FEATURES

Some Problems Connected with the Cultivation of other Food Crops

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The need for the country to move towards self sufficiency in its food requirements has for many reasons been an over-riding goal of successive administrations, and a rapid expansion in subsidiary food crop production an essential part of this strategy. A considerable part of our food imports, for instance, has comprised wheat and wheat flour and it is argued that the one way this trend could be reversed was to increase production and consumption of substitutes which are included under the category of 'subsidiary' food crops. On the contrary when wheat flour is more freely available in the market the tendency has been for people to move away from the substitutes such as locally grown roots, tubers and cereals. In this paper G. Jayanath, of the People's Bank, Research Department, discusses how this has happened and what measures have been taken to attempt to reverse the trend. His conclusion is clearly that production could be expanded only if producers find it attractive enough to do so, but there comes a stage when consumers interests can collide. The greatest challenge before the authorities he concludes, is to avoid this clash of local producer and consumer interests and still push forward towards self sufficiency in at least some of the more essential subsidiary food items.

At a time when all efforts are being made for the country to achieve self-sufficiency in rice, there appears to have been a downward trend in the production of 'other' food crops over the last few years. Particularly after 1976, the production of 'other' food crops has registered a continuous declining trend. It may be observed that in the meantime the production of rice during this same period has recorded a rapid increase with a new crop record for each year after 1976.

Though rice forms the staple diet of the people of Sri Lanka, food items such as millets or coarse grains and maize, gram and other pulses, and yams like sweet potato and manioc have assumed an important place in the diet of every household in the country from ancient times. It was only after foreign rule came to be established that people in this country too developed a tendency and the habit of consuming food made of wheat flour. Before the advent of the foreigners a rural subsistence economy ensured self sufficiency in food. The transition to a modern export economy led to a change in the entire economic structure and the new plantation system of cash crops like tea and rubber, made deep inroads into the existing village economy resulting in a neglect of the existing subsistence agriculture. The economy of the village gradually became less and less adopted to supplying even the everyday needs of the community.

Even at present, the livelihood in the rural sector is based mainly on agriculture with paddy and 'other' food crops taking the first and second place respectively; while the dietary habits of the rural people have not undergone any major changes as such. In recent times much attention has been focussed on the production of 'other' food crops as a substitute for rice and wheat flour. Another factor contributing to this emphasis has been the realisation that larger quantities of pulses, cereals and seeds like gingelly and soya have a high nutritional value and are essential for a balanced diet. Further, there has also been much inducement and encouragement to grow chillies, red onions and potatoes which upto the 1960's constituted nearly 90 percent of the total value of imports of the 'other' foodstuffs sector. The Socio-Economic Survey of the Department of Census and Statistics showed that in 1974 a major portion of our diet consisted of cereals. It also showed that the deficiency in pulses, fish and meat, milk and milk products, vegetables and fruit consumption was striking. The daily, per person, availability of food supply (in grams) together with the minimum amounts recommended by the MRI were as follows:

TABLE 1.

Daily per capita availability of food supply in grams

Food balance sheet (Census and Statistics)

Availability in 1974		Recommended
Items	Grams	Allowances
Rice	271.8	
Wheat	89.3	
Total including others	369.0	348
Coconut Kernel	85.6	85
Fats and oils	7.0	13
Yams	127.6	110
Sugar	18.0	30
Total	607.2	586
Pulses	2.0	30
Meats	3.3	10
Fish	17.7	60
Milk & Milk Products	30.6	60
Eggs	4.0	6
Total	57.6	166
Vegetables	97.2	150
Fruits	28.4	50
Total	125.6	200

Import statistics given below demonstrate that imports of chillies, red onions, and potatoes had been increasing upto the early 1970's and were reduced drastically thereafter, but once again were stepped up from 1978.

*The "Other Food Crops" referred to here, also more commonly termed "Subsidiary Food Crops", generally comprise those crops that provide foodstuffs other than rice, sugar, fish products and livestock products. They have been an essential part of the diet of our people and over the past two decades have taken up nearly one-third of the value of the country's annual food import bill. Many of these crops can be grown extensively in this country and have been part of the traditional cultivation in chenas and homegardens, and the national development programmes over the years have all envisaged a move towards self-sufficiency in regard to most of these crops through both intensified cultivation and import substitution.

