1-1-1959

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C. K. Dorsey

Harold Edward Kidder

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in WEST VIRGINIA

BULLETIN 431

SEPTEMBER, 1959

WEST VIRGINIA UNIVERSITY
Agricultural Experiment Station

THE AUTHORS

C. K. Dorsey is Entomologist in the West Virginia University Agricultural Experiment Station and Professor of Entomology. H. E. Kidder is Associate Animal Husbandman in the West Virginia University Agricultural Experiment Station and Associate Professor of Animal Husbandry.

West Virginia University
Agricultural Experiment Station
College of Agriculture, Forestry, and Home Economics
A. H. VanLandingham, Director
Morgantown

Cattle-Grub Control in West Virginia[1]

C. K. DORSEY and H. E. KIDDER

IN West Virginia, as in many other areas of the country, cattle grubs *Hypoderma lineatum* (DeVillieres) and *H. bovis* (L.), are serious pests of cattle. The adult, egg-laying flies cause calves and adult animals alike to become highly excited and nervous. During active cattle grub fly season the harassed animals often run wildly in a terrified manner with tails over their backs. Infested cattle frequently fail to eat properly and weight gains are affected. It is a well-known fact that the damage caused by these pests to the meat and hides of infested animals costs the national livestock industry many millions of dollars ($50-100 millions) each year (*Cattle Grubs,* U.S.D.A. [2]).

Until the recent introduction of some of the new chemicals (organic phosphates) there was no really satisfactory control measure for cattle grubs. Some of these organic phosphates are referred to as systemic insecticides because they are absorbed in the circulatory system of the treated animal and are transported to all parts of the body inhabited by cattle grubs. These chemicals are highly lethal to the grubs, and tests by research workers in various parts of the country have indicated that they are effective when properly used.

Since an effective control for cattle grubs is badly needed by West Virginia farmers the new method was tested to determine its effectiveness under West Virginia conditions. Co-Ral was chosen for testing because it was one of the most promising of the compounds previously tested elsewhere.

Co-Ral (Bayer 21/199) is a development of the Bayer Company of Germany and is distributed in this country by the Chemagro Corporation. It is an organic phosphate with the chemical name of *O, O*-Diethyl *O*-3-chloro-4-methyl-2-oxo-2*H*-1-benzopyran-7-yl phosphorothioate.

McGregor *et al.* (6) in preliminary tests found that certain phosphorus compounds would kill cattle grubs when used systemically. Smith and Richards (10) demonstrated that selected phosphorus compounds would kill cattle grub larvae when applied as washes. Roth and Eddy (9) tested a number of phosphorus compounds as washes and

[1]Grateful acknowledgement is made to personnel of the West Virginia University Department of Animal Husbandry including Charles Boyles, C. J. Cunningham, and Dr. G. C. Anderson for invaluable help in these studies. The cooperation of Ross, John, and Samuel Tuckwiller in this work is appreciated. In the early phases of the study, Dr. H. L. Hansen, former Assistant Entomologist in the West Virginia University Agricultural Experiment Station gave valuable assistance.

sprays and they showed that Co-Ral killed the grubs more effectively as a spray than other test materials. This finding was in agreement with that of Lofgren *et al.* (5). Graham (4) working in South Dakota, Burns and Goodwin (3) in Louisiana and Turner and Gaines (11) in Virginia all found that Co-Ral gives good control of cattle grubs in their respective areas. The use of Co-Ral for cattle grub control has been approved by the Agricultural Research Service of the U. S. Department of Agriculture and by the Federal Food and Drug Administration.

Another systemic insecticide, Trolene, (Dow ET-57), has been tested and approved in some regions for controlling cattle grubs. McGregor and Bushland (7) in Texas, Adkins (1) in Alabama, Raun and Herrick (8) in South Dakota, and Turner and Gaines (7) in Virginia are some of the workers who have found Trolene to be effective in controlling cattle grubs. Preliminary tests in West Virginia also indicate that this insecticide is effective, but additional experiments with this material will be made before making definite recommendations.

