Ag and Food Interprets . . .

- **Lower cost gives popularity to bulk blending in South and Midwest**
- **Precise use of plant food characterizes Netherlands agriculture**
- **What should be the role of the fertilizer salesman?**
- **Participants in safety contests have better safety records**
- **Drive to put newer agricultural chemicals under Miller Amendment**

Bulk Blending

Savings are used by farmers to meet costs of fertilizer spreading; co-ops active in Midwest and parts of the South

BULK BLENDING, a significant departure in preparing mixed fertilizers, is growing in popularity in the Midwest and parts of the South, notably Florida. In this practice the basic plant nutrients nitrogen, phosphate, and potash are in effect sold by the pound instead of by percentages, although some producers also mix to grade. Bulk blending is not to be confused with bulk fertilizer distribution and spreading, an older development.

There are potentially important savings in this new idea, although the amount of actual savings is sometimes debatable. One contention is that bulk blending obviates expenses for handling and packaging, placed as high as $8 to $12 per ton. However, A. V. Slack of TVA points out that raw materials costs are higher in bulk blending. Bulk blenders use more expensive sources of nitrogen (dry materials) than do producers of standard mixed fertilizer.

Slack contends that one of the main savings comes from minimizing the rehauling of materials. The blending plants are usually small; after blending, their materials normally go direct to the farm in spreader trucks. In the more common practice, materials are shipped from basic producers to a large mixed fertilizer plant, are mixed and reacted, reshipped to the distributor, unloaded, reloaded onto trucks, and finally carried to the farm. Bulk blending reduces the shipping mileage, and eliminates some of the handling.

Cooperatives Active

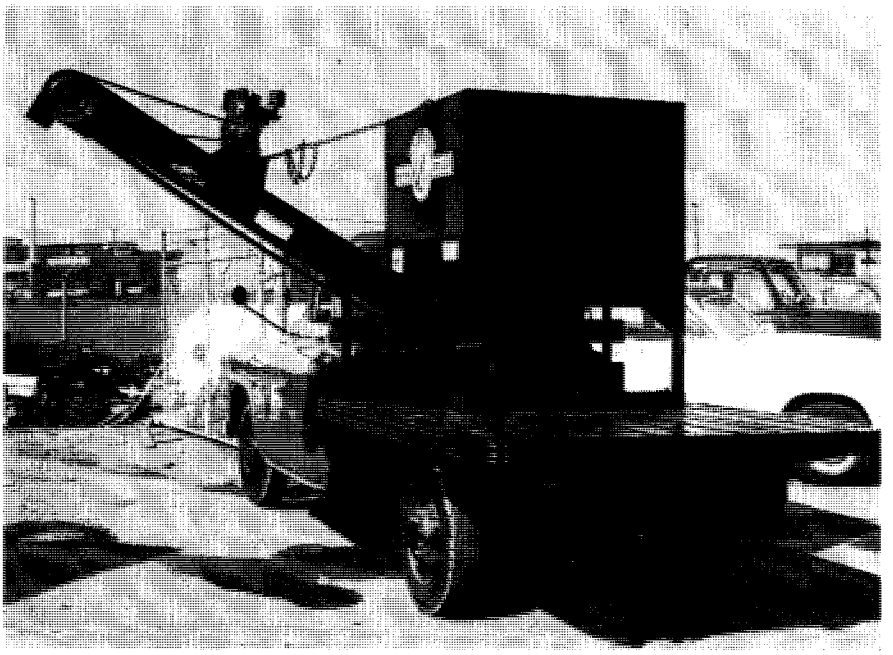
Co-operatives are prominent in the trend to bulk mixing. The idea got under way some five years ago in Illinois, with the push furnished primarily by Illinois Farm Supply, a co-op. It now has some 40 small plants in the state. One reason for the headway made in Illinois is that farmers there have been making heavy direct use of phosphate rock, and therefore are familiar with the bulk materials concept.

Cost is not the only—not even the main—reason for bulk blending success, in the opinion of an Illinois farm authority. Convenience is the important thing, he contends, for both mixer and farmer. The practice offers entry into the mixed fertilizer business with minimum investment. And it provides a simplified way of meeting the farmer's soil test.

The test may call, for instance, for 50 pounds of N, 40 pounds of P_2O_5, and 50 pounds of K_2O. He can't meet this with a straight 10-10-10, but with a bulk blend he can. Another factor in bulk blend success is simply the general trend to bulk material, whether straight, blended, or chemically combined. Many farmers just don't like the trouble and extra work of handling bags. Besides, bulk blends usually sell for 15 to 20% less.

Fertilizer use in Missouri last year

Transfer conveyor used by Wilson & Geo. Meyer & Co. can move up to 800 to 1000 pounds of material per minute from portable flow bins to custom spreaders



was 791,000 tons against 801,000 tons in 1957. Despite the dip in over-all use, consumption of bulk phosphate rock went up 9%, and other dry bulk fertilizers increased 52%. There are some 46 bulk blending plants in Missouri, of which 22 are owned by co-ops. The chief materials involved are ammonium nitrate, ammonium sulfate, various ammonium phosphates, ammoniated superphosphates, ammonium sulfate-phosphates, normal and concentrated superphosphates, calcium metaphosphate, and potassium nitrate.