These 'other' or 'subsidiary' food crops, we refer to, can be listed under four broad categories.

(a) Potatoes, sweet potatoes, manioc, other yams or roots and tubers.
(b) Red onions, Bombay onions, chillies and other condiments.
(c) Ground nuts, green gram, black gram, seeds like gingelly and soya bean, and other pulses.
(d) Maize, sorghum, mineri, thanahal and other coarse grains.

TABLE 2. IMPORTS OF CHILLIES, ONIONS AND POTATOES-QUANTITY AND VALUE—1958-1979

Year	QUANTITY ('000 cwts.) Chillies	Onions	Potatoes	Total	VALUE (Rs. '000) Chillies	Onions	Potatoes	Total
1958	285	12	865	1,162	21,773	214	16,629	38,616
1959	316	46	271	633	24,619	575	6,357	31,552
1960	345	203	1,115	1,003	36,537	3,285	19,169	58,991
1961	206	212	1,189	1,606	20,411	2,861	20,497	43,769
1962	380	166	1,058	1,604	36,342	2,516	22,233	61,091
1963	343	153	1,368	1,864	37,864	1,797	26,076	65,737
1964	425	111	1,471	2,007	46,471	2,822	25,462	74,754
1965	278	130	1,074	1,483	30,009	2,535	17,908	50,452
1966	358	104	1,220	1,682	42,550	1,620	24,053	68,223
1967	296	38	362	690	29,332	755	6,696	36,783
1968	352	989	10	1,350	34,156	16,217	360	50,733
1969	245	1,273	Nil	1,510	25,520	23,556	Nil	49,075
1970	263	1,296	4	1,563	30,000	29,109	178	59,286
1971	326	45	63	444	39,700	752	3,835	44,287
1972	389	20	117	526	24,439	338	7,596	32,373
1973	4	—	25	29	500	—	1,763	2,263
1974	—	—	197	197	—	—	5,547	5,541
1975	—	—	12	12	—	—	1,134	1,134
1976	—	—	17	17	—	—	2,143	2,144
1977	20	—	3	22	13,800	—	606	14,645
1978	118	357	78	553	78,800	45,229	9,256	133,406
1979	166	254	163	584	101,722	36,950	27,840	166,285

Source: *Ministry of Agriculture*

Since importation of such food items had adverse effects on our foreign exchange earnings, measures were taken to restrict such imports and also to encourage local production. In the Five Year Agricultural Development Plan (1966-1970) much importance was given to the production of 'other' food crops. It was thus planned to reach the levels of self-sufficiency in food items like red onions, chillies and potatoes and with this objective in mind it was decided to provide irrigation facilities to about 40,000 acres of new land as shown below.

TABLE 3. Sources of Irrigation to serve new lands

		Acres
I.	**Lift Irrigation**	
(a)	Surface sources —	15,000
(b)	Under ground water —	5,000
II.	**Gravity Irrigation under tank schemes**	
(a)	Major tank schemes —	15,000
(b)	Minor tank schemes —	5,000
		40,000

Source: Agricultural Development Proposal (1966-1977)

Although these targets set in the Plan were not fully reached, it was quite evident that considerable progress had been made during the period 1965-70. The extent under production increased (15%) by 49,065 acres during this period. Again, in the Five Year Plan (1972-76) much emphasis was placed on local production and numerous programmes were drawn up to extend the acreage under 'other' food crops as well, as seen in the table below.

Under this plan it was expected to provide irrigation facilities to a total area of 68,000 acres, for cultivating 'other' food crops. During the period 1970-76, the extent cultivated with 'other' food crops had increased substantially i.e. 472,461 acres or 120.7 percent. What is important here is that the production increases during this period had brought the country closer to

TABLE 4. SELECTED SUBSIDIARY FOOD CROPS-PRODUCTION SUPPLY AND DEMAND (cwts) 1970-76)

Crops	Production in 1970	Projected Demand 1976	Supply Estimated 1976
1. Dried Chillies	125,000	670,000	600,000
2. Red Onions	716,000	2,400,000	2,400,000
3. Pulses	50,700	1,824,000	265,000
4. Maize	409,000	800,000	660,000
5. Sorghum	1,000	340,000	23,000
6. Soya Beans	—	—	63,000
7. Ground Nuts	132,000	—	266,000
	1,433,000	6,234,000	4,277,000

