

# profile...

## From "barrel" operator to largest liquid fertilizer manufacturer in California. That's the history of 10 years' growth by Agriform, pioneer with neutral ammonium phosphate fertilizer solutions

THE YEAR is 1945. In California, the fertilizer industry will sell just short of half a million tons of fertilizers. Of this amount, only 2% (tonnage basis) will be liquid materials—ammonia and ammonium nitrate solutions, liquid phosphoric acid, "mixed" liquid fertilizers. Nine short years later—1954 (latest complete statistics)—the California fertilizer industry has doubled to over 800,000 tons, but of this amount 18% (tonnage basis) is now liquid materials.

Spanning this decade which has seen liquid fertilizers carve out an important place for themselves in the California fertilizer industry and spread to other sections of the country as well has been the growth of Agriform Co. (Bakersfield, Calif.), one of the West's pioneering liquid fertilizer companies and introducer of neutral ammonium phosphate solutions. Today its 18 plants, ranging from simple distribution points to complete formulating plants for fertilizers, insecticides, and other agricultural chemicals, stretch from Yuma, Ariz., to Pasco, Wash., through the major growing areas of the Pacific Coast.

Like most of the early liquid fertilizer companies, Agriform started small—as a "barrel" operator supplying ammonium nitrate solutions and complete liquid fertilizers to the citrus industry surrounding its plant at Santa Ana. (Early entrants to the liquid fertilizer field generally started out on a small scale—a few drums of raw materials, a simple mixing facility, and you were in business as a "barrel" operator. Now that liquid fertilizers have become more securely established, the number of people who start this way is smaller, and most start with more elaborate storage and mixing facilities.) The company began expanding almost immediately, with a second plant beginning operation in the Imperial Valley, California's intensely farmed "desert" bordering Mexico. Since then, it has almost been a plant-a-year as the Agriform string has grown, first eastward to Yuma and then northward in steps up California's central valley. Latest plant is a 200-ton-per-day unit at Woodland, which began operation in the spring of last year, culminating

10 years of development in liquid fertilizer manufacture techniques.

### Introduces Neutral Fertilizer Solution

Growth of the liquid fertilizer industry and of Agriform has gone hand in hand. In addition to plugging for



The President . . .

### John C. Anderson

#### Sound management for liquids

liquid material per se, Agriform has also made several significant technological developments, not the least of which was its introduction in 1952 of neutral ammonium phosphate solutions based on white phosphoric acid.

In the postwar 1940's, liquid fertilizer companies dealt with aqua ammonia, ammonium nitrate solutions, and green phosphoric acid produced by wet process acidulation of phosphate rock. California, in common with most of the West, was primarily a nitrogen user, but there were varying needs for materials to supply N and P<sub>2</sub>O<sub>5</sub>, as well as K<sub>2</sub>O on occasion. Furthermore, prospects for the future were that there would be an ever increasing need for P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O as natural fertility of soils in these materials was cropped out.

While nitrogen materials worked satisfactorily, either via direct injection or via irrigation water, the P<sub>2</sub>O<sub>5</sub>-containing materials did not. Green acid could be used directly (injection or irrigation water application), but it was corrosive. "Mixed" liquids

containing N and P<sub>2</sub>O<sub>5</sub> were likewise not too satisfactory. They were generally of low pH, resulting in considerable corrosion. Furthermore, flocculent, ammonia-complex precipitates form when green phosphoric acid is reacted with ammonia-containing materials, sludging up application equipment and clogging injection shanks.

Agriform, then under the direction of one of its founders, L. P. Hall, sought an out from these difficulties, finally in early 1952, after several years of experimenting, brought out the first neutral liquid fertilizer containing N and P<sub>2</sub>O<sub>5</sub> made from reacting ammonia with white phosphoric acid (made by Westvaco from electric furnace phosphorus). Since that time, neutral fertilizer solution manufacture has spread eastward to the Midwest and South, and some of the other major white phosphoric acid producers, notably Monsanto and Victor, have also become pluggers for liquid fertilizers based on white acid.

In growing up with these new fertilizers forms, Agriform has gained considerable operating know-how in formulation techniques. Insofar as liquid N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O types are concerned, two general production methods can be used—batch and continuous. Agriform is a devotee of the latter, and its Woodland plant, designed by its vice president William Rockwell, incorporates what it believes to be the better approach. Key unit in the Woodland plant is a small, 100-gallon stainless steel tank where the neutralization reaction between aqua ammonia and phosphoric acid occurs. A pH meter and heat controls monitoring the neutral N-P<sub>2</sub>O<sub>5</sub> product are combined with flow meters for the raw material streams to achieve semi-automatic control of the process. By switching to continuous operation, Agriform feels it has improved on the batch process in two ways—less heat need be dissipated within a given time during neutralization; plant investment is lower because of less extensive use of stainless steel for corrosion resistance.