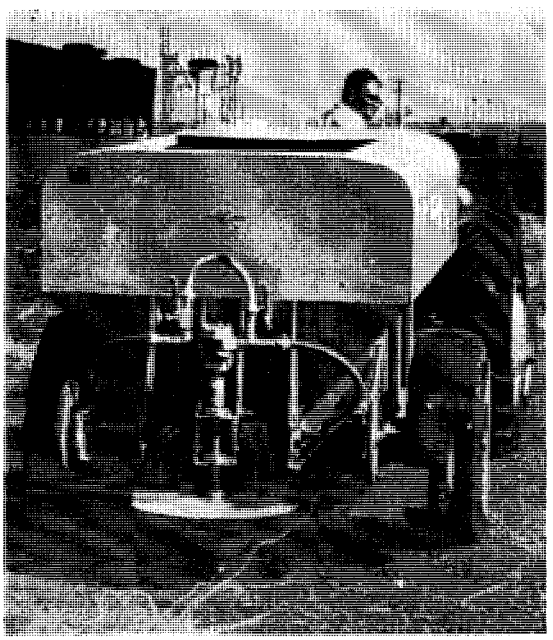
Dry Fertilizers Used

Bulk blended fertilizer in Missouri is applied to the farmer's field at approximately the cost for the same amount of plant food in bagged fertilizer, says W. L. Baker, supervisor of fertilizer inspection stationed at the University of Missouri.

In Indiana, bulk blending is conducted for the most part by two county co-op organizations; the materials used are dry forms of nitrogen, normal and triple superphosphate, and potash. The savings are primarily in manufacturing costs that would be incurred in a regular mixed goods plant. Some independent bulk blenders also offer custom application, but not the two co-ops.

In the Southeast, Florida probably leads in bulk blending. But many small dry mix plants scattered over the South have bulk loading stations and serve spreader trucks. Hence they may be classed as bulk blenders. In comparison to production of standard mixes, bulk blending apparently is not so economical in the South as it is in the Midwest. The saving in freight and handling is reduced or eliminated because most of the southern mix plants are small and serve mainly local markets. Most of them also have bulk loading facilities for their cured mixes.

Tow spreader can hold up to three tons of phosphate fertilizer, applying it in swaths as wide as 25 feet



In the South as in most regions, says TVA, the standard materials are ammonium sulfate, superphosphate, and muriate. Urea and ammonium nitrate are used by the larger blenders, and some use multi-component materials like diammonium phosphate or ammonium-phosphate-sulfate. Triple superphosphate is more popular in the Midwest, ordinary super in the South.

Economics

Savings vary widely, and estimates of their size can be misleading, TVA emphasizes. Producers who sell both bulk and bagged fertilizers usually cut the price by $2.50 to $4.00 per ton if the product is not bagged. Savings in operating costs are likewise variable. They are offset by higher cost of nitrogen which, for a 10–10–10 made with all nitrogen from solutions on the one hand, and from ammonium sulfate on the other, would give bulk blends a disadvantage of as much as $6.00 per ton.

Bulk blending appears to have made little or no progress in the Atlantic States and on the Pacific Coast. The practice as established in Illinois, says J. C. Crissey, division manager for G. L. F. Soil Building Service, Ithaca, N. Y., has never been introduced in the New York, New Jersey, and northern Pennsylvania area. One reason may be the strict control laws in New York and New Jersey. In California, only two or three co-ops or mixers conduct bulk blending, distribution, and application.

J. R. Simplot Co., Pocatello, Idaho, has been engaged for over 10 years in blending straight fertilizer materials, and in bulk spreading with its trucks in the intermountain and western states. More recently, it says, additional emphasis has been placed on selling the customer bulk materials, delivered into the customer's truck. Also available are bulk boxes, which are either sold or rented.

The consumer realizes a saving of approximately $3.00 per ton when he takes delivery in his own vehicle at Simplot's plant. In the instance of rented bulk bins, Simplot feels that because of the cost of the bins, replacement, interest, and other costs, the price should logically approximate the bag price. Furthermore, it says, to handle bulk materials efficiently the dealer and distributor generally invest $20,000 to $70,000 for the mixing plant facilities alone. Consumer savings can still be realized through reduced labor and time expended.

Storage Difficulties

What of the storage problem on the farm? There appears to be very little bulk storage on farms in the South, where few farmers are equipped with bulk handling facilities. The nearest approach to farm storage is in the upper Midwest and the West, where use of portable bins is growing. The bins are of 1 to 1.5 tons' capacity, and provide storage until the fertilizer is applied. So far, the farmer in Missouri is not accepting the storage problem. The tendency of some blends to cake in humid weather makes him reluctant to take delivery prior to date of application. This limits the capacity of the blending plant during rainy seasons, a problem in much of the Midwest.

Labeling

An important and as yet imperfectly answered question in bulk blending practice concerns labeling and nutrient guarantees. Many states have fairly rigid labeling requirements for bagged mixed fertilizers, and will undoubtedly insist that adequate safeguards be provided the buyers of bulk blends as well. But enforcing the rules and detecting violations could be much more difficult, if not impossible.

In fact, some thoughtful observers consider bulk blending an open door to easy violation of guarantees. To them it does not make sense to require that standard mixes be held to very close tolerances, and that the producer be held liable for failure of any bag of his product to meet specifications, while allowing the bulk blender to operate under conditions that would make weight or grade inaccuracies (whether accidental or intentional) easy to commit and hard to detect. In Missouri, Indiana, and some other states, the invoice or sales ticket for blended goods now serves to carry the required labeling statement, or evidence of materials purchased. Other Midwest authorities have accepted a statement of the weights and guarantees for the materials entering the mixture. In some instances, the farmer actually buys the separate materials, and then pays to have them mixed.