Source: *The Five Year Plan* 1972-1976

TABLE 5. ACREAGE UNDER CULTIVATION

	1965	1970	1976
Kurakkan	64,635	52,078	97,630
Maize	29,408	50,736	94,992
Chillies	48,603	58,996	134,873
Red Onions	14,559	16,660	23,892
Potato	1,662	8,188	7,693
Manioc	130,498	147,046	373,575
Sweet Potato	34,418	39,150	112,548
	323,777	372,842	845,303

Source: *Economic Review–February* 1978

the goal of self-sufficiency. The significant progress achieved in the 'other' food crops sector during the period 1970-76 was largely a result of factors such as the ban on imports and the consequent high prices obtained by farmers.

An examination of production figures relating to 'other' food crops for

TABLE 6. PRODUCTION OF 'OTHER' FOOD CROPS Cwts. (000) 1972-79

		1972	1973	1974	1975	1976	1977	1978	1979
1.	Maize	261.2	268.4	469.4	680.4	611.5	825.5	692.8	512.3
2.	Sorghum	0.6	22.2	61.7	120.0	32.6	39.4	10.7	1.6
3.	Kurakkan	540.6	472.5	385.0	404.6	306.9	447.2	287.5	211.7
4.	Meneri	N.A.	6.7	N.A.	9.7	46.5	21.2	10.2	2.0
5.	Thanahal	N.A.	N.A.	9.7	3.4	3.9	2.6	4.1	.7
	Course Grains	802.4	769.8	924.8	1,218.1	971.4	1.335.9	1,005.3	728.3
6.	Green Gram	24.6	58.2	116.0	116.7	91.0	153.6	165.3	190.5
7.	Black Gram	N.A.	N.A.	12.8	20.5	46.5	230.4	154.9	119.0
8.	Cowpea	22.8	12.5	39.7	148.8	234.2	415.8	443.1	369.4
9.	Soya Bean	0.7	4.5	19.6	22.6	14.5	21.8	56.5	26.2
10.	Ground Nuts	107.7	181.7	144.8	149.7	119.8	129.1	147.1	106.3
11.	Dhal	6.2	33.3	153.8	44.8	6.0	.3	2.6	1.0
	Pulses	162.0	290.2	486.7	503.1	512.0	951.0	969.5	812.4
12.	Manioc	N.A.	N.A.	167.0	15,093.1	13.440.3	10.774.2	9i773.6	7158.1
13.	Sweet Potatoes	1.106.7	N.A.	N.A.	2,835.9	2,539.4	1,910.6	1,608.2	835.4
14.	Potatoes	922.0	780	538	750	762.0	752.0	588.0	1032.5
	Roots & Tubers	2,028.7	880	705	18,679	16,741.0	13,436.8	11,969.8	9026.0
15.	Chillies	238.0	382.4	361.8	321.2	715.4	613.4	554.2	430.1
16.	Red Onions	1,223.0	1,242.9	1,396.8	1,423.1	1,541.4	1,306.5	1,417.6	1230.5
17.	Bombay Onions	36.1	26.5	21.6	26.2	24.6	37.9	70.0	19.5
	Condiments	1,497.1	1,651.8	1.780.2	1,770.5	2,281.4	1,957.8	2,041.8	1680.1
	Total	4,490.2	3,49..8	3,896.7	22,170.7	20,505.8	17,681.5	15,986.4	12,246.80

