AGRICULTURE

Crop Production Increases and Fertilizer Usage

Agricultural productivity could be raised by increasing the cultivated acreage as well as by improving the productivity of land. The extent of new land which could be brought under plantation crops like Tea, Rubber and Coconut is limited as any further jungle clearing could cause damage to the country's economy. Much money and time is also required to bring in new land under paddy. Hence maximising the productivity per acre becomes a matter of increasing importance. This could be achieved mainly by increasing the use of chemical fertilisers, use of high yielding seed and planting material and by adopting soil conservation measures.

The debate on the promotion of excessive use of chemical fertilizers and the need to use more organic manures like green leaf, cattle dung and compost has been carried on in the columns of this journal too. The case for chemical fertilizer was made recently by the Deputy Minister of Agriculture Development and Research when he stated:

"Sometimes the question is asked why so much of foreign exchange is spent in importing fertilizers when so much cattle dung is available, along with the possibility of converting thousands of tons of garbage into compost. To get the nutrient content of 100 lb. of fertilizer, 5 to 10 tons of organic manure has to be applied to the soil. The present cost of collecting, transporting and spreading of a quantity of 5-10 tons is prohibitive and therefore farmers resort to artificial fertilizers. In the interior villages farmers resort to artificial fertilizers. In the interior villages farmers find it difficult to transport 4 or 5 cwts. of fertilizers. In this situation we cannot expect a farmer to apply tons of compost or cattle manure. Therefore, chemical fertilizer is the cheapest and most convenient source of supplying plant food".)

Data compiled by the Ministry of Agricultural Development ment and Research shows the quantities of fertilizer used in Sri Lanka is much below the dosages recommended for the different crops (Table 1).

According to the Master Plan on consumption and distribution of chemical fertilisers prepared in 1977 by a team of local and foreign experts, considerable scope exists for the improvement of agriculture productivity in Sri Lanka. According to this report it is possible to increase the production of Tea by 133%, Rubber by 185% and Coconut by 300%. Thus the, the quantity of fertiliser used in the coconut sector appears to be the most unsatisfactory.

According to the different research institutes despite factors such as the weather, water management, weed and pest control which the farmers fail to control fully and hence remain as non variables, it would be possible to increase the present productivity of Tea, Coconut, Rubber and Rice by 25%, 43%, 50% and 30% respectively, solely by using the recommended quantities of fertiliser. Although almost all paddy farmers use improved varieties of paddy which could give yields of 100-200 bushels per acre the average yield per acre continues to stagnate at 53 bushels mainly because the recommended fertilisers dosages are not being applied. If the recommended quantities of fertiliser are used in paddy it will be possible to save about 75% of the 500 tons of rice annually imported at present.

While a considerable extent of the cultivated acreage in the plantation sector consists of small holdings the application of fertiliser in them remains at a level lower than in estates. This is clearer in the case of Coconut and Rubber lands. 50% of Coconut and 30% of Rubber lands are owned by small holders having extents of less than 10 acres. Of the cultivated extents of Tea, Coconut and Rubber about 30%, 73% and 52% are extents of less than 50 acres. A major portion of these lands are owned by the private sector. Extents of over 50 acres and a small proportion of small holdings are owned by the State sector. Application of fertiliser in large estates declined considerably since mid - 1970 due to the uncertainties which prevailed between the state take over

Table 2 Fertiliser Consumption according to Crops and Years

IN 1000 m. tons

Year	Tea	Rubber	Coconut	Paddy	Others	Total
1965	158	23	49	42	46	318
1966	158	22	52	44	54	330
1967	143	22	50	73	50	338
1968	134	18	63	86	65	366
1969	112	21	59	84	64	340
1970	108	21	65	88	57	339
1971	113	17	59	97	61	347
1972	99	12	49	90	50	299
1973	93	15	39	127	55	329
1974	97	12	40	98	47	294
1975	102	10	27	49	26	214
1976	95	13	31	72	53	264
1977	80	12	29	123	53	298
1978	115	21	43	136	65	380

Source: Ceylon Fertiliser Corporation.

Table 1 Fertilizer Use and Productivity in Major Crops

	Rice	Tea	Coconut	Rubber
Fertiliser quantity (cwt) recommended per acre ...	3	7	2.5	4.5
Fertiliser quantity (cwt) used per acre at present ...	0.93	3.48	0.80	0.62
Quantity presently used, as a percentage of quantity recommended%	32	50	32	14
Percentage increase in productivity per acre by use of fertiliser as recommended %	30	25	43	50
Production achieved by the use of fertiliser at present (In mn. bushels)	90	480	350	2300
Estimated production achievable by using fertiliser as recommended (In mn bushels)	117	600	500	3450

Source: Ministry of Agricultural Development & Research.

of private lands over 50 acres, in extent in 1972 and the vesting of these lands in different state institutions. Encouragement given to Estate Superintendents by the Government to fertilize their lands and the grant of fertiliser subsidies once again contributed to the increased use of fertiliser in the state sector in 1978.

