

FEATURES

Role of Regional Fertilizer Warehouse Complexes

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Availability of fertilizer in adequate quantities and also in time and at a fair price has been a major problem for the agricultural sector in Sri Lanka; particularly for the small holders in plantation crops and small cultivators of paddy and subsidiary food crops. The various factors responsible for the inadequacies in the system have been highlighted in many reports, as this paper shows, but basically it has been the drawbacks in the system of distribution that has brought about the situation. The Government has therefore decided, after due consideration, to establish a chain of five Regional Fertilizer Warehouse complexes to supply the needs of the entire country. In this paper C. R. Kuruppu, Director of the National Fertilizer Secretariat, Ministry of Plan Implementation, discusses this new scheme and emphasises the need for efficient management and operation of the complexes.

There is considerable scope to substantially increase agricultural productivity in Sri Lanka. This could be clearly observed from a comparison of the average production with the potential in respect of the four major agricultural crops of the country, tea, rubber, coconut and paddy (rough price) as given in Table I.

TABLE I
ACTUAL & POTENTIAL ANNUAL YIELDS OF MAJOR CROPS

	YIELD	
	Actual	Potential
Made tea, upcountry	1,500 kg.	2,500 kg.
Made tea, lowcountry	1,500 kg.	4,500 kg.
Rubber	700 kg.	2,000 kg.
Coconut	4,000 nuts	16,000 nuts
Rice (rough)	2.5 tons	5 tons

SOURCE: Masterplan on Promotion of Fertilizer Distribution Consumption — Main Report, Table I, Page 3.

To realise a higher level of agricultural productivity, it is necessary to adopt a package of measures such as the use of high yielding varieties; proper weed, pest and disease control; soil and water conservation with appropriate drainage facilities; and the application of fertilizer conforming to the dosages recommended by

the relevant Research Institutes. Of these measures, fertilizer application is one of the most important since the present consumption of this commodity in the agricultural sector is far from satisfactory as indicated in the data in Table II, where the current fertilizer use in relation to the quantities recommended by the appropriate research organisations are given.

TABLE II
CURRENT FERTILIZER USE

	Current Fertilizer use in Relation to Recommended Dosage (in %)
Tea	75
Rubber	35
Coconut	20
Rice	37

SOURCE: Masterplan, Main Report, Table II - Page 3.

The application of fertilizer in the large plantations, both in the private and public sectors, are at present quite satisfactory. The transport that brings the produce of the estates to the metropolis take fertilizer on their return journeys back to the plantations. Thus, there is no serious problem in the supply of fertilizer to these plantations. However, the position is totally different among small holders and farmers. In this sector, an important factor that constrains the consumption of fertilizer is the non-availability of the different varieties of this commodity in adequate quantities at the ap-

propriate times. The current system of fertilizer distribution does not adequately serve these users of this vital commodity.

Present System of Supply to Retailers

Today the supply of fertilizer is undertaken at the wholesale level in Colombo by a number of

public and private sector institutions; at the intermediary level by 102 District Warehouses scattered all over the island; and at the retail level by Multi-Purpose Co-operative Societies, Agricultural Service Centres, Private Authorized Dealers as well as by outlets belonging to the Coconut Cultivation Board and the Tea Smallholders Development Authority. Although there are at present sufficient stocks of fertilizer at the wholesale level, the position is not satisfactory at the intermediary and retail levels. This adversely affects the total overall consumption of this commodity by the agricultural sector.

(The Agricultural Service Centres are operated by the Commissioner of Agrarian Services functioning within the Ministry of Agricultural Development & Research).

The main function of the District Warehouses is the bufferstocking of fertilizer to ensure its ready availability in different varieties to retailers at all times. Unfortunately, for a number of reasons, these warehouses have failed to effectively perform this task. For one thing, these warehouses are unfavourably located in relation to the railway and the main highways of the country. In fact, only a few of them are connected to the National Railway System. Consequently, transport costs to these warehouses are considerable with changes in the means of transport from rail to road. Moreover, the small storage capacities of the District Warehouses do not enable them to benefit from large scale rail transport. Instead of utilising trains consisting largely of fertilizer wagons, this commodity has to be transported in a few wagons which increase the turn-round time of the CGR.

On the other hand, these warehouses suffer from a lack of competent managerial staff with appropriate training and experience. This is reflected in the average annual through-put of these warehouses which is as low as 1.1 whereas in some private retail outlets it is as high as 16.0. The lower through-put factor naturally increases their average operational cost. Moreover, most of these warehouses function as isolated units without any active contact with either the retailers, whom they are expected to serve, or the higher levels of the distribution system. This managerial deficiency together with the absence of proper transport facilities

have contributed to poor planning and control of fertilizer stock movements at the intermediary level.

