

Two Antibiotic Sprays Ready For Grower Use Next Spring

WASHINGTON, D. C.—Two commercial antibiotic manufacturers, Merck and Pfizer, will probably be marketing antibiotic sprays for plant disease control next year. Both sprays will contain streptomycin. Pfizer will market Agri-Mycin, a mixture of streptomycin with 10% oxytetracycline added. Merck's product Agristrep will contain streptomycin as the sole active ingredient.

The relative effectiveness of streptomycin *vs.* streptomycin and added oxytetracycline has not been conclusively resolved by field trials. Results reported this fall do indicate that both antibiotic formulations are very effective for control of fire blight of pears and apples, and a number of diseases of economic importance to farmers.

Pfizer claims that its product containing streptomycin with added oxytetracycline provides a degree of insurance against emergence of strains of bacteria resistant to streptomycin. Merck researchers say that they have no evidence of emergence of resistant strains following three years of field trials with streptomycin. While Pfizer field trials have shown no resistant strains, Pfizer's laboratory reports indicate that such strains can readily develop when only streptomycin is used.

Both Agri-Mycin and Agristrep have been registered with the USDA for control of fireblight of pears and apples, walnut blight, and bacterial leaf spot. It now remains for the USDA and the various state experiment stations to make recommendations on use of these antibiotic pesticides. These recommendations to the farmers on what will be the most advantageous spray schedules and spray concentrations could be of major importance in the marketing of the two formulations next year.

Another problem for manufacturers is development of analytical techniques to prove the absence of residues on fruit following application of the antibiotic sprays. The FDA has taken a strong position in opposing the presence of antibiotics to food intended for human consumption.

The question of antibiotic carryover in animal feed was extensively discussed last year at the annual Symposium on Antibiotics in Washington. At this year's session two papers discussed the antibiotic carryover problem in relation to spray residues. No antibiotic is detectable in the harvested fruit apples, and tomatoes.

John C. Garber of Merck said that streptomycin is absorbed into the plant following application of streptomycin sprays. However, no streptomycin residue is detectable in the matured crop when analyzed by a spectrophotometric technique. Garber soaked tomatoes for two hours in a solution containing 250 parts per million of streptomycin; immediately following the soaking, the tomatoes were found to contain 300 micrograms of the antibiotic per 100 grams. Three days after soaking the antibiotic assayed to from 13 to 160 micrograms per 100 grams, and at the end of 10 days no antibiotic could be found. He suggests that the normal ripening process of the tomato removes any traces of antibiotic that might have been present due to late treatment of the tomato plant.

It is not anticipated that there will be any question of antibiotic residue on apples and pears because the spray is normally applied before the fruit is formed on the tree.

A simple microbiological assay for determination of surface residues resulting following application of antibiotic sprays was reported by Robert N. Goodman, University of Missouri. The assay technique is sensitive to 0.15 parts per million. In greenhouse trials the bioassay was capable of detecting residues of Agri-mycin on apple leaves 27 days after application of a spray containing 100 parts per million of the antibiotic combination. Assays of field test ma-

terial failed to detect any antibiotic activity in fruit sprayed 4 times at 4 day intervals with 100 parts per million of the antibiotic prior to harvest. Reviewing recent research on Pfizer's Agri-Mycin F. C. Visor discussed laboratory work which indicates that oxytetracycline is synergistic to the effectiveness of streptomycin in the bactericidal activity of the latter. Visor reported that the streptomycin-oxytetracycline combination was found to be effective at lower concentrations than the concentration necessary for the same level of activity with streptomycin alone.

Dr. Garber said that the Merck research workers have studied the stability of the streptomycin spray formulation with over 40 different commercially used spray mixtures. The results of the stability studies were not reported but he did say that streptomycin was found to be stable when mixed with all but the most reactive spray compounds.

The relative stability of the antibiotics with other spray mixtures could be of importance to the farmers and orchardists next summer. If it is possible to incorporate the antibiotic in some of the present sprays a considerable saving in labor costs could result to the user.

Many fruit growers now apply as many as 8 or 10 different sprays in the course of a growing season, and four to six more trips with a spray rig might not find too ready consumer acceptance. The question of compatibility of the antibiotics with other normally used sprays will have to be solved in the near future, for the state agriculture services will soon be drafting recommendations for spraying.

These recommendations could be of the greatest importance to the two antibiotic manufacturers who are about to enter the pesticide business.

