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Introduction

FERTILIZER and lime are increasing in importance as production supply items in farming operations in the Eastern Panhandle of West Virginia. Many changes are taking place in the manufacturing and distribution of fertilizers. What changes are adopted, and how they are adopted, are of special concern to farmers, dealers, and manufacturers. Of special interest to farmers are such considerations as: (1) availability of the kinds and grades of fertilizer desired; (2) services available; and (3) costs of materials and services.

Present methods of lime and fertilizer distribution in the area are not well known. For this reason a study of these methods, as well as relevant trade opinions of dealers in the area, is being made by the West Virginia University Agricultural Experiment Station and Farmer Cooperative Service, United States Department of Agriculture.

Because many of the large orchardists in the area do not buy their fertilizer through in-state dealers, their procurement practices cannot be reported as a result of the work completed to date. Their fertilizer procurement problems need to be studied in a different manner. Also, grocery stores and the like, which handle small amounts of fertilizer, were not included in this study.

Kinds of Dealers in the Area

Forty-one dealers who handle fertilizer, lime, or marl in the Eastern Panhandle were included in this study. Twenty-two of these dealers had retail stores, 13 were without fixed retail establishments other than their homes, four were farmers, and two were manufacturing-sales establishments. An estimated 21 thousand tons of fertilizer were sold in the year July 1, 1953 to July 1, 1954 by these dealers. Six of the 22 retail stores were either local farmers' cooperatives or affiliated agents of a regional cooperative organization. These stores were larger than the typical non-cooperative retail store and handled an average of 480 tons per store during the period, compared with an average of 132 tons for the non-cooperative retail stores.

Most of the fertilizer dealers reporting handled several "lines" of farm supplies. Twenty-one reported either fertilizer, lime, or marl as the most important retail line. Three indicated fertilizer as their only retail line, two stated that marl was their only retail item, and two reported lime as the only farm supply item they retailed. In the Eastern Panhandle, the general farm supply store is the most common type of business establishment handling fertilizer.

The volume of fertilizer handled by individual establishments varied greatly—from less than a ton per year to several thousand tons. Most of the fertilizer distribution is controlled by two organizations. The six largest establishments handled about 87 per cent of the total tonnage. The number of dealers, according to tonnages handled for the year July 1, 1953 to June 30, 1954, was as follows:

TONNAGE HANDLED	NUMBER OF DEALERS
Under 100	26
100-499	9
500-999	3
1,000 and over	3
TOTAL	41

About 60 per cent of the fertilizer was sold during the first half of the year. It was estimated that 5 per cent of the fertilizer was for non-farm use.

Lime and marl distribution has become the principal business for several people in the area. There are eight operators who have no other business and are not farming. Most of these concerns are small, and the operator usually drives his own truck.

Only one of the dealers in the area was equipped to mix fertilizers. This concern mixes on a commercial basis and also serves other dealers in the area.

Operations and Equipment

Bulk fertilizer is handled by seven dealers, who sold about 80 per cent of the fertilizer in the area. Four of these dealers do their own hauling and have spreading equipment. The wholesale distributor does the hauling and spreading for the other three. The four who haul have 2-ton spreader trucks—three fan-type spreaders, and one auger-type spreader.

Hauling and spreading charges varied from $2.50 to $4.50 per ton. Two dealers charged $1.00 extra per ton for applying on plowed ground;

one dealer charged $1.25 per ton extra for loads of less than 5 tons; and three dealers charged extra for longer hauls. In all instances the dealers spread the bulk fertilizer if they hauled it, so there was no separate charge quoted for spreading.

Detailed records were kept on the spreading of dry bulk fertilizers. Except in rare instances, it was possible for the driver to go directly to the field and immediately spread the fertilizer. On a few occasions, however, the driver had to wait as much as an hour for the farmer to designate where the fertilizer was to be spread. The fields upon which bulk fertilizer was spread were larger than the average for the area. It took an average of about 4 minutes per acre to do the spreading under the field conditions (rock outcropping frequent) encountered in the area. (For further details as to bulk spreading practices see Table 1.)