Source: *Ministry of Agriculture*

TABLE 7. TOTAL CULTIVATED AREA UNDER 'OTHER' FOOD CROPS (ACRES) 1972-79

		1972	1973	1974	1975	1976	1977	1978	1979
1.	Maize	40,142	59,928	95,128	98,970	75,092	96,720	70,718	58,333
2.	Sorghum	196	2,982	5,405	9,283	2,446	3,431	1,353	236
3.	Kurakkan	52,894	94,701	94,571	66,289	49,019	63,245	43,665	26,770
4.	Meneri	N.A.	2,436	N.A.	2,501	2,647	2,724	1,361	407
5.	Thanahal	—	N.A.	1,425	1,050	702	428	200	120
	Course Grains	93,323	160,047	196,529	178,093	129,906	160,548	117,237	85,866
6.	Green Gram	7,053	12,966	26,417	22,866	20,667	30,509	30,132	30,124
7.	Black Gram	—	—	3,439	5,026	12,579	24,279	31,760	21,591
8.	Cowpea	2,376	3,310	7,395	21,578	47,516	74,516	63,116	74,791
9.	Soya Bean	211	387	3,232	2,818	1,780	2,502	4,770	3,016
10.	Ground Nut	11,950	15,379	19,078	19,209	16,615	16,012	26,457	12,484
11.	Dhal	63	502	3,274	665	169	07	102	170
	Pulses	21,653	32,544	62,835	94,978	99,326	157,846	155,337	142,176
12.	Manioc	N.A.	N.A.	225,642	195,696	171,515	134,804	98,494	82,864
13.	Sweet Potatoes	35,918	N.A.	N.A.	52,492	37,010	31,698	21,787	15,780
14.	Potatoes	7,809	7,011	5,728	6,307	6,914	7,997	6,509	10,404
	Roots & Tubers ...	43,727	7,011	231,370	254,495	215,439	175,499	126,790	109,048
15.	Chillies	59,779	90,903	102,672	81,640	107,088	108,908	83,517	49,750
16.	Red Onions	14,253	17,288	15,956	15,635	19,135	20,171	15,511	14,533
17.	Bombay Onions ...	617	440	447	349	433	603	557	330
	Condiments	74,649	108,631	119,075	97,624	120,056	129,682	99,585	64,613
	Total	233,261	308,233	609,809	625,190	571,327	622,575	498,949	401,703

Source: *Ministry of Agriculture*

TABLE 8. OTHER CROPS-YIELD PER ACRE (CWTS) 1972-79

Course Grains	1972	1973	1974	1975	1976	1977	1978	1979
1. Maize	6.51	4.48	4.93	6.87	8.12	9.09	9.80	8.78
2. Sorghum	3.06	7.44	11.42	12.93	13.33	11.48	7.91	6.78
3. Kurakkan	0.01	4.99	4.07	6.10	6.26	7.07	6.59	7.91
4. Meneri	N.A.	2.75	N.A.	3.88	6.23	7.78	7.49	4.91
Pulses								
6. Green Gram	3.49	4.49	4.39	5.10	4.40	5.03	5.49	6.32
7. Balck Gram	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	3.51
8. Cowpea	9.60	3.78	5.37	6.90	4.93	5.58	6.51	4.94
9. Soya Bean	3.32	11.63	6.06	8.02	8.15	8.71	11.84	8.69
10. Ground Nuts	9.01	11.81	7.59	7.79	7.21	8.06	7.19	8.51
11. Dhal	98.41	66.53	46.98	67.37	35.50	42.86	25.49	N.A.
Roots and Tubers								
12. Manioc	N.A.	N.A.	74	77.13	78.36	79.92	99.23	86.94
13. Sweet Potatoes	30.81	N.A.	N.A.	54.03	68.61	60.28	73.81	52.38
Condiments								
14. Chillies	3.98	4.21	3.52	3.93	6.68	5.63	6.64	8.65
15. Red Onions	85.81	71.90	87.54	91.02	80.55	64.77	59.11	84.76
16. Bombay Onions	58.51	60.23	48.32	75.07	56.81	y2.85	62.02	59.09

Source: Ministry of Agriculture

the period 1970-79 shows a step rise upto 1977, but a sharp drop in 1978. In the year 1972 the total area under 'other' food crops stood at 233,261 acres. In 1977, it shot up to 622,575 acres. But during the year 1979, it dropped to 401,703 acres (19.5%). An examination of the figures on production clearly reveals a similar downward trend. In 1972, production was 224,510 tons. In 1977 production went up to 884,075 tons, but as in the case of acreage in 1979, in production too there was a drop to 612,340 tons (23.4%).

The acreage under cultivation in 1978 showed a downward trend in all the 'other' food crops except potatoes. The production of 'other' food crops other than green gram had all recorded a fall in 1979. The average yield per acre too had dropped in 1979, the notable exceptions being soya bean, green gram, chillies and red onions.

As seen in the tables the production of pulses in 1979 stood at 40,620 tons. In order to meet the country's requirements in 1981, the production would have to be brought to 116,990 tons, i.e. an increase of more than hundred percent. Total wheat flour requirements at present are met solely by imports. The objective should be to decrease wheat flour imports and consumption and at the same time increase the production and consumption of substitutes like root crops and pulses. A programme has already been implemented to produce our entire rice requirements locally. In 1979, almost 27.9 percent of our local requirements of chillies, 16.9 percent of red onions and 13.6 percent of potato were met through imports.

