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WORLD FERTILIZER MARKETING
SYSTEMS--WITH EMPHASIS ON DEVELOPING COUNTRIES

by John T. Shields*

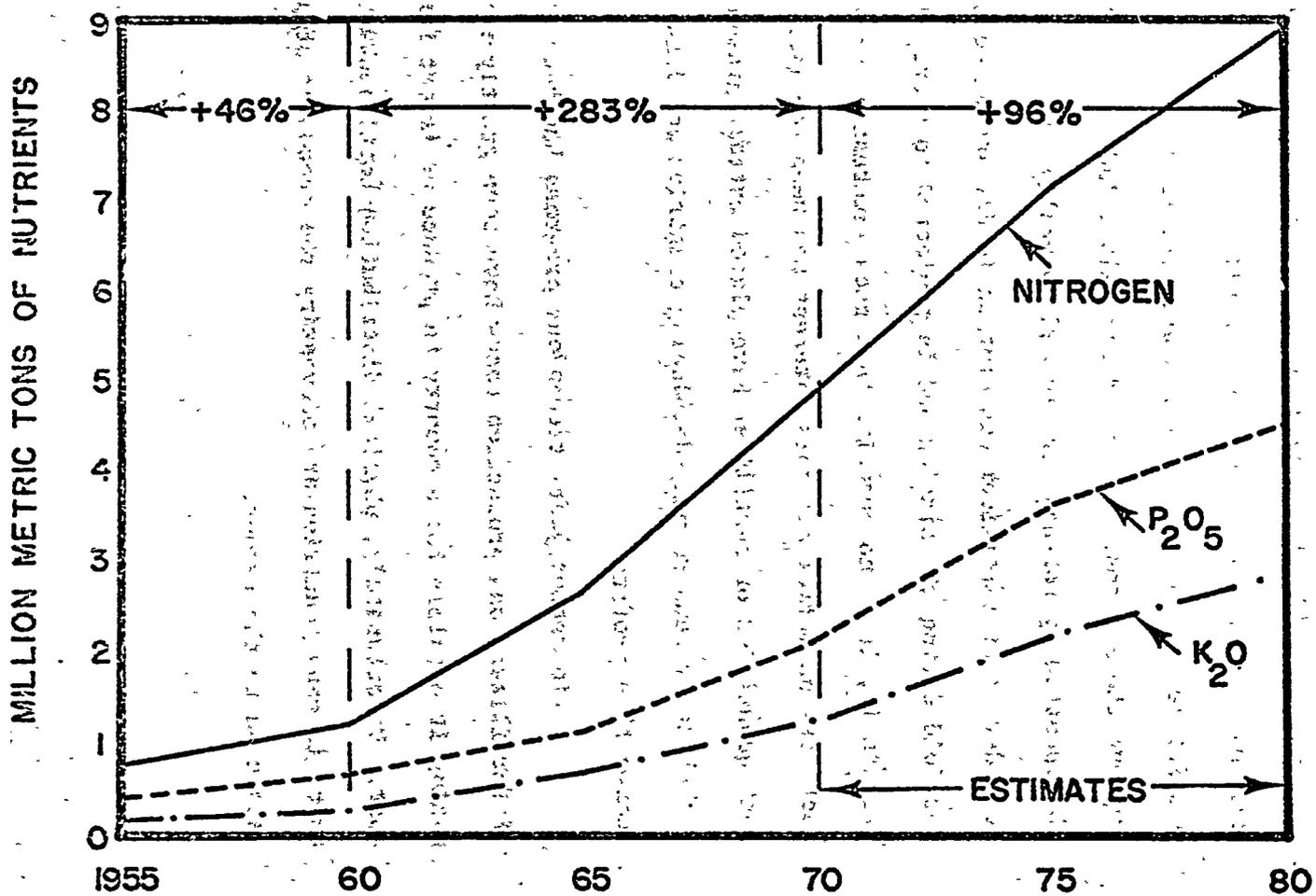
Considerable attention is now being given to fertilizer marketing systems in developing countries. Public and private developmental institutions are interested in conducting research and rendering technical assistance to improve the systems. The world fertilizer industry is interested because of the opportunity for new markets and hopefully greater profits. When one considers that fertilizer consumption in developing countries increased fourfold during the sixties and is projected to nearly double again by 1980 (figure 1), it is no surprise that such interest is aroused. The unfortunate facts of the matter are this interest has been too long in coming, for such quantities of fertilizer have placed extreme pressures on indigenous marketing systems in many developing countries and losses have been more common than profits.

