



Figure 1. Iowa Damage Rating Scale

# Corn Rootworm Control Trials - 1971

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## Introduction

Damage to field corn by western corn rootworm, *Diabrotica virgifera* LeConte, was discovered for the first time in the state near Colfax, North Dakota in July, 1970. Adult western corn rootworm beetles were known to be in North Dakota for several years prior to 1970; however, larval damage had not been detected during previous years.

In 1970, an 80-acre field of corn four miles west of Colfax, North Dakota, was found to have nearly 90 per cent loss in some areas of the field. Corn plants with the typical curved or "goose-neck" stalks were found leaning or on the ground in heavily damaged areas of the field. Rootworms were estimated at 3-5 per plant and adult beetles ranged from 30-50 per plant.

Another field of corn five miles west and four miles south of Colfax sustained about 40-50 per cent loss in the entire field.

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**Table 1. 1971 Corn Rootworm Control Trials with Banded Granular Insecticide on Gerald Thompson farm, Colfax, North Dakota.**

Insecticides	Rate per acre	Block Nos.			Root Ratings		Range Test <sup>1</sup>
		I	II	III	Total	Mean	
Check <sup>2</sup>		43	27	22	92	30.7	
Diazinon 14G	1 lb.	36	27	20	83	27.7	
Furadan 10G	¾ lb.	22	22	20	64	21.3	
Dasanit 15G	1 lb.	24	20	20	64	21.3	
Bux 10G	1 lb.	22	20	20	62	20.7	
Thimet 15G	1 lb.	22	20	20	62	20.7	
Furadan 10G	1 lb.	22	20	20	62	20.7	
Dyfonate 20G	1 lb.	21	20	20	61	20.3	

<sup>1</sup>The check differs significantly from all of the treatments except Diazinon 1 pound at the 5 per cent level of confidence. None of the chemical treatments differ from each other at this level, but it appears that Diazinon 1 pound is more similar to the check than it is to any of the other chemical treatments.

<sup>2</sup>One of the five checks in each block was selected at random for inclusion in the analysis.

**Table 2. Dursban 10G Band Treatments.<sup>1</sup>**

Insecticide	Rate per acre	Block Nos.		Root Ratings	
		I	II	Total	Mean
Dursban 10G	½ lb.	34	35	69	34.5
Dursban 10G	¾ lb.	31	22	53	26.5
Dursban 10G	1 lb.	29	23	52	26.0

<sup>1</sup>Dursban treatments are not included in the range test because of only two replications.

Several granular insecticides are registered for western corn rootworm control. It was decided to initiate control trials in 1971 using the currently registered corn rootworm compounds as well as potential chemicals to determine how these insecticides would perform under North Dakota soil and climatic conditions.

### Materials and Methods

Major emphasis was given to testing seven registered granular insecticides (Table 1) and one unregistered granular insecticide (Table 2) on the Gerald Thompson farm, located five miles west and four miles south of Colfax, North Dakota. A similar trial was also conducted on the Wayne Haverland farm located four miles west of Colfax. However, because corn rootworm populations did not develop as anticipated at the Haverland farm, rootworm damage rating was not conducted there and statistical data from this field has not been included.

All granular insecticides were applied in a six-inch band over the row at planting time. Treatments on the Gerald Thompson farm were applied with an International Harvester six-row corn planter with Gandy applicator boxes mounted above and

in front of the press wheels. The granules were applied in a band in front of the press wheels.

The treatments were applied in a random block design with all treatments replicated three times. Registered granular insecticides were applied at manufacturers' recommended dosage rates. The unregistered compound (Dursban) was applied at test rates of ½, ¾ and 1 pound actual toxicant per acre. Since there was not enough Dursban to complete treatments in Block III, this compound was not included in the statistical analysis.

The Iowa State Damage Rating Scale (Fig. 1) was used to determine insecticidal protection of corn roots. A rating range of 2-5 was used with a rating of 2 being a non-damaged root and 5, severely damaged.

Ten corn plants were dug at random from the middle two rows in each of the treatments and checks. The roots were washed and rated as previously indicated. The ratings for treatment and check were totaled and averaged (Table 1). Treatments and checks having a higher value denote greater root damage, whereas those having a lower value denote less damage or no damage at all.

Table 1 shows the totals and averages of rootworm damage rating for all treatments and a representative check on the Thompson farm.

### ACKNOWLEDGEMENT

Appreciation is expressed to the following for cooperation and assistance during the work on the 1971 corn rootworm trials: Gerald Thompson (farmer, Wyndmere, North Dakota, land and equipment), Wayne Haverland (farmer, Colfax, North Dakota, land and equipment), Sherwin Hintz (graduate research assistant, NDSU, Fargo, North Dakota), Dr. Robert Carlson (statistician, NDSU, Fargo, North Dakota.)

Chemical companies that provided insecticides used in the rootworm trials: American Cyanamid Co., Chemagro Chemical Corp., Chevron Chemical Co., Dow Chemical Co., Geigy Chemical Co., Niagara Chemical Co., Stauffer Chemical Co.