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 material 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 synergystic 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 synthetic 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.