In recent years tremendous progress has been made in the manufacture of fertilizers and production costs have been greatly reduced in many countries making it possible for a country to produce or import fertilizers at a reasonable cost. Unfortunately, physical distribution bottlenecks and/or high marketing costs in many countries are preventing the economies of production from being passed on to the farmer.

In an attempt to help alleviate this problem, the Tennessee Valley Authority (TVA) and the Food and Agriculture Organization (FAO) of the United Nations, at the request of the Agency for International Development (AID), are

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Figure 1
FERTILIZER CONSUMPTION IN 112 DEVELOPING COUNTRIES
 1955-72 WITH ESTIMATES TO 1980



cooperatively engaged in studying selected fertilizer systems throughout the world. Information is being developed relative to the type of system, development and performance of the system, investment in, and costs of operating the systems and trends for future growth. Hopefully, this data will be used by policymakers and market planners in structuring more effective and efficient distribution systems in countries where such efforts are needed.

Toward an Understanding of Marketing Systems

Fertilizer marketing systems are a product of the environment, a protege of the political, economic, and social pressures that have shaped the organization of agriculture over several centuries. There are wide differences in marketing systems as they operate in respective countries. This can be attributed to the fact that marketing is an integral part of the larger agricultural sector and the nation's overall economic system. A modern marketing system is neither feasible nor useful where agriculture is largely subsistence and where the overall economy is operating at a low-level of technology. Similarly, a modern farm production system cannot be sustained without a marketing system capable of adequately supplying needed inputs (fertilizer) and handling the increased output. Fertilizer marketing systems are not static. They evolve over time and are closely associated with conditions in the country and its stage of development. Hence, a first step in analyzing fertilizer marketing systems is to relate them to their environment.

The underlying premise of the work is that there is a pattern of evolution of fertilizer marketing systems in developing countries. These systems evolve as a part of the overall development of a country. The "growing pains" which accompany changes in fertilizer marketing systems may be diagnosed by knowing what to look for. By treating these "ailments"

within the framework of the system, hopefully, one can assist in the orderly planning of fertilizer marketing systems in developing countries.

As the marketing system evolves, there are certain characteristic marketing activities and problems that are likely to emerge as the system responds to certain technological innovations. For purposes of analysis, we can group fertilizer marketing systems into three categories, even though the categories might overlap and any given country will differ with others in the same category. A brief description of characteristics in marketing development and other key variables will help in understanding this categorization.

Figures 2 and 3 are designed to illustrate the evolution of fertilizer marketing systems in developing countries. Certain features in the diagrams require an explanation in order to better understand the process of market development and how this process can serve to identify emerging marketing problems.

The diagrams portray three stages in continuum--traditional, transitional, and commercial market-oriented marketing systems. These stages may represent countries, or regions within a country or even individual fertilizers. For example, it is entirely possible for nitrogen products to be in the second or third stage of development while P_2O_5 and K_2O are still in the first stage (traditional). In each case there is a developmental process--beginning with the traditional activities through the transformation to more advanced marketing systems, culminating with the commercial market orientation.

As the marketing system evolves it includes a larger proportion of importers, manufacturers, and farmers; more activities are involved and more fertilizers flow through the systems. Greater size also implies growing complexity of marketing activities which make up the fertilizer marketing

