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FERTILIZER DISTRIBUTION AND TRANSPORTATION IN INDIA

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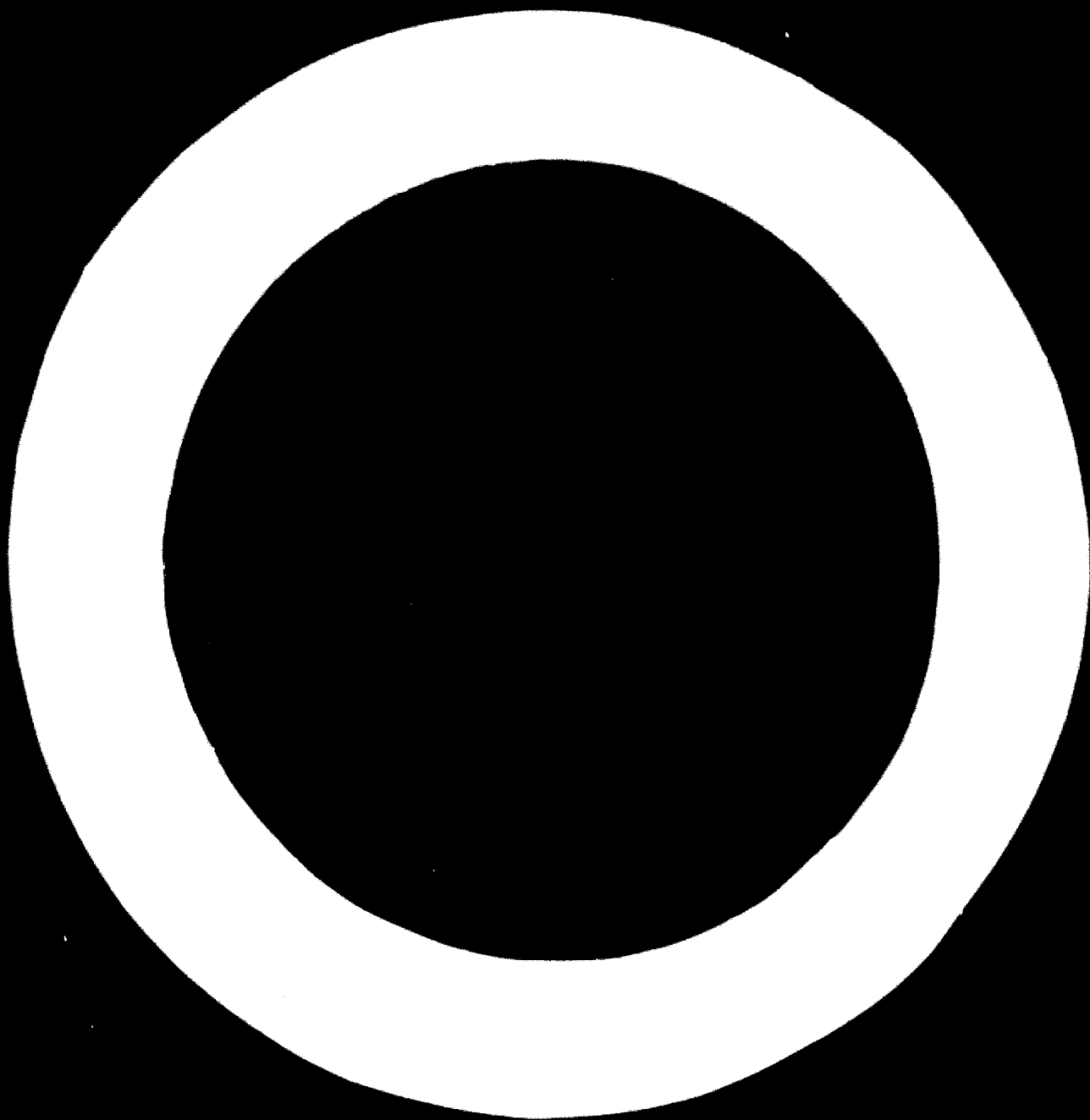
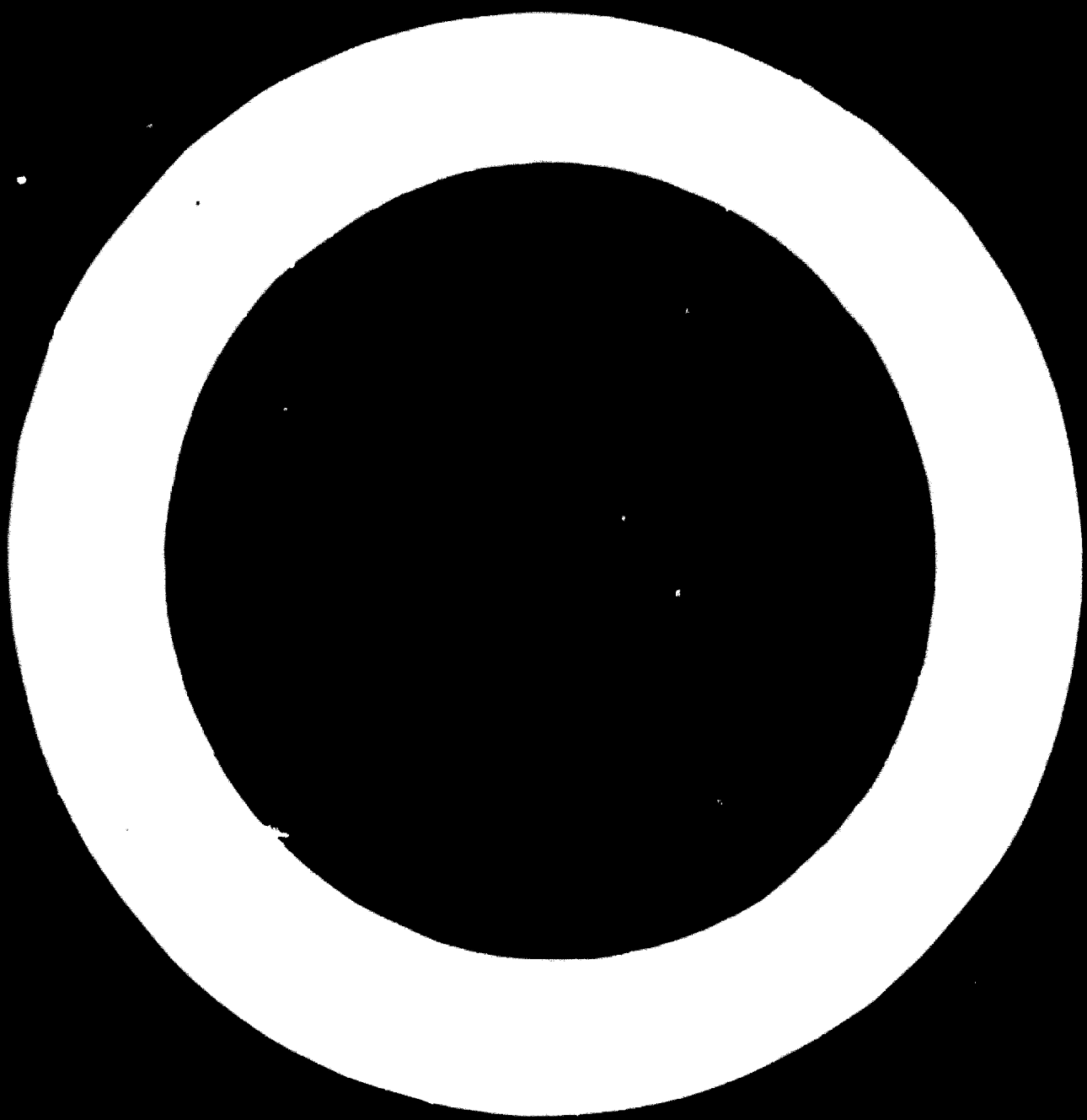