In addition, about 8,000 tons of cerals and pulses were being used annually as animal feed; but the local requirement for 1980 was estimated to be about 60,960 tons. It has not been possible to meet this requirement. This data alone reveals that local supply of 'other' food crops is far short of the existing demand.

According to Table 2 — on Imports upto 1966-red onions, chillies and potatoes had been imported in large quantities. The import of these items were brought under restriction in 1967. Imports of potatoes were heavily reduced, though the drop in imports of onions and chillies was not significant at that time. During the period 1973-76 we were able to do away with imports of red onions and chillies though small quantities of potato were coming in. With the liberalization of trade in November 1977, it is quite evident that the situation changed drastically.

In 1979 the imports of chillies rose by 498 percent over that of 1977; imports rose from 19,600 cwts in 1977 to 117,700 cwts in 1978 and 165,900 cwts in 1979. A total quantity of 357,342 cwts of red onions was imported in 1978 as against no imports in 1977. In 1979 a further 254,429 cwts were imported. Potato imports in 1978 showed an increase of 1,709 percent over that of 1977; going up from 2,780 cwts in 1977 to 78,091 in 1978 and 163,189 in 1979.

TABLE 9. PROJECTED FOOD REQUIREMENTS FOR SRI LANKA 1981-91.
(tons '000)

Crop	1981	1982	1991
Rice	1,487.02	1,632.73	1,773.52
Bread & Wheat Flour	485.55	535(71	586.11
Roots	463.65	503.78	540.33
Pulses	116.99	128.54	139.88

Source:. *Department of Census and Statistics*

The total foreign exchange expenditure involved in importing red onions, chillies and potatoes in 1978 shows an increase of 825.2 percent as compared with 1977; and a further 25 percent increase in 1979.

It is evident that there is a connection between the production of roots and tubers, cereals and pulses and the importation of wheat flour. It can be seen how the local production of these crops generally go up with the imposition of a ban or restriction on imports of wheat flour.

When wheat flour is available in larger quantities and at a cheaper rate in the local market, the tendency is for people to consume food items made of wheat flour rather than locally grown cereals.

TABLE 10. WHEAT FLOUR IMPORTS

Year	Quantity (tons)
1968	359,388
1969	388,434
1970	268,631
1971	330,462
1972	323,935
1973	365,354
1974	441,806
1975	455,218
1976	379,760
1977	523,861
1978	662,947

Source: *Ministry of Food and Cooperatives*

This trend is even more apparent in the production of red onions and potatoes. When imports are restricted the local production usually goes up; while imports prove a disincentive to local farmers.

An examination of figures for 1979 reveals the beginning of a reversal of the earlier trend and a drop in acreage and production. The farmers cultivating 'other' food crops appear to have found it difficult to obtain a reasonable price for their produce. Since most of these food crops are grown in remote areas, with meagre transport facilities, the middleman exploits the entire situation here and reaps a big margin of profit. Prices tend to fall in times of glut. With a view to eliminating these obstacles for the farmer, encouraging production and stabilizing the producers' prices over the entire season, and also supplying food items to the consumer at a reasonable price, the Government (implementing a recommendation made by the Food Policy Committee) introduced a floor price scheme in 1979. This scheme which is now in operation now covers eleven 'other' food crops. The floor price has been fixed, taking into account the production price and also the local market and world market prices.

The objectives of this scheme were broadly:

1. To prevent the private trader from controlling the market.
2. To provide regular and reasonable prices to the farmer which would act as a producer incentive.
3. To keep price fluctuations in the market above this price level.
4. To give commercial status to these crops and also to bring them in line with prices in the world market.

As a result of this scheme the producer could have an idea of the price he should get for his produce. During periods of glut, particularly during harvesting seasons, this scheme can prevent the traders bringing down the price if officials are prepared to purchase at the floor price. Further, as the floor price is expected to be fixed higher than the cost of production farmers may be assured that they will not be losing by their taking to cultivation of these crops. However, shortly after the scheme was introduced on 8 items the average open market price was such that the middleman were still in a position to obtain high profits. For example, in the case of chillies, the producer got only Rs. 10/50 a lb. (production price being Rs. 10/19) while the price in the open market was around Rs. 13/- (the profit being Rs. 2/50). In the case of green gram (which was then not under the GPS) the producer got only Rs. 5/76 a lb. (cost of production being Rs. 2/66) when the price in the open market was around Rs. 7/50 (a profit of Rs. 1/75).

