the labour market.

The full impact of free education⁶ introduced in 1946 was felt after 1960 and this to a large extent, explains the progressive increase in the number of women entering the labour force in the age groups 20—34 years, the younger age segments of the child-bearing span. It is also noteworthy that the highest levels of participation of women in economic activity are found in the earlier years of married life when fertility is higher than in subsequent periods. The substantial decrease in labour force participation of women after the fortieth year is presumably due to the fact that many women who are working would withdraw from the labour force once their family income level reaches a point where it could adequately sustain a family or it may be that grown up children enter the labour force to supplement family income and therefore both parents need not work. These years roughly correspond with periods when fertility itself tends to decline.

Quite apart from the impact of improved technology in agriculture on fertility one factor that has considerably contributed to reduce the birth rate and the number of children in each family has been the progressively higher levels of education of women and the impact of education on increasing the participation of women in economic activity and on postponing the date of marriage as a consequence. Education has meant that women have postponed marriage until after completion of education or they would await till the prospective partners complete their studies and secure a steady job. It has also resulted in women showing a greater readiness to accept family planning methods. The female average age at marriage was 22.1 in 1963 while it had risen to 23.5 in 1971 and to 24.2 in 1975. In comparison, the male average age of marriage rose slightly from 27.9 in 1963 to 28.0 in 1971 and to 28.3 in 1975. This clearly shows that the changes in the female age at marriage have been the more dynamic factor affecting fertility than the male age at marriage.

6. Free medical care has also had an impact on fertility in the rural sector. The Family Health Bureau the main family planning government agency operates under the government free medical care programme. The impact of the Family Health Bureau is more wide-spread than that of the voluntary organisations engaged in family planning work such as the Family Planning Association. On the other side, free medical care has contributed to sharply reduce the morbidity mortality rates since the forties. Before 1939 it was a very high infant mortality and death rate that kept the rate of population growth down.

TABLE 3
Sri Lanka Female Participation Rates

Age Group	1968 Labour Force Survey			1973 Labour Force Participation Survey				
	Total	Urban	Rural	Estate	Total	Urban	Rural	Estate
10-14	3.9	—	—	—	2.4	2.0	2.2	4.9
15-19	25.0	14.6	19.7	67.3	28.2	26.8	25.4	52.5
20-24	38.1	27.4	30.7	89.7	49.9	48.5	46.8	70.9
25-29	32.1	18.8	22.1	91.2	33.8	34.6	32.1	42.6
30-34	26.4	16.1	19.8	83.6	38.3	39.1	37.0	44.7
35-39	27.6	16.2	23.1	84.9	29.7	29.9	29.1	34.2
40-44	27.8	17.1	19.8	88.2	29.9	31.1	28.7	36.4
45-49	25.1	12.9	23.1	78.1	28.2	28.8	27.5	32.1
50-54	20.6	12.8	15.4	73.6	26.7	21.3	27.6	31.0
55-59	15.6	9.8	14.2	41.6	21.8	22.9	22.5	12.5
60-64	9.2	9.4	8.9	11.7	7.3	6.7	7.1	12.5
65+	4.9	3.4	5.3	4.3	5.6	4.9	5.8	5.3

Sources: The Determinants of Labour Force Participation Rates in Sri Lanka 1973
Economic Research Department; Central Bank of Ceylon Colombo 1974.

2. Education and Rural Women

The introduction of free education, progressively brought an increasing number of rural women into the mainstream of education. Secondary education was looked upon as the principal means of getting employment outside the agricultural sector. Before the mid forties, even though women had access to education good schools were not found in the rural areas. Even where good schools were found most men and women could not enter them and continue their education because they could not afford it.⁷ With the introduction of free education the path was clear for increasing numbers of children of both sexes to enter school and continue their education to higher levels. As a result, the literacy rate has moved up rapidly to 85.6 per cent for males and 70.9 per cent for females in 1971. However, despite free education being available for more than thirty years the drop-out rates from rural schools have been quite high, very much higher than in urban areas and this has contributed to early marriage and often tended to keep fertility levels high among poor and illiterate families. Drop-outs who have contracted early marriages have done so with partners who are equally less educated, and for those groups fertility has continued to remain at high levels.

