

tional Canners Association “. . . some are inclined to question whether you can litigate your way into high quality crop production . . .” There is in fact a trend toward short contracts. Some have shrunk from many pages, not so long ago, to less than one page written in plain, nonlegal English.

Agricultural Research

Besides their development work in food technology, most large processors feel they must also maintain a very active program of agricultural research and development. Witness a Western processor who some years ago was having trouble with the local variety of sweet potato. Starch content was inconsistent and there were storage and processing problems. The processor's agricultural staff went to work and eventually decided upon and introduced a new variety from the Eastern U. S. Yields were doubled, processing became much simpler, and both grower and processor benefited.

Large scale use of fertilizers and pesticides, particularly the latter, raises problems that processors are helping to solve. Off-flavors such as that caused by BHC in canned ripe olives are getting much attention; NCA, nine experiment stations, and MIT are seeking causes and cures. Pesticide residues are an obvious problem on which growers and processors work closely together. The effect of fertilizers on nutritional value and other properties of crops is getting a good deal of attention and as more is learned about it will quite probably become of considerable interest to both growers and processors.

Besides their own agricultural develop-

ment work, food processors stimulate and sponsor through their associations research designed to improve consistently production of processing crops. The technical advisory committee to NCA's raw products committee suggested recently that the rapid progress made in pesticides during the past few years has not been accompanied by similar progress in methods of application, which in fact have not changed basically in the past 50 years. Stimulated by the NCA, groups in New York, Ohio, and Florida are working on development of improved application equipment, and a number of others are investigating the basic relationship between spray coverage and disease and insect control.

At the state level the Canners League of California, for example, works very closely with the extension service on agricultural problems peculiar to canning crops. Information developed is made available to growers via the county agents.

Processor's Man, Real Link to Grower

The processor's field man is the real link between grower and processor. Besides procuring his company's raw materials, the field man must be a walking storehouse of information, able upon request to answer the grower's questions on fertilizers, pesticides, and any number of related subjects. Most large processors today want field men with a college level background in agriculture and prefer also a practical background in agriculture. Besides this, says one field man, a background in psychology can be very handy. He recalls one of his first experiences in which upon approaching a grower (in not quite the correct manner)

about the aphids in his peas, he was invited to leave the farm before he had gotten well started. Field men can often help their growers with problems on crops they aren't buying, such as hay. The farmer in turn can help the field man, one way being by steering him to the right growers when he is having procurement trouble with a particular crop.

While it would not be strictly true to say that growers and processors are universally one big happy family, the relationship has improved steadily, particularly during the last 10 years. Such progress is very helpful to an agricultural economy in which just 10 leading vegetable states produced in 1954 a total of 4,607,000 tons of vegetables alone for processors. Also in 1954, processors took 95% of the peas grown in the U. S. 83% of the lima beans, 78% of the beets, 74% of the tomatoes, and so on. In the light of such facts, good grower-processor relations are more than helpful—they are necessary.

Urea Outlook

Urea expansion continues at rapid pace this year in face of stiff price competition

UREA, with fertilizer use taking two thirds of its output, will be in good supply through 1957. Even though current productive capacity exceeds demand by almost 50%, plant expansions will add another 25% by the end of 1956.

Because of urea's several advantages to farmers, its demand as a fertilizer is expected to increase 10% during 1956. Urea supplies more nitrogen than ammonium nitrate—its nearest rival in total available nitrogen per unit weight of dry material. This means lighter applications with fewer refillings of the applicator.

Less hygroscopic, urea is easier for farmers to handle. Urea finds more and more use in high analysis materials by fertilizer formulators faced with granulation problems.

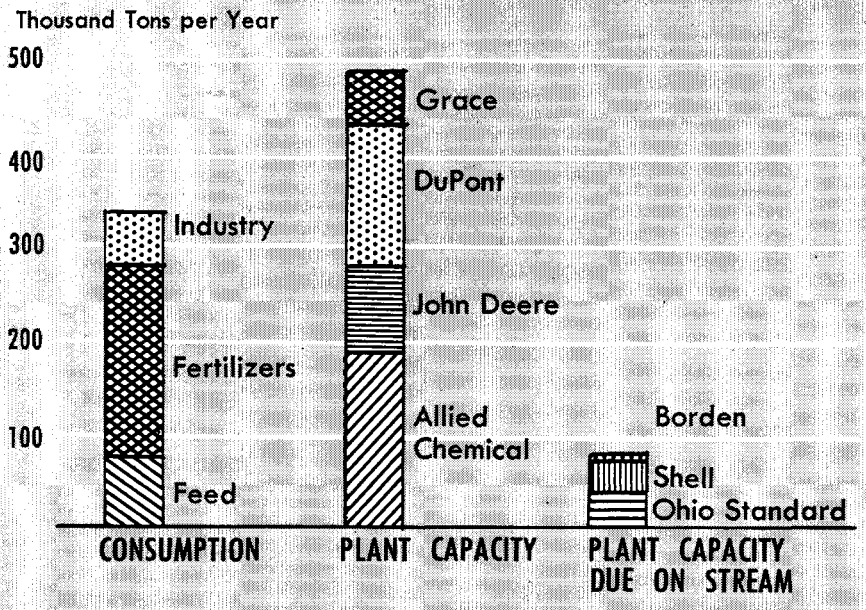
Although some authorities debate the point, urea is claimed to cause less “burning” than ammonium nitrate when used in heavy applications. Finally, foliar feeding can be done more easily using urea.