The floor price scheme implemented was reviewed at the end of 1979 and prices were duly revised on some of these crops for the Yala season of 1980. Three more items, (namely, cowpea, green gram and potatoes) were also included in the scheme. There were still, however, important commodities like red onions, sweet potatoes and manioc which had not been brought under this scheme. (Onions have been included from September this year). If this scheme is to succeed it is apparent that the government departments associated with production and marketing of these items should actively intervene in the proper implementation of the scheme. At present Government agencies like the Marketing Department, CWE, Co-operatives and Paddy Marketing Board do not seem to be very effective in procuring these items. According to reports these institutions were not able to buy even 1 percent of the total production in 1978. Exact figures are not available but if these estimates are correct it reveals that nearly 99 percent of the total trade in 'other' food crops is handled by private traders.

When we try to bring local production in line with the world market prices, undoubtedly the consumer could benefit, but in time of scarcity of supply in the world market, problems may arise in increasing the local production for farmers to avail of this facility; as provision of irrigation and land preparaton usually takes time.

The income from 'other' food crops had fallen substantially in

TABLE 11. "FLOOR PRICES" ANNOUNCED FOR ELEVEN "OTHER" FOOD CROPS

Rs. per kg.

Commodity	Maha 1979/1980	Yala 1980
1. Soya Bean	4.40	4.95
2. Tumeric (Cured)	11.00	16.50
3. Gingelly (Dried)	4.95	6.60
4. Chillies	18.70	20.90
5. Cowpea *	4.07	4.75
6. Green Gram*	6.05	6.60
7. Maize	1.65	1.65
8. Black Gram	3.52	3.52
9. Sorghum	1.32	1.32
10. Ground Hut (unshelled)	4.95	4.95
11. Potatoes *	3.85	3.85
12. Red Onions		1.00-1.35
13. Bombay Onions **		2.25

* Included after November, 1979
** Included after Sept. 10, 1980.

1978. In 1976, according to a Ministry of Plan Implementation study, the price fetched by chillies was Rs. 1404.91 a cwt. but in 1978 it had dropped to Rs. 907.73 (a fall of 35.4%); while the price of red onions had dropped from Rs. 205.59 a cwt. in 1977 to Rs. 165.05 in 1978, indicating a fall of 19.7 percent. A bushel of cowpea which fetched Rs 115.54 in 1976, was sold at Rs. 108.63 (a 6% fall). In 1976, the price of a bushel of green gram stood at Rs. 166.14 whereas in 1978 it dropped to Rs. 147.08 (a 11.5% fall)

Income from all 'other' food crops, except potatoes and other yams had dropped in 1978. During the period 1972-77, producers obtained such good returns due to the high prices resulting from the import ban. On the other hand, with the trade liberalization in 1977 the situation changed. The cultivation of 'other' food crops requires much more labour than for paddy cultivation.

One reason why the cost of production has gone up is due to increased wages. In the case of the cultivation of 'other' food crops, particularly, there is the problem of hiring out labour. Farmers thus prefer to work as paid labourers rather than cultivate 'other' food crops at such high costs of production and comparatively low return.

Settlers in the colonisation schemes have naturally preferred to grow only rice and when unable to do so on their highland allotments they have rather left them fallow. Cultivation of these crops are more intensive in terms of water use, labour and time (as the table below partly indicates).

TABLE 12. Average Number of man days required for cultivating an acre with different crops

Paddy	88
Chillies	178
Green Gram	102
Ground Nuts	87
Red Onions	308
Bombay Onions	227

Source: *Agricultural Research and Training Institute (Elahera Survey Report)*

When we analyse the yield of 'other' food crops per acre, it is evident that the yield has gradually gone up in respect of soya bean, green gram, menari and potatoes. In 1979, the yield per acre had come down in respect of all other commodities.

It is evident that the production potential as far as 'other' food crops are concerned could be high if the correct cultivation techniques, extension and research services, and motivation is provided to local farmers. A comparison with yields of other countries in the region will reveal this as seen in table 13.