In Sri Lanka, the bulk of the women who are engaged in agriculture or seek work in agriculture are normally not those who have had a secondary or higher education. They are mostly women who are either illiterate or have had the least education and have chosen agriculture as their main vocation due to no other option being available. Because of the lack or insufficiency of education they cannot expect to get employment in industry, in the commercial sector or in government and semi-government institutions. Most of these women work as family helpers or as paid labour in agriculture. The educational levels of rural family helpers are given in table 9. Despite the high drop-out rate an increasing number of women from the rural sector have gone through secondary school and have entered the universities.⁸ In fact, the bulk of the school going population today is rural, and the number of women in the univer-

7. In spite of attempts to widen the accessibility of education, educational opportunities in the rural areas have never equalled those in the urban sector. Most of the rural schools have an enrolment of less than 200 and so the content of educational facilities available in these schools are very limited. These disparities between urban and rural schools show up clearly in the curriculum particularly in the facilities available for science education.

8. The percentage enrolled in schools in 1975 has been as follows :

Years	Male	Female
6—11	61	63
12—17	54	54

sities from the rural areas outnumber those from the urban and estate sectors. In most universities especially in the arts streams women have outnumbered men.

A large number of educated young men and women from farming families have preferred to work in the urban areas. Even if they opt for work in the rural areas they are usually in search of work that involves non-manual or clerical duties and work in factories or other activities which would ensure a regular and stable income. The impact of education on fertility seems to be greatest in the case of rural women who are educated and are not employed in agriculture.

This is true particularly of those who have migrated to the urban areas and who work in the towns and factories. A large number of educated rural women have moved away from their villages and settled down in neighbouring towns which are closest to their work place. Unlike agriculture, other forms of employment particularly in manufacturing and the services is non-seasonal in nature and keeps women occupied during most of the day. Domestic agriculture, as distinct from plantation agriculture, being seasonal often without involving a daily routine, gives women more leisure and time at their disposal and this has not tended to have a favourable impact on fertility, unless agriculture has provided the family with a substantially higher income and consequent improved living standards which of course tends to counteract the unfavourable impact of the combination of poverty and greater leisure on fertility.

Fertility levels in general, have fallen in the rural sector in recent years as a result of agricultural development largely through resulting higher income levels.⁹ Once income levels rise the farmer becomes more conscious of his economic status, he tries to emulate the richer urban dweller and this rapidly brings about changes in certain aspects of his life style. The rural population was originally over 80 per cent but latterly this

9. The other factor has been the impact of family planning and counselling services which, of course, under the present arrangement have not had a full fledged impact all over the country. Farming families will be influenced by the family planning programmes to the extent that such services have been made available either by private voluntary organisations or by government programmes. Large areas of the country still seem to be little affected by the family planning programmes and this is largely due to the fact that the direction of activities is from the centre in Colombo and the voluntary organisations that operate at the metropolitan level have not had the resources, the personnel and the finances to have a more decentralised programme giving priority to those areas where these programmes are most vitally needed.

proportion has tended to fall and this has been due to the development of urban centres and new towns.¹⁰ There has been a gravitation of population to the urban areas with the establishment of a large number of industries in the urban western coastal belt in the sixties.

In the rural sector the ratio of females to 100 males was 86.3 in 1946 and 78.3 in 1971. The gap between the urban and rural sectors in this respect is not wide but there are marked differences between districts. This situation has resulted largely from the migration of males to urban centres of work and to certain highly productive agricultural areas, while less educated or uneducated females have continued to reside in the villages. The highest male ratios are in the dry zone agricultural districts of Anuradhapura, Polonnaruwa, Trincomalee, Moneragala and Vavuniya where the resident male population registered is very much higher because many of the males who work in these areas live elsewhere and reside in these areas only for purposes of work. In the rural areas employment opportunities are few and are highly seasonal and land holdings small and unproductive with the result that men have had to migrate to the cities in search of employment leaving their families and dependants in the village.

The absence of males from their homes tends to have an impact on fertility and the size of the family, favourable to the economy. Especially in paddy cultivation, there are a large number of migrant male, sometimes female workers, who stay away from their permanent places of residence for a long time. In Jaffna and Galle districts the number of women outnumber men and this is particularly true of Jaffna where a large number of men who work in urban centres like Colombo and Kandy have left their families behind.

Despite the importance of this factor over the years, the sex-wise disparity in the rural population has been somewhat reduced. This is because not only men but women have also tended to leave the village in search of employment or have tended to migrate very often leaving the children behind. This latter tendency has become more pronounced in the late sixties and throughout the seventies with the spread of education among rural families.

10. In 1946 the total rural population was as much as 84.63 per cent of the total population and in 1971 this had declined to 77.56 per cent.