In Idaho, each load of bulk material normally must be tagged with the analysis or weight of each ingredient. If the spreader trucks or bins are not so marked, a copy of the invoice or delivery ticket carrying such data goes along with the driver.

Seldom is it possible for authorities to test a load of blended material and get a true analysis of what the farmer has received at the blending plant. The blend has materials of differing densities, and may separate badly in the equipment. Getting a homogeneous sample, tough enough in standard chemical mixes, is virtually out of the question with a bulk blend that has been handled very much between blending and application.

(Segregation, or even the normal separation of nutrients in particles of blended materials, may eventually prove to be an important disadvantage for another reason. Work in progress at Purdue and elswhere points to a need for intimate mixture of nutrients in the root zone for greatest effectiveness, at least with starter fertilizers. Further proof along this line may put a damper on bulk blending of starter materials.)

Spreader Trucks

Most bulk blenders provide customers with a custom application service. In some cases the service may be their own, or it is arranged through a local dealer. In some areas truckers operate spreader trucks. Charges vary widely and are based either on area covered or tons applied. A scattered sampling places these charges at $1.00 to $1.50 per acre, and from $3.00 to $5.00 per ton.

In some parts of the South, says W. D. Barton, general manager of Tennessee Corp.'s East Point, Ga., plant, a considerable tonnage of fertilizer is distributed in bulk spreader trucks. This fertilizer is made in the usual way in fertilizer plants and delivered from the mixing machine to the trucks. The trucks deliver the materials to the farm and spread them at rates chosen by the farmer. Tennessee Corp. operates in the northern half of Georgia, northeast Alabama, and part of Tennessee.

As might be expected, bulk blending and application have led to new needs in equipment. Indiana reports an active demand and says marked improvements are being offered in equipment for blending and distribution. Missouri expects that the bulk blending advance will stimulate demand for bulk handling and application equipment of all kinds. Bulk blending obligates the basic materials producer to grade the particle size of his products more carefully, and offer materials that will stay together in a physical mixture.

Bulk Handling in the West

On the West Coast, Wilson & Geo. Meyer & Co., which handles fertilizer sales for Stauffer and Western Phosphates, has signed up some 40 dealers in its bulk handling plan, called the Anchor Custom Service. Thus far these dealers are reported to have experienced an average volume increase of about 50% in dry fertilizer handled. W&GM sells in bulk to the dealer at some $4.00 per ton below the bagged price.

The dealer uses the $4.00 to buy the necessary equipment, including such items as a portable rail car unloader, transfer conveyor, portable storage unit, custom spreader, and portable flow-bins. The equipment is designed and built in sizes by Fabricated Metals of San Leandro, Calif. The dealers can offer a custom application service to growers at $0.50 to $1.00 per acre, and obtain a profit from the margin between their buying price for fertilizer and the bag selling price.

The farmer meanwhile pays the same per ton for his fertilizer that he would have paid for it in bags. Since he does not have to handle bags he can fertilize more acres per day. These two selling points, according to W&GM, are usually sufficient to close a deal for the bulk handling service. So far, the service has not stressed bulk blending, but any operator who has or acquires blending equipment can fit it easily into this bulk handling scheme.

Agriculture in The Netherlands

Every acre of farm land is hard to come by. That's why per-acre fertilizer use is so high

With 11 million people in an area only about half the size of West Virginia, The Netherlands cannot afford to misuse any of its land. Consumption of nitrogen fertilizer per acre of agricultural land there is the largest in Europe, 73.5 pounds. Phosphate use is 44.6 pounds per acre, and potash 59.9. If use in the United States rose to this level the American fertilizer industry would be several times larger than it is now.

Agriculture in The Netherlands aims at specializing in those crops which it can produce most profitably, rather than trying to raise everything the country needs. Dutch cheeses are famous, and large quantities of other dairy products also are exported.

The biggest crop in The Netherlands is grass—to feed the dairy cows. Some 3 million out of the 5.8 million acres of total agricultural land is classified as grassland. And grassland application is a big market for fertilizer. The practice got a big stimulus after the war when a new scheme of pasturing cows—strip grazing—was introduced. Instead of turning the herd into an entire field to graze, it is admitted to only a small strip set off by a movable electric fence. After a week or two the cows are moved into a new strip, while fertilizer is applied to the first strip.

This system increased fertilizer consumption, and was to halve the amount of land needed for the cows. However, with the canny obstinacy that farmers exhibit the world over, the Dutch farmer more often than not used the same amount of land, doubled the size of his herd (a traditional sign of prestige), and helped produce a surplus of dairy products.

Other main crops, with production figures for 1956 (in metric tons) are: sugar beets, 2.5 million; potatoes, 3.2 million; oats, 403,000; spring barley, 241,000; rye, 492,000; and wheat, 300,000.

The use of compound fertilizers in The Netherlands is not so extensive as in the United States. Labor is still relatively cheap in The Netherlands, and great care is given to the land. Farms are rather small—25 acres might be typical—and detailed soil analysis is obtained on many farms. More and more farmers calculate the nutrients needed for each plot of ground with considerable precision, and apply accordingly.

However, today many mixed fertilizers are manufactured and they cover most needs. In fact, one company, Albatros, started 25 years ago to produce such concentrated compounds as 12-10-18; 9-10-23; 6-18-28; and 15-15-15. Together with ENCK Works, Albatros produces some 25 completely water-soluble fertilizer compounds for the Dutch market. Another company, Windmill, is also experimenting with mixtures.

