Weed Science Society executive committee, seated, left to right: Dr. Arnold P. Appleby, secretary, Oregon State University, Corvallis; Dr. Dayton L. Klingman, vice-president, Crops Research Division, Beltsville, Md.; Dr. Boysie E. Day, immediate past-president, University of California, Riverside; Dr. Glenn C. Klingman, president, Eli Lilly & Co., Greenfield, Ind.; and Dr. L. L. Danielson, president elect, USDA, ARS, Beltsville, Md.; and standing, Dr. Earl G. Rodgers, editor of "WEEDS," University of Florida, Gainesville; and Dr. Fred W. Slife, business manager and treasurer, University of Illinois, Urbana.

Ninth Weed Science Society Meeting Features New Herbicide Technology

Weed science is making undreamed of advances in technology. Researchers are at the point of pinning down the specific action of pesticides in soil and plant life. New research holds early promise of not only pinpointing pesticide persistence, but of methods to break down such persistence by formula.

Thus, environmental safety coupled with increased weed control and improved use of water have become prime goals of the industry. Each advance makes pesticide use not only more palatable but of increasing use to society.

Many of these new developments were reviewed at the recent Weed Science Society of America session at Las Vegas, Nev. More than 250 papers were presented and almost 1000 weed science researchers on hand to discuss the industry.

The need for continuing efforts in weed prevention were highlighted by Dr. Robert J. Anderson, associate director of USDA's agricultural research service. He reported that farmers are now spending $2.5 billion a year to control weeds but are still losing more than 13 per cent of their crop production. He also noted that 2 million Americans are afflicted each year with skin poisoning or skin irritation caused by weeds such as poison ivy.

The society's highest award, honorary membership for life, went to Dr. Erhardt P. Sylwester, extension weed specialist in Iowa. Dr. Sylwester was born on a farm in Sibley County, Minn. He reecived his bachelor's and master's degrees from St. Olaf College and his PhD from Iowa State College. He started as a forest pathologist, then became extension botanist and plant pathologist at Iowa State College before being named head of the Iowa State College Seed Laboratory. Since 1952 he has developed one of the finest extension weed control programs in the U. S. He has served the North Central Weed Conference since its inception in 1944 and has been president and chairman of this and other weed conferences. He has received the USDA Superior Service Award. As a longtime active participant in the Weed Science Society, Dr. Sylwester has been influential in training many of the current generation of weed scientists.

Two members of the society received plaques as joint authors of the outstanding paper pub-

Awarded honorary life membership in the WSSA was E. P. (Dutch) Sylvester, Extension weed specialist at Iowa State University, Ames.

lished in "Weed Science" in 1968. They are C. R. Swanson and H. R. Swanson of the USDA. Their paper was entitled: "Inhibition and Degradation of Monuron in Cotton Leaf Tissue by Carbamte Insecticides."

New officers for the coming year are: president, Dr. Glenn C. Klingman, director of plant science, Eli Lilly Co., Indianapolis; president-elect and 1970 program chairman, L. L. Danielson, plant physiologist and leader in weed research in horticultural crops, USDA, Beltsville; vice-president, Dayton Klingman, agricultural research service, USDA, Beltsville; secretary, Dr. Arnold Appleby, farm crops department, Oregon State College. Dr. F. W. Slife remains as treasurer and business manager; and Dr. Earl G. Rodgers of the University of Florida continues as editor of the society's journal, "Weed Science."

The next meeting of the society is to be held at the Queen Elizabeth Hotel in Montreal, February 3-5, 1970. John Bandeen of the University of Guelph is in charge of local arrangements. Plans have been made for the 1971 meeting in Dallas and for the 1972 meeting in St. Louis.

Pesticide Decomposition

A new technique has been discovered that allows scientists to chemically duplicate, in their laboratories, the effects of living microorganisms on pesticides in soils.

Scientists have long known that soil microorganisms play an important role in destroying persistent herbicides. But, until now they had no way of knowing just how the microorganisms brought about these beneficial effects.

Dr. Jack R. Plimmer of USDA's Agricultural Research Service described the method that he and his colleagues, Dr. Philip C. Kearney and Mrs. Ute I. Klingebiel developed in studies of atrazine, an *s*-triazine herbicide.