TABLE 4
Mechanization in Agriculture
Particulars of Tractor Imports

Year	Type of Tractors		Imported	
			Quantity	Total
1971	2	Wheels	1,650	} 2,650
	4	,,	1,000	
1972	2	,,	700	} 730
	4	,,	30	
1973	2	,,	810	} 810
	4	,,	—	
1974	2	,,	1,310	} 1,460
	4	,,	150	
1975	2	,,	—	} 100
	4	,,	100	
1976	2	,,	—	} —
	4	,,	—	
1977	2	,,	3,000	} 4,286
	4	,,	1,286	
1978*	2	,,	3,000	} 4,000
	4	,,	1,000	

* Upto 13.8.78

Source: Sri Lanka State Trading (Tractor) Corporation.

3. Spread of New Agricultural Practices

Tables 4, 5, 6 and 7 give some indication of the prevalence of new agricultural practices in domestic agriculture or the extent of the progressive displacement of older and largely traditional techniques. The trend towards increasing mechanisation of certain agricultural operations has been evident from the early sixties. The latter has been most important in the cultivation of paddy, the largest domestic agricultural crop. Table 4 shows the increasing number of two-wheeled tractors that have been brought into the country. In 1978 and 1979 the annual level of tractor imports more than quadrupled, mainly due to the liberalised trade policies. This occurred despite the fairly sharp increase in fuel costs. The total tractor population in the country is now about 20,000 and on the basis of 1.2 million acres of cultivated paddy land there is one tractor for 60 acres of paddy land. Combined with the use of buffaloes this shows a high degree of adequacy of draught and mechanical power. One reason for the increasing use of tractors in ploughing and preparation of fields has been the shortage of buffaloes and labour and rising wage costs

in most of the paddy growing areas. Furthermore, most farmers have felt that the period of time devoted to ploughing in the traditional way is time consuming especially in view of the fact that if the rains get delayed there is not much time available to prepare the fields between the arrival of the rains and the scheduled time for sowing. Women normally do not participate in the preparation of the fields (ploughing and levelling) prior to sowing and hence the employment of tractors cannot be claimed to have displaced women from these tasks in the paddy fields.

Quite a few of the tractor operators, especially those who own two wheel types, are farmers themselves. While farmers use tractors to plough their own plots only for a short time tractors are hired to other farmers during the ploughing season. At other times they are used profitably for the general haulage of goods and for the transportation of people on trailers. Tractor hire rates have risen sharply in the last two years along with wages and this has meant higher incomes for farming families. Invariably higher incomes have tended to affect at least to some extent the traditional life style of families. With higher incomes and the prospects of better living standards farmers have become more conscious of their economic status and they realise that their living standards have a lot to do with the size of their families.

4. Irrigation and Controlled Water Supply

Table 5 refers to the acreage of agricultural crops that come under different forms of irrigation. In the Dry Zone where the bulk of the land for domestic agriculture is primarily under paddy, but includes other crops such as chillies, onions, cereals and sugar cane, cultivation is heavily dependent on irrigation. Even during the rainy season of the North East monsoon from November to February irrigation water has to be used to supplement rain or to ensure an even and regulated distribution of water. The availability of irrigation water, which is normally under the control of the irrigation authorities, has enabled the cultivator to regularly cultivate his holdings, to use more fertilizer and pesticides, to control weeds and employ improved methods of cultivation. All these practices need invariably not only an assured but a regulated water supply.

TABLE 5
Acreage Under Irrigation Schemes — 1978

District	Major Irrigation Schemes	Lift Irrigation Schemes	Drainage & Reclamation Schemes	Flood protection Schemes	Total
Colombo	10,587	—	—	—	10,587
Kalutara	—	—	777	9,904	10,681
Ratnapura	3,483	—	—	—	3,483
Matara	10,075	—	4,610	—	14,685
Galle	6,089	—	11,713	10,035	27,837
Hambantota	34,506	—	—	—	34,506
Puttalam	4,968	—	—	—	4,968
Batticaloa	61,076	—	—	—	61,076
Trincomalee	46,648	49	—	—	46,697
Amparai	120,708	—	—	—	120,708
Jaffna	23,390	1,707	—	—	25,097
Vavuniya	21,372	2,844	—	—	24,216
Mannar	22,403	—	—	—	22,403
Anuradhapura	63,520	3,961	—	—	67,481
Polonnaruwa	63,673	1,354	—	—	65,027
Kandy	17,400	—	—	—	17,400
Matale	4,270	—	—	—	4,270
Badulla	17,127	1,208	—	—	18,335
Nuwara Eliya	3,710	—	—	—	3,710
Moneragala	10,244	—	—	—	10,244
Kurunegala	34,491	—	—	—	34,491
Total	579,734	11,123	17,100	19,939	627,896