These shortcomings of the existing distribution system at this level were highlighted in the Masterplan on Promotion of Fertilizer Distribution and Consumption prepared by a team of local and foreign experts and released in early 1978. The Masterplan indicated that there are far too many warehouses at the intermediary stage at too many different places and that these difficulties were compounded by the fact that most of these warehouses are unfavourably located in relation to the centres of fertilizer demand. The Masterplan concluded that a few strategically located large warehouses under proper management would be sufficient to satisfy the island's requirements of fertilizer at the intermediate level.

(See Masterplan on Promotion of Fertilizer Distribution and Consumption Main Report, Page 52).

Regional Fertilizer Warehouse System

Taking these factors into consideration, the Government has decided to establish a chain of five Regional Fertilizer Warehouse Complexes to supply the fertilizer needs of the retailers of the entire country. The implementation of this scheme would be largely financed with foreign assistance*. All these Regional Warehouses would be connected to the National Railway System and would also be in close proximity to one of the main Highways of the country. The establishment and operation of these Complexes is the responsibility of the Ceylon Fertilizer Corporation that falls within the purview of the Ministry of Agricultural Development and Research. Co-ordination of the relevant work* of

different Ministries and other institutions for the efficient functioning of the Regional Warehouse System would be undertaken by the National Fertilizer Secretariat of the Ministry of Plan Implementation**.

The Master Plan on Promotion of Fertilizer Distribution and Consumption recommended that the following factors be taken into consideration in determining the location of Regional Fertilizer Warehouse Complexes***.

- 1) Since the cheapest form of large scale transport in Sri Lanka is the rail, these warehouses should be located close to the railway line so that they could be connected to the National Railway System with the least expenditure.
- 2) It should be close to a national highway as most retailers would be transporting fertilizer from the complex to their stores by truck.
- 3) Proximity to the main fertilizer demand areas is preferable since it would minimise the total transport cost.
- 4) The retailers in the District should be able to re-fill their retail stores within one day from the Regional Warehouse.
- 5) Location in a District or sub-District capital would be advantageous since it would ensure easy accessibility to Government institutions at the District or sub-District levels.
- 6) To facilitate the recruitment of suitable managerial personnel and retaining their services, it is prudent to site these complexes in places where minimum social and private infrastructure facilities are available such as schools, hospitals, shops, theatres and other recreational facilities.
- 7) Ready availability of water and electricity and easy access to the telephone system.

* The local costs of the First Regional Fertilizer Warehouse Complex at Maho are financed mainly from the counterpart funds of the Federal Republic of Germany. This country also financed the foreign expenditure involved in the provision of ancillary facilities such as the supply of trucks and a mixing plant. It is expected that the proposed Well-gama Regional Fertilizer Warehouse Complex would also be largely financed by the Federal Republic of Germany.

** Since a number of Ministries, State institutions and private sector establishments are involved in various aspects of fertilizer activities such as import, local production, distribution, consumption, transport and handling, a National Fertilizer Secretariat was established in early 1979 under the Ministry of Plan Implementation primarily for the purpose of co-ordinating the activities of these institutions and to undertake the formulation and implementation of national fertilizer policies.

*** Masterplan on Promotion of Fertilizer Distribution and Consumption, Main Report, Page 53.

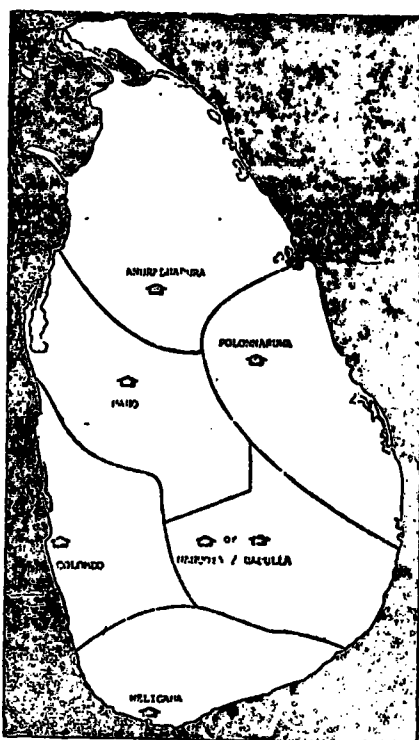
The first Regional Fertilizer Warehouse Complex at Maho is already in partial operation and is expected to be fully commissioned shortly. This Regional Warehouse has a capacity to store 16,000 tons of bagged fertilizer while its mixing plant is capable of mixing 10 tons of fertilizer per hour. Work on the establishment of this Regional Warehouse commenced prior to the release of the Masterplan applicable to the entire island. Thus, it does not conform to some of the important criteria mentioned above such as location in a District or sub-District capital, minimum infra-structure facilities and the ready availability of water.