Figure 2

EVOLUTION OF FERTILIZER MARKETING SYSTEMS

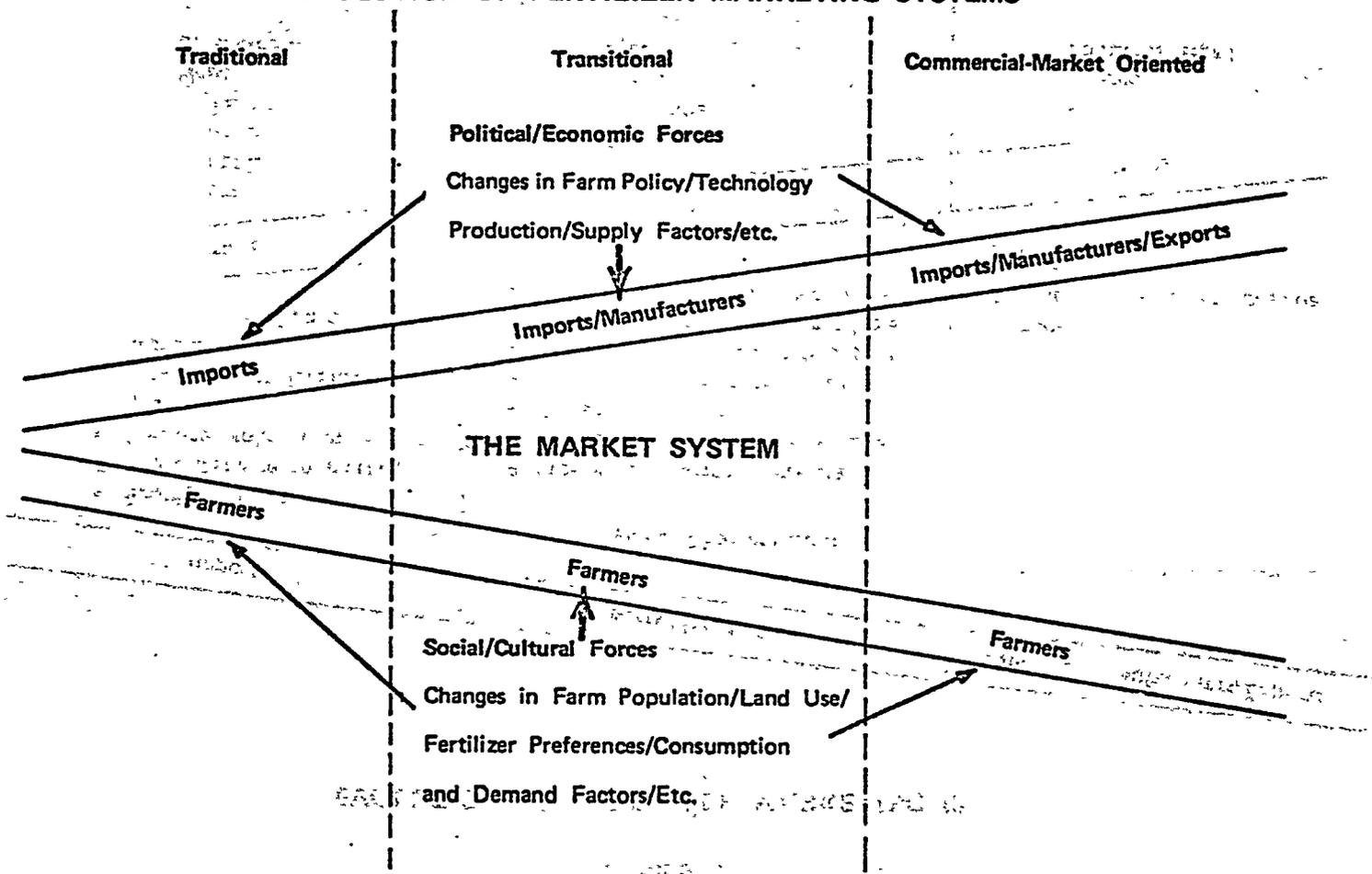


Figure 3

EVOLUTION OF FERTILIZER MARKETING SYSTEMS

| Traditional | Transitional | Commercial-Market-Oriented |
|---|--|--|
| Imports | Imports/Manufacturers | Imports/Manufacturers/Exports |
| <ul style="list-style-type: none"> • Supply is imported • Short distance to market • Fertilizer sold in small quantities • Few types of fertilizer available • Fertilizer subsidized | <p>Typical Characteristics</p> <ul style="list-style-type: none"> • Production capacity accelerates • Transportation bottlenecks appear • Storage is critical • Farmers demand more services • Temporary surpluses may appear • Public & private capital available • Lack of farmer and dealer credit | <ul style="list-style-type: none"> • Fertilizer market diversified • Marketing costs increase significantly • Efficiency problems arise • Quality control important • Exports are common • Consumption increases slowly • Supply/demand forces at play • Wholesalers/retailers provide more services |
| Farmers | Farmers | Farmers |
| <p>Ghana Ethiopia Paraguay Indonesia Nepal S. Vietnam</p> | <p>Thailand Philippines Kenya Brazil</p> | <p>Taiwan Mexico Southern Brazil Venezuela Japan U. S. European Countries</p> |

systems. Greater specialization among marketing activities and the individuals and institutions that perform them is the main cause for this complexity. Now, for a closer look at some of the characteristics of each stage of development along with country examples.