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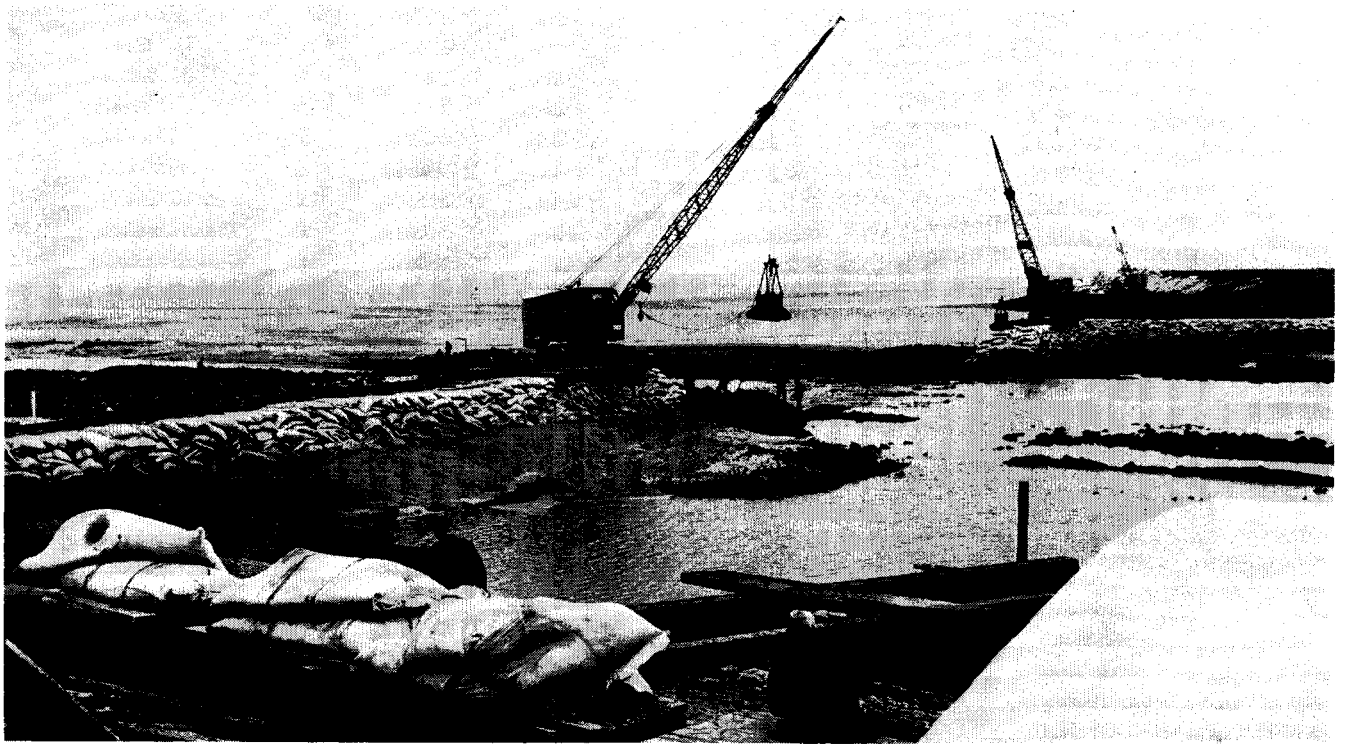


Reclaiming land from the sea still goes on in The Netherlands—as it has for the past 800 years. Dykes are built around an area of shallow sea, and the water is pumped out

extent outdoor vegetables, compounds are used intensively. On grass and arable land the use of modern mixed fertilizers is smaller but steadily increasing. This is partly to save labor; there is now nearly full employment in Holland, and labor, although reasonable in cost today, is becoming more expensive all the time.

Some small dealers still mix by hand or in simple concrete mixers, but the big companies believe this practice gradually will lose importance.

Fertilizer sales in The Netherlands are arranged through co-ops and privately owned firms. Roughly, this is a 50/50 split, with the co-ops slightly predominating.

Most fertilizers are offered through a central sales organization. All nitrogen is sold by "Centraal Stikstof Verkoopkantoor," potash through "Nederlandsche Kali Import Maatschappij," superphosphate through "Vereniging van de Nederlandse Superfosfaat Industriëen," and Fertifos (dicalcium phosphate) through "N. V. Handel-en Transport Mij. 'Vulcaan,' " while basic slag is directly imported by the big co-ops and private trade companies from manufacturers in Belgium, Luxemburg, and Germany.

Prices are prearranged for one year, slightly increasing from lows on autumn and winter sales to highs for delivery during the growing season in spring and summer. Distribution organizations make their contracts with producers of nitrogen and compound fertilizers during the autumn (September), for the next season. Others make these arrangements in spring (May-June). Usually co-ops and private dealers agree to take certain amounts each month, helping to reduce production peaks and storage problems for producers.

Phosphate rock must be imported and so must potash, but The Netherlands now makes about twice as much fertilizer nitrogen as it needs, and so exports half its production. Normal and triple superphosphate are also exported on a big scale. The production of triple is totally exported, in fact, and not offered on the home market at all. Mixed fertilizers also are exported to customers all over the world.

The big nitrogen producers are State Mines (owned by the government), Mekog (owned 65% by Shell), and Cie Néerlandaise de l'Azote (controlled by Italy's Montecatini). Of the approximately 400,000 metric tons produced each year, State Mines accounts for about half, and each of the other two companies about a fourth.