Use of Animal Fats in Feeds Spurts Ahead

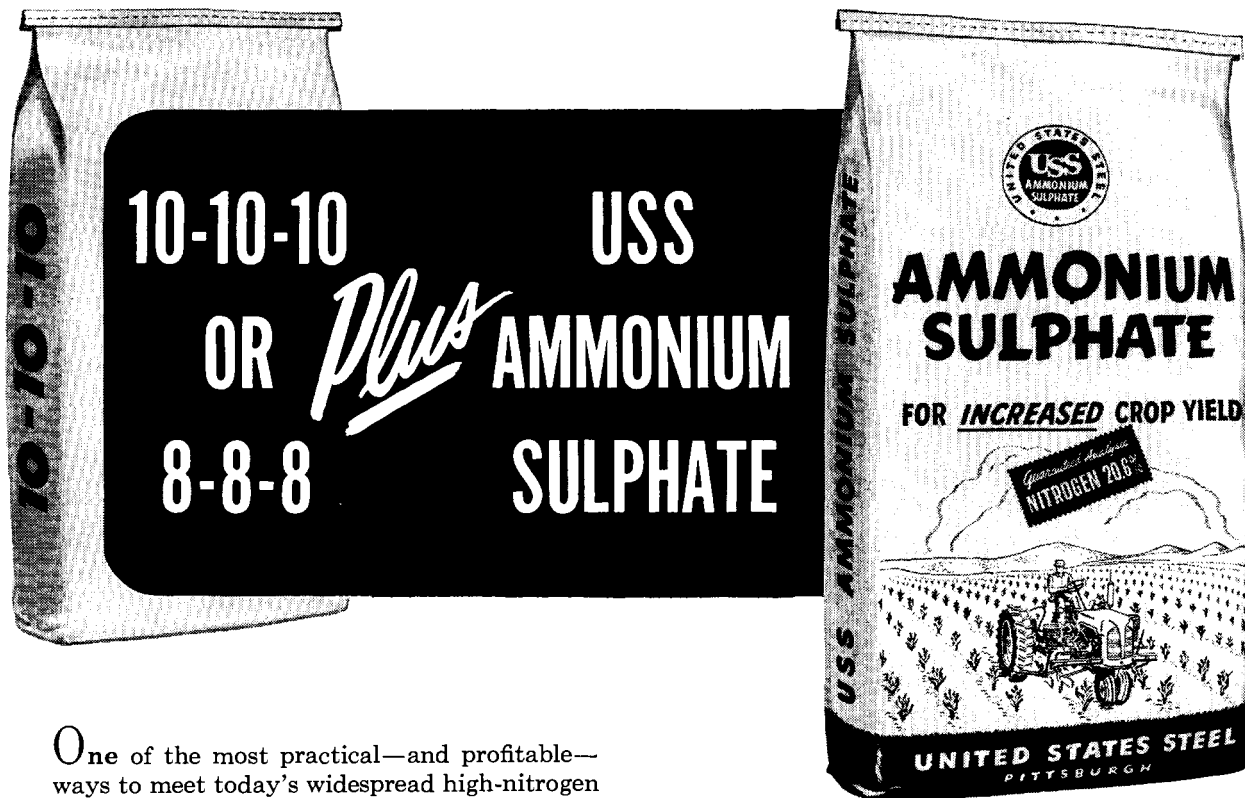
At present rate of use, feed industry relieves packers of about 25% of yearly animal fat surplus

CHICAGO.—Just two years ago, animal fats were being used by the feed industry at a rate of about 10,000 pounds a year. Today the rate is about 250 million pounds a year and it could double within the next year or two, believes O. H. M. Wilder of the American Meat Institute Foundation. At the present rate, the feed outlet takes about 25% of the yearly animal fat surplus created largely by the inroads of syn-

thetic detergents into the fat consuming soap industry.

Animal fats will continue to find a market in poultry and certain other feeds as long as they can be had in quantity at a cost less than about three times the cost of corn, believes R. M. Bethke of Ralston Purina but materials handling and improvement of fat quality are problems that must get continuing attention. Bethke spoke at the American Meat Institute's 49th annual meeting here.

To meet high-nitrogen recommendations for early spring application . . .



One of the most practical—and profitable—ways to meet today's widespread high-nitrogen fertilizing recommendations is to sell the more popular high-nitrogen mixed fertilizers such as 10-10-10 or 8-8-8 *plus* supplemental nitrogen for direct application. And one of the best materials for early broadcast or plowdown nitrogen application is USS Ammonium Sulphate.

USS Ammonium Sulphate is a dependable nitrogen source . . . all its nitrogen is in the non-leaching Ammonia form . . . proved best for early spring applications. Kiln-dried for consistent free-flow, it won't cake and clog farmers' equipment. It's less corrosive than similar materials. And the free-flowing quality of USS Ammonium Sulphate makes it an easy mixer.

USS Ammonium Sulphate is available in strong, moisture-proof 100-pound bags for direct sale. The distinctive bright yellow bag with the green markings is a familiar and trusted package to most farmers. USS Ammonium Sulphate is also available in bulk quantities for mixing. Get your order in now for delivery in time to meet early spring demand. Contact our nearest Coal Chemical sales office or write direct to United States Steel Corporation, 525 William Penn Place, Pittsburgh, Pa.