1. Countries with traditional fertilizer marketing systems: a large percentage of the population derive their livelihood from farming; productivity and incomes are low. Fertilizers are usually in short supply; farmers lack the incentive to buy fertilizer; credit for fertilizer is inadequate; most fertilizer is imported; domestic prices are usually above world market prices; fertilizer is frequently subsidized; few types of fertilizers are available in the market; transportation to the farm is often by animal drawn conveyance; distance fertilizer is moved in the market is very short; there is virtually no regulation or quality control; fertilizer is often sold in very small quantity--sometimes as little as a kilo (2.2 lb).
In addition, this system is usually absent of new technology and government policies supporting market development are virtually nil or in the infant stage of development. Time is usually not highly valued. Changes in the system are taking place slowly and marketing services, practices, and facilities are likely to accommodate themselves to needs as they emerge. Country examples are: Indonesia, Paraguay, Ghana, Nigeria, Ethiopia, Zaire, Senegal, Nepal, and South Vietnam.

Table 1 projects some salient features of four typical developing countries in the early stage of fertilizer marketing development--Ghana, Ethiopia, Paraguay, and Indonesia. With the exception of Indonesia very little fertilizer is used in these countries. As

Table 1. Comparison of Fertilizer Marketing Systems for Four Developing Countries in the Traditional Stage of Market Development¹

| Item | Ghana | Ethiopia | Paraguay | Indonesia |
|---|---|--|--|---|
| Consumption (mt nutrients) (1971) | 2,100 | 2,300 | 3,000 | 249,000 |
| Seasonal consumption | 90% sold in Mar-June period | 80% May-September 10% February-April | 85% for summer crop | 65% first crop; 35% second crop |
| Source of supply | Imported by Government primarily from Europe | Imported early by private importers - Europe | Imported by government & private sources - U.S. - Europe | 80% imported including all P ₂ O ₅ , K ₂ O & mixed from U.S., Europe, Asia by Public Sector & some private |
| Marketing channels | Through Crop Production Division, Ext. Serv., Co-ops, State Farms | Privately operated to large scale farmers co-ops market to small farmers | Private dealers - primarily expatriate | Government channels by 3 agencies - Pusri, Pertani, Pertamina |
| Transportation | 99% by truck - barge just starting | 100% truck | 100% truck to dealers truck/animal draft to farm | 100% truck to distributors - animal draft/truck to farmer |
| Transportation costs as % of retail price | 14%-51% | 30% | 13%-18% | 15%-20% |
| Storage | National, regional, dist., subdistrict | Lack of storage facilities | Most storage in Asuncion primarily | Not adequate but is available at all levels |
| Storage costs as % of retail price | 13%-23% | 5% approximately | Not available - included in importers margin | 3%-5% average |
| Credit assistance | Limited credit services joint responsibility groups have been tried | Private trade to large farmers - Government provides credit to small farmers | National banks/traders | Available to importers & distributors at low interest by Govt. farmers; private/institution credit to farmer - high interest |
| Pricing | Uniformed fixed prices | Free market - transport cost partly pooled | Free market | Regulated prices with subsidies |
| Subsidy as a % of retail price | 77%-112% | No subsidy | No subsidy | Importer & distributor subsidized: price subsidized, urea at 40% & TSP at 55% |
| Gross marketing margin as a % of retail price | None | 20% at the importer level; 4% at retail level for 18-46-0 | 20%-40% at the importer level; 5%-15% at retail level | Importer 4.5%; distributor 2.8%; subdistrict 1.2%; retailer 1.5% |
| Average retail price - selected fertilizer | Ammonium sulfate \$32 urea \$44 (excluding subsidy) | | Urea \$133.00; TSP \$117.04; DAP \$136.87 | Urea & TSP \$65 excluding subsidy |
| Promotion responsibility | Extension service & commodity boards | Extension service | Extension service - private suppliers | Extension service, primarily |

¹ Not all items in this table are comparable due to the preliminary status of the study--only selected salient features have been used in this analysis.

is the case in most tropical climates, seasonal consumption has two peak periods which usually correspond with the first and second crops. Again, with the exception of Indonesia, all fertilizer is imported usually through the public sector and distribution may be through government and/or private channels.

Most of the cost of marketing fertilizer in these countries is made up of expenses incurred in transporting and storing fertilizers. For example, in Ethiopia these two expenses amounted to 35% of the retail farmer price while in Indonesia they amounted to about 25% of the farmer price.

Credit is usually identified as a serious limiting factor to market expansion. However, this is not always the case. Credit is generally available through government banks, importers, private distributors and cooperative societies; however, the noninstitutional sources of credit are usually expensive. It is common to find interest rates as high as 30%-50% per year in some developing countries. Payment in kind (crop) is also very common and usually is one of the most expensive sources of credit for low-income farmers.