About 80% of the synthetic nitrogen fertilizer used in Holland is in the form of nitrolime, a mixture of ammonium nitrate and calcium carbonate having an N content of 20.5%. When State Mines first started making ammonia from its coke gases in 1930, it sold the product as ammonium sulfate, the most common nitrogen fertilizer then in use.

Fears of explosion with ammonium nitrate were strong at that time, so the nitrate was mixed with an inert material, calcium carbonate. Nitrogen content was set at 20.5% to match what the farmers were used to in sulfate.

Later on, State Mines introduced Nitrofos, in which the calcium carbonate was replaced by phosphate. This is a 20-20-0 fertilizer. It is made by treating phosphate rock with nitric acid. Calcium nitrate is crystallized out of the solution, and the mother liquor is neutralized with ammonia. This liquor is then evaporated (some of the heat coming from recovery of the heat of neutralization) to a few per cent moisture and sent to a flaker. The flaker is a rotating steel drum, heated on the inside with steam; flakes form as the mixture dries on the outside. Flaked particles are then further dried in rotary driers. Temperature is high enough to melt the particles slightly, and they become rounded into a granular product.

Calcium nitrate is a relatively low-volume, but important, co-product. Some is exported to the U. S.—to Florida citrus orchards, for example. Recently, State Mines has developed a new prilling process to get large prills of calcium nitrate. Dutch farmers prefer large prills to small ones.

But large prills are difficult to make in a conventional prilling tower. The new State Mines process sprays large drops of molten material into oil rather than air. The oil is about ten feet deep. The resulting prills are about 4 cm. in diameter. Oil remaining on the surface of the prills is a good "raincoat" for the otherwise hygroscopic material.

State Mines and Cie Néerlandaise de l'Azote both make urea—probably about 90,000 tons a year between them. State Mines plans to double capacity this year, bringing its total to 100,000 tons. Practically all of it is exported. Producers have not encouraged its use as fertilizer in The Netherlands, nor has it found much use in feeding cattle. State Mines has developed its own urea process and licensed it to several countries in Europe, to a company in South Africa, and to W. R. Grace for a plant in the Caribbean area. Cie Néerlandaise de l'Azote uses the Montecatini process of the parent company—which has also been widely licensed. The soil in The Netherlands does not lend itself very well to the application of anhydrous ammonia.

Phosphatic fertilizers have had a long history in Holland, partly because the country has always had a big merchant fleet and so has been able to import rock. Largest superphosphate manufacturer is Albatros Super Fosfaatfabricken. Other are: Eerste Nederlandsche Coöperatieve Kunstmestfabriek—Vlaardingen; Nieuwe Nederlandsche Mij. tot Vervaardiging van Spiegelglas, Glazen Voorwerpen en Chemische Producten N. V.—Sas van Gent; Chemische Fabriek Coenen & Schoenmakers N. V.—Veghel.

About 150,000 tons of potash is imported per year: 35% from West Germany, 35% from France, 25% from East Germany and 5% from various other countries. Mekog and Norsk Hydro in Norway have experimented with a process for recovery of potash from sea water, but so far it appears uneconomical.

One reason why the land in Holland is so carefully tended is that it has been so hard to come by. A very large fraction of it is below sea level, having been reclaimed from the sea and river beds during the past eight hundred years. Reclamation is still going on. Dykes are built around an area of shallow sea, and the water is pumped out. Originally windmills supplied the power for this, and they still dot the landscape in Holland, but diesel and electric stations are the rule today. The process is costly, and the hard won land gets the best care available.

Fertilizer producers require that more and more of their salesmen have technical training before trying to sell

Fertilizer Salesmen

Their role in agriculture is potentially immense; how best to realize their potential is the poser

ALMOST EVERYONE agrees that long term growth of the fertilizer industry depends on farmers' using sound scientific principles. For practical reasons, though, someone other than the scientist generally must funnel this scientific knowledge into the farmer's consciousness. Today's farmer has many sources trying to infuse his mind with the benefits of scientific farming, including the use of fertilizers. But all too often the poor farmer still does not get the word.

Many surveys show this. These same surveys show that when the farmer does get the word, he usually gets it from one of three major sources —state and county extension workers, local dealers, and his neighbors who do use modern methods.

The big question in many people's minds is: "Where does the fertilizer salesman fit into this picture?" And there are many answers to this question, depending on where one operates and what he sells. The recent NPFI survey of farmers' attitudes, for example, shows that salesmen rank low on the totem pole of information sources. Various, more limited polls made by basic producers show about the same thing. But some in the industry feel that these polls do not represent what actually happens. The farmer usually won't admit that he was sold by a salesman, these doubters say. Their proof:

- Anhydrous ammonia. This form of nitrogen is popular today even though colleges did little of the original work with it and lagged behind industry in recommending it to farmers.
- Nitric phosphates. California Spray-Chemical, the only western producer of this type of fertilizer, has seen its sales grow from scratch to a significant share of the market in only a few years, and for the most part without recommendations from public agencies.
- Other new products. Many, including insecticides, have been accepted by growers several years ahead of public agency recommendations.

These points indicate that fertilizer salesmen are important to the future health of the fertilizer industry. Their exact role is still not precisely clear, and probably will vary widely from section to section in the country. In California, for example, salesmen represent a potent force indeed. How potent can be calculated readily. There are about 200 fertilizer salesmen in the state, each of whom makes up to ten calls a day. In one month, in this one state, there are thus up to 40,000 chances to spread the gospel of scientific farming; many of these are contacts with people who are not convinced of the merits of the gospel. East of the Rockies, however, salesmen generally do not contact so many farmers directly; they spend more of their effort on dealers, county agents, and other middlemen.

