

Californians Aflame With New Weed Control Notions

At Biggest Conference Ever, Jan. 19-21 in Fresno

A record-breaking attendance of 660 at this year's California Weed Conference in Fresno leaves no doubt at all that weed control in the nation's most populous state is big business indeed.

Nor did the dedication and enthusiasm of conference members belie the seriousness accorded weed science on the West Coast.

On the program for delegates gathered at the Fresno Hacienda Motel, Jan. 19-21, were revelations of daring new concepts in weed control: speakers foretold the increased use of herbicides in rights-of-way and other crop and noncrop areas; close scrutiny was focused on more viscous formulations (both invert emulsions and "particulate" sprays); and an entire afternoon was surprisingly given over to a thorough analysis of flame weed control, including a demonstration of equipment.

And time after time weed specialists announced from the podium the ever-increasing importance of industrial and urban vegetation maintenance and control.

Of the importance of herbicides in general, it was predicted early in the conference that the sale of weedkillers will outstrip insecticides and fungicides in the not too distant future.

This prediction came from Dr. E. M. Gifford, a weed scientist from the University of California's Davis campus, who remarked that now truly agriculture has come to the city, and that increasing urbanization, with its attendant demand for recreation and residence certainly augurs well for those who pursue weed control. Dr. Gifford pleaded for increased attention to educating the weed control experts of tomorrow.

The Davis scientist preceded a trio of engineering-oriented weed controllers who examined basic application concepts, the

problems of drift, and the use of aircraft in weed control.

"The use of agricultural aircraft has become a necessity in certain areas," Dr. Wesley E. Yates commented in his address, "Coverage and Drift Problems Related to Aerial Application." A noted authority on his subject, Dr. Yates is also at the University of California at Davis.

"Sixty-four million acres were treated by agricultural aircraft in 1962," Dr. Yates said, "and



Defining the basics in weed control was California researcher Dr. Boysie Day (left) who reminisced with John Deere representative David W. Cayton during a coffeebreak.

that represents only one-sixth of the total pertinent acreage in the U.S."

Problems associated with aerial techniques grow more complicated as time goes on, and of course the hazards of drift are foremost in most applicators' minds. Whereas in the beginning, the concern was for visible damage to adjacent desirable vegetation, which could frequently be readily perceived through such manifestations as "browning," now the chief fear is that residues from sprays will contaminate forage lands and then be taken up into livestock grazing on the fields.

What is to be done to control drift possibilities? Dr. Yates first enumerated the factors which affect the uniformity of distribution of aerial sprays. They are

(1) influence of the aircraft itself; (2) size of particles in the spray; (3) the chemical formulation; and (4) climatic conditions.

Dr. Yates explained that a fixed-wing aircraft creates its own turbulence which may in turn cause irregularities in distribution patterns of sprays. One way to avoid this problem is through use of helicopters, which create no concentrated disturbance and which achieve a more uniform pattern.

The particle size also exerts tremendous influence on how sprays are laid on the land. Dr. Yates pointed out that larger particle sizes are not affected by aircraft turbulence as much as small particle sizes.

Contract applicators and others who wish to test the configuration of their sprays may use Dr. Yates' method. He adds a dye to the spray solution and then places white paper strips perpendicular to the flight pattern, which then shows graphically where the spray has gone.

Seek to Reduce Drift

Studies of drift reduction through improved or altered application techniques are being carried out at Davis by Dr. Charles R. Kaupke.

Among the factors which determine spray patterns are nozzle type, pressure, height of release of material (from the ground), a variety of meteorological conditions, and properties of the fluid itself.

Fluid properties were singled out by the California agricultural engineer as a primary steppingstone to improved sprays. Density, surface tension, and viscosity characterize the fluids under study, and Kaupke said, "we are more or less left with the viscosity factor" since it is difficult to alter significantly the other two qualities.

In order to produce larger



Kaupke: "More helicopters in use tomorrow."

droplets which in turn will help reduce drift, weed controllers have, in recent years, turned to the possibility of increasing viscosity; first and most familiar were the invert emulsions; now science has given us the "particulate" spray, such as Dow's Norbac. Kaupke defined particulate sprays as mixtures composed of many "swollen discreet particles," in which there are theoretically no free spray mixture, and consequently no fine droplets to drift.

Kaupke too joined his voice to the chorus which predicts greater use of helicopters. He said most of those manufacturers who formulate invert emulsions do not recommend application by fixed-wing aircraft. While helicopters and inverts won't completely eliminate drift, it is substantially reduced, he added.

Invert emulsions and particulate sprays are currently in wider use in noncrop areas such as rights-of-way, Kaupke concluded.

Bring Equipment Mfg. In

The third of the engineering trio to share his know-how with the gathered Californians and their out-of-state guests was Iowan Walter G. Lovely who's with the U.S. Department of Agriculture in Ames.

Lovely believes that agricultural engineers and equipment

producers should be admitted early to the processes attending the tests, experiments, and other development procedures strewing the path to ultimate registration. Frequently the critical factors which decide what effects, good or bad, a herbicide will have are irrevocably intertwined with the application method.