Source: Dept. of Irrigation

In 1978, a total of more than 627,000 acres came under different forms of irrigation. The bulk, nearly 580,000 acres, came under major irrigation schemes. These schemes were concentrated largely in about six areas Amparai, Batticaloa, Polonnaruwa, Anuradhapura, Hambantota and Kurunegala, which are areas where paddy output is not only generally high, but high yielding varieties have also been extensively cultivated. The availability of irrigation has encouraged multiple cropping in the dry zone and paddy is being cultivated in both the Yala and Maha seasons¹¹ with the deployment of superior cultural practices. The intensity of cultivation has increased and in certain limited areas three crops are not unknown. From the point of view of female labour and family helpers multiple cropping, superior cultural practices and a regulated water supply have meant much more work for them. In these areas in the dry zone where the highest yields have been regularly obtained, family or hired female labour is widely used for such tasks as applying fertilizer, transplanting, weeding and harvesting which are almost entirely done by female labour.

Marked differences in yields have been noticed between different water supply conditions.¹² The effect of qualitative differences in water supply is evident from the fact that yields in major agricultural schemes under irrigation are higher than those in both minor schemes and rain fed lands. The most widespread new agricultural practices on irrigated land consists of the cultivation of new high yielding varieties, the number of fertilizer dressings and the extent of area under cultivation which is transplanted. The pattern of spread of new high yielding varieties as against the older high yielding varieties may not indicate a clear trend because of the short time during which these new varieties have been available. Paddy yields have been high in all areas that were employing superior methods of cultivation. Transplanting, weeding and the systematic use of fertilizer have considerably increased the demand for female workers, either as paid workers or family helpers.

(a) Fertilizer Use

A clear relationship between fertilizer use and differences in holding size is seen mainly in Polonnaruwa in the Dry Zone and Kandy in the Wet Zone. The proportion of operators who had used three dressings of fertilizer was highest in the 4-6 acre size class. These were farmers who cultivated the relatively bigger holdings. Except in Anuradhapura, in all other

11. The Maha (meaning the big crop) cultivation season extends from October to April and in the Yala (meaning the lesser crop) cultivation is coincident with the South West Monsoon and extends from May to September.

12. See. The Agrarian Situation Relating to Paddy Cultivation in Five Selected Districts of Sri Lanka, Agrarian Research and Training Institute, December 1975.

districts 50 per cent of the farmers had used one application of fertilizer and 30 per cent had applied three dressings in extents over 4 acres. In all districts, irrespective of the water supply situation, the top dressing was usually with urea. Only about 50 per cent in most districts have used basal fertilizer and this was true of farmers who came under major development schemes. In minor and rain fed areas, except in Kandy, the proportion using basal fertilizer has been less than 20 per cent. From the foregoing it could be concluded that in areas with a high yield potential a large number of farmers have used some kind of fertilizer and have observed more closely the recommendations of the Department of Agriculture in using basal fertilizer. The extensive use of fertilizer involves regular weeding and the latter task is largely performed by women.

(b) Transplanting

As transplanting is a costly operation, it is normally adopted under assured water supply conditions. Over 50 per cent of the operators in the Polonnaruwa, Hambantota and Kandy districts have adopted transplanting. In Polonnaruwa as much as 78 per cent of the total labour input and in Hambantota 86 per cent consists of hired labour and for weeding, transplanting and harvesting more than 90 per cent of the hired labour consists of women. In these areas even large holdings have been extensively transplanted. The availability of an assured water supply together with the fact that farmers in these areas were traditionally used to transplanting may have contributed to this. In Polonnaruwa under major schemes transplanted crops were significantly out-yielding the broadcast crops. The difference in yields being as much as 28 bushels per acre on transplanted new high yielding varieties such as BG 10-11 or IR 8 and 20 bushels per acre for old high yielding varieties such as H4 or H8. The very small proportion of the area transplanted under minor schemes in the dry zone and in the rain fed areas in the Colombo district shows the reluctance of farmers to adopt techniques that are associated with high expenses with less favourable conditions.