A couple of major trends within the fertilizer industry reveal that it realizes how much its own future rests with its salesmen. The trends:

- Fertilizer producers require that more and more of their salesmen have technical training before trying to sell.
- National Plant Food Institute and other trade groups are delving into farmers' minds to learn how best to get information from the laboratory to the farmer, with the salesman as one intermediary, and are then passing their findings about the farmer on to the industry.

NPFI has been expanding its efforts

greatly over the past few years, and has set up field offices in agricultural centers from coast to coast. The institute recently published the Fertilizer Salesman's Handbook, a compilation of data about both fertilizers and farmers' attitudes toward fertilizers. This handbook has, in general, been warmly received by the industry.

Sales Training from NPFI?

NPFI also has sent up a trial balloon testing whether it should expand its activities into actual sales training programs. In February, it put some 180 fertilizer salesmen and marketing specialists through "school" in Ohio, to train them in putting their technical message across to the farmer in terms of dollars in the farmer's pocket.

The school has been hailed as a great success by some. Others say, however, that such an approach may yet turn out to be a mixed blessing. Their reason: It acts as the "great leveler"; men from less progressive organizations are trained at the expense of the more progressive ones (the ones who support NPFI in greatest measure). And it appears to Ag & Food that the latter camp—those who consider association-sponsored schools a mixed blessing—grows stronger as more people in the industry reflect on the subject.

This is not to say that these same opponents feel that the NPFI or other trade groups have no function at all in these fields. Rather, they feel that NPFI and other associations should restrict their efforts to such tasks as improving the general fertilizer knowledge of salesmen, but should leave the actual sales training to the individual companies, each of which has its own approach to selling. Besides having a leveling effect that may work against the progressive supporters of NPFI, such one-shot schools provide, in the words of one observer closely affiliated with selling, "merely the initial stage of scientific salesmanship. Training of any salesman must never cease insofar as knowledge is concerned, and must be conducted on a continuing basis."

There is no doubt, though, that having knowledgeable salesmen is only one of the steps the industry must take to keep itself growing. The next step is to ensure that the farmer listens to the salesman and absorbs at least part of his knowledge.

Price Emphasis

The big stumbling block here is usually emphasis on price. (For more on pricing in fertilizers, see page 400.) In fact, one producer estimates that the farmer is at least 80% interested in price and only 20% in anything else about the fertilizer—a situation which has grown up, according to another company, because there have been so many "quick-buck boys" selling fertilizer in the past. Still a third producer is even harsher. It says of the man who sells on price alone:

"He analyzes nothing.
"He is a destroyer of business.
"He is a promoter of decadence.
"He creates no desires—points out no needs.
"Etc., etc., etc."

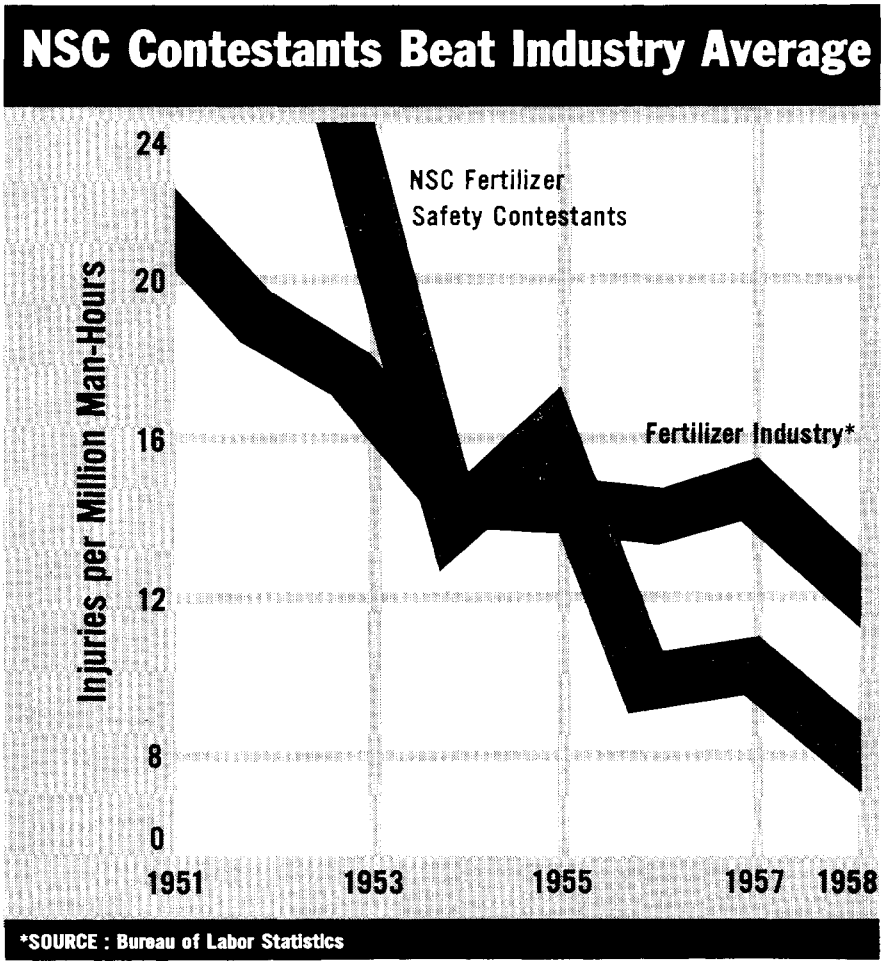
All of these remarks, and many more, give graphic proof that the shift among the basic producers is to try to sell service, and in that way maintain a price structure with built-in profits. Most have intensive training programs for their salesmen, for their dealers, and for growers. The intent is clear: The salesman-farmer relationship must not degenerate into "How much?" If the salesman answers that question, and if his price is not the lowest quoted, four years' college training—along with whatever new information he may have from his own experience and that of agricultural scientists—goes down the drain insofar as the education of that farmer is concerned.