Table 1. Operating Factors in Spreading Bulk Fertilizer as Reported by Eight Dealers in the Eastern Panhandle, 1953-54 Season

Item	Range		Average
	From	To	
Tons of fertilizer per load	2.8	6.0	4.6
Miles to farm (one way)	1.5	75.0	19.7
Number of acres in field	7.0	70.0	23.1
Number of minutes per load used for:			
loading	15.0	40.0	21.9
travel to farm	10.0	185.0	54.7
spreading	45.0	120.0	78.8
travel back	10.0	150.0	44.4
other	15.0	125.0	47.5
Total minutes per load	120.0	435.0	217.5
Miles per load in round trip including the spreading	9.0	155.0	49.6
Miles per load traveled while spreading	4.0	18.0	9.2

The practice of field mixing has developed to a limited extent in the area. One three-hopper "Gandy" spreader was operated near Wardensville in the spring and summer of 1955. This machine is owned by an individual, but its use is encouraged by a cooperative, which furnishes the fertilizer ingredients. This spreader mixes three concentrated ingredients according to a desired formula as it applies fertilizers to the soil. This method had two principal advantages over the ordinary dry bulk distribution—(1) the mixture could be adjusted to the exact fertilizer requirements of individual fields or parts of fields, (2) savings were possible because less weight was being hauled over the fields as well as to the farm.

The owner of the Gandy spreader stated that hauling the spreader on a trailer in order to move it on the public roads is a disadvantage.

Also, it took more time to cover an acre than did the spreader trucks. Depending upon the type of power used for pulling, this spreader might be usable on steeper ground than the truck spreader. In general, those who used this spreader were rather enthusiastic about its possibilities.

Liquid fertilizer has not been used extensively in the area. One dealer was equipped to handle anhydrous ammonia but did not use his equipment to any great extent. There was a great variety of opinion among the dealers as to the future of liquid fertilizer in the area. Some stated that they thought it is the "coming thing," and others were indifferent to its possibilities.

The handling of bulk fertilizer, now a fairly common practice, has been adopted by the larger firms in the area. Some of the other practices have been, or are being, pioneered by small firms or operators. For example, use of anhydrous ammonia and the three-hopper field mixer-spreader have both been tried out by small operators. The services and operating practices of cooperatives or agents of cooperatives are much like those of other establishments.

Informational Services

Dealers were asked to what extent they advise farmers about the kind of fertilizer needed and general application practices. Twelve of 41 dealers stated their practice as follows: six sent out pamphlets; three sponsored meetings with personnel from the West Virginia University Extension Service; and four held farmers' meetings, two of which showed movies and made recommendations to farmers.

Only one dealer in the area was equipped to test soil. Seven stated that they will send soil samples to fertilizer companies if farmers request it.

Most of the dealers reported that they considered more than half of the people working in their establishments as competent to advise farmers in their fertilizer needs. Upon being asked how their employees had gained this competency, the following replies were received:

SOURCE OF FERTILIZER INFORMATION	NUMBER REPORTING
Fertilizer companies and cooperative meetings	12
Literature from fertilizer companies	9
County extension agent	7
Experience	3
Actually testing soil	2
Plant training	1

No information, however, was obtained as to the extent farmers relied on these individuals for recommendations or considered them competent.

Sixteen dealers gave no definite source for such training. Some stated they believed that the informational and educational aspects of the problem were not their responsibilities. A more common view, however, seemed to be that the dealer would like more help in getting the proper information to farmers in his area.

Prices, Credit, Discounts, and Services

Fertilizer dealers do not have rigidly-fixed price and credit policies. Most of them treat the problem on a personal basis.

Cash and credit prices—Nineteen dealers stated that their price quotations were on a cash-and-carry basis. Even though their prices were quoted in this manner, nine gave credit and made no charge for this service. Their decision to give credit was based on the particular circumstances bearing on the transaction at hand. Nine other dealers either charged for credit or gave discounts for cash. In many instances it seemed that no clear-cut policy existed.

Delivery charges—Only four of the dealers stated that they do not give free delivery service, charging from $1.00 to $1.50 per ton for delivery. Some of the others were considering a minimum delivery charge in order to discourage small orders.

Spreading charges—Six different operators spread fertilizer. Two of these charge $0.50 per ton more than the cash-delivered price: two charge $1.00 per ton extra for spreading on plowed ground; and two make no charge for spreading but have a 5-ton minimum load. Most of the dealers stated that they would prefer to have the farmer both haul and spread the fertilizer.