Pricing is generally government controlled and is fixed in countries in the traditional stage of marketing. In table 1 I have deliberately selected two countries with regulated prices and two countries with free market conditions. Both Paraguay and Ethiopia have a free market and no subsidy while Indonesia and Ghana have regulated prices and subsidize fertilizer. The effect of the subsidy is different in each country and is indicative of the different subsidy policies that occur in developing countries. While some countries subsidize

the farmers others prefer to subsidize importers, manufacturers, and even some countries subsidize distributors.

2. Countries with transitional fertilizer marketing systems: Country is becoming more market oriented; production of food crops is a priority in agricultural developmental plans; public and private capital is going into expansion of the marketing system; fertilizer production capacity is rapidly increasing; fertilizers are moving greater distances to farmers; more attention is given to pricing policies; more types of fertilizer are available; temporary surpluses may appear for some fertilizers; transportation is often a critical bottleneck; animal transport is being replaced by more advanced conveyances; storage is usually short and costly; farmers are demanding more services in connection with fertilizer marketing; and the need for better market news and price information is now a problem.

A general expansion of the marketing system is taking place, requiring new policies, more facilities, more services and more capital. Fertilizer demand is increasing (sometimes rapidly) and primary emphasis is on improving market infrastructure. Country examples are: Kenya, Brazil (excluding Southern Brazil), Pakistan, India, Thailand, Philippines, Afghanistan.

Table 2 presents market data for Brazil, Thailand, Philippines and Kenya. These countries are examples of countries with marketing systems undergoing considerable change as a result of aggressive agricultural development policies encouraging fertilizer programs to help increase food production. Each of these countries' governments

Table 2. Comparison of Fertilizer Marketing Systems for Four Developing Countries in the Transitional Stage of Market Development¹

| Item | Thailand | Kenya | Brazil | Philippines |
|---|--|---|--|---|
| Consumption (mt nutrients) (1971) | 97,000 | 54,000 | 1,126,004 | 170,000 |
| Seasonal consumption | 50% May-August; other sales evenly distributed | February-March = peak Oct.-Dec. smaller peak | Evenly distributed with small peak in Oct.-Nov. | Two peaks = March-May November-January |
| Source of supply | Imports account for 85% of supply - Japan, U.S. Europe through commercial importers - 15% domestic production primarily nitrogen | 100% imported primarily from Europe by private importers | Nitrogen = 76% imported P ₂ O ₅ = 88% imported K ₂ O = 100% imported worldwide imports primarily U.S., Europe, Mexico | 45% imported 55% produced domestically Import by private companies & sugar assn. |
| Marketing channels | Private distributors & numerous Chinese merchants through wholesale/retail channels at 5 trading levels | Private importers distribute to large farms directly & through appointed dealers to small farmers | Producers → Farmer Co-ops → Farmer (15%) Private dealers → Farmer Company dealers → Farmer Agent → Farmer | Primarily through Co-ops → Farmer Mktg. assn. → Farmers Private dealers → Farmers |
| Transportation | 90% of sales originate in Bangkok - 69% by truck; 24% by rail; 7% by water | Combination railway/truck - farmers pick up fert. at railways | Combination rail/truck with farmer pick up | Most by truck/barge |
| Transportation costs as % of retail price | 7%-10% averages | 15%-30% | Approx. 10% with discounts common | Approx 8%-10% |
| Storage | By Govt. stores/private dealers virtually no storage up country | Lack of storage at retail level | Mostly at production points but dealers & co-ops are expanding | Inadequate stocks held due to shortage of storage |
| Storage costs as % of retail price | <1%; not significant included in importer margin | 7%-9% | Not available, included in distributors margin | Not available, included in dealers margin |
| Credit | 70% of all fertilizer sold on credit; 55% from institutional source; 45% from traders at high interest | Available through Govt. banks, co-ops, & traders | Dealers → Farmers (12%-24%) Banks → Farmers (6%-12%) Co-ops → Farmer (6%-8%) Lack of dealer credit | Available primarily through Govt. (ACA) with some banks & dealers giving credit High losses & high cost credit, also crop/barter |
| Pricing | Open market - prices abnormally high | Free market with subsidy | Free market | Free market with cheaper prices in food sector |
| Subsidy as a % of retail price | None | 18%-35% | None | Socialized pricing in the food sector |
| Gross marketing margin as % of retail price | Abnormal markup at importer level - 80% 20% through wholesale/retail channel | Wholesaler: TSP=7% A. sulfate=9% Retailer: TSP=5% A. sulfate=12% | 30%-35% for urea 35%-50% for DAP | Co-ops - 5%-7% importer distributor 25%-35% Dealers - 10%-12% |
| Average retail price - selected fertilizer | 21-0-0 = \$130 urea = \$165; 16-20-0 = \$195 | Ammonium sulfate = \$44 Urea = \$81; CAN = \$66 | Urea = \$115; DAP = \$157; 3-15-15 = \$67 | Urea = \$120; Ammonium sulfate = \$79 |
| Promotion responsibility | Extension; mktg. boards; private efforts not successful | Divided among Govt.; co-ops; importers & extension service | Extension, co-ops; company's dealers | Extension, dealers, co-ops |