"We will in the future be making much more accurate applications," the USDA man opined. He said in the weedkilling world of tomorrow we shall probably have "prescription type" compounds, chemicals so specific and so suitable to the particular species that it will take a trained professional to prescribe them.

This view of the future has been voiced elsewhere, of course.

What Happens to Residues?

Another USDA researcher, Dr. T. J. Sheets from Beltsville, Md., detailed for the avid conventioners the paths taken by herbicide residues in soils.

First he stated unequivocally that soil residues are not necessarily undesirable, and that the accumulation of residues is not always to be termed a problem.

There are many factors at work on chemical traces in the earth, which Dr. Sheets listed as: microbial action, volatilization, adsorption, leaching, photodecomposition, dilution, and chemical reaction.

"The longer a herbicide persists, the greater the number of these processes which come into play," the Beltsville technician mused.

He cautioned his audience to remember that not all herbicides are acted upon by soil microorganisms. Fenac, for example, is not, he said.

Removal of undesired vegetation from crops and from non-cropland by flame is not really a new process, having been in use for some 25 years. But it is a technique which receives scant attention, compared to chemical methods, so the entire half day devoted by Californians to flame weed control and cultivation elicited hearty enthusiasm from the group.

Whether one endorses the process or not, it was obvious that delegates wanted to learn what weedkilling by fire is all about.

Program planners had scheduled an address by J. W. Gotcher, president of Gotcher Engineering and Manufacturing Company in Clarksdale, Miss.

Gotcher, whose firm manufactures weed flaming equipment, is considered the "father of flame cultivation." Unfortunately he could not attend, and his address was presented by John C. Taylor of California Liquid Gas Company.

"Flame cultivation in its true sense is selective weed control," Taylor read. "The difference in resistance to heat among various plants enables this selectivity."

What occurs is not the literal consummation of a plant in flames, but an altering, through heat, of the plant's cell structure so that it does not survive.

In his prepared paper Gotcher advised applicators that it may be necessary to increase fuel pressure and velocity of flame in denser growths of vegetation; and the same adjustments may be necessary to drive heat through the protective coatings of hardier plants.

To discuss equipment for flame weed control, conference leaders brought Darrel Reifschneider to

Proud of past, hopeful for future of the California Weed Conference, outgoing president James Devlin of Amchem (left) exchanged ideas for future growth with Dr. Norman Akesson, new prexy. He's from the U of Cal's Davis campus.





Student and teacher. Flame weed control expert Howard Rhoads (right) paused with one of his students from Cal Poly during the afternoon exhibit of available flaming equipment. Student is Paul Lasker.

the podium. He's sales manager for Manchester Tank & Equipment Company in Lynwood.

Manchester manufactures flame weed control rigs.

Reifschneider said that in 1960 a new self-vaporizing liquid head burner was introduced, and this replaced the pipe burners originally used. These new flare-shaped burners are set on 12" centers, and produce a flat, high-velocity flame and operate at almost twice the pressure as the old-type burners.

There are four types of flame devices, Reifschneider said. These are the hand burner, the field burner (which may be up to 18 ft. wide), the boom-type burner (for ditches, fencerows, roadsides), and the flame cultivator (for agricultural use).

Noncrop Flaming

A partisan of weed control by fire whose bailiwick is noncrop areas is Robert Meyers, Coberly & Plumb, Bakersfield. Coberly & Plumb is an agricultural chemical supply house which also deals in flaming equipment and services.

Meyers said liquid petroleum gas has helped speed flaming along because it is self-pressurized, concentrated, and portable. Meyers said that heat from flame guns coagulates protoplasm in plant cells, killing the

organism. "Green growth" flaming, he added, is more effective on young weeds which are less resistant to heat because they haven't formed the thick protective covering characteristic of older plants.

Large weeds should be mowed, stacked, and then burned, Meyers said, because if they are merely flamed, the stalks will be left standing.

He also recommended that contract applicators and others concerned with non-ag weed control burn off areas before applying a soil sterilant. This enhances chemical effectiveness.

Side benefits to weed control by fire include a certain amount of insect and disease control. Insects and eggs overwinter in weeds and crop residues, and burning of course reduces breeding and harboring areas.

While most observers feel the process is just another of many techniques in the increasingly complicated job of curbing weeds, and recognize that the method will never replace chemical modes, one researcher spoke of the flaming concept in glowing terms.

He was Jack H. Parks of the High Plains Research Foundation, Plainview, Texas, whose research has been strictly agricultural. Parks said flaming offers selective weed control with: (1) no drift during or after treatment; (2) no residue in soil or plant; (3) no special weather requirements, other than comparative dryness; (4) no problems with compatibility with pesticides or fertilizer; (5) immediate results; (6) a process which can be repeated as often as desired; (7) no need for soil incorporation; and (8) a process



Conducting equipment tour were farm advisor Vincent Schweers (left) of Visalia and flaming authority Robert Meyers, who explained the rigs.

unaffected by soil type, sunlight.