'other' food crops sector had been fairly encouraging during the years 1971 to 1976; but together with the decline in production of these recovery of loans granted in respect of several of these crops became difficult. Thus in respect of chillies, red onions, potatoes, vegetables, Bombay onions, manioc and a few

TABLE 13. AVERAGE YIELD OF SOME OTHER FOOD CROPS IN SELECTED ASIAN COUNTRIES-KG. PER HECTARE

	Maize	Sorghum	Millet	Grain
Australia	2,661	1,627	1,081	—
Burma	471	—	267	356
China	2,863	2,333	783	1,375
India	1,600	339	508	600
Indonesia	890	—	—	890
Japan	2,600	1,104	1,667	—
Pakistan	1,260	698	429	—
Philippines	857	—	—	857
Sri Lanka	1,073	844	603	808
Thailand	1,592	1,951	—	2,487
Developing Countries	1,836	533	660	1,046
Developed Countries	4,290	1,627	1,125	1,188
U.S.A.	5,409	3,280	—	—

Source: *Regional Co-operation in the Development of coarse grains, pulses, roots and tuber crops in Asia and the Pacific* 1977.

China, Japan and Thailand stand out among the Asian countries for their high levels of production and there is no reason why Sri Lanka cannot move closer to these yields, by resorting to tho extensive and intensive cultivation practices prevalent in these countries.

Under the National Environment Protection Policy, it is now strictly prohibited to clear jungles for chena cultivation. This policy, to some extent effects 'other' food crops like kurukkan and meneri.

However, this limiting factor could be overcome with provision of irrigation facilities and adoption of modern technology. 'Other' food crops could be grown on highlands which are not suitable for paddy cultivation. Introduction of 'other' food crops under an irrigated system in paddy fields in Yala season is quite feasible because these food crops do not require as much water as compared with paddy, as seen in tabe 14.

Until 1978 farmers could obtain field crop loans from the state banks on comparatively easy terms. In fact loan repayments in the others such crops the recovery rate of loans to these farmers dropped from 82 per cent in 1971 to 35 per cent in 1977. The Government decided that there should be a tightening in agricultural credit procedures and accordingly in 1978 the Central Bank withdrew the 75 percent guarantee to the banks against agricultural loans. Farmers thus faced more stringent requirements in obtaining agricultural loans and there was a sharp drop in Bank credit as seen in table 15. This situation inevitably could have an impact on the position of 'other' field crops. As the table shows total credit for minor food crops fell from Rs. 0.9 million in 1978 to Rs. 16.4 million in 1979.

There are areas where conditions are not suitable for growing paddy, but where 'other' food crops could be successfully grown. Thus, large scale cultivation of 'other' food crops has been feasible so far only in particular regions of the island where the soil is suitable, where there is a regular supply of water, and where extension facilities and marketing are provided.

TABLE 14. IRRIGATION WATER REQUIREMENTS OF SOME CROPS

Crops	Period	Irrigation water requirement (Ac. inches)
Paddy	180 days	61.00
Red Onions ...	90 days	26.00
Green Gram ...	85 days	28.00
Ground Nuts ...	105 days	27.6

Source: *Agricultural Research and Training Institute (Elahera Survey Report)*

Many of the 'other' food crops can be grown under rain fed conditions, but yields under such conditions have been found to be generally low and profit not attractive enough for their cultivation. On the contrary when grown under irrigated conditions these crops have given high yields and returns to the farmer. In comparatively dry areas like Jaffna and Vavuniya red onions and chillies are successfully grown under lift irrigated conditions, with water obtained from deep wells. An important point here, however, is that the dominant factor that has determined the expansion of production is the profit obtained by the farmer.

In the land allotments of the Mahaveli area there is specific provision for cultivation of 'other' food crops, but here we have a classic example of why the farmer settlers have not found 'other' food crops production worth their while. The basic reason is that these crops have not appeared economically profitable to these settlers. A People's Bank Research Study in a hamlet of the Mahaveli H area shows that an average of only 10 percent of those farmers expected to grow 'other' food crops had done so. They cultivated rice instead. In region III of the H area an estimated 1,703 acres was expected to be cultivated with 'other' food crops but for the Yala 1980 season only 568 acres were planted with these crops.