¹Not all items in this table are comparable due to the preliminary status of the study--only selected salient features have been used in this analysis.

has encouraged private sector investment in fertilizer marketing with different degrees of success.

With the exception of Kenya the other countries produce fertilizer indigenously, the Philippines and Brazil more than Thailand. However, all four countries depend on imports to help meet demand. Each country is now planning to build and/or expand present production capacity in order to reduce imports and save foreign exchange.

Transportation, credit, and storage is a common problem to all four countries. Thailand has virtually no storage outside Bangkok in the major fertilizer consuming areas. Kenya has limited storage which is compounded during the rainy season because of demand at peak consumption periods. Most of Brazil's present storage is at or near production points. This situation is changing as Brazil begins to build bulk blend facilities and locate storage terminals nearer the market.

Fertilizer prices, by U.S. standards, are high in all four countries being compared, especially since little or no services are provided by dealers. The Philippines is an exception in that producers and cooperatives have fair to excellent agricultural service centers and do provide technical services. A good example is The Sugar Producers Cooperative Marketing Association (SPCMA), formerly ESSO of The Philippines.

In Thailand about 80% of the total fertilizer finds its way to the farmer through private traders. There are five different levels of fertilizer trading from the commercial importer to the farmer.

Selling methods tend to be opportunistic, short range, and price oriented. Brand advertising is the most important source of promotion by dealers with virtually no technical services available from private sources. One firm, Thai Agricultural Services Company (TASCO), now in liquidation was in a class by itself insofar as it was attempting to establish an entirely new distribution system for fertilizers, pesticides and other farm inputs. Some experts say it failed because it was too advanced and not well understood by Thai agriculturists.

3. Countries with commercial market-oriented fertilizer marketing systems:

This type of marketing system is well known to all of you since our own U.S. system is representative. Basically, the country is a large consumer of fertilizer relative to available land; problems of fertilizer supply begin to shift from issues of production to distribution; the fertilizer market is quite diversified; mixed fertilizers are important sources of N, P₂O₅, K₂O; granulation and blending are commonplace; a larger portion of the fertilizer purchases by the farmer will be through a wholesale/retail distribution channel as opposed to the basic producer selling direct to the farmer; attention shifts to market organization changes in order to gain efficiency in the system; with farmers demanding more services an increasing portion of the fertilizer bill is taken up by the cost of providing these services; distribution costs usually account for a major share of the marketing bill, and government policy is usually consumer oriented thus the marketing system is regulated so as to protect the farmer from misrepresentation and malpractices. Country examples are: United States, European countries, Taiwan, Southern Brazil, Mexico, Venezuela, Costa Rica, and Korea.

Data in table 3 represents four countries which have reached the late stages of market development. Although Mexico and Venezuela are still undergoing major shifts in their fertilizer programs, the fertilizer market in each country is well developed. Each of the four countries has been extremely influential in other countries in their geographic region. With exception of Venezuela, the countries are exporters of fertilizer with Japan exporting 60% of its nitrogen, mostly to neighboring Asian countries. Venezuela will soon be exporting nitrogen.

The contrast in the marketing channels is interesting. Most of the fertilizer in Japan and Taiwan is marketed through cooperatives while most of the fertilizer in Mexico and Venezuela is sold through noncooperative channels. Another similarity is transportation. The transportation cost expressed as a percent of marketing cost is the same for Mexico and Venezuela while Japan and Taiwan have similar transport cost.

Pricing is controlled in all four countries but to different degrees. Taiwan's pricing mechanism is the most unique of the four countries. It operates on the barter principle--barter paddy rice for fertilizer. Mexico and Venezuela operate on the "price equalization" principle, i.e., fertilizer prices are the same throughout the country. Japan's pricing scheme involves "fixed prices" negotiated between ZEN-NOH and Representatives of the Japanese Fertilizer Industry.