Quantity discounts—It was not a common practice to give these discounts; only eight dealers indicated that they gave them. The minimum quantities required by the individual dealers to be eligible for a discount ranged from 3 tons to a carload. Most of the dealers quoted a higher price on a bag basis than on a ton basis. Usually there was no difference in the per-bag price whether only one or several bags were bought. If a price difference was made, it was done on an informal non-quoted basis.

Other discounts—Discounts were given for various other reasons. One dealer gave a discount on spreading charges in fields above a specified minimum size. Some dealers encouraged early-season movement by announcing peak-season prices in advance and discounting from this price if the fertilizer is taken early. One gave a discount if the fertilizer was ordered in advance of the delivery date.

Marl and Lime

Marl—Ten dealers handled marl. The marl was quarried from local beds. Much of it moved out of the area. Prices at the marl beds were quoted from $0.45 per ton and up, but the cash-delivery price was the most important price. This price—to local farmers—ranged from $1.60 per ton and up, depending on farm location with respect to the source. According to the information received, it was possible for any farmer in Jefferson County to get marl delivered for $1.60 per ton.

Lime—Twenty-four dealers handled lime in some form. Nine dealers priced bulk lime by the load. Prices varied from $2.50 to $7.50 per ton on a cash-delivery basis. The top price was for burnt lime. The gross margin reported by dealers ranged from $0.50 to $3.50 per ton. The higher margins were received on some lime moving out of the State. The top margin received from West Virginia farmers was $2.00 per ton.

Bagged ground lime was handled by two dealers. The hydrated bagged lime, handled by four dealers, was priced from $18 to $24 per ton on a delivered basis. Prices on a delivered basis for less-than-ton lots for hydrated bagged lime were quoted by 19 dealers and ranged from $20 to $28 per ton—but mostly $22 to $24 per ton on a cash-delivery basis. The top price was for burnt lime. Five of the dealers made separate charges for delivery, but their total price came within the range indicated. Margins reported on bagged lime ranged from $1 to $8 per ton, averaging $4.50 per ton.

Dealers were asked whether they make money on lime. Ten stated that they think they are making money, 18 said they are not making money; and one stated he could make money if he could get enough lime. Only one dealer planned to change his practices, and that was to raise the price. Those who lost money stated that they handle lime mainly as a customer service.

Summary

Farmers and fertilizer dealers in the Eastern Panhandle of West Virginia are faced with the problem of responding to a changing technology in both fertilizer manufacturing and distribution. Dealers are not in agreement as to the feasibilities of some of the recent innovations in fertilizer distribution. Some are quite enthusiastic about liquid fertilizer for the area, whereas others are at least very indifferent to it. Small dealers seem as ready, perhaps even more ready, to adopt new practices and products as do the large dealers.

Not only did the 41 dealers included in this study vary considerably in their opinions, but they also varied in the nature of their business, amount of business, and their facilities. Thirteen dealers had no business establishment other than their homes. Those having retail establishments were mostly the typical general farm supply store handling several lines—feed being important and most common.

The dealers were in general agreement about the bright future for bulk distribution of dry fertilizer, which is gaining in importance in the area. On the average, a bulk spreader truck spent about 4 minutes per acre in the field while unloading. Mainly because of rock outcroppings in a third of the fields, it was necessary to make one or more stops during the spreading operation. On the average it took over 3½ hours to take out a load of bulk fertilizer and return the truck. The average distance traveled per load was about 50 miles, of which 9 were in the field doing the spreading.

Rather than having rigidly-established policies on credit and discount practices, most of the dealers meet these problems informally—seeming to judge each case on its own merits. They usually do not make a sufficient price differential between cash and credit sales, large and small orders, and long and short hauls. Because of this situation, many of the large farmers who would be easiest to serve—especially orchardists—do not use the services of established retail dealers.

Marl and lime are extracted from local sources. Several truckers and farmers are involved in the distribution of those items.

The flexibility of the fertilizer establishments in the area is such that dealers are receptive to new ideas and methods. Although the managers of the retail establishments feel that their employees are well trained, it is probable that research and further education would help meet some of the business problems resulting from technological change.

There seems to be no significant difference between the operations of cooperative retail fertilizer establishments and other establishments, other than the declaring of patronage dividends by cooperatives. The retail cooperatives seem well supported, with an average volume of about three times the average volume of non-cooperative retail establishments.