USS AMMONIUM SULPHATE



4-2044

UNITED STATES STEEL

The feed industry does not have a long history of experience with fats and is still learning how to handle them. It is learning, for example, that copper base alloys should be avoided in fat handling systems. Copper tends to dissolve in hot fat, and in solution it catalyzes reactions that produce rancidity. The same is true of rubber. Piping layouts and sizes also must be specially designed to handle hot fats.

Fats are heated generally with steam, but they must nevertheless be kept as dry as possible; water is probably the most important enemy of stability in fats. When clean and dry they keep fairly well, but storage capacity should be so balanced with rate of use that the quantity in storage at any time can be held to a minimum.

The amount of fat going into an animal feed must be carefully controlled because it is an expensive ingredient relative to most other feed components. Also, high fat content can be harmful from the nutrition viewpoint.

Animals regulate their eating generally by caloric content; if the fat content of a feed is too high, the animals will get the necessary calories, but they may not eat enough total feed to provide all of the vitamins and protein supplied in other feed components.

While fats are still sold to feed manufacturers on the basis of soap industry standards, characteristics like titre and free fatty acid content seem to have little relation to what is needed in the animal feeds.

Bethke would like to see a separate set of standards for feed grade fats. He sees also a need for much education in quality matters, among both users and suppliers of fat products.

The place of fats in large livestock feeds is yet to be determined. Poultry feeds have been the major outlet to date because poultry are raised on a much more easily controlled diet than are livestock, and it is much simpler to prove an advantage in using fats. Swine, sheep, and cows get a large part of their food directly from the farm.

Feed supplements are the only items that can be carefully controlled, and seem therefore to be the place for fats. This is being done to some extent, but the difficulty of proving results on an only partially controlled diet remains.

In addition, the price of fats has gone from 2 and 3 cents a pound to 7 and 8 cents a pound in the last few years, making accurate control and visible results even more important to the farmer.

Industry

NFA-APFC Consolidation Plans Proceeding

PROPOSED CONSOLIDATION plans for joining the National Fertilizer Association and American Plant Food Council into a single new organization advanced another step Oct. 28, when the APFC board approved the merger. NFA members will vote on the proposal at their meeting in Hollywood, Fla., Nov. 10.

Approval of the amalgamation by both organizations will bring into existence the National Plant Food Institute as spokesman for the American fertilizer industry. That industry has a long history of trade association activity, extending back to 1876 when the National Association of Chemical Fertilizer Manufacturers was formed in Baltimore. The original National Fertilizer Association came into being seven years later as the result of a meeting in the same city. That organization lasted less than five years and from 1887 until 1893 the industry was without a general or national association.

The nucleus of the present associations developed from an informal meeting of twelve "western" fertilizer manufacturers at Columbus, Ohio, March 6, 1894. That group held its first convention in Buffalo, N. Y., as the Association of Manufacturers in the West. In 1901 the name was changed to Fertilizer Manufacturer's Association and membership was opened to all fertilizer manufacturers. The name was changed again in July 1906 at the convention at Put-in-Bay, Ohio, to the National Fertilizer Association.

The next step was an expansion. The Southern Fertilizer Association, an organization of long standing, became a part of the NFA at the latter's 32nd annual convention at White Sulphur Springs, W. Va., in June 1925.

Charles J. Brand, a leader in the development of the Bureau of Agricultural Economics of the USDA became the chief full-time official of the organization at about this time. His position was executive secretary and treasurer.

Unhappy days came upon the organization during the zealous crusade for antitrust actions beginning about 1939. NFA was one of the many organizations attacked. Despite the roughness of the battle, the organization survived.

In 1945 another organization came into being in the fertilizer industry. It was named the American Plant Food

Council and included some former members of the NFA. It was headed by Clifford Woodrum, a former Virginia congressman.

During 1945 Charles Brand retired to be succeeded by D. S. Murph, who had been administrative assistant and attorney for the NFA for 12 years. He was followed in 1946 by Maurice Lockwood, who became the first full-time president. He held that position until 1948, when he joined International Minerals and Chemical Corp., of which he is now a vice president.

Russell Coleman, director of the Mississippi Agricultural Experiment Station, succeeded Lockwood as NFA President, a position he still holds.

Paul Truitt, former president of the National Association of Margarine Manufacturers, succeeded Woodrum on the latter's death and is current president of the APFC.

Russell F. Coleman

Paul Truitt



Army Ends Contract for Daniels Nitrogen Process Plant

The Army Ordnance has terminated its contract with Food Machinery and Wisconsin Alumni Research Foundation for operation of the demonstration unit for fixing atmospheric nitrogen directly as dilute nitric oxide. This process was developed by Farrington Daniels and Frederick Cottrell.

The demonstration unit, located at the Sunflower Ordnance Works in Kansas City, will be shut down, but laboratory and small pilot plant operations will be continued.

In announcing termination of the contract, Food Machinery said that the process was technologically feasible, but that the economics of commercial production did not prove to be in line competitively with other processes now being operated on a large and integrated scale.

The process has been the subject of much interest and speculation on the