Tables 6 and 7 give details of the area under high yielding varieties of paddy cultivated in the Maha season 1978/79 which produced a bumper crop. The distribution of high yielding varieties closely follows the availability of water for cultivation purposes from major irrigation schemes. Areas where high yielding varieties were widely cultivated were Anuradhapura, Polonnaruwa, Hambantota, Batticaloa and Kurunegala. The cultivation of these varieties has meant not only the employment of more labour, particularly females, but has also substantially increased incomes with the result that this has also had a fairly significant influence on the size of farm families.

TABLE 6
Cultivated Area Under High
Yielding Varieties - 1978 / 79 Maha

District	Acres
Colombo	35,329
Kalutara	14,699
Galle	13,960
Matara	39,464
Puttalam	26,660
Kuruncgala	150,865
Kegalle	29,420
Ratnapura	16,128
Kandy	36,202
Matale	18,418
Nuwara Eliya	19,460
Badulla	41,962
Moneragala	23,402
Jaffna	70,760
Vavuniya	47,119
Mannar	44,053
Anuradhapura	113,904
Polonnaruwa	79,076
Trincomalee	73,675
Batticaloa	103,092
Amparai	47,626
Hambantota	41,319
Uda Walawe	18,873
Sri Lanka	1,105,466

Source: Division of Agricultural
Economics, Farm Management and
Statistics
Government Department of
Agriculture, Peradeniya.

TABALE 7
Cultivated Area Under High
Yielding Varieties 1978 Yala

District	Acres	Percentage of Gross Extent Sown
Colombo	32,715	68.9
Kalutara	10,657	22.9
Galle	13,572	25.4
Matara	37,082	77.8
Puttalam	6,484	90.5
Kurunegala	88,195	85.1
Kegalle	25,783	98.8
Ratnapura	n.a	—
Kandy	33,455	81.8
Matale	9,490	78.5
Nuwara Eliya	n.a	—
Badulla	12,968	69.3
Moneragala	2,844	65.7
Jaffna	n.a	—
Vavuniya	2,118	89.1
Mannar	313	91.0
Anuradhapura	53,996	96.6
Polonnaruwa	48,601	86.6
Trincomalee	22,239	81.9
Batticaloa	n.a	—
Amparai	64,357	94.0
Hambantota	27,600	93.6
Uda walawe	14,904	83.6
Sri Lanka	507,373	68.3

Source: Dept. of Agriculture, Peradeniya
Dept. of Census & Statistics

TABLE 8 Z
Gross Income Per Family

(Amount in Rupees)

	Income from all Sources	Paddy Income	Percentage of paddy income of total
Polonnaruwa*	7,915	3,943	75.1
Hambantota*	3,565	3,041	85.3
Anuradhapura*	4,768	3,260	68.4
Kandy	4,083	2,287	56.0
Colombo	4,895	1,335	27.3

* High yielding varieties extensively cultivated

Source: The Agrarian Situation relating to five selected Districts, Agrarian Research and Training Institute

The above table shows certain significant differences in the per family income levels between areas that deploy superior cultural practices and those that do not.

In the Kurunegala and Hambantota districts a large proportion of operators of medium size, that is those who cultivate 4-6 acres, have introduced new high yielding varieties in the Maha season compared to others. During the Yala as well, operators of larger holdings have planted a substantial proportion of their lands with new varieties. Farmers with access to stable water supply have readily taken to cultivation of new varieties, and 44 per cent of holdings of major schemes have been planted with new varieties compared to less than 20 per cent in minor schemes in all districts other than Anuradhapura.

The new high yielding varieties have out-yielded the old high yielding varieties in the major schemes in Polonnaruwa and Hambantota. In Polonnaruwa an average yield of new high yielding varieties of 88 bushels was significantly greater than those of the old high yielding varieties which was 56 bushels. In Hambantota the older varieties such as H4 have generally given a similar or better performance than the new high yielding varieties during the Yala.

With the increase in adoption of high yielding varieties there has been an increase in the use of complementary inputs and the adoption of improved cultivation techniques. An increasing number of farmers have fertilized the crops at the recommended rates, transplanted and used chemical weedicides and pesticides. This has also resulted in greater mechanisation of farm operations, in particular in ploughing and threshing and the use of sprayers. At the same time, for all these new operations labour requirements have also gone up. Labour requirements have increased from 51.34 man days to 68.44 which is an increase of 31.3 per cent in labour use.

