THE OBSERVATION POST

Philip H. Groggins

Looking Ahead with the Fertilizer Industry

A NEW STYLE fertilizer industry is on the way. The revolutionary forces responsible for the change will give it more than merely a new look. From a technological viewpoint, the fertilizer industry has slipped far behind such chemical process industries as rubber, rayon, plastics, and petroleum. Now the revolution, long overdue, is in action. Under the stimulation of emergency conditions and bright future prospects, plans for a larger, more efficient industry are taking a concrete form which probably will yield a robust hybrid reflecting features of the chemical and petroleum industries.

Before World War II, the leisurely environment of the Southeast, where fertilizer plants are most numerous, exerted a great effect on the pace of the industry. Cheap labor and lack of organized effort for economic improvement dulled the urge toward a more vigorous approach. Most of the larger manufacturers appeared content with the slow but steady increase of business. Dry-mixers began to appear in considerable number but this never became a trend so influential as to stir up a change toward better production and distribution practices. The result has been a surplus of production facilities and overlapping of distribution channels. Even the current injection of technical improvement into the hitherto placid fertilizer industry is likely to show least effect in the Southeast.

Factors in Changing Position

There are many factors contributing to the ferment in the fertilizer industry. Each has a specific leavening effect. It is a combination of technical and competitive pressures from within and without that has stimulated the more alert and aggressive elements of the fertilizer industry to take steps to safeguard or improve their position. The basic stimulus for change stems from the Department of Agriculture's determination that fertilizer production needs to be expanded enormously to maintain or improve nutritional standards for a rapidly growing population. Here are 1950 use and 1955 claimed requirements of the major plant nutrients:

	1950: Tons	*1955: Tons*
Nitrogen, N	**1,210,000**	**2,185,000[a]**
Phosphates, P_2O_5	**2,088,000**	**3,550,000**
Potash, K_2O	**1,082,000**	**2,185,000**
	4,380,000	**7,920,000**

[a] Based on NPA supply data and DPA program determination. Does not include conversion loss of 132,000 tons N.

These figures indicate an increase of about 80% in the planned use of fertilizers in a five-year period. Realization of such a consumption would be a revolutionary rather than evolutionary development. Educational programs, incentives and other devices will be needed to create a market for such a great fertilizer output.

There is no doubt that we will have a steady increase in our population and hence a bigger problem in producing adequate supplies of foodstuffs. It is known also that we have just about reached the limit in the utilization of our good tillable acreage. We must depend increasingly on the agricultural sciences and chemicals to produce more and more food on our farmlands for future expanded needs. The contributions of plant breeders, soil scientists, agronomists and entomologists can be expected to result in the development of improved varieties, more efficient farm practices and greater yields. The chemical industry which supplies plant nutrients and plant and animal medicinals must also play a dominant role in ensuring adequate production of food, feed and fiber.

Nitrogen Expansion

During World War II, average annual domestic agricultural consumption of nitrogen in fertilizers was about 550,000 tons. That was all that was available. A substantial part of the supply was imported from Chile and Canada. In 1955, synthetic ammonia facilities alone will be capable of producing about 3 million tons of N. This enormous expansion is directly attributable to the persuasive representations and claims of the U. S. Department of Agriculture. Twenty-five new plants are being built to supply these expanded needs. Facilities are being constructed by many firms which have not participated actively in manufacture and distribution of mixed fertilizers.

In the past, the fertilizer industry looked to other segments of the chemical industry for supplies of nitrogen chemicals. There was no competition between them in the production of mixed fertilizers. This situation will soon be vastly different. It is reported that one of the major traditional suppliers of nitrogen chemicals is embarking on the large scale production of mixed fertilizers. By a proper integration of its facilities and resources, it should be able to produce mixed fertilizers cheaply via the nitraphosphate or other processes. Distribution facilities will be needed but there is little doubt that these can be developed or acquired by negotiation.

A more striking development is the entry of the petroleum industry into the nitrogen picture. It is known that Shell Chemical Co., Phillips Petroleum, Lion Oil Co., Delta Chemical Co. and Atlantic Refining Co. either have or are building ammonia plants. To ensure outlets for their products, these newcomers to the fertilizer industry must either join existing elements of the industry or develop captive or other markets. Other firms, such as Grace Chemical Co. and John Deere are constructing completely integrated fertilizer facilities. Thus, we find that the chemical and petroleum industries are becoming active participants in the fertilizer business.

This development cannot be overemphasized because the unit cost of N is the greatest item of cost in making mixed fertilizers. Even a casual glance at some cost figures would suffice to establish the economic advantage of having a captive or integrated source of nitrogen. Using current prices, the f.o.b. cost per unit of N in various forms is approximately:

	Cost per Unit N	*Cost of N in Ton 12% N Fertilizers*
Ammonia from completely amortized plant	**$0.50**	**$6.00**
Ammonia from partially amortized plant	**0.75**	**9.00**
Merchant ammonia	**1.00**	**12.00**
Nitrogen solutions	**1.20**	**14.40**
Ammonium nitrate	**2.00**	**24.00**
Ammonium sulfate	**2.20**	**26.40**

(This discussion will be continued in the next issue.)