

LIVESTOCK INSECTICIDE EAR TAG TRIALS — 1982

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Insecticide-impregnated livestock ear tags first appeared on the market in the late 1970s. In 1980 the synthetic pyrethroid fenvalerate was marketed in ear tag formulations, and this product demonstrated considerably better fly control than previously used insecticides. Permethrin, another synthetic pyrethroid, was first used in ear tag formulations in 1981.

Livestock insecticide ear tags have provided impressive season-long fly control in trials conducted in other states (Williams, 1982). To demonstrate this new fly control technique in North Dakota, we applied a single Atroban® Cattle Ear Tag to each of 75 Charolais cross steers in Logan County in 1981 (Kopp et al. 1982) and demonstrated that excellent season-long fly control is attainable under North Dakota conditions. Encouraged by the 1981 results, we expanded these trials in 1982 to new locations and added other insecticide-impregnated ear products which might be useful to North Dakota cattle producers.

The objectives of this study were to: 1) demonstrate how this type of application technique could fit present spring livestock handling procedures in North Dakota; 2) evaluate the efficacy of fly control provided by each of the products available on the North Dakota market; and 3) provide a demonstration trial of this new fly control technique to livestock producers in several different geographic areas of the state.

METHODS AND MATERIALS

Five demonstration livestock insecticide ear tag trials were arranged for the 1982 fly season. Each trial was designed to evaluate one ear tag product for horn fly control through the season. For each trial, fly numbers on the treated herd were compared to fly numbers on an adjacent untreated herd in a separate pasture. For all treatments, one tag per head was applied to each animal in the herd.

Treatment effectiveness was determined by making weekly or biweekly fly counts on the cattle. In each trial,

county agents where the trial was conducted made the fly counts throughout the season. Flies were counted on both treated and control herds on the same afternoon sometime between 1:00 and 5:00 p.m. Flies were counted on one side of five animals in each herd; the number reported is the average number of flies per side per animal.

Ectrin® Insecticide Cattle Ear Tags were applied to 96 head of crossbred steers belonging to Marvin Feitchner of Lehr, ND. Roger Martin, Logan County Agent, applied the tags on April 28, 1982, and made the fly counts throughout the summer. An All-Flex tagger was used to apply the tags.

Atroban® Cattle Ear Tags were used in two demonstrations in McIntosh County. An Angus cow-calf herd of 140 head belonging to Alvin Entzi of Fredonia, ND, was treated on May 1, 1982. A second herd of 22 yearling Holsteins belonging to Gary Hoffman of Forbes, ND, was also treated on May 5, 1982, with Atroban® tags. McIntosh County Agent William Klein made fly counts on the treated herds and two control herds throughout the summer. The Y-TEX tagging system was used.

Y-TEX Gardstar® Insecticide Ear Tags were used to treat 99 head of black white-faced cattle belonging to John Sitting Crow of New Town, ND. The cattle were tagged on May 13, 1982, and fly counts made throughout the summer by County Agent James (Keith) Soiseth. The Y-TEX tagging system was used.

A mixed herd of 44 cows and yearlings belonging to McLean County agent Pat Carpentier was tagged on May 14, 1982, with an experimental ear strip produced by Phillips Roxane, Inc. These strips, called Permectostrips®, contains 10 percent permethrin as the active ingredient. The ear strips were attached to existing ear tags on the cattle. Holes were punched into existing ear tags and the Y-TEX tagging button was used to fasten the insecticide strips to the tag. Carpentier made fly counts on the treated herd and an adjacent control herd throughout the summer.

RESULTS

The major pasture fly pest in all trials was *Haematobia irritans* (L), the horn fly. This is the most visible fly

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to livestock producers and all of the products tested did an excellent job in reducing horn fly populations on the treated herds. All pastures had small populations of *Stomoxys calcitrans* (L.), the stable fly. The stable fly moves to an animal, takes a blood meal and leaves, so it is not exposed to the insecticide for prolonged periods. We believe that most of the flies counted on the treated animals were stable flies.

Tables 1-5 show the results of each of the trials. The observation dates, weeks after treatment, average number of flies on the tagged-untagged animals and percent control are presented for each trial.

The results of the Ectrin® ear tag trial are shown in Table 1. Nine counts were made throughout the 1982 season with horn fly populations peaking in the last two weeks of August at an average 300-325 flies per side of the animals. Ectrin® tags provided better than 96 percent control during peak fly populations. No Ectrin® tags were lost during the trial.

Table 1. Ectrin® Livestock Insecticide Ear Tag trial fly counts in Logan County, ND. Counts are the average number of flies per side of five tagged (April 28, 1982) and five untreated animals from crossbred steer herds in separate pastures.

Date	Weeks After		Average Number of Flies/Animal		
	Treatment	Tagged	Untreated	%Control	
May 14	3	0	0		
May 28	5	0	25	100	
June 11	7	0	80	100	
June 24	9	5	90	94.5	
July 16	12	5	150	96.7	
July 30	14	5	250	98.0	
Aug. 13	16	10	325	97.0	
Aug. 27	18	10	300	96.7	
Sept. 1	19	10	325	97.0	

Atroban® ear tag trial results are shown in Tables 2 and 3. Five counts were made throughout the 1982 season, and horn fly populations peaked in this area during early August at an average of over 400 flies per side of the animals. In both the beef and dairy herd, control during the period of peak horn fly populations was better than 97 percent and no tag loss was reported.