A change in the type of labour used is also evident.¹³ Paddy farmers have shifted from exchange labour to family and hired labour and about 60 per cent of the labour that falls into these categories are women. The employment of hired labour has increased by 100 per cent while exchange labour has decreased by 40 per cent. The preference for hired labour is mainly on account of the greater commercialization of production as a result of the introduction of high yielding varieties.

TABLE 9
Distribution of Female Family Helpers by
Education & Sectors

Educational Level	Urban %	Rural %	Estate %	All Island %
1. No schooling (Illiterate)	10.91	20.73	25.23	20.09
2. No schooling (Literate)	1.47	2.72	2.70	2.63
3. Primary (1st - 5th grade)	29.50	30.12	35.14	30.20
4. Secondary (6th - 10th grade)	38.05	25.58	18.92	26.36
5. Passed GCE/SSC	9.44	4.37	4.50	4.76
6. Passed GCE/HSC	0.59	0.32	—	0.34
7. Passed Degree	0.29	0.07	—	0.09
8. Other	—	0.10	—	0.09
Total	90.27	84.02	86.49	84.55

Source: Land & Labour Utilisation Survey 1975

13. See Nihal Amarasinghe "The Impact of High Yielding Varieties of Rice on a Settlement Scheme in Sri Lanka." *Tropical Agriculturist*, April - June 1974. Also Nihal Amarasinghe "Report on the Economic and Social Implications of the Introduction of High Yielding Varieties on Settlement Schemes in Ceylon." A case study. UNDP Research Projects, 1971/72.

The income effects¹⁴ of new high yielding varieties are significant. In a study of a settlement scheme it was found that after the introduction of new high yielding varieties farmers operating below the poverty line had been reduced from 26 to 16 per cent while 96.4 per cent reported that they were better off.

Table 9 gives details of the female family helpers and their distribution in the three sectors in terms of educational background. In the rural sector the bulk of the family helpers are either illiterate or have only gone to school upto the fifth grade. These two categories constitute more than 50 per cent. In the urban areas however, the bulk of the female helpers are concentrated in the education levels from the first grade to the tenth grade where the percentage is about 67. Since those with higher qualifications above the tenth grade are in a position to get jobs outside (because the minimum qualification today for men and women for any job is GCE Ordinary Level) they have sought work outside and no longer help their families. This is also partly due to the fact that educated women with a secondary education feel that they should go out to work and that as far as possible they should be away from agricultural activity. The figures also indicate that in all sectors, the bulk of the women with little or no education function as family helpers and that in fact, very few that fell into these categories have sought work outside. It is very high in the rural sector where women generally stay at home and look after the family because the income levels especially after the use of improved agricultural practices have risen to a point where it could sustain a family.

Table 10 is important because it shows that unemployed women in the urban and rural sectors dislike working as agricultural labourers or doing any form of manual work. It is only in the estate sector that women prefer to function as agricultural labourers where the percentage is as high as 53. In the estates the extensive employment of women has been conditioned by cultural and historical factors. In the rural areas job expectations are largely concentrated on non-agricultural areas. More than 15 per cent wanted to work in clerical capacities, more than 20 per cent preferred teaching jobs and 35 per cent wanted jobs presumably of a specialised nature which did not fall into these categories. The job expectations, to some extent, are an indication of the impact that these expectations are likely to have on female fertility. The jobs that the rural women seek, mainly clerical, teaching and other posts, are those that ensure a higher and a more stable income which, of course, could ultimately have a fairly important bearing on the size of the family. All these job

14. *ibid*

expectations involve some element of training or at least some post secondary school education and all these factors could have an important bearing on fertility. Moreover, most unemployed women with high job expectations would postpone marriage until they find employment or they would look for partners who have jobs consistent with their own expectations. Thus it is common to find educated rural women though temporarily unemployed marrying men who are employed as teachers, clerical hands and minor technicians.

TABLE 10

**Distribution of Unemployed Female Population
by Job Expectations**

Expected job	Urban %	Rural %	Estate %	All island %
1. Agricultural labour ..	4.93	8.13	53.18	10.01
2. Non Agricultural labour ..	11.21	12.19	10.12	11.94
3. Agriculture (self) ..	0.89	2.65	—	2.25
4. Clerical ..	17.04	15.26	11.29	15.32
5. Teaching ..	19.28	20.33	5.06	19.37
6. Technical ..	5.82	4.64	1.26	4.64
7. Executive ..	3.13	1.74	—	1.85
8. Others ..	37.66	35.02	18.98	34.57

Source: Land & Labour Utilisation Survey 1975