Fertilizer application of urea is mostly as solutions. New and future producers plan to make solutions a large part of their production, feeling that this trend will continue to expand. A few large producers having facilities to make both are marketing urea-ammonium nitrate

Drop changes hands at pea buying station on grower's farm near Patterson, Calif. Pea viners are owned by processor. After vining, peas will be graded



1955 UREA USE AND CAPACITY



ently could not prevent price reductions in the face of larger imports of foreign urea.

Price competition in this field is so strong that freight rates and plant location relative to markets determine selling areas. At present the Midwest is well covered by urea producers. In the Southeast, urea faces a stiff fight for sales from liquid ammonia and nitrates. Lack of a plant in the area has held back sales. As plants converting natural gas to ammonia, urea, and other chemicals go on stream in the coming year, sales in the Southeast will undoubtedly increase.

West Coast urea supplies will be augmented when Shell Chemical's 100 ton-per-day plant begins production in September 1956. But other companies have temporarily shelved their plans to build urea plants as part of ammonia expansions. In the West urea goes about 80% to fertilizer with animal feed getting just small amounts of the remainder. However, the feed market is believed to have great potential on the West Coast.

In 1954 about 30,000 tons of urea, mostly from Norway and Germany, entered West Coast ports. Domestic producers selling urea at \$13 to \$15 a ton more than in the East got only a third to a half of the West Coast market. Domestic urea price reductions now place it competitively with imported urea.

Although urea supply now exceeds demand by a wide margin, manufacturers feel that two years from now will see a better balance. Fertilizer demand may expand as much as 10% per year and demand as feed supplements is expected to expand at an even greater rate. Industrial demand for urea in plastics will increase slowly as more uses for structural urea-formaldehyde plastics are found.

solutions. Ease of handling and equipment interchange with aqueous ammonia fertilizers has led farmers in several areas to seek urea solutions. Strong selling by ammonia producers has aided this demand.

Urea combined with other materials is expected to find only limited fertilizer demand, urea-formaldehyde probably remaining a "luxury" item for lawn and special uses. So new that a use pattern has not been established, Du Pont's mixture of methylene ureas, Uramite, has been introduced as a turf builder and for ornamental plants. It's ideal for uses that require "slow availability" of nitrogen, they say.

the three supplements. Urea-molasses proved to be slightly more expensive than sorghum gluten (13.3 cents compared to 12.7 cents per day per heifer) but much cheaper than ammoniated molasses.

Nonagricultural urea goes mainly into plastics. Urea condensed with formaldehyde, one of the older polymers, is used in paper as wet strength improvers, and is molded into radio and TV cabinets.

Urea Price-Sales Picture

Price cutting (in terms of available nitrogen) has been prevalent in recent months. Fall fertilizer demand appar-

Urea in Protein Supplements

The second largest use for urea today is in animal feeds, mainly as protein supplements. In this field urea does not have a chemical competitor. Over the past year, use of urea in ruminant feeds has almost doubled although the total is still small. As more knowledge of protein supplements in feed is gained, the trend in urea demand will become more clearly established.

Texas Agricultural Experiment Station workers have used urea-molasses for wintering cattle rations supplements, and found that urea-molasses is comparable with sorghum gluten feeds and dehydrated ammoniated molasses. During an 84-day test in the winter of 1954-55, cattle were fed with three supplements. Urea-molasses did not have the refusal that occurred with ammoniated molasses. Weight gain differences were small among the groups of heifers fed

Urea synthesis and prilling tower operated by Grand River Chemical has an annual capacity of 95,000 tons. Fertilizers take largest part of production, but agricultural extension workers foresee increase for feed supplements