(This warehouse is already experiencing difficulties due to the lack of satisfactory social amenities and the absence of an adequate supply of good water. Action is, however, being taken to overcome or minimise the adverse effects of these deficiencies).

However, most of the important factors enunciated earlier have been taken into account in determining the location of the balance Warehouses. These are to be established at Wellgama to serve the South, Anuradhapura for the North, Polonnaruwa for the East and the bulk of the area to be covered by the Mahaweli Development Scheme, and a location in the Uva province or the Nuwara Eliya District to cater to the central region of the island. Colombo would perform an important regional function at the intermediary level by supplying directly by road the requirements of the retail outlets in the adjacent Districts such as Kalutara, Ratnapura, Kegalle and a section of Kandy, apart from the Colombo District itself. A map indicating the geographical areas to be served by these complexes covering the entire country is given in the figure above.

The Regional Fertilizer Warehouse System will serve mainly the retailers that supply the fertilizer requirements of smallholders of tea, rubber and coconut as well as the growers of vegetables, fruits and other food crops. However, they would undertake retail sales on a limited scale to serve the needs of fertilizer users in the surrounding areas. As at present, the estate sector (largely concentrated on tea and rubber crops) will continue to obtain their requirements direct from Colombo.

Bufferstocking of different



LOCATIONS OF REGIONAL FERTILIZER WAREHOUSES WITH SERVICE AREAS

varieties of fertilizer would be only one of the functions of these Complexes. Their management would undertake promotional activities to encourage the greater use of fertilizer in their respective areas. They would also engage in the mixing of fertilizer to produce different fertilizer mixtures that would be relevant to the agricultural activities of the regions that they serve. For this purpose, it is proposed to provide all Complexes with facilities for the mixing of fertilizer.

In connection with promotional activities, these Complexes would operate technical services to extend technical advice to retailers on methods of fertilizer handling, management practices, fertilizer application, as well as provide them with relevant hand books and literature. This would enable the retailers to perform their tasks satisfactorily while simultaneously transferring the relevant know-how to the smallholders and farmers that they serve. The latter development would in turn increase the over-all demand for fertilizer at the level of the smallholder and farmer.

With the inauguration of the Regional Fertilizer Warehouse System, the existing District warehouses would progressively cease to engage in fertilizer supply at the

intermediary level. However, an effort will be made wherever feasible to use the facilities of existing District warehouses to supplement the storage capacities of the Regional Warehouses. District warehouses with storage capacities exceeding 1,000 tons and satisfying certain requirements such as favourable location and minimum infra-structure facilities will be integrated with the Regional Warehouse Complexes and centrally managed by the main office of the Complex located at the Regional Warehouse. Thus, the Regional Fertilizer Warehouse Complexes will comprise of the Regional Warehouses together with one or more satellite warehouses.

Fertilizer Mixing Facilities at Regional Complexes

The mixing of fertilizer would facilitate the bufferstocking function of these complexes. By the constant review and adjustment of the fertilizer mixing programmes, it would be possible to increase the stocks of those fertilizer mixtures that move fast while reducing the stocks of other mixture where sales are correspondingly slack. This flexibility would enhance the ability of these complexes to make available all required fertilizer mixtures at all times in adequate quantities. In this connection, it should be noted that the existing District Warehouses deal mainly with fertilizer relevant for paddy and subsidiary food crops. However, the Maho Regional Fertilizer Warehouse Complex as well as the other complexes to be established will handle fertilizer for all crops that are applicable to their respective catchment areas.

Originally, the provision of facilities for the mixing of fertilizer at the Regional Fertilizer Warehouse Complexes was not envisaged since sufficient capacities were available in and around the metropolises to satisfy the requirements of the nation. The Maho Regional Warehouse Project, as stated earlier, was implemented prior to the release of the Masterplan on the Promotion of Fertilizer Distribution and Consumption and, therefore, provision was included for the installation of mixing facilities. However, the establishment of similar facilities in the other Regional Warehouses was not contemplated.