But the Texan admits he sometimes favors incorporating a herbicide into the process, because it's sometimes necessary to kill weeds in certain crops while the desirable plants are themselves too small to withstand the heat.

Parade of Prestige

On the Conference's final day, a roster of weed experts took the assembly on a guided tour through the past and towards the future of weed control in California. Speakers included some of the best known names in the industry in the West, such as brush control expert O. A. Leonard; surfactant authority and conference publicity man Dr. Dave Bayer; and popular and genial past Conference president W. A. (Bill) Harvey, extension weed specialist. All the foregoing are from the University of California, Davis. With them was Dr. Boysie Day, a plant pathologist from the Riv-

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Well-known westerners found time during the California conference to discuss new techniques and changing needs of control. E. J. Bowles (left), active weedman with Pennsalt, chatted with Dr. O. A. Leonard, speaker on brush control.



California Weed Conference Is Largest Ever Held

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erside campus of the sprawling state institution.

Dr. Leonard described his recent experiments with brush control, saying he had obtained outstanding results in poison oak control using silvex applied by mistblower.

He also said he had better results in blue oak control using Tordon, new from Dow, instead of amine forms of 2,4-D.

Dr. Bayer said surfactants (surface active agents) can't be used in very hard water. And certain herbicides may react with the surfactant.

Since surfactants that work in one instance may fail in another, applicators must treat each application as unique and formulate accordingly.

Bill Harvey asked where the Californians are going in weed control. He suggested using the term "vegetation control" instead of weed control because so

much more is really involved. He also boldly underscored the importance of noncrop vegetation maintenance and control as a rapidly growing portion of the industry.

Dr. Boysie Day attempted to summarize by defining the "basic principles of weed control." He cited such statements from the literature as "Prevention is better than cure; control is more feasible than eradication; and eradication is normally impossible" as true "basics" in weed science.

The California Weed Conference is an efficiently run, well-attended affair that attracts more delegates than any other state weed meeting. There is a definite sense of tradition, an esprit de corps, and an obvious dedication to the serious pursuit of weed science. The growing attendance is evidence of the importance of vegetation maintenance in California, and of the benefits accorded the practitioners of weed control by the Conference program.

New Gandy Broadcaster Spreads in Small Quantities

A new 3-point-hitch granular chemical applicator can apply as little as 5 lbs. material per acre on a broadcast basis, according to the Gandy Co., Owatonna, Minn.

A patented five-blade rotor assures that material will not leak out the openings in the hopper bottom when the rotor is not turning.

Another feature, Gandy says, is that the applicator has been designed to be easily cleaned and maintained. The hinged rate-control slide can be dropped down, away from the bottom, in a matter of seconds for overnight "freeze-proof" storage.

For more details on the chemical applicator, or the agricultural model of this same machine, interested applicators may write to the Gandy Co., Owatonna, Minn.



A granular chemical applicator said to apply as little as 5 pounds material per acre is manufactured by the Gandy Co., Owatonna, Minn. The applicator is made in 4 sizes from 8 to 14 ft.

Meeting Dates



Wisconsin Park and Recreation Society, 34th Annual Meeting, Northland Hotel, Green Bay, March 10-12.

35th Annual Michigan Turfgrass Conference, Kellogg Center, Michigan State University, East Lansing, March 11-12.

Wisconsin Turfgrass Conference, Wisconsin Center Building, Univ. of Wisconsin, Madison, March 23-24.

Rutgers University Turfgrass Equipment and Products Field Day, New Brunswick, N. J., April 23-24.

Florida Turf-Grass Assn. Meeting, Sheraton Hotel and Plantation Field Laboratory, Ft. Lauderdale, May 6-7.

Florida Nurserymen and Growers Assn. Meeting, Sheraton Hotel, Ft. Lauderdale, May 13-15.

Alabama Nurseryman's Assn. Meeting, Admiral Semmes Hotel, Mobile, June 6-8.

Louisiana Nurserymen's Assn. Meeting, Municipal Auditorium, Lafayette, Aug. 5-7.

Southern Nurserymen's Assn. Meeting, Golden Triangle Motor Hotel, Norfolk, Va., Aug. 8-10.

Texas Association of Nurserymen, Shamrock Hilton Hotel, Houston, Aug. 15-18.

Midwest Regional Turf Field Days, Purdue University, Lafayette, Ind., Aug. 16-17.

Ohio Agricultural Experiment Station, Lawn and Ornamentals Field Day, Wooster, Sept. 21-22.

Turf Big Business in Texas

Establishment and maintenance of turf areas is developing into a \$200,000,000 nonfarm market in Texas for the fertilizer and limestone industry, delegates were told at the annual Fertilizer and Limestone Conference held at Texas A&M University, January 4-6.

Dr. G. G. McBee, turf specialist at Texas A&M University, added that this amount includes grassed areas for home lawns, golf courses, ball fields, parks, cemeteries and landscaped business and government buildings.