Earlier findings showed that the herbicide could be destroyed by a soil fungus that biologically split one side chain from the chemical molecule. The new technique enables scientists to produce similar reactions in a test tube without the presence of microorganisms or any other living cells.

In developing the technique, the researchers found that radicals, or very reactive chemical groups, generated by a simple system, produced reactions which removed both side chains from the molecule, thus permitting the test-tube observations.

Awarded plaque for best paper award was C. R. Swanson, Crops Research Division, USDA, Stoneville, Miss. Co-author H. R. Swanson was not available for picture.

Now that this important advance has been made, the researchers plan to extend their studies to similar types of herbicides. With this technique, they expect to produce metabolites that are difficult to isolate in nature. By studying the properties of these new products produced by pesticides, they hope to learn more about the safe use of pesticides and environmental hazards.

Rights-of-Way

Chemical treatment of power line right-of-ways can be effective in controlling undesirable woody plants. Reporting on a 15-year study of vegetation development following chemical woody plant control in central Pennsylvania, Dr. W. R. Byrnes said he and Purdue colleague, Dr. W. C. Bramble, applied initial treatments, including selective basal, semi-basal and broadcast foliage sprays in 1953, with follow up basal sprays in 1954 but with no further chemical treatment until 1966.

"The original chemical sprays were highly effective on the woody brush," Byrnes reported, "resulting in 94 to 99 per cent topkill among the five chemical treatments applied. Furthermore, the follow up basal sprays caused virtual elimination of tall-growing tree species."

Byrnes stated that ground layer vegetation on the right-of-way developed into a dense, vigorous community of bracken fern, sedges, herbs, and blueberries while such plants were very sparse in the adjacent undisturbed forest.

"Broadcast and semi-basal sprays drastically reduced plant cover and altered species composition of the ground layer," Byrnes related, "however, after 12 years these treatment areas had returned to the original

compact Bracken-Sedge-Herb-Blueberry community."

"The basal sprays," he continued, "selectively removed woody brush with only minor disturbance of ground cover plants. The shrub sweet-fern invaded all treatment areas and gradually developed into a dominant species on the right-of-way by 1968.

"Wildlife species, particularly deer, rabbit, grouse and turkey, utilized the right-of-way treatment areas for food and cover," Byrnes pointed out. "A low woody shrub border selectively developed along the edges of the right-of-way has been particularly beneficial for deer."

Herbicide Activity

The effectiveness of amiben, a widely-used herbicide, may be prolonged by chemical modification. Amiben, a selective herbicide applied as a preemergence treatment to control grass and broad-leaf weeds in many crops, rapidly loses effectiveness when exposed to light.

However, Dr. Alan R. Isensee, plant physiologist of USDA's Agricultural Research Service, reported a way to reduce the light-sensitivity of this herbicide. Experiments indicate that chemical modification of the amiben molecule by benzoylation of the primary amino group may provide a way of reducing photodecomposition and possibly improving the performance of herbicide.

In laboratory research, amiben, N-benzoyl amiben, and their methyl esters were irradiated in solution. After 2 to 4 hours, Dr. Isensee reported that amiben and its methyl ester were inactive herbicidally but the N-benzoyl derivatives were fully active after 6 hours irradiation.

Applied on a soil surface at 1, 2, or 4 pounds per acre, amiben lost 11 to 14 percent activity after 8 hours of sunlight. However, he said N-benzoyl amiben suffered no loss during the same length of time. These results indicate the possibility of increasing the usefulness and persistence of a herbicide by slight chemical change, Dr. Isensee said.

Herbicide Persistence

Of five herbicides tested in Idaho, only one continued to persist in the soil after 50 days of incubation, according to Dr. Lambert C. Erickson, agronomist, University of Idaho. Erickson said that five herbicides were applied pre-emergence at five rates in five spring sown crops. The herbicides were ingran, picloram, linuron, silvex and dicamba. The five crops were Piroline barley, Idaed 65 wheat, Summit flax, Improved

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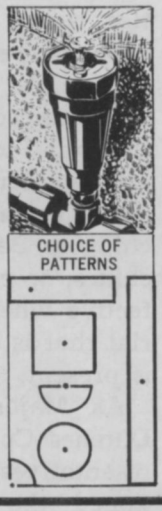

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Alaska peas, and Mingren sunflower.

