

deficiency is found, it may mean more headaches, or opportunities, for the fertilizer manufacturer.

Grower education also commands a top spot in any list of problems. A co-op director, commenting on the

publicized over-capacity in nitrogen, says that there actually isn't any. If every farmer could be sold on fertilization, any surplus that now exists would be eliminated, he says.

For the Midwest as a whole, new

users are still the best bet for a rise in fertilizer sales. A general feeling is that farmers are now forced to be more efficient, and a good educational program can induce them to bolster their net income by using fertilizer.

Higher Raw Material Costs Shave Profits From Good Northeast Season

SOME LOOK for a smaller fertilizer tonnage during the 1956-57 season in the Northeast, but at least one large New England cooperative reports an increase in tonnage. The same source estimates that consumption in the Northeast will approximate that for 1955-56. Some concern meanwhile is being shown over the Federal Soil Bank program. The program reportedly has drastically curtailed consumption of tobacco fertilizers in Connecticut.

Mounting raw materials costs present a problem to the fertilizer industry all along the eastern seaboard. Profits have been further reduced by heavier charges for equalization of freight with competitors' plants. Urea was advanced \$5.00 per ton as of April 1, establishing the range at \$100 to \$105 per ton. Other nitrogen materials had been advanced at the start of the year. Commenting on this, Allied Chemical & Dye says that despite this upturn nitrogen selling prices are still below those of a year ago.

Current nitrogen prices to the grower in the Northeast run about \$45 to \$50 per ton for ammonium sulfate; \$125 to \$130 per ton for urea; and \$83 to \$87 per ton for ammonium nitrate.

Although delays were encountered for a time in getting two new plants into operation, urea production was pushed up to 418,289 tons during 1956. The only available comparison is the output of 92,513 tons made during the March-July period of 1955. Imports of urea were smaller last year at 69,700 tons, but factors in the trade are now wondering if the recent price boost here may not result in increased imports.

Anhydrous ammonia output for the nation in 1956 shattered all previous records at 3,336,857 tons. This year there is a tendency to level off plant operations in anhydrous. Production fell off last year in ammonium sulfate, both coke-oven and synthetic. These events have again directed attention to the possibility that more coke-oven operators might switch from ammo-



In tests to determine toxicity of Borden's 38 nitrogen fertilizer at high dosages, 6-inch tomato plants were placed in pots of poor soil deficient in nitrates. After six weeks without injury, pots and plants were moved to sandy, nitrate-deficient soil outside. No food was available and none was added. Photo was snapped three months after test began. L. L. Baumgartner (above) of Baumlanda Horticultural Research laboratory says test demonstrates what a steady release of nitrogen can do for plants

nium sulfate to diammonium phosphate. However, the development has been slow, and some nitrogen market experts look for no further changeovers to DAP.

Expansion that has occurred in anhydrous ammonia, ammonium nitrate, and urea partly reflects the growth in nitrogen solutions. There are people in the industry who now feel that solutions growth is nearing its peak, and that trends will increasingly favor granular goods and high analysis solid fertilizers.

Higher charges for wages, freight rates, raw materials, and fuel made their influence felt in phosphatic fertilizers as well as in nitrogen. One eastern manufacturer advanced normal superphosphate from 88 cents per

unit to 90 cents, effective April 1. The raw material, phosphate rock, evidenced stronger price tendencies. The 68% BPL Florida rock was moved up from \$5.115 per long ton at the mines to \$5.25.

The New England industry agrees with its counterparts in other sections that with freight rates increasing steadily the economies of using high analysis fertilizers will be more and more obvious. And there will probably be, it is held, an increasing trend toward granulation to take advantage of savings offered by high analysis goods.

While one would expect that advances in materials and other costs would find reflection in prices of mixed fertilizers, mixed goods actually have shown very little change in price. Their Department of Labor index was lower in February—109.5 as against 110.2 in January.

Although delayed billing is still employed in the industry as a sales gimmick, some large distributors have taken a firm stand against it.

Some further observations can be made on some of these factors in so far as the Northeast is concerned.

Although diammonium phosphate (DAP) reportedly releases its nitrogen only a third as fast as ammonium sulfate, not much DAP seems to be used in this area except for research work. A little is finding its way onto turfs and for corn and certain other row-crop vegetables grown in lighter soils having low organic content.

Some success has been reported in other areas in applying a diammonium phosphate-urea solution through a sprinkler system. This application, however, is generally regarded as not too practical in the East. In the first place, potash rather than phosphate is the plant nutrient widely needed in the East. Furthermore, application of diammonium phosphate or other source of phosphorus through a sprinkler system during the growing season fails to provide optimum placement. Phosphorus is needed at the seedling stage of growth, and is frequently banded near the seed. Often it is also mixed throughout the soil before planting.