TABLE 15. AGRICULTURAL CREDIT 1978-1979

(Rs. Million)

	People's Bank		Rural Banks		Bank of Ceylon		Total	
	'78	'79	'78	'79	'78	'79	'78	'79
1. Crop Cultivation	154.1	25.8	4.5	4.5	100.9	25.5	259.5	55.9
1.1 Paddy	122.4	20.5	0.5	1.0	60.2	17.7	181.1	39.2
1.2 Minor Food Crops ...	27.8	5.3	4.0	3.6	29.1	7.5	60.9	16.4
1.3 Sugar Cane and Cotton	3.9	—	—	—	11.6	0.3	15.5	0.3

Source: *Central Bank of Ceylon*

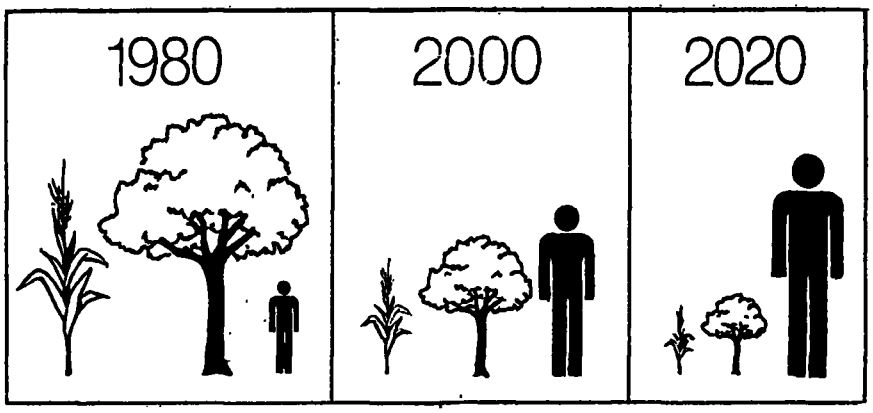
According to the Sectional Plan of the Ministry of Agriculture 1978-84 it is envisaged to expand the cultivation of subsidiary food crops as follows:

Crops	Acreage	Production (Cwt)
Red Onions	16,800	3,000,00
Chillies	9,200	831,000
Bombay Onions	10,000	1,500,000

In addition, plans have been prepared to increase potato production in Jaffna, Badulla and Nuwara Eliya Districts as well as to produce seed potatoes locally and import large quantities of seed potato for immediate cultivation. Extensive soya bean cultivation is also to be undertaken in collaboration with International Agencies such as the UNDP, FAO, USAID and CIDA.

As the foregoing discussion has revealed such plans for expanding production would materialise only if the necessary incentives and conditions are provided to the producer, and most attractive for him has been the price incentive. This factor, however, appears to have conflicted at crucial stages with the interests of the consumer and there are even suggestions that if this sub-sector of domestic agriculture is to be vigorously promoted it may have to be even at the expense of a transiant period of consumer hardship.

LIVING RESOURCES-NEED FOR A WORLD STRATEGY



A world strategy for the conservation of Earth's living resources is needed now because:

1. Living resources essential for human survival and sustainable development are increasingly being destroyed or depleted. At the same time human demand for these resources is growing fast. The problem is illustrated above. If current rates of land degration continue, close to one third of the world's arable land (symbolized by the stalk of grain) will be destroyed in the next 20 years. Similarly, by the end of this century (at present rates of clearance), the remaining area of unlogged productive tropical forest will be halved. During this period the world population is expected to increase by almost half-from just over 4,000 million to just under 6,000 million. The predicament caused by growing numbers of people demanding scarcer resources is exacerbated by the disproportionately high consumption rates of developed countries.

2. The action required to cure the most serious current conservation problems and to prevent still worse ones takes time: time for planning, education, training, better organization and research; and when such action is undertaken, it takes time for the biosphere to respond, reforestation, the restoration of degraded land, the recovery of depleted fisheries, and so on, are not instantaneous processes.

3. National and international capacities to conserve are ill-organized and fragmented — split up amongst sectors such as agriculture, forestry, fisheries and wildlife-with consequent duplication of effort, and gaps in coverage, competition for money and influence, and conflict; and they have little influence on the development process, with the result that development, the principal means of tackling human problems, too often adds to them by destroying or degrading the living resource base of human welfare.