Table 2. Atroban® Livestock Insecticide Ear Tag trial fly counts in McIntosh County, ND. Counts are the average number of flies per side of five tagged (May 1, 1982) and five untreated animals from cow-calf herds in separate pastures.

Date	Weeks After		Average Number of Flies/Animal		
	Treatment	Tagged	Untreated	%Control	
May 29	4	5	265	98.2	
June 6	6	10	250	96.0	
June 22	8	6	300	98.0	
Aug. 4	10	10	450	97.8	
Aug. 19	12	5	400	97.8	

Gardstar® Y-TEX tag trials results are shown in Table 4. Ten counts were made throughout the 1982 season and horn fly populations peaked on July 19 and again on August 25. Excellent fly control was obtained through the eleventh week post treatment, but there ap-

Table 3. Atroban® Livestock Insecticide Ear Tag trial fly counts in McIntosh County, ND. Counts are the average number of flies per side of five tagged (May 5, 1982) and five untreated animals from dairy heifer herds in separate pastures.

Date	Weeks After		Average Number of Flies/Animal		
	Treatment	Tagged	Untreated	%Control	
May 29	4	15	175	91.5	
June 6	6	10	200	95.0	
June 22	8	5	350	98.6	
Aug. 4	10	5	425	98.9	
Aug. 19	12	5	400	98.8	

peared to be a decrease in the efficacy in the last half of August. No Gardstar tags were lost during the demonstration.

Table 4. Gardstar® Y-TEX Livestock Insecticide Ear Tag trial fly counts in Ft. Berthold Indian Reservation, ND. Counts are the average number of flies per side of five tagged (May 13, 1982) and five untreated animals from black white-faced hereford herds in separate pastures.

Date	Weeks After		Average Number of Flies/Animal		
	Treatment	Tagged	Untreated	%Control	
May 25	2	0	0		
June 3	3	3	20	85.0	
June 11	4	3	42	92.8	
June 21	6	2	90	97.8	
July 7	8	0	81	100	
July 12	9	0	87	100	
July 19	10	1	150	99.4	
July 26	11	0	100	100	
Aug. 16	14	6	100	94.0	
Aug. 25	15	12	130	92.4	

The results of the Permetho-Strip trials are shown in Table 5. Sixteen counts were made during the 1982 season, and horn fly populations peaked on July 30 and August 27 at about 500 flies per side of the animals. Even during periods of peak fly pressure, 99 percent fly control was obtained by these ear strips, even though five of 44 tags plus strips were lost during the test.

Table 5. Permetho-strip trial fly counts in McLean County, ND. Counts are the average number of flies per side of five tagged (May 14, 1982) and five untreated animals from crossbred herds in separate pastures.

Date	Weeks After		Average Number of Flies/Animal		
	Treatment	Tagged	Untreated	%Control	
May 21	1	0	60	100	
May 28	2	3	193	98.5	
June 4	3	1	200	99.5	
June 11	4	0	150	100	
June 18	5	0	175	100	
June 25	6	1	200	99.5	
July 2	7	2	200	99.0	
July 9	8	0	250	100	
July 16	9	4	300	98.7	
July 23	10	3	300	99.0	
July 30	11	0	500	100	
Aug. 6	12	8	350	97.8	
Aug. 13	13	0	400	100	
Aug. 20	14	4	400	99.0	
Aug. 27	15	5	500	99.0	
Sept. 3	16	2	400	99.5	

All products tested provided good horn fly control through the entire 1982 fly season. It is not possible to rank any one of these products above the other for efficacy.

DISCUSSION

All products tested in these trials gave excellent season-long horn fly control in North Dakota. No one product or formulation could be ranked superior to the other. Restraining the animals is required to use any of the tag or strip products; however, since most North Dakota cattle producers work their animals in April or May, ear tag application for fly control could easily fit into present stock handling schemes. The insecticidal ear tags can be numbered to serve the dual purpose of animal identification. This method of application is both practical and efficacious and we expect to see wider usage in seasons to come.

Studies on how insecticide ear tags affect calf weight gains were conducted by Kansas State University researchers in 1981 (Lynch et al. 1981). These tests demonstrated that average daily weigh gains of calves in tagged herds were 0.4 lbs. greater than in untagged herds. In five days, a treated calf would gain 2 lbs. over an untreated calf. At a \$0.65 per pound calf market price, this would represent an added value of \$0.29 per treated animal per day.

The retail costs of the ear tags varied from one location of the state to another as well as from product to product. Retail costs ranged from \$1.15 per tag up to \$1.35 per tag during the 1982 growing season. This would mean that it would take five days for the producer to recover the cost of one tag per animal.

Five ear tag products will be available in 1983. The following products are federally registered: Ectrin® Insecticide Cattle Ear Tag (active ingredient — 8 percent fenvalerate), Purina Insecti-Shield® Cattle Ear Tag (active ingredient - 8 percent fenvalerate) and Ectiban® Insecticide Tapes (active ingredient — 0.9 grams permethrin). North Dakota has state labels (Section 24c) on Atroban® Insecticide Ear Tag (active ingredient — 10

percent permethrin) and Y-Tex Gardstar® Insecticide Ear Tag.

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