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## 1.0 INTRODUCTION

With the growing emphasis on the use of chemical fertiliser as probably the most important plank in the strategy for agricultural revolution in India, the distribution of fertiliser and the problems connected therewith have assumed considerable importance in this country. The quantities involved are fairly massive, the consumption of fertiliser in the country being nearly 7 million tonnes of material. These 7 million tonnes of fertiliser per year are required to be distributed over a vast area throughout the country by either the fertiliser manufacturers or the Central Fertiliser Pool of the Government of India. All the imported fertiliser is put into the Central Fertiliser Pool which also has the authority to take over up to 30% of the domestic production of individual manufactureres. The Central Fertiliser Pool has, therefore, a vital role to play in the fertiliser distribution in the country as a supplier of fertiliser as well as a regulatory influence in the overall fertiliser supplies in the country. The efficient distribution planning both of the manufacturers network as well as that of the Central Fertiliser Pool is important in the interest of fertiliser off-take in the country and the entire operations require great deal of attention due to the supply-demand-transportation-distribution picture being a product of a large number of variables almost in a constant state of flux.

## 2.0 MECHANISM OF ASSESSING DEMAND AND SUPPLY POSITION

The Government of India in the Ministry of Agriculture holds meetings every six months in each territorial zone with the State Governments, representative of cooperatives, manufacturers, etc where the trends of consumption and the requirements for different seasons during the next one year are discussed in detail. The representatives of the manufacturers indicate the supply that they expect to make to each State and from this the requirements of supplier to be made by the Central Fertiliser Pool are determined. These include supplies not only to the State Governments and cooperatives but also to the fertiliser manufacturers for their seeding programme for market development in advance of production. The planning for future imports is also done on the basis of these assessments. The Pool issues allotments to State Governments and seeding programme units, etc. on the basis of these assessments and supplies are then required to be effected in accordance with these allotments by the Pool's handling and supplying agents, i.e. the Food Corporation of India at the ports

and the Central and State Warehousing Corporations at the inland depots. The supplies are made with railway freight up to the nearest railhead destination prepaid by the Pool so that fertiliser may be available to cultivators at uniform price throughout the country. In other words the overall railway freight is "pooled" into the price structure. Most of the domestic manufacturers also follow the system of pooling of freight.

### **3.0 DISTRIBUTION PROBLEMS OF THE CENTRAL FERTILISER POOL**

The Central Fertiliser Pool set up by the Government is thus basically a residual supplier which steps in to fill the gap between the demands on the one hand and supplies by the fertiliser industry on the other. Since it is a residual supplier, it is particularly susceptible to the fluctuations in demand and supply. To this are added a number of other factors as follows which operate in the Pool under severe constraints:-

- (a) The availability of the required variety of fertilisers from the countries of export.
- (b) The domestic season in exporting countries.
- (c) The fluctuations in the shipping market and the availability of vessels at the required time.
- (d) Monsoon conditions at Indian ports resulting in difficulty in spacing out arrivals.
- (e) Availability of covered railway wagons.
- (f) Availability of adequate storage at the required locations.
- (g) Changes in the consumption pattern and the requirements of various State Governments due to the time lag involved between the assessment of requirements and the actual availability of fertiliser.

### **4.0 DISTRIBUTION PROBLEMS OF THE DOMESTIC MANUFACTURERS**

The distribution of fertiliser by the fertiliser manufacturers is also beset with a number of difficult problems which are mainly connected with the following:-

- (a) Adequate and timely availability of covered railway wagons.
- (b) Adequate rail and road communications in certain areas.
- (c) Adequate availability of storage accommodation.
- (d) Timely availability from Central Fertiliser Pool of seeding material required for market development in advance production.



