

area operators figure they get about 100 yards per man day in sodding. In a seeding operation, they figure on 200 yards per man day.

How does the landscape contractor prepare the homeowner to keep the new lawn? Juchartz says there is also a great variation here. And it's at this point that he feels contractors need to get together and agree on recommendations, that is, for the area they serve. Good use could be made of a garage sheet or leave piece of some type containing instructions which would help insure success of the new job. Recommendations given for this area by the operators replying usually called for daily watering the first 10 to 20 days and then gradually tapering off, monthly fertilizing, mowing at a 1½-inch height, and no use of weedkiller.

Biggest problems in doing the job were listed as the same for both seeding and sodding. These were obtaining proper grade, fighting compacted soil, and getting the homeowner to spend enough money to do the job right.

Thinking of the contractors about what the industry needs most centered on two major points. First, more education for the public. And secondly, state inspection of sod to insure standards.

Chemical Residues Leave Soil by Various Routes

Contract applicators concerned about chemical residues in the soil—as an aftermath of spraying for weed or insect control—have a number of natural forces working in their favor, it is reported by the Institute of Agriculture, University of Minnesota.

One of these forces, and a primary one, is microbial decomposition. Tiny soil microorganisms attack virtually all chemical molecules in one way or another.

There are other ways in which pesticides are lost or inactivated. Some are lost through vaporization (volatilization). Some residues leach down into the soil where they cause no further problem.

Some disappearance is due to

plant removal or the breakdown of pesticide molecules as they are taken up by plants. Finally, there is some chemical breakdown of pesticides, although very little has been proven by research to occur.

Since soil microorganisms are so important, they have long been in the scientific limelight where the residue problem is concerned. According to Russell Adams, Jr., soil chemist at the University, there seems to be no pesticide molecules that will not be attacked eventually by some soil microorganisms.

Considerable concern has been voiced about adding unnatural organic compounds to soil. However, recent research has shown that chlorinated hydrocarbons can undergo breakdown through action of soil microorganisms.

Microorganisms Can Adapt To A Pesticide

Apparently, microorganisms can adapt themselves to a pesticide. In one study, organisms were subjected to 2,4-D, and a lag period elapsed as the compound was slowly and then more rapidly attacked as the metabolizing organism developed.

Then, later additions of 2,4-D were more quickly decomposed.

There is some scientific controversy over how this adaptation develops—whether it is due to formation of enzymes or mutations. In any case, once an organism becomes able to break down a pesticide, it retains this ability for some time.

Do insecticide or herbicide chemicals affect microorganisms? At normal field applications, research shows, there is rarely any effect. In some cases, small quantities of pesticides actually stimulate microbial activity.

Another important factor in pesticide residues is sorption, or the process by which soil takes up and holds the chemical. Importance of sorption—adsorption or absorption—of molecules depends on the type of soil.

Organic residues disappear most quickly from sand, but develop strong bonds with clay, particles of which have charged sites on the surface. Pesticides

Meeting Dates



Nebraska Program on Selection and Handling of Pesticides, University of Nebraska, East Campus, Lincoln, Apr. 3-4.

Western Aerial Applicators Short Course, Landis Auditorium, Riverside City College, Riverside, Calif. Apr. 3-4.

Western Aerial Applicators Short Course, Caravan Inn, Sacramento, Calif., Apr. 5-6.

Canadian Chapter, International Shade Tree Conference, Annual Convention, Holiday Inn, Ottawa, Ontario, Apr. 27-28.

Florida Turfgrass Trade Show, Diplomat Hotel, Hollywood By The Sea, Fla., Apr. 27-29.

Western Chapter, International Shade Tree Conference, Annual Meeting, Hotel Coronado, San Diego, Calif., Apr. 30-May 3.

Florida Nurserymen and Growers Association, Annual Convention, Robert Meyer Motor Inn, Orlando, May 25-27.

The Hyacinth Control Society, Annual Meeting, Holiday Inn, Fort Myers, Fla., June 18-21.

American Association of Nurserymen, Annual Convention, Americana Hotel, Bal Harbour, Fla., July 8-13.

Third National Grassland Field Day and Conference, University of Nebraska, Lincoln, July 12-14.

Miss Lark Trade Show and Convention, Convention Auditorium, Hot Springs, Ark., Aug. 10-12.

Penn State 1967 Field Day, Pennsylvania State University, University Park, Aug. 16-17.

Nursery and Garden Supply Show, Texas Association of Nurserymen Annual Convention, City Auditorium, Austin, Aug. 20-23.

International Shade Tree Conference, 43rd Annual Convention, Marriott Motor Hotel, Philadelphia, Pa., Aug. 27-31.

Texas Fertilizer Association's 1967 Agricultural Exposition, KoKo Inn, Lubbock, Nov. 9-10.

which are taken up to these charged sites are *adsorbed*, and are thus inactivated.

However, molecules taken up in such a way are a constant source of the pesticide in the soil solution.