

The New Jersey Station has recommended fall application for appropriate crops, but this has met with poor farmer response.

Fall planting has made some headway in Pennsylvania as the result of a six-year drive to encourage farmers to employ this procedure on hay. The practice involves use of 0-20-20 and 0-15-30 formulas between Aug. 15 and Sept. 15.

Cornell has conducted some research on the matter of plowing under nitrogen in the fall and spring and its relationship to leaching. It finds that nitrogen fertilizers leach in bare soil as follows, the first form being the most leachable: anhydrous ammonia, calcium cyanamide, urea (subject to leaching for one or two days after application), and nitrogen solution 2.

Our survey tends to confirm the belief that fertilizer-pesticide combinations are not doing as well as expected when these were first offered. Aldrin has been used in such mixtures but broader application of the idea is handicapped by complicated and confusing regulations. New Jersey officials are reluctant to approve application of mixtures on food crops. In Pennsylvania some use has been made of fertilizer combined with aldrin or heptachlor for wireworm control.

On the industry side, Du Pont is completing facilities at Belle, W. Va., for a new nitrogen fertilizer compound, trade-named Uramite, which is a mixture of methylene ureas and which is almost completely water insoluble. It is produced during a controlled urea-formaldehyde reaction, and combines high nitrogen content (38%) with a prolonged release rate. Initial production will go to professional growers of turf and ornamental plants.

Diammonium Phosphate

Diammonium phosphate has been accorded much attention. The switch from ammonium sulfate to this product has been very limited, due possibly to the fact that it has not been available in quantity "at a price." By this is meant a price commensurate with its value as determined by the cost of nitrogen from ammonium sulfate and the cost of available phosphoric acid from superphosphate.

In the view of James E. Totman, president of Summers Fertilizer Co., the savings in handling are substantial, but it will take several years to convince farmers that diammonium is a good product and cheaper—if, in fact, the end result shows that it is cheaper. Prices quoted to date show no net advantage to the farmer. It is believed that the use of diammonium phosphate will be confined to the specialty fields rather than for large consumption on crop land.

The great advantage of diammonium phosphate is that high analysis fertilizers can be made from it rather than from other materials. By high analysis here is meant mixtures such as 15-30-15, for which application equipment is not available.

Distribution of triple superphosphate is making some gain in the East but the effect on the volume of regular grades as yet is not appreciable. Triple, however, is expanding in the newer fertilizer-consuming areas and at the expense of ordinary superphosphate (20%).

Potash Supply Ample

Supplies of potassium salts were fully adequate to meet agricultural demands in this area during the 1954-55 season. Problems facing the potash industry are the matter of discounts to induce early purchases; imports of European potassium salts; and prices at ports for domestic potash that will meet foreign competition. A large producer holds it doubtful

whether discounts actually encourage early shipments, and the industry's policy for the coming year in this connection has not been determined.

Views obtained on the potash imports very naturally depend on the position of the seller. A Carlsbad producer said that imports are still troublesome to the domestic potash industry and resulted in a situation where it was unable to ship all of its production. Imports can also be considered, probably, as responsible for reduced domestic process at the ports.

On the other hand an Eastern fertilizer interest who is a large importer of the salts contends that the amount of imported potash, reported as less than 2% of the supply, should not have troubled the domestic producers. It also did not justify their action in establishing competitive prices at the ports, he says, because increased ocean freight rates contributed to a reduction in shipments from Europe. Demands of European buyers also were heavier.

Midwest Off to Slow Start, but Fertilizer Sales Not Expected to Fall Proportionately to Farm Income

VARIOUS REASONS are given for the slight decline in fertilizer sales in the Midwest this season. Adverse weather and lowered farm income receive most of the blame, although farmers delay in buying may also be important. The season started off quite slowly, and it was soon evident that, even though demand did increase, producers would not be able to catch up and total output would be less than last year. An improved supply situation gave farmers the feeling that there was no need to get their fertilizer early. Price-cutting probably had some effect; whenever there is a possibility that prices may be lowered it is natural to delay purchase.

To a great extent, Midwest farmers have been insulated from the agricultural "recession" which started in 1951, but 1955 will probably see a significant lowering of farm income in the area. Of course, drought areas such as Missouri and southern Iowa felt the pinch much earlier, but it is only now that the corn belt may really begin to feel the effect of the decline in prices for livestock, the ultimate product of the area's agriculture. Hog and fed beef cattle prices are down. Only poultry, which is minor compared to other livestock industries, is up. In the dairy areas of Wisconsin, Minnesota, and northern Michigan the farmers are also caught in a squeeze resulting from troubles in marketing dairy products.

Fertilizer sales need not drop propor-

tionately with farm income. The farmer is more likely to decrease his purchase of farm equipment or consumer items long before he cuts into his expenditure for fertilizer. Preliminary results of a survey of its member banks by the Federal Reserve Bank of Chicago indicate that local bankers expected a slight increase in fertilizer sales and a slight decrease in farm equipment sales this year. Territory covered in the survey includes northern Illinois and Indiana, southern Wisconsin and Minnesota, Iowa and most of Michigan. While the increases expected were probably too small to be significant if analyzed statistically, it is probably true that fertilizer sales will be better than those of farm equipment. Farmers (and most bankers) can see the more immediate effect of fertilizer application in increasing profits, but the return on investment for equipment is more difficult to evaluate and accrues over a longer period of time. Of course, a considerably larger cut in gross income than has been experienced so far, or is expected to appear in the near future, would necessarily cut into fertilizer purchases.