## 5.0 METHODS ADOPTED TO DEAL WITH THE DISTRIBUTION AND TRANSPORTATION PROBLEMS

### 5.1 BUFFER STOCKING COMPLEXION OF DISTRIBUTION OPERATIONS

5.1.1 Due to several variables involved, it has been the growing feeling in the country that fertiliser distribution has to be predominantly a buffer stocking operation to absorb various fluctuations and to avoid shortfall in supply of fertiliser almost at any cost, as the latter will have a highly adverse effect on agriculture production. As far as the Central Fertiliser Pool is concerned, efforts are being made to purchase fertiliser as much in advance as possible. This is despite the approximations which are necessarily involved in making assessment as much in advance as say one year, which is being found to be necessary. This, again, involves acquisition and construction of warehousing facilities in an adequate measure at the ports/factories to keep them fluid and near consumption centres to reduce the load of movement in the event of supplies being required at short notice. This also sometimes involves movement of fertiliser from one region to another. The buffer stocking nature of the distribution operations does tend to increase the cost of operations but it is considered worthwhile to do so in the interest of avoiding shortages in the supply of fertiliser. It has been possible to do this so far without increasing the fertiliser prices.

5.1.2 The Central Fertiliser Pool has kept at its disposal storage accommodations to the tune of nearly one million tonnes at ports and at inland depots throughout the country. Domestic manufacturers have also developed storage facilities at factories as well as at consumption centres. Some of the plants are providing adequate storage to cover 6 weeks' full production at the factories and another 8 weeks' production at or near consumption centres. Much of the accommodation is provided to the Central Fertiliser Pool and the domestic manufacturers by the Central Warehousing Corporation and the State Warehousing Corporation set up in all the States. These agencies have specialised in scientific storage of fertiliser to avoid damage and deterioration and this experience has been extremely satisfactory.

### 5.2 RAILWAY TRANSPORTATION

#### 5.2.1 PRIORITY FOR FERTILISER MOVEMENT

In India, inland transportation of fertiliser is mostly in covered railway wagons and in bagged condition. The Indian Railways have accorded a high

priority to the movement of fertiliser. In fact, it enjoys almost the highest priority in the Indian Railways Preferential Traffic Schedule. Despite this, considerable difficulty has been experienced in getting timely supply of covered wagons at the ports, inland depots and at factories. The position, recently, has been further complicated by the locking up of railway wagons due to difficult conditions in the eastern sector of the country, which by affecting the turn-round of wagons drastically has a significantly adverse effect on the availability of rail transport not only in the eastern sector but throughout the country. While Railways are taking steps to increase the fleet of covered wagons, several steps have been taken in coordination with them to increase the utilisation of the existing resources.

#### 5.2.2 LOADING IN OPEN WAGONS

With a view to relieving the strain on availability of covered wagons, fertiliser from certain factories has recently been loaded in open wagons covered with tarpaulin and provided with armed escort by the Railways. The experiment has been fairly successful. The question of loading fertiliser from the ports in open wagons is however more problematic because, unlike fertiliser bags from the factories, the Pool fertiliser bags from the ports have holes in them due to use of hooks in port handling thus making them more vulnerable to weather, etc. The question of loading fertiliser in open wagons with due precaution and also its bulk transportation by rail, if necessary, in specially designed wagons is, however, under examination. It is proposed to study the experience of some other countries in this respect e.g. West Germany where bulk transportation of fertiliser by rail and road is being done.

#### 5.2.3 CLOSE CIRCUIT BLOCK-LOAD RUNNING TO GAUGE TERMINALS

A system has also been evolved in consultation with the Railways that in the event of shortage of wagons on one gauge and a relatively easier position on the other, fertiliser may be moved intensively on the easier gauge by close circuit running of special trains up to the gauge terminal and then moved from these terminals by road.

#### 5.2.4 BYPASSING RAILWAY TRANSHIPMENT YARDS

Another method employed for expediting fertiliser despatches by rail was to develop storage accommodation at break-of-gauge transshipment points so that fertiliser could be moved up to these points without involving handling at the transshipment yards and sheds of the Railways which have very limited capacity. Fertiliser is taken delivery of at these points and then moved either by road or by rail on the other gauge without involving rail transshipment as such.