"Major emphasis was given to detecting herbicide translocation symptoms in the seed crop. Thus far our study shows that via germination bioassays only dicamba shows evidence of such transmission and it shows only in peas," Erickson stated.

Concerning the possible pollution of the soil by long-lasting residues, Erickson reported that soils treated approximately May 20 were sampled on September 1, and later tested by pea bioassay for the presence of herbicide residues.

"Detectable residues were found for all herbicides for all rates," he explained. "However, after 50 days of incubation in the greenhouse, the soils were again bioassayed and no residues were found except for picloram."

Erickson also reported that these studies revealed no significant effect on the chemical composition of plants.

Perennial Weed Control

Putting chemicals on weeds to make them grow might seem a strange way of eradicating weeds, but scientists at Stanford Research Institute believe this may be the answer for certain perennial weeds.

Dr. Charles A. Beasley, manager of SRI's Plant Biology Laboratory, has managed to manipulate the growth pattern of Johnson grass so that the plant is more vulnerable to herbicides. The objective of this research is to allow the plant to be killed with a single application of herbicide.

"One of the major problems with applying herbicides to Johnson grass is that while one part of the plant is growing vigorously other parts may be in various stages of dormancy," Dr. Beasley explained. "Herbicides usually kill only those parts which are active, and are relatively ineffective on the dormant buds."

In laboratory experiments a chemical called Ethrel (2-chloroethane phosphonic acid), when applied to Johnson grass, acted in such a way as to cause most of the vegetative buds to become active simultaneously, allowing one application of herbicide to eradicate the entire plant.

Bartles Continues Fight Against Wood-Burning Ban

William H. Bartles of W. H. Bartles Tree Service, Hyde Park, N.Y., has quite a few bones to pick with the ban on open burning of wood, brush and leaves. While no one can deny the need for preventing air pollution, Bartles says, the major contributors to this pollution—motor vehicles and industrial smokestacks—should be attended to and not the "little guy," i.e. "smoke from wood, which burns clean anyway."

Municipal disposal areas, already taxed to capacity by a throw-away society, are now faced with the additional problem of incorporating logs, brush and stumps into their land fill system, he says. Governing officials, instead of trying to repeal the unnecessary ban on open burning of wood, are going to great lengths to dream up impractical ways to make the anti-wood burning resolutions work.

One scheme that will gobble up tax dollars, according to Bartles, is the "chipper plan." This proposal pertains to the use of chippers to dispose of brush and logs dumped at central sites. Officials fail to realize—and do not ask experienced tree service businessmen about limitations of chippers, Bartles says. These machines, he points out, are not effective when working on material that is dirty or when metal is present.

As Majority Leader of the Dutches County Board of Representatives, Bartles has questioned the wood-burning ban from the beginning. His guest editorial in the April, 1968 issue of **Weeds Trees and Turf** Explained why the ban is unsound.

In his continued fight to repeal the ban in New York State, Bartles has proposed that sites be picked in open areas where private individuals and municipalities can truck their burnable wood by-products and debris. Crews could then rotate from site to site and burn the piles under proper atmosphere and safety conditions.

This plan, he says, would lessen the load on town disposal areas where garbage is now being covered in the land fill method. It would also provide persons in the tree service business a place to properly dispose of such debris.

"It is impossible to level and cover 'uniformly' as the rules specify, and it is not practical to use any other method of disposal than burning," Bartles contends.

In his fight to get state authorities to repeal the wood-burning ordinance, Bartles and others have sent copies of specially passed resolutions to the governor, state legislators and every county government in New York. They also called a special meeting to present to state and federal officials reasons for seeking the repeal of the ban.

Bartles reveals that hearings have been held by the Board of Health in New York in answer to ever-increasing pressure to revise the resolutions. Some changes may come about, he reveals, although he cannot tell what they might be.

Bartles has asked that every New York tree service company will contact their governing officials to try to make them see the impracticability of the chipper plan. The Dutchess County proposal—which has since fallen through due to lack of funds—would have cost half-a million dollars for the first three years, he reveals, and the plan would not have worked. Federal funds were to have been used.