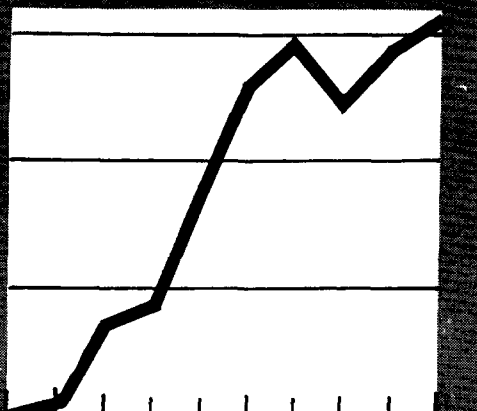
### For Sale: Liquid Fertilizer Plants

Agriform now believes it is in a position to cash in on some of its development work during the past 10 years, in addition to its main business of formulating and applying fertilizer solutions and pesticides. Thus, it is now offering to build plants comparable to its Woodland one, set up and ready to run, in areas outside its own marketing regions.

While Agriform's major activities center on liquid fertilizers, it also offers other services to its agricultural custo-

## Agriform Co.

Plugging liquid fertilizers along with technological development helped set Agriform's 10-year growth record. This year, Agriform entered the home garden market and began selling to farmers through consignee distributors



NOTE: Fiscal year ends Aug. 31. Sales of 1952 and prior years included income from resale of dry materials; beginning in 1953, sales of liquid fertilizers were kept separate

mers. In 1950 it introduced Agrifoliant, the first material in solution form ready to apply for cotton and other defoliation. Then in 1952 it perfected Agritox Synavated Dust, a DDT-plus-synergist insecticide. This was tested for two years in the high heat of California's Imperial Valley and then released in 1954 for commercial scale use. Agritox Synavated Dust had some success in a number of areas that year when DDT alone proved unsuccessful in controlling cot-

ton and other insects, and Agriform is now marketing its dust throughout California and Arizona.

This year for one of the few times in its short history, Agriform doesn't have a plant under construction. This is far from indicating an end to Agriform expansion, however. Growth curves for liquid fertilizers slant steeply upward, and Agriform can be expected to try to maintain its position as the largest neutral fertilizer solution manufacturer in California as

well as remain near the top in sales of other liquid types. Up to mid-1955, Agriform sales were mostly on a direct-to-grower basis, at which time it made two significant changes: First, it appointed Sales Network, Inc. (under direction of Fred H. Fidler, formerly vice president of J. Walter Thompson advertising agency), as its distributor for small package goods for home owners, its first entry to the home garden market. Secondly, it began distributing most of its farmer products through consignee distributors. Agriform is thus moving out of the direct application end.

Although precise plans for the future have not been announced, Agriform may now be in a position to breathe new life into a trend that seemed to be developing in the West about 18 months ago. Because of increased competition from basic manufacturers' sidestepping the traditional distribution route by going directly to growers, some of the larger formulators were expected to try to consolidate their positions by becoming basic producers of one or more of their raw materials. Beyond expansions by Best Fertilizers (AG AND FOOD, June 1954, page 612), however, this trend of formulators becoming basic never gathered momentum in the West. It would appear, however, that Agriform could well be the next formulator to move in this direction.

John C. Anderson bought control of Agriform in November 1953 and became its president in 1954. Today, under the guidance of chairman of the board Harvey Stonehouse, Agriform has three operating heads—Demont Galbraith, vice president for sales, William Rockwell, vice president for production, and Anderson, who handles finances. Agriform executives attribute much of their success in recent years to their corporate structure and to clear definition of function for sales, production, and finance, for the liquid fertilizer business has come of age, and only the application of sound management techniques is apt to permit these new companies to grow with the expanding industry, they feel.

For the future, Agriform believes the outlook is "solid" for fertilizer solutions, backed by what it cites as triple advantages of ease in handling from basic manufacturer to growing crop, low plant investment for formulation, and small labor costs. Higher analyses, possibility of using less expensive green acid, and improved application equipment are expected as additional goads to increased sales in the future. Agriform sales for the first quarter of fiscal 1956 (September through November 1955) are up 40% over the same period last year, and its confidence would not seem misplaced.

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