Decline in the application of fertiliser in the plantation sector especially among small holders and in the paddy growing sector have been mainly due to (i) economic factors (ii) lack of understanding among agriculturists and (iii) difficulties in obtaining fertiliser supplies at the village level.

The prices of fertiliser and market prices of agricultural products have a direct bearing on fertiliser consumption.

The present prices of fertiliser are based on a 55% to 85% subsidy. During the last 7 years fertiliser prices have changed about ten times. In order to prevent the resulting ill effects on fertiliser use, Government has adopted a policy of revising fertiliser prices annually. In revising fertiliser prices we have to be extra careful in view of the fact that such decisions affect agricultural productivity on a long term basis. A steep upward revision of prices made suddenly leads to a reduction in fertiliser application by agriculturists, destroys systematic application and eventually leads to a decline in long-term productivity.

Further, when agriculturists become used to lower consumption of fertiliser, a reduction in prices will not help to boost up fertiliser consumption to the earlier high levels.

Institutional sources of credit become important in attempting to increase fertiliser usage. Although credit is now being given for cultivation of coconut and paddy, the stringent conditions insisted upon by certain lending institutions prevents even creditworthy genuine farmers from obtaining credit from them. These credit schemes have failed as they try to ensure recovery of credit by creating an interconnection between issue of credit and purchase of produce. In 1979, release of credit for paddy cultivation had to be considerably reduced (from Rs. 448 mn to Rs. 73 mn.) due to the inability to recover loans granted earlier. The decline in fertiliser consumption in paddy cultivation in 1979, was due to fertiliser prices remaining at a high level despite a stable GPS price (Rs. 40 per bushel) as well as due to a reduction in the amount of agricultural credit released.

Some agriculturists are reluctant to apply fertiliser in the recommended quantities due to their concern for a possible decline in production which may be caused by drought, floods and other calamities. However, they may be motivated to apply more fertiliser than at present if their anticipated incomes could be guaranteed by an Insurance scheme. Certain deficiencies prevailing in the existing insurance scheme for paddy prevent maximum motivation of cultivation for use of fertiliser.

Retail sale of fertiliser at village-level for small-holding is performed mainly by MPCSs and agricultural productivity centres and to a lesser extent by the private traders issue of fertiliser for the plantation sector is also performed to a lesser extent, by the Tea Small Holdings Authority, Coconut Development Authority, and Rubber Control Department through their limited number of sub-offices. The inability to obtain different fertilisers at the proper time and at standard prices without encountering transport difficulties has led to a decline in fertiliser use by small holders and cultivators. Large plantations do not experience this difficulty as fertiliser is transported in bulk in lorries from the metropolis.

In the case of Tea small holdings, a recent study of the Agriculture Division of the Ministry of Plan Implementation reported that "from the statistics regarding the schemes for supply of fertilizer and VP plants it was observed that the benefits of these schemes do not reach even 10 percent of the small holders, and that a much larger effort is called for. The report recommends that the Tea Small Holdings Development Authority (TSHDA) should seriously explore the possibility of utilizing the state sector estates as outlets for the small holders' requirements of agriculture inputs. Expenses incurred by the estates in servicing the small holders could be re-imbursed by the TSHDA".

When purchasing from the private dealers the farmers are not quite certain whether they receive the correct mixture at the correct prices. If fertiliser could be distributed on an island-wide basis through MPCSs and APCs which are located all over the country it

Table 3

Tea, Coconut, & Rubber Lands–According to Size

	Tea			Rubber			Coconut		
	No. of owners	Acreage	Percentage of total acreage	No. of owners	Acreage	Percentage of total acreage	No. of owners	Acreage	Percentage of total acreage
Small holders & extents less than 10 acres	132,466	126,816	21.0	155,309	171,338	30.6	798,693	579,626	50.3
Extents 10-50 ac.	2,563	55,034	9.1	7,747	119,830	21.4	40,320	264,000	22.9
Extents over 50 ac.	1,223	431,332	69.9		268,771	48.4	3,097	308,397	26.8
Total	136,252	603,182	100.0	163,056	559,939	100.0	842,110	1,152,023	100.0

Source: Sri Lanka Tea Board, Rubber Control Dept., Coconut Cultivation Board.

Table 4 Quantity of Fertiliser Distributed to Agriculturists through Tea Small Holdings Authority, Coconut Cultivation Board and Rubber Control Dept. 1979

	Tea	Coconut	Rubber
1. Total quantity of fertiliser distributed (Mn. Tons)	105,400	23,500	49,700
2. Quantity distributed through T.S.A./CCB/RCD	1,700	900	5,400*
3. (2) above as a percentage of total quantity distributed	1.6	3.8	10.9*

* Provisional

Sources: Ceylon, Fertiliser Corporation, Tea Board, Coconut Cultivation Board, Rubber Control Department.