For this reason, some members of the industry emphasize service and advice, and shy away from price. One company goes so far as to advise its salesmen to carry no price schedules with them on their calls, but to try to sell on the basis of the package of fertilizer-plus-service to yield the biggest profit to the farmer.

Fertilizer Safety

Safety contests sponsored by National Safety Council help cut accidents in fertilizer industry

The drive for safety—an unending battle against the dangerous foibles of human nature—is making progress in the fertilizer industry. During the past eight years, fertilizer industry injury frequency rates as reported by the Bureau of Labor Statistics have been cut nearly in half.



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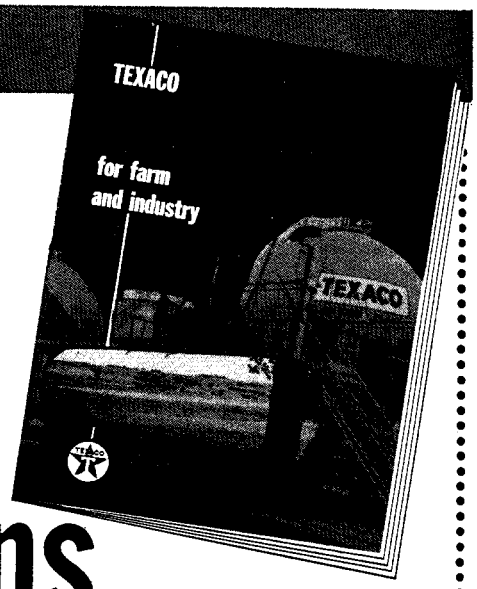

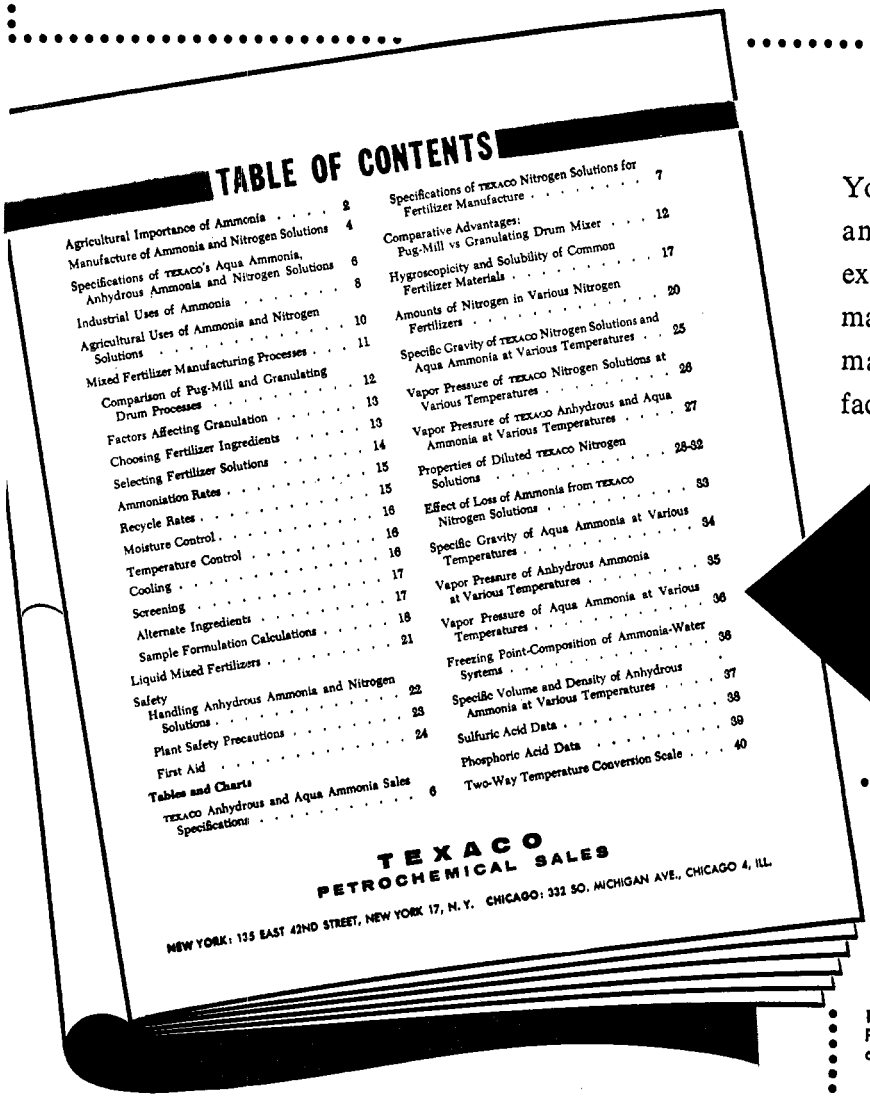

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But there is plenty of room for further improvement; the industry's injury rate still about twice as large as the average for the chemical industry.