During the past several years the Midwest has been something of a "frontier" for fertilizer, with usage spreading from the eastern areas towards the west. Now the western "frontier" has just about reached the limit imposed by lack of moisture in the great plains area. However, there is still a great potential re-



Despite increased availability, delay in fertilizer purchases until the last minute causes waiting at the plant at the peak of the season. These trucks are waiting at Swift's plant at Calumet City, Ill.

maintaining for increasing fertilizer usage, even in those states where consumption is now heaviest. Some fertilizer manufacturers point to Illinois as an example of one of the large Midwest fertilizer-consuming states in which plant food consumption could be increased greatly. Although tonnage sales are high in Illinois a tremendous quantity of rock phosphate is used. The trend in rock phosphate usage is slightly down but a great deal of work remains to be done by the fertilizer manufacturer in convincing Illinois farmers of the advantages of using higher analysis material.

Fertilizer consumption in the Dakotas for wheat is gradually increasing although the level is still quite low and offers a potentially larger fertilizer market.

Pasture Improvement

Fertilizer use in pasture improvement programs is also increasing, but at a slow rate. Many people feel that even in the corn belt much more of the land could be more profitably devoted to pastures than to other crops. When acreage allotments cause the midwestern farmer to seek alternate crops for corn, the usual choice is soy beans. Now bean prices are likely to drop, making conversion to pasture even more attractive. Such a switch would benefit fertilizer sales provided pasture treatment could be boosted at a greater rate. An added advantage would be the fact that pastures are ideally suited for fall application, practice that is catching on but still nowhere near as prevalent as it should be.

The trend towards higher analysis continues in the Midwest but eventually it will have to level off. Higher analysis phosphatic materials become more desirable the farther one gets away from

the sources in the southeastern U. S. One fertilizer mixing plant in Minnesota, for example, uses triple super almost exclusively—using normal superphosphate only to keep from using inert filler.

More and more plants are changing over to granulated mixed goods. Usually a premium is charged for granulated material, but many mixers sell a product which has been granulated, although not as carefully as the highest quality material, at regular prices. During the height of the season granulation may not be as complete as it is at less busy times.

Many companies are investigating new granulation processes and considerable improvement may be expected in this field. Most processes seem to be in the preliminary stages of development, and few companies care to talk about their prospects.

Liquid Fertilizers

Complete liquid fertilizers are sold only to a small extent in the Midwest, but use is rapidly growing. Most fertilizer manufacturers do not think liquids will ever take over a large share of the fertilizer market, however. High water content, with consequent high freight costs, limits distribution to a small area around the plant. Manufacture has been generally confined to small producers, if liquids do appear more promising in the future the larger companies will undoubtedly be ready for them. It is claimed that every major company has a set of plans for a liquid fertilizer plant drawn up and ready if necessary.

A strong difference of opinion still exists about the value of insecticide-fertilizer mixtures. In the Midwest, Iowa is a state where they are most popular. Like many innovations in the

fertilizer industry, combining insecticides with fertilizers has been adopted first by the smaller operators. At least one major company is now in the field although most are opposed because of difficulties in achieving uniform distribution of insecticide in the product and because of safety measures needed in the plant. Many experiment station people are also opposed, contending that the band treatment resulting from application of combinations does not give adequate control of soil insects.

The possibility that nitrogen has been over-expanded does not appear to be true in the Midwest. There may be excesses in certain areas but in the country as a whole there is a need for greatly increased use of nitrogen. Start-up of National Petrochemicals plant at Tuscola, Ill., has moved the basing point for freight rates further north. This has brought about some cost reduction for nitrogen fertilizers but not enough to affect sales one way or the other. Eventually plants to be constructed in Chicago and the Twin Cities area will change basing points again.

Intensive sales campaigns have increased the use of anhydrous tremendously, but in the long run there is likely to be a switch to nitrogen solutions in the midwest. Pressure equipment needed for anhydrous is one drawback. Then too nitrogen in several different forms may be incorporated in solutions. Urea is included in most. In many cases, of course, the form of the nitrogen is said to make no difference.

Newer Materials

Urea-formaldehyde is being used in Swift's New Golden Vigoro complete lawn food. The company reports a satisfactory acceptance of this product. It remains too expensive for other than specialty uses. Raw materials are not cheap, nor is the process of combining urea and formaldehyde easy. Du Pont, one manufacturer of this product, combines the two substances to form a powder to be added to the mixture of other plant foods. By contrast, Swift effects the combination in the mixing operation. There are still many difficulties in making the process operate smoothly but Swift has established the operation at a number of its plants.

Some of the chemical companies are experimenting with other new polymeric nitrogen compounds which will release their nitrogen slowly in the soil. Apparently most of these are in the very early research stages. At the University of Minnesota studies are being carried out to see whether peat can be used as a means of slowing down nitrogen release.

Diammonium phosphate, introduced by Colorado Fuel & Iron, is being scheduled for a trial run by one midwestern company. It is receiving careful scrutiny by a number of other firms.