### 5.2.5 BLOCK-LOAD RUNNING ON SINGLE TRIP BASIS TO SELECTED POINTS BY CLUBBING OF DESTINATIONS

Apart from close circuit running, block loads are also being run on single trip basis to selected points by clubbing of destinations within a specified radius, say 300 kms. Several special trains have recently been run under this scheme from Bombay. This avoids detention of wagons in intermediate yards and thus reduces the turn round for the railways. For the movement over the balance portion within the radius of 300 kms, road movement at the cost of the Pool has been authorised.

### 5.3 ROLE OF ROAD TRANSPORT

As would be seen from some of the instances given in the previous paragraph efforts have been made recently to supplement rail transport by road transport of fertiliser. This has been done to the extent necessary and economically feasible. Road transport is distinctly more expensive than rail transport but due to paucity of railway wagons, it often becomes desirable to move comparatively short distance traffic in fertiliser by road. Here, considerable care has to be taken to ensure that road movements remains supplementary to rail movement so that it may neither affect the finances of the Central Fertiliser Pool or the domestic manufacturers nor lead to non-utilisation of any available capacity with the Railways. Certain norms have, therefore, to be developed in order to decide when road movement is to be undertaken. This has been done for the Central Fertiliser Pool and in this connection a Committee on Road Movement of Pool Fertiliser was recently set up by the Government. The Committee recommended that within 75 kms, road movement should be preferred to rail movement as it was more economical for the Pool and will also avoid locking up of railway wagons in short distance traffic which is not in the over-all interest of the Railways either. It also recommended further studies in the light of the actual road transport charges and handling charges in different regions to see whether this radius for preference to road could be further extended. These studies are in progress. This Committee also recommended that in the event of railway wagon shortage, movements within 300 kms. should be undertaken by road by local officers at their discretion and in this context certain yardsticks relating to date of registration with the Railway were laid down. The road movement can also be undertaken beyond 300 kms. with the permission of the Ministry and this has been frequently given recently. Fertiliser has been moved even

up to 1,000 kms. by road in recent weeks. Another recommendation of the Committee which is being implemented is to the effect that in areas with sparse rail communication facilities, about 4 points in each district, not connected by rail may be treated as supply points of the Pool which will bear not only the railway freight but also the road transport charges up to these points. Bulk transportation of fertiliser by road to big consignees is also under examination.

#### 5.4 PORT OPERATIONS

In the matter of handling of imported fertiliser at the ports, the most important recent development has been the substantial switch-over from bagged shipment to bulk shipment and the consequential changes in the nature of port operations. It was assessed that by shipping fertiliser in bulk instead of in bags, the country would save nearly Rs. 120/- per tonne in terms of foreign exchange, due to lower freight and savings in bagging costs at the loading ports. India is now shipping roughly 60% of its imported fertiliser in bulk. In this context, several studies have had to be made for the more hygroscopic fertilisers in order to determine the conditions under which such fertiliser could be brought to a tropical country like India in bulk without danger of damage. We started with imported ammonium sulphate in bulk and later added DAP and MOP. Recently NPK has also been imported in bulk and bulk shipment of urea has been cleared. While shipment of fertiliser in bulk is wholly desirable not only for the savings in foreign exchange but also because it cuts down vessel detentions both at loading and unloading ports, thus improving their turn-round which is welcomed by the shipping circles the world over. However, some very special arrangements have had to be made at the unloading ports for handling fertiliser in bulk and several methods of port operations were evolved in this connection. At some ports we have discharge by slings from the holds to the hopper wagons after which bagging and standardisation on the wharf itself is done before despatch. At some ports like Bombay, bulk fertiliser is moved from wharf in trucks without bagging to local consignees like Fertiliser Corporation Unit in Bombay. In Bombay, we have not only the hopper wagons but also conveying arrangements from the holds direct into the transit shed where automatic bagging and stitching plants are provided. In Bombay we have also tried successfully the use of portable pneumatic machines for discharge of bulk fertiliser which nearly doubled the rate of discharge of the ships. This machine was originally