The cost of marketing appears to be lowest in Taiwan (10%-16% of retail price). However, it should be pointed out that Taiwan's

Table 3. Comparison of Fertilizer Marketing Systems in Countries in the Commercial-Market Stage of Development¹

| Item | Japan | Mexico | Taiwan | Venezuela |
|---|--|---|---|---|
| Consumption (mt nutrients) (1970/71) | 2,241,000 | 544,537 | 257,000 | 59,000 |
| Seasonal consumption | January-June - 60% | May-August - 51% December-January - 20% | February-March - 40% July-August - 50% | March-June - 50% November-December - 20% |
| Source of supply | Domestic produced compounds account for 75% of market | Domestic production - 90%; imports - 10% | Self-sufficient, now exporting | Net imported now but will be net exporter of N by 1974 |
| Exports | 60% of nitrogen production exported | Prior 1970 insignificant - now increasing | 10%-15% of total prod. | None |
| Marketing channels | Cooperatives - 68% private merchants or dealers - 32% | Guanomex, public sector distributors - 52% commodity assoc.; banks - 48% | Public sector corp. - 10%; Taiwan Food Bureau - 65%; commodity assoc. - 25% - 85% marketed through co-ops | All fertilizer channeled through Govt. corp (IVP) private - 20% banks - 35% (reform) commodity boards - 30% |
| Domestic transportation | Truck - 77%; rail - 16% barge - 7% | Truck - 84%; rail - 16% | 90% by rail/truck | Nearly all truck to the farmer |
| Transportation costs as % of marketing cost | 20%-25% | 10%-12% | 30% | 10%-12% |
| Storage | Wholesale level - 65% retail level - 35% most of which is co-op | Wholesale level - 80% Farmer Assoc. - 15% Local distrib. - 5% | Primarily at rail heads and Food Bureau warehouses | At all levels but not close to farmer |
| Volume sales (not comparable) | \$190,000 annual turnover per firm | Approx. 25,000 mt - at wholesale/retail combination dealer | Not available | Small dealer - 1500 Large private dealer - 25,000 |
| Credit to farmers | Co-ops → Farmers Private trade → Farmers Credit purchases account for 2/3 of all purchases | 72% all fert. was sold on credit at 9%-12% interest/annum, Guanomex banks, etc. | Through barter by Taiwan Food Bureau-Taiwan Fert. Co., banks, etc. | IVP → Farmers Bank → Farmers Private dealers → Farmers |
| Pricing | Negotiated fixed price by co-ops; free price in private trade Seasonal pricing | Controlled by Guanomex seasonal-pricing | Fert./crop barter for rice; all other crops cash/credit basis | Price equalization principle at all locations |
| Marketing cost as a % of retail price | 25%-50% depending on type of fert. | 35%-40% | Taiwan Food Bureau 16% Taiwan Fert. Corp. 10% | 15%-20% (estimated) |
| Gross marketing margin as a % of retail price | 15%-35% depending on type of fertilizer | 8%-34% depending on fertilizer type | 5.2%-20% depending on fertilizer | 11%-13% excluding producer's margin |
| Average retail price selected fert. (mt) | Urea \$117 15-15-15 \$132 ammonium sulfate \$48 | Urea \$114 DAP \$145 ammonium sulfate \$60 mixed fert. \$120 | Urea \$95 16-20-0 \$80 ammonium sulfate \$62 20-5-10 \$79 | Urea \$100 ammonium sulfate \$61 12-12-17 \$111 DAP \$138 |
| Promotion responsibility | Local extension, cooperatives private wholesalers | Guanomex, extension, co-ops, dealers | Taiwan Food Bureau Taiwan Fert. Corp. | Primarily IVP extension service some |

¹Not all items in this table are comparable due to the preliminary status of the study--only selected salient features have been used in this analysis.

marketing system is a very tight government regulated system and it is difficult to evaluate marketing cost because of the built-in character of the rice-fertilizer barter system.

Marketing margins vary widely among fertilizers in each of the countries. For example, the range in Japan is 15%-35%, in Mexico 8%-34%, 5%-20% in Taiwan and 11%-13% in Venezuela. The margins in Venezuela do not include the producer's margin, which is thought to be significant.

In each of the four countries the producers are very instrumental in promoting fertilizer sales. Promotion is also conducted by most of the cooperatives, extension services, and dealers. Generally speaking, highly commercial fertilizer marketing systems have good promotional schemes which are adapted to environment within which the system operates. It is in this area of promotion that countries in the early stages of market development can profit most by examining more advanced systems which are similar.