Young animals are usually more susceptible to attack from cattle grubs than adult cattle. The control experiments in West Virginia were consequently concerned mainly with calves 3 to 4 months of age, although one group of cows was included for comparative purposes. Two different herds belonging to West Virginia University were used in these tests. One was located at Morgantown and consisted of both purebred Angus and Herefords; the other herd, located at Wardensville, was entirely grade Herefords. The third experimental herd consisted of Herefords belonging to Ross Tuckwiller at Lewisburg.

The experimental animals used in 1957 and 1958 were treated only once during the year, some in early summer, and others in the fall or early winter. A high pressure sprayer was used to apply the material (Co-Ral 0.5%) at an operating pressure of about 200 p.s.i. An attempt was made to wet thoroughly the skin of each treated animal, particularly the back and sides. Approximately 2 quarts of spray were applied to each calf and 4 quarts to each cow. The animals were sprayed in a small pen or chute arrangement to expedite the process and to minimize wastage of spray material.

Actual grub counts were made during the following February by palpating the backs of the treated and untreated animals. The efficiency of Co-Ral spraying for control of cattle grubs in calves varied from 98 to 75 per cent, with an average control of 92 per cent; the control in cows (one herd) was 91 per cent. In addition, no lice or mites were observed on treated animals, whereas some of the untreated animals were infested. Horn fly control was good on treated animals (July

treatment) for about two weeks. The results of cattle grub control are summarized in Table 1.

The results of the two-year period of study confirms those of other workers in various parts of the country. It is believed that satisfactory control of cattle grubs can be obtained in West Virginia either with summer (3rd week in July) or fall (September-October) treatment. (See precautions in Table 2.) Summer treatment is preferable, however, because the infested animals will be relieved of the effects of the burrowing grubs early in the season and the lighter summer coat is more easily penetrated by the spray. Table 2 summarizes the recommended measure for grub control in West Virginia based on the experiments reported here.

Precautions

The user of Co-Ral should take the same care and precautions that he would when using other poisons. He should avoid getting this material in his eyes or on the skin, and avoid breathing the dust or spray particles. If spilled on the skin it should be washed off immediately with soap and warm water. Wash contaminated clothing with soap and hot water before re-use.

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Table 1. Cattle-Grub-Control Results with 0.5 Per Cent Co-Ral Spray, 1957-1958

Herd	Date Sprayed	Number of Animals				Average No. Grubs Per Animal				% Grub Reduction	
		Treated		Not Treated		Treated		Not Treated			
		Calves	Cows	Calves	Cows	Calves	Cows	Calves	Cows	Calves	Cows
W. Va. Univ. (Morgantown) Hereford and Angus	Nov. 20, 1958	37	..	21	..	1.5	..	10.5	..	85.	..
W. Va. Univ. (Wardensville) Hereford	June 30, 1958	26	..	14	..	1.19	..	5.07	..	75.	..
Tuckwiller (Lewisburg) Hereford	July 1, 1958	31	..	21	..	1.0	..	15.3	..	94.	..
	Sept. 27, 1957	24	25	24	25	0.33	0.24	16.7	2.6	98.	91
	Total	118	25	80	25						
				Average		1.0	0.24	11.89	2.6	92.	91

Table 2. Cattle-Grub-Control Recommendation*

Material	Spray Concentration	Sprayer Pressure	Approximate Application Rate		Application Time
			Per Calf	Per Cow	
Co-Ral (25% W.P.)	0.5% (Approximately 16.5 lbs. for 100 gal. spray)	200-250 p.s.i.	2 qt.	4 qt.	3rd week in July or in the fall

* PRECAUTIONS:
Do not use on dairy animals.
Do not treat sick animals.
Do not treat calves under 3 months of age.
Do not spray heavily, calves under 6 months of age.
Do not treat animals within 60 days of slaughter time.
Do not use Co-Ral with pyrethrins, allethrins or synergists such as piperonyl butoxide.