meant for foodgrains but was modified by the Indian engineers to suit fertiliser discharge. This experiment was perhaps the first of its kind anywhere in the world. Pneumatic discharge of bulk fertiliser in Bombay is now being done as a regular measure. In addition, a more sophisticated system is already under execution at Kandla. These arrangements visualise installation of a high speed continuous unloader with matching conveying automatic bagging and storage arrangements. This will also minimise the use of hooks on fertiliser bags. These arrangements will enable a discharge rate of about 4,000 tonnes a day. In the context of port handling of fertiliser in India, it would not be out of place to mention that during the past few years there has been considerable speeding up of the turn-round of vessels as would be seen from the following figures:

(In lakhs of ruppee)

Year	Despatch rebate earned	Demurrage incurred	Net earnings or net expenditure	
			(+)	(-)
1967	22.89	43.67		-20.78
1968	47.39	84.86		-37.47
1969	34.92	16.34		+18.58
1970	26.85	NIL		+26.85

#### 5.5 LIBERALISATION OF DISTRIBUTION AND LICENSING

In order to make fertiliser available more easily to small distributors and cultivators, the Fertiliser Control Order was recently relaxed and this now enables any person to take up fertiliser distribution business and apply for registration to the State Government concerned within 14 days. No licensing by the State Governments is necessary. The Pool has also allowed its field supplying units to sell uncommitted stocks of fertilisers direct, without allotment by the Ministry, to certain agencies like the State Governments, Cooperative Societies and registered manufacturers.