Workers Respond to Contests

Responsibility for industrial safety rests on the shoulders of many—top management, plant managers, foremen, plant safety directors. But ultimately the task falls to the individual worker. One way to make workers safety conscious: set up contests so workers can compare their own records with others, and be rewarded for doing a good safety job. The industrial department of the National Safety Council sponsors contests in 31 industries. The fertilizer section contest has been running since 1953, and those companies taking part have generally shown better safety records than the industry average.

There were 170 contestants in the 1958 fertilizer contest. Perfect records were chalked up by 79. The 1958 results in comparison with those of the previous year show a 23% decrease in total injuries, and a 19% decrease in the injury frequency rate. The frequency rate (number of disabling work injuries per million employee-hours of exposure) for all in the contest was 8.9. By contrast, the industry as a whole in 1958 had an injury rate of 13.2, according to BLS figures. A similar comparison of rates for 1957 showed safety contest participants with 10.9, the industry as a whole with 15.5.

It is hard to say whether the better records of contestants result from their being in the contest, or being more safety-minded to begin with. It is probably a combination of both. An interesting fact is that while only about one-third of the fertilizer companies which are members of the National Safety Council take part in the contest, rates of all fertilizer Council members are about the same as those in the contest. This could be taken to mean that the contests do not actually reduce accidents. However, the NSC says that companies in the contest feel it is well worth the time and effort. One evidence of this: few companies drop out of the contest once they are in.

The annual contest is open to any member of the NSC. A company may enter all of its plants as one unit, or enter each plant separately. Most enter each plant as a separate unit; thus while there were 170 contestants in last year's contest, only 32 companies were involved. The fertilizer contest has four divisions: dry mix plants, wet mix, complete fertilizer plants, and open pit mining operations. There is a further breakdown within these divisions according to the number of man-hours worked. This way only plants of roughly the same size and type compete with one another.

The NSC sends a plaque to first place winners in each group. As it works out, there are usually several plants in every group with perfect records, and all get plaques. A second or third place standing brings a certificate from NSC.

On the basis of number of plants with perfect records in 1958, Virginia Carolina was far out front with 19. Davison had a clean slate at nine of its units, and the Grange League Federation was right behind with eight.

Other companies with one or more perfect safety records in 1958: F. S. Royster Guano, Swift & Co., Smith-Douglass, Canadian Industries, Federal Chemical, Robertson Chemical, Witts Fertilizer, Summers Fertilizer, Continental Guano, Illinois Farm Supply, Farm Fertilizers, Southern Fertilizer and Chemical, Spencer Chemical, Missouri Farmers Association, and American Cyanamid.

Pesticide Laws

Legislation proposed for putting newer types of agricultural chemicals under federal pesticide laws. NAC lends its support

THE National Agricultural Chemicals Association is making good on its announced intention to support legislation bringing some of the newer types of agricultural chemicals under the same regulations that now govern insecticides, fungicides, and rodenticides. NAC has said it will plug for H. R. 6436, a bill Congressman Harold D. Cooley (D.-N.C.) recently introduced. Cooley is chairman of the House of Representatives Committee on Agriculture, to which the bill has been referred.

H. R. 6436 would amend the Federal Insecticide, Fungicide, and Rodenticide Act to bring under its umbrella some of the newer chemicals such as nematocides, plant growth regulators, defoliants, and desiccants. These products would then be subject to the same labeling, registration, and regulatory controls that now apply to the older types of agricultural chemicals. The change would be accomplished by broadening the legal definition of economic poison to include these chemicals. Indirectly, H. R. 6436 would also make these chemicals subject to requirements of the Miller Pesticide Amendment, which gives the Secretary of Health, Education and Welfare authority to limit the amount of chemical residues that may remain in or on raw agricultural commodities.

NAC says enactment of the Cooley bill during the current session of Congress is considered "highly desirable and in the public interest."

If H. R. 6436 becomes law during the present session, some of its provisions may not go into effect until March 5, 1961. However, products introduced after Jan. 1, 1958, would come under its provisions immediately upon enactment.

Among the pertinent provisions of H. R. 6436 are its definitions of the chemicals involved. A nematocide is defined as "any substance or mixture of substances intended for preventing, destroying, repelling or mitigating nematodes." Nematodes are defined as "invertebrate animals of the phylum nemathelminthes and class nematoda, that is, unsegmented round worms with elongated, fusiform, or sac-like bodies covered with cuticle, and inhabiting soil, water, plants, or plant parts; may also be called nemas or eelworms."

A plant growth regulator, according to Cooley's bill, is "any substance or mixture of substances intended, through physiological action, for accelerating or retarding the rate of growth or rate of maturation, or for otherwise altering the behavior of ornamental or crop plants, or the produce thereof, but shall not include substances to the extent that they are intended as plant nutrients, trace elements, nutritional chemicals, plant inoculants, and soil amendments."

A defoliant means "any substance or mixture of substances intended for causing the leaves or foliage to drop from a plant, with or without causing abscission."

The term desiccant means "any substance or mixture of substances intended for artificially accelerating the drying of plant tissue."

NAC estimates that about 4000 nematocide, defoliant, desiccant, and plant regulator products are now marketed; it expects the number of them to increase at a rather rapid rate. This bill, it says, would ensure that such products are safe and effective for the purposes for which they are sold.