This matter was recently reviewed in the light of the substantial increase in the consumption of fertilizer in 1978 in relation to its use

in the previous years,* and the economies in handling arising from the operation of mixing facilities in the regions. Recent studies conducted by Agra-und-Hydrrotechnik for the German Agency for Technical Cooperation of the Federal Republic of Germany indicated that considerable economies could be realised by the mixing of fertilizer in the Regional Warehouses rather than in Colombo. A comparative analysis reveals that the mixing of fertilizer at the proposed Welligama Regional Fertilizer Warehouse Complex itself rather than at the Hunupitiya Mixing Plant of the Ceylon Fertilizer Corporation would result in a saving of Rs. 71/- per ton in respect of bagged fertilizer and Rs. 65/- per ton in the case of bulk fertilizer. It is, therefore, economical to directly transport the imported or locally produced fertilizer to the Regional Warehouse for mixing, overcoming additional cost arising from double handling, double book keeping and similar operations. The study concludes that the findings for Welligama would be applicable to the other proposed Regional Fertilizer Warehouse Complexes as well**.

For this reason, it is now the intention of the Government to provide such facilities also in the balance Regional Fertilizer Warehouse Complexes to be established at Welligama, Polonnaruwa, Anuradhapura and, at a location in the Uva Province or Nuwara Eliya District.

Importance of the Managerial Factor

To promote the use of fertilizer conforming to the dosages recommended by the relevant Research Institutes, the management of the Regional Fertilizer Warehouse Complexes will maintain a continuous dialogue and contact with the retailers that they serve. Measures will be adopted to ensure that sales are effected in a convenient manner with the minimum of bureaucratic procedures. Difficulties of retailers with regard to matters such as storage at the retail level and credit facilities would be ascertained and measures formulated to overcome serious constraints. Simultaneously, action will be taken to train retailers to perform their functions effectively. ***Moreover, an effort will be made to obtain feedback information from retailers as to the factors that constrain the proper use of fertilizer among the smallholders and farmers so that suit-

able steps could be devised to remedy shortcomings. General promotional activities will also be undertaken to educate those engaged in agricultural pursuits on the advantages of proper fertilization, both by propaganda as well as by the operation of demonstration plots.

In order to successfully perform the bufferstocking function a forecast of the future demand for fertilizer would be undertaken and these prognostications will be reviewed and updated from time to time. The movement of fertilizer from Colombo to the regions would be effected in such a manner as to conform to the demand patterns of their areas and the proposed fertilizer mixing programmes of the complexes.

As indicated earlier, the main problem in the effective distribution of fertilizer is its non-availability in adequate quantities at the village level to satisfy the requirements of the smallholder and the farmer. The recent report of the market survey in the Kurunegala, Anuradhapura, Matale and Puttalam Districts undertaken by the Regional Fertilizer Warehouse Complex at Maho in co-operation with the Agra-und Hydrrotechnik of the Federal Republic of Germany states that "since 1977 the supply situation for the country has changed considerably with ample stocks available in Colombo", but refers to "the problem of lack of fertilizer in the village sales centres". This report goes on to state that the problem of lack of fertilizer at the village level is the result of other problems such as "lack of transport facilities, lack of storage facilities at the dealer's level, and may be lack of purchasing credit". ****

One of the functions of these Complexes would be to ensure that retailers possess adequate stocks of their own prior to the commencement of the fertilizer seasons to meet the first wave of demand and thereafter replenish

their stocks from the Regional Warehouse on a regular basis so that fertilizer of different varieties are always available. Higher sales margins, a well thought out transport rebate system and appropriate credit facilities, both for the purchase of fertilizer and for the establishment of storage facilities, are some of the incentives that could be offered for this purpose.

(To overcome the problem of inadequate transport facilities at the village level, the Regional Fertilizer Warehouse Complexes propose to operate a fleet of lorries to transport fertilizer from their warehouses to the retail sales outlets when necessary.)

For the effective discharge of these important and responsible functions the operation of a sound managerial system for the Regional Fertilizer Warehouse Complexes consisting of personnel with professional expertise, adequate experience and correct motivation cannot be over-emphasised. The establishment and maintenance of such professional cadres in a large number of District Warehouses in remote and distant places with limited social amenities is neither feasible nor commercially justifiable. However, the recruitment and retention of such personnel is a practical proposition in a few centrally located fertilizer complexes that enjoy certain minimum social infrastructure facilities. Since the success of these complexes would largely revolve on the quality of the management, those responsible for their over-all operation should devote adequate attention to this matter and ensure that they are staffed with proper personnel who are provided with facilities for training and improvement of their professional skills on a regular basis.