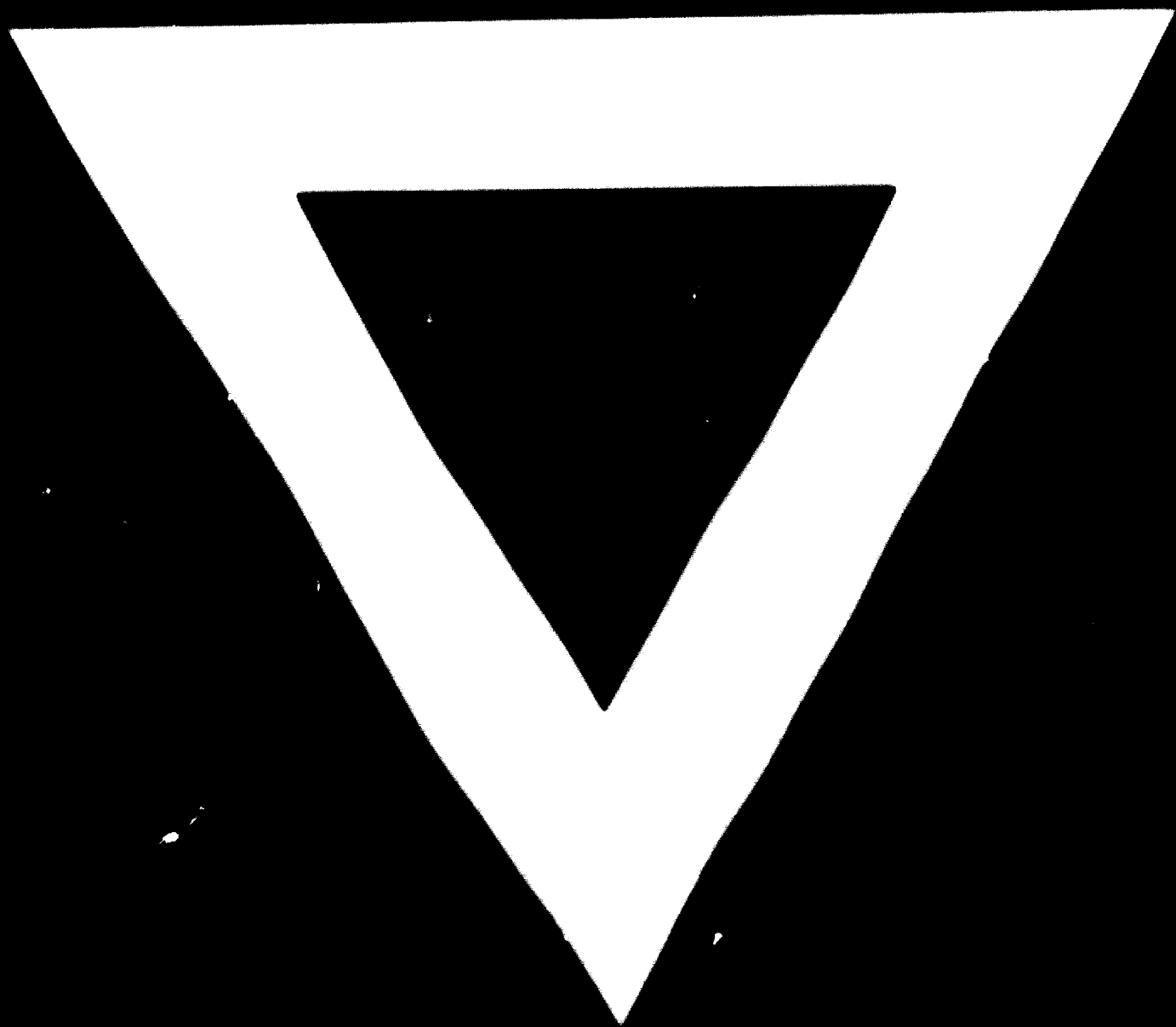
#### 5.6 REPORTING SYSTEM

It has been realised that for the proper functioning of a distribution system there has to be a fairly extensive and regular reporting system. In this context a Shipping and Distribution wing has been established in the Fertiliser Division of the Ministry of Agriculture for an integrated operation of shipping, port handling, railway movement, road movement and distribution. The handling agents of the Pool at the ports are the Food Corporation of India and at inland depots the Central and State Warehousing Corporations. While policy matters are

settled with the Head Offices of these organisations, the Shipping and Distribution wing of the Ministry of Agriculture maintains direct contact on operational matters with the Zonal Offices of the Food Corporation of India at the ports, with the State Warehousing Corporations and with the Central Warehousing Corporation's Regional Offices. In this context telex facilities have been provided in the Shipping and Distribution wing, which remains in direct contact with the officials in charge of port operations. Daily position in respect of arrival of ships, their berthing, their discharge and clearance from the ports is received by telegram/telex. In addition, a weekly statement of the committed and uncommitted stocks available and despatches made during the previous week is also received from the ports as well as from the various State Warehousing Corporations and Central Warehousing Corporation units. Efforts have, however, been made to avoid the hazards of over-centralisation and the field units have therefore been given full authority to make despatches in terms of allotments made. The reporting system is utilised to keep an overall watch on the performance, maintaining coordination and making interregional adjustments. This becomes essential because of the fact that the ship arrival position, movement position and the demand position are liable to considerable variations and a central coordinating agency becomes essential in order to maximise the utilisation of the existing resources and stocks.

#### 6.0 OVERALL POSITION OF DISTRIBUTION

Due to various measures adopted, as mentioned above, during the year 1970-71 fertiliser supplies in this country were by and large full in relation to the demands made by the State Governments, seeding programme manufacturers, etc. In the beginning of 1971-72, some difficulty has been experienced in the supply of certain varieties of fertiliser on account of problems in procurement from abroad and transportation problems. With more advance purchases, greater use of road transport and the hope of better availability of rail transport, it is expected that the position in respect of these fertilisers will also be relieved quickly. In view of the inherent flux involved in the situation, constant efforts and watch are however necessary in order to maintain an adequate pipeline for timely supply over the vast and proliferated network of fertiliser distribution in the country.



**14.3.74**