In areas which do not depend on sprinklers for irrigation, sprinkler application requires specialized equipment, which means additional costs; furthermore, surface application of

this type of mixture might cause loss of nitrogen by volatilization of ammonia. Also on fine turfs, urea formaldehyde—with a very much slower nitrogen release rate than DAP or other agricultural inorganics—is generating some interest regionally. Its high cost, however, rules it out for most agricultural applications.

Besides nitrogen, phosphorus, and potassium, other nutrients loom important today. Acid soil in much of the Northeast demands calcium (simple liming is the most economical source), while magnesium—a limiting factor to production in the area—is gaining wide recognition as a vital component of plant foods. Manganese and sulfur are not considered to be problems, and receive relatively little attention. Feeling in some quarters is that trace elements are added to fertilizers mostly for advertising purposes (“secret” formulas, for example). But molybdenum is being studied quite extensively and recommended in some areas, and boron now appears in a number of mixed fertilizers for this section of the country.

A trend toward granulated or pelletized fertilizers is evident all over the U. S. This tendency is definitely making itself known in the Northeast, although not so rapidly as in the Midwest. (A major New England co-op now granulates all of its high-analysis fertilizers—72% of its total production.) Preference for granular products could be due to the increase in broadcasting and plow-down applications of nitrogen to avoid side-dressing.

There have been no major changes in placement techniques over the past year, but present research points to such changes in the near future, according to Penn State's agronomy department. Latest models of farm equipment appearing today should increase employment of these new techniques over the next few years.

To a limited extent, urea solutions

are being used for “ammoniation” by eastern fertilizer manufacturers. In Virginia, these solutions ordinarily also contain ammonium nitrate; about 5% of the nitrogen is derived from urea. Interest in urea solutions is growing. Research and trial work is under way on the use of these solutions in granulation, and results thus far have been promising.

The Northeast uses some mixed fertilizer solutions, although considerably less than the Midwest. Several plants have been built to produce liquid fertilizers in the East, and more can be expected.

A big advantage of liquid fertilizers is their ease of application. Relatively little labor is required, an important factor in view of today's farm labor shortages. On the other hand, liquid fertilizers are more expensive along the Atlantic Coast than they are in the Midwest or Far West.

Vermont soils will get their first commercial application of urea-ammonium nitrate solutions this year. In Maine, increased use of anhydrous and nitrogen solutions is expected, if supply situation to the consumer is worked out.

New Jersey reports that mixed neutral fertilizer solutions are used there only in limited quantities. Similarly, New York, Pennsylvania, and Rhode Island say that these materials have gained relatively little acceptance.

Mixtures of fertilizers and pesticides have not found widespread acceptance in the East. In the past, they have been used on peanuts. This year in some states they will also be used on corn. One of the main reasons for adding pesticides to fertilizers for corn is to control southern corn root worm; this pest is not a very great problem in the East.

Although fertilizer-pesticide mixtures are registered and used on lawns in New Jersey, they have not been recommended for agricultural crops in that state. Maine reports that there

has been little interest in fertilizer-pesticide mixtures; its research people are “not too encouraged about the practical possibilities of these materials.”

Fall fertilizer is not practical to a great extent in the Northeast, some think, although it can be practiced on cover crops which are to be plowed the following spring for vegetables and for row crops. Nitrogen use in early fall would lead to higher production and higher nitrogen content in cover crops plowed.

The principal deterrent to fall fertilizer use in the Northeast is high rainfall coupled with relatively shallow soils. The combination leads to leaching into lower soil levels.

For several years now, many Northeast states have noted carry-over from potassium or nitrogen usage. These build-ups are taken into account when fertilizer recommendations are made, point out spokesmen from West Virginia, Virginia, Rhode Island, and Pennsylvania. One source explains that nitrogen accumulation is usually inverse to that of phosphorus and potash. As the levels increase it is practical to reduce the amount of phosphorus and potash in relation to nitrogen used.

Growth Potential

As far as agricultural stations in the Northeast are concerned, the biggest growth market for fertilizer materials in the next few years will be in use on forage and pasture crops. A second promising area is more use on home and recreational areas.

This is the bright side of the fertilizer market. There is also a dark side—the problems which face the industry in the Northeast. These problems are many and varied. Here are some rated as the biggest:

- The need for the industry to realize that fertilization is only one part of the total crop production process. The market is going to go to the company that sells service with competent agriculturists.

- Declining farm prices, low farm incomes, and decreased farm land acreage (all of which have been blamed for the plateau in fertilizer consumption).

- Rising costs of materials and services, coupled with the price pressure of sharp competition.

- The need for more intensive farmer education.

As to the proposal to shift from oxide to elemental designations on fertilizer labels, cooperatives and some others favor the idea. But the majority of manufacturers in this area appear to be lined up against the shift.

One of GLF's 175-truck fleet that applies fertilizer and lime for member farmers in New York, New Jersey, and northern Pennsylvania. GLF trucks engaged in this service spread more than 500,000 tons of fertilizer in 1956