General Problems Identified in Fertilizer Marketing Systems--Each

country has its own set of problems just as each stage of development is characterized by certain kinds of conditions and problems which emerge as the system changes. Investigation of selected marketing systems to date (although limited) has identified several general factors crucial to and limiting the growth and efficiency of marketing systems in developing countries. These constraints are grouped according to their level of influence on the marketing system.

Political and Economic Constraints:

1. Uncertainty and inconsistency of government policy regarding marketing infrastructure needs.
2. Unwillingness or inability of governments to enforce existing policies regarding fertilizer distributor responsibilities.
3. Failure of both public and private sectors to encourage re-investment of monies in expansion of the marketing system.
4. Lack of continuity in policy enforcement due to rapid turnover in government officials.
5. Shortage of qualified personnel to handle the appropriate management and planning necessary for an effective and efficient fertilizer marketing system.

Market Infrastructure Constraints:

1. Lack of adequate transportation facilities at reasonable costs especially in Africa.
2. Inadequate or poorly located storage facilities usually long distances from the point of supply.
3. A shortage of institutional credit to small farmers and also small retail distributors in order to maintain adequate stocks of fertilizer.
4. In many developing marketing systems, fertilizer prices are predetermined and are termed as a fixed uniform price to encourage fertilizer use in distant areas of the countries. This in turn penalizes those farmers near the source of supply.
5. Improper and/or misuse of subsidies which tend to create a financial burden for the marketing system.

6. Marketing margins at the wholesale/retail level are generally too low to induce reinvestment into the system. Profits are usually siphoned off at or near point of supply.

Farm Level Constraints:

1. Unfavorable fertilizer/crop price ratios prevent farmers from using fertilizer economically.
2. Farmers' lack of knowledge about fertilizer is still a serious problem in many developing countries.
3. Farmers in most developing countries are unable to store fertilizer at the farm.
4. Procedures for buying fertilizer in some countries are often complicated and discourage farmers from placing orders.
5. Credit is very expensive, especially from noninstitutional sources, and the costs frequently discourage farmers from buying fertilizer.

Some Conclusions and Recommendations

In this paper a number of issues have been touched on regarding the improvement of fertilizer marketing systems in developing countries. Several points seem obvious--any improvement in marketing systems in developing countries must include some changes in transportation and storage facilities at all levels of marketing; responsibility for marketing fertilizers must be with organizations that have a vested interest and can effect changes in the system; those who distribute fertilizer must have sufficient incentives to handle and promote fertilizer sales; innovations in the marketing system must be in line with the capability of the system. Pricing policies involving subsidies can retard a system's progress if the subsidy is not applied properly and at appropriate level in the marketing chain and government policies must be

conducive to expansion and improvement in the marketing infrastructure including investment incentives.

It is apparent that most developing marketing systems are in need of guidance and training at three various impact levels:

*At the policymaking level

*At the executive management level

*At the wholesaling/retailing level

Each of these impact levels requires a different approach and different action. For the greatest impact the training should start at the policy level in order that government officials become aware of the needs and conditions necessary for effective and efficient fertilizer marketing within the system's environment. Training at the management level should give the marketing management team the tools with which to organize a sales and promotion program while training at the retail level should leave the distributor with tools for operating a profitable fertilizer business.

Some Thoughts on Providing Assistance

Removing the bottlenecks in fertilizer distribution systems in developing countries will require more than increased capital investment in the systems. Technical advice and assistance through seminars, workshops and training programs will be needed in order to influence policy and create conditions necessary for viable marketing systems.

Many public and private organizations will be engaged in rendering marketing assistance through both bilateral and multilateral efforts. FAO will provide assistance through its technicians and the Fertilizer Industry Advisory Committee; most European countries tend to provide assistance through direct bilateral aid as does Japan. The U.S. Government provides assistance primarily through the AID program and its missions in the country by contracting with TVA and other research and development institutions. Numerous other

organizations such as the World Bank, Regional Banks, United Nations Industrial organization (UNIDO), Organization for Economic Cooperation and Development (OECD), etc., will also provide assistance at various levels of market operations.

The world fertilizer industry through its normal trade relations is in the best position of any group to make an impact on fertilizer market development. No organization or person knows your product better than you, no one is more aware of its benefits than you are, no one can sell it better than you can. You know the problems of promoting, merchandising, and distributing fertilizer better than anyone else. You know how to diagnose and treat the "symptoms" of market inefficiency and ineffectiveness. In other words, you the fertilizer industry, can greatly assist in improvement of fertilizer marketing systems in the developing world. After all, who stands to gain most from the doubling of fertilizer consumption in the developing countries during the 1970's. YOU DO.