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AERIAL APPLICATION OF HYDRAMETHYLNON FIRE ANT BAIT (AMDRO^R) METHOD DEMONSTRATION

Red imported fire ant insecticides formulated as baits on light particles of processed corn cob grits coated with soybean oil, as is commonly used in the formulations of hydramethylnon (Amdro^R), avermectin (Affirm^R), fenoxycarb (Logic^R) and Pro-DroneTM, are registered for broadcast application at a rate of 0.8 to 1.5 lbs formulated insecticide per acre. The methods used to achieve these low rates are no clear and difficulties exit in complying to the label directions with conventional application equipment. American Cyanamid Company had developed and distributed a bulletin in an attempt to assist individuals attempting to use their product (anonymous, 1980, Amdro^R Fire Ant Insecticide Information Bulletin, "Application equipment information", PE-5824, American Cyanamid Company, Wayne, New Jersey).

Aerial application of fire ant baits requires special modifications of application equipment, but most applicators are restricted to attempting application with conventional seeding/granular fertilizer application equipment and at most, turning the air scoop forward. This method demonstration was conducted in cooperation with Henry P. O'Neal, Dr. Jack D. Price and Dr. Rodney Holloway to determine the effectiveness of aerially applying Amdro at the 1987 Brazoria County Aerial Application Clinic.

MATERIALS AND METHODS

The cooperater in this method demonstration was pilot James Knape, using an Ag Cat airplane fitted with a Stainless Steel Fabricators, Inc. Spreader. The pilot was instructed to fly over a series of 1 meter square funnels placed in a row 30 meters across the flight path. Granules collected in the funnels were weighed and weights were entered into a computer program that plotted the distribution pattern of the granules in the swath, and produced a printout including other technical and environmental information. The program was also capable of calculating optimum swath width based on the data collected.

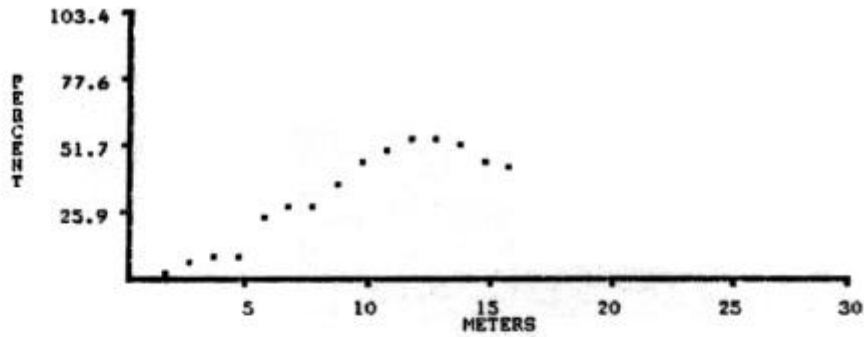
RESULTS AND DISCUSSIONS

Tables 1 and 2 list the results of this method demonstration. On the day of this demonstration (March 4, 1987, 2:06 pm), the temperature was 70°F and wind was blowing at 12 mph. The pilot flew into the wind to make the trial application. By adjusting the settings of the gate opening to 11.5 turns, the pilot was able to achieve an application rate of 1.0 lbs per acre at a swath width of 40 ft, flying at an altitude of 12 ft and at a ground speed of 96 mph. However, the range of

material applied within this swath was from 0 to 2.5 lbs per acre. The simulated optimum swath width for applying 1.1 lb per acre of material was 52 feet. In this simulation, the range of rates of bait applied within the swath was from 0.5 to 2.2 lbs per acre. The rate range within the actual and simulated swaths illustrate the difficulty of achieving a proper application of bait formulated fire ant insecticides by air, and explains, in part, the erratic results of product efficacy form trials in which these baits had been aerially applied.

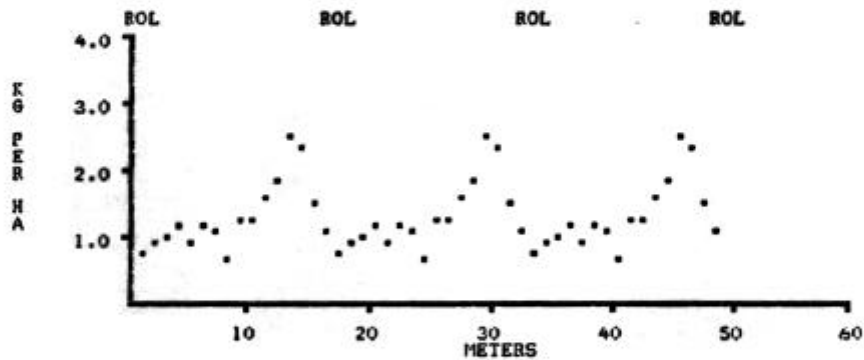
Table 2. Coefficient of variation vs swath width racetrack lapping and racetrack lapping 16 meters or 52 feet reports, documenting results of computerized simulation of the optimum application pattern calculated from data obtained by aerially applying hydramethylnon (Amdro^R) fire ant bait insecticide, Brazoria Co., Texas 1987.

COEFFICIENT OF VARIATION VS SWATH WIDTH
RACETRACK LAPPING



1:	0.0	0.8	5.1	8.4	7.4	21.6	27.4	26.1	36.0	43.4
11:	49.4	52.9	53.7	50.0	43.9	42.0	45.1	49.8	55.2	61.2
21:	66.7	71.8	76.5	80.9	85.1	89.1	92.9	96.5	100.0	103.4

BACETRACK LAPPING 16 METERS OR 52 FEET



MEAN RATE: 1.3 KG/HA OR 1.1 LB/AC
STANDARD DEVIATION: 0.5 KG/HA OR 0.5 LB/AC
COEFF. OF VAR.: 42.0%

	KG/HA	LB/AC	KG/HA	LB/AC	KG/HA	LB/AC	KG/HA	LB/AC	KG/HA	LB/AC
1	0.7	0.7	0.9	0.8	0.9	0.8	1.1	1.0	0.9	0.8
6	1.1	1.0	1.0	0.9	0.6	0.5	1.2	1.0	1.2	1.1
11	1.5	1.3	1.8	1.6	2.5	2.2	2.3	2.1	1.5	1.3
16	1.0	0.9	0.7	0.7	0.9	0.8	0.9	0.8	1.1	1.0
21	0.9	0.8	1.1	1.0	1.0	0.9	0.6	0.5	1.2	1.0
26	1.2	1.1	1.5	1.3	1.8	1.6	2.5	2.2	2.3	2.1
31	1.5	1.3	1.0	0.9	0.7	0.7	0.9	0.8	0.9	0.8
36	1.1	1.0	0.9	0.8	1.1	1.0	1.0	0.9	0.6	0.5
41	1.2	1.0	1.2	1.1	1.5	1.3	1.8	1.6	2.5	2.2
46	2.3	2.1	1.5	1.3	1.0	0.9				

MINIMUM RATE: 0.6 KG/HA OR 0.5 LB/AC
MAXIMUM RATE: 2.5 KG/HA OR 2.2 LB/AC