

though the rates of the liquids were relatively high in comparison with the dry formulations, they were easily and effectively applied with the spot-gun applicator. The results for the first test are given below [the control rating is based on a subjective, visual estimate of crown injury (0 = no control, 10 = complete crown death); ratings with the same letter are not significantly different at the 5 percent level of the Duncan's multiple range test].

Treatment	Rate [lb(ai)/A]	Avg Control Rating
Amdon 10-K	4	10.0
Banvel 5G	8	5.3
Banvel 5G	10	6.3
Banvel 5G	15	6.0
Banvel XP	8	5.6
Banvel XP	10	5.6
DPX-3674-A	10	8.7
DPX-3674-A-1	10	8.7
DPX-3674-A-1	20	9.3
Spike 20 P	2	6.7
Spike 20 P	3	7.7
Spike 20 P	6	8.0
Spike 80W	3	7.0
Control	--	0.0

PERFORMANCE-BASED CONTRACT SPRAYING

Donald Dalton

Dalton's presentation indicated that a performance specification with a written guarantee for herbicide spraying could be a valuable tool for the maintenance engineer.

NEW DEVELOPMENTS FROM DUPONT

Turney Hernandez

Herbicides are maintenance tools and we must learn to use these tools to maximize return on our maintenance investment, keeping in mind the many factors that affect performance. The key to success in vegetation management is the proper use of these herbicides in programs designed and planned over the long term.

The E.I. DuPont Company has roadside and industrial weed control specialists in most states in the United States. They work as a team in the roadside market. The company's objective is to supplement the efforts of roadside vegetation management specialists in every state with plot work, equipment adaptation or modification; helping with surveys, and assisting in developing efficient and effective use programs. We want to help you, the roadside vegetation management supervisor, accomplish the best job at the lowest cost. To do this, we position DuPont products along with those of other manufacturers in programs to accomplish this objective. These programs must be safe and satisfy the needs of your state. Some new developments from DuPont are

1. The development of a new 2-lb/gal water soluble formulation of Velpar;
2. The introduction of a 10 percent pelleted formulation of Velpar called the Gridball, which contains 0.335 g active ingredient per pellet for brush control; and
3. The introduction of krenite S, a new formulation containing a suitable surfactant.

DuPont is also developing three promising new

herbicides. A broadleaf weed killer that will control most of the problem annuals at rates of 0.25-1.25 oz/acre, a compound that is selective for control of Johnsongrass at rates between 0.25 and 1 lb/acre, and a foliage absorbed brush control that appears to be broad spectrum.

DOW HERBICIDES THAT WILL BE AVAILABLE IN THE FUTURE FOR ROADSIDE WEED CONTROL

Robert D. Fears

For many years, the Dow Chemical Company has sold herbicides for roadside weed control and will continue to develop herbicides for this use. These herbicides will have the ability to be used without adverse effects on applicators, wildlife, fish, or the environment. They will exhibit unique biological activity that will give advantages in weed control not offered by competitive products.

Due to continued cost escalation of raw materials, energy, and labor, new herbicides will sell at higher prices. As with present herbicides, the new products will also control a wider spectrum of woody plant species when mixed with other chemicals such as 2,4-D or Tordon.

One of the new products that Dow now has available for roadside weed control is Garlon. Garlon is the trade name for triclopyr or 3,5,6-trichloro-2-pyridinyl-oxyacetic acid. Through field tests and commercial applications, it has been demonstrated that Garlon herbicides are highly effective for the control of many woody plants and some broadleaf weeds. Herbicidal action of Garlon or triclopyr is through characteristic auxin-type response.

Formulations of triclopyr include Garlon 3A herbicide, which is a water-soluble triethylamine salt containing 3 lb of triclopyr/gal and Garlon 4 herbicide, which is an oil-soluble, water-emulsifiable butoxyethyl ester containing 4 lb of triclopyr acid equivalent/gal. Garlon herbicides are low in acute oral toxicity to mammals. Undiluted Garlon 3A is moderately to severely irritating and injurious to eyes and may cause slight to moderate skin irritation. However, when diluted with water for ground application, it becomes essentially nonirritating to the skin and may cause only slight discomfort and effects to the eyes. Undiluted Garlon 4 is essentially nonirritating to eyes and may be slightly irritating to the skin. Neither formulation is absorbed through the skin in acutely toxic amounts. Although Garlon 4 is toxic to fish, Garlon 3A is very low in toxicity to fish. Both formulations have very low toxicity to mallard duck and Japanese quail. Under temperature and moisture conditions favorable for microbial activity, triclopyr degrades quite rapidly in soil.

Lontrel, the trade name for DOWCO 290 or 3,6-dichloropicolinic acid, is the second new herbicide that Dow is developing. It has exhibited excellent herbicidal activity against members of the Polygonaceae, Compositae, and Leguminosae plant families. Like Garlon, DOWCO 290 induces characteristic auxin-type responses in growing plants. Lontrel 205, which contains 2 lb of 2,4-D acid equivalent and 0.5 lb of DOWCO 290 acid equivalent per gallon as the alkanolamine salts and M-3972, which contains 3 lb of DOWCO 290 acid equivalent per gallon as the monoethanolamine salt, are formulations being tested for weed control in turf and on roadsides.

DOWCO 290 and its formulations have low acute oral toxicity to mammals and are not absorbed through the skin in acutely toxic amounts. DOWCO