Storage Capacities of Complexes

The storage capacities of the five Regional Fertilizer Warehouse

instruction on auditing and stock control, managerial skills, and techniques in fertilizer handling.

****Report of the Fertilizer Market Survey in the Kurunegala, Anuradhapura, Matale and Puttalam districts undertaken by the Regional Fertilizer Warehouse Complex at Maho in co-operation with the Agra und Hydrrotechnik of the Federal Republic of Germany, April 1979, page 25.

* The estimated consumption of fertilizer in 1978 was 380,000 tons, whereas in the 4 previous years it ranged between 210,000 tons and 298,000 tons.

** Report of Agra-und-Hydrrotechnik for the German Agency for Technical Co-operation of the Federal Republic of Germany on "Optimum Location and Capacities of Regional Fertilizer Warehouses", Page 8.

***This would include advice and

TABLE III
Storage Capacities of Regional Fertilizer Warehouse Complexes (in Tons)

Item	Regional Warehouse Complexes				
	Maho	Wellgama	Polonnaruwa	Anuradhapura	Uva Province/ N'Ellya District
1. Storage Capacities of Affiliated District Warehouses	1,600 Kurunegala	1,630 Matara 1,475 Galle	4,890 Polonnaruwa 3,765 Batticaloa	1,630 Anuradhapura 1,630 Vavuniya 1,630 Jaffna	1,190 Badulla
2. Total	1,600	3,105	8,655	4,890	1,190
3. Storage Capacities of Regional Warehouses	16,000	10,500	13,000	20,000	12,500
4. Total Storage Capacity of Complexes	17,600	13,605	21,655	24,890	13,690
5. Anticipated throughput factor of Reg. Warehouses	3.0	3.3	3.0	2.5	2.5
6. Anticipated throughput factor of affiliated District Warehouses	2.5	2.8	3.5	3.0	3.0

SOURCE: Prepared on the basis of data in the Report on the Optimum Location & Capacities of Regional Fertilizer Warehouses.

Complexes together with the District warehouses to be affiliated to these complexes are give in Table III. This data also includes the annual anticipated through-put factor for the Regional Warehouses as well as for the affiliated satellite District Warehouses. The storage capacities of the Regional Fertilizer Warehouse Complexes to be established were determined in a report on "Optimum Location and capacities of Regional Fertilizer Warehouses" prepared for the National Fertilizer Secretariat of the Ministry of Plan Implementation to which reference has been made earlier. In arriving at its conclusions, this analysis has taken into consideration the future annual fertilizer requirements at the retail level of the areas to be served by these complexes, the capacity of District Warehouses to be affiliated to these complexes, their existing and potential through-put factors, as well as the anticipated through-put factor of the proposed Regional Warehouses.

It will be seen from this information, that nine existing district warehouses with storage capa-

cities exceeding 1,000 tons would be affiliated to the Regional Fertilizer Warehouse System. The largest over-all total storage capacity would be at the Anuradhapura Complex with around 25,000 tons. Such a large storage capacity is required at this Complex since it has to cater to the entire Northern region of the island and the area to be served is substantial in relation to other Complexes.

The total storage capacities of the Polonnaruwa Warehouse Complex would be in the region of 21,500 tons since it has to progressively supply the fertilizer requirements of the Mahavelli Development Scheme as well. Total storage capacities of the other Complexes range from around 13,500 tons at Wellgama to 18,000 tons at Maho.

The variation in the anticipated annual through-put is marginal both in respect of the Regional Warehouses as well as the affiliated warehouses. In the case of the former it ranges from 3.0 to 3.5 while in the latter it varies from 2.5 to 3.0 depending on whe-

ther its location is in the dry or wet zones.

SUMMARY

Thus, the network of Regional Fertilizer Warehouse Complexes are not only expected to engage in the mixing, bufferstocking and sale of fertilizer at the intermediary level. More importantly, they are expected to undertake vigorous sales promotional campaigns, conduct market surveys, train retailers in the fulfilment of their tasks and above all impress on the users of fertilizer the advantages of the appropriate application. For the successful performance of these functions, it is most important that these Complexes possess enterprising managerial personnel with a capacity to establish a continuous dialogue with retailers and other imported users and enjoy their confidence. The success of the efforts of the Government to raise the level of fertilizer consumption in the island together with other related cultural practises in order to increase agricultural productivity rests to a considerable degree on the efficient management and operation of these Complexes of the Regional Fertilizer Warehouse System.