

CONTROL OF THE HORN FLIES IN BEEF CATTLE

By

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The horn fly, *Haematobia irritans* (L.) is a blood sucking ectoparasite of cattle that is active from early spring until the first severe frost in the fall.

Both sexes of the adult fly remain on the cattle both day and night except for a brief time when the female leaves the host to lay eggs on freshly deposited manure pats. The eggs hatch in less than twenty-four hours and spend from three to twelve days feeding on the manure pat. Pupation (Larva to adult transition) takes place in three to fourteen days under the manure pat. After two to eight days, adult flies emerge from the puparia and begin feeding on cattle two to three hours after emergence. According to W. G. Bruce (1942), the change from egg to adult during the summer months requires only nine to twelve days, with the adult fly living about seven weeks and producing about 400 eggs. Thus, control measures can be directed at the adult flies on the cattle or the larvae stages found in manure. Cattle producers can choose from several different methods of fly control including back rubbers, sprays, dust bags, ear tags, ruminal boluses, oral larvicides and live traps. Each control method offers advantages and disadvantages in effectiveness of control, ease of administration, and cost per animal treated.

The objective of this trial was to compare the effectiveness of insecticide impregnated ear tags and the controlled-release Inhibitor bolus used to prevent horn fly larval development.

Haufe, W. O. (1982) reported that under ranch conditions in Alberta, Canada, yearling steers treated with two fenvalerate impregnated ear tags gained 17.7% more than control steers during the May 13th to September 5th grazing period. He also indicates that pest control practices must effectively eliminate an infestation without interruption during the grazing season to prevent the minimum loss of 17-20% in potential growth rate.

Quisenberry and Strohbehn, (1984), found that calves nursing on treated cows were significantly heavier at weaning than calves nursing untreated cows.

PROCEDURE:

In June, 1988, four herds of crossbred cows and calves (30-50 head per herd) were assigned to one of four fly control treatments as follows:

Herd 1 - Cows tagged with two "Max Con" insecticide ear tags per cow. "Max Con" is a trade name of the Y-Tex Corporation. Active ingredients are chlorpyrifos, cypermethrin, and piperonyl butoxide.

Herd 2 - Cows tagged with two “Tomahawk” insecticide ear tags per cow. “Tomahawk” is a trade name of Coopers Animal Health, Inc. “Tomahawk” Insecticide ear tags contain pirimiphos methyl, a phosphate insecticide that has never been used on cattle in the United States.

Herd 3 - Cows given one “Inhibitor” bolus per cow. “Inhibitor” is a trademark of Sandoz, Ltd., a division of Zoecon Corporation. Active ingredient is methoprene, an insect growth regulator.

Herd 4 - Control cows not treated for flies.

Each herd grazed on similar but separate native range pastures with uniform stocking rates. Each herd was separated from one-fourth to two miles in order to maintain fly population integrity. Actual application of the ear tags or bolus was done according to the manufactures recommendations on June 15, 16, and 20th. Due to the extreme heat and drought conditions, the trial was terminated after 67 days because Herd 1 exhausted its grass supply and required movement to new pastures. Estimates of the fly population were made early in July and again at the close of the trial. Dr. Dennis Kopp and Dr. Hendrik Meyer of the Entomology Department NDSU, helped with the first fly count and offered much valued advice and counsel.

At each fly count, approximately 15-20 cows per herd were carefully observed, using binoculars. Flies were estimated on a per side basis and converted to flies per cow figure. No attempt was made to document the number of eggs laid or hatching success of larval flies in the manure pats.

All cows and calves were individually identified and weighed on a regular basis. Although each herd had a slightly different starting date and final weigh date, all cow and calf weights were computed to a June 20th - August 26th (67) days trial period.

Results of the trial are shown in Tables 1, 2 and 3.

DISCUSSION:

Application of the ear tags or administration of the slow-release bolus required every cow to be processed through a headgate. Processing time required per cow treated was not different between the application of the ear tags or the giving of the bolus with a balling gun. Both treatments required approximately one minute per cow using a crew of three. The cost of the treatments varied from \$1.79 per cow using the “Inhibitor” bolus to \$2.00 per cow with either the “Max Con” or “Tomahawk” tags, exclusive of labor charges.

Fly populations were just starting to build in mid June when the three treatments were applied. By July 21, at the first fly count, both ear tag brands had reduced the number of flies per cow to less than twenty. The “Inhibitor” treated cows had counts estimated to be approximately 160 flies per cow, but the cows did not show any particular discomfort at this level. By contrast, the control cows had estimates of over 520 flies per cow and appeared to be very uncomfortable with head tossing, tail switching and bunching up.

This discomfort or “fly fighting” caused the control cows to lose weight or have minimal gains during the sixty seven day trial period. This was especially true for the Milking Shorthorn cross (MS(AxH) and Simmental (Sim X) crossbred cows.

Calf performance between herds apparently was not adversely affected since the control calves gained as much as the calves from the “Max Con” and “Inhibitor” treated herds and only slightly slower than the calves in the “Tomahawk” treated herd.

SUMMARY:

Cows treated with two “Max Con” or “Tomahawk” ear tags enjoyed a relatively “fly free” summer at a cost of \$2.00 per cow. These cows gained from 33 to 58 pounds in body weight and also supported calf gains of from 173 to 220 pounds during the 67 day trial period. Cows treated with one “Inhibitor” bolus had fly counts of approximately 160 per cow but this level did not seem to be detrimental since the cows gained an average of 38 pounds and their calves gained between 173 and 188 pounds per head.

Control cows were heavily infested with horn flies throughout the trial period, with counts in July averaging over 520 flies per cow. Gains were minimal (12-14 pounds for Hereford and Angus x Hereford cows) to negative (-33 to -55) for the MS (AxH) and Simmental cross cows.

Calf gains were not adversely affected by a lack of fly control since they gained on par with calves from the treated herds.

Table 1. Visual Estimation of Fly Numbers Per Cow

Treatment	1st Observation July 21st	2nd Observation September 7th
Herd 1 “Max Con” tags	11	168
Herd 2 “Tomahawk” tags	19	124
Herd 3 “Inhibitor” bolus	160	180
Herd 4 Control	537	180

Table 2. Sixty-Seven Day Weight Changes of Cows Treated for Fly Control

Treatment	No. Head	Gain-Loss Pound	Gain Head	ADG
“Max Con”	70	+3844	54.9	0.82
“Tomahawk”				
BWF	10	524	52.4	0.72
Hereford	10	572	57.3	0.86
MS (AxH)	10	335	33.5	0.50
Sim X	10	465	46.5	0.69
“Inhibitor”				
52	1996	38.4	0.57	
Control				
BWF	9	114	12.7	0.19
Hereford	9	128	14.2	0.21
MS (AxH)	7	-382	-54.6	-0.81
Sim X	9	-299	-33.2	-0.50

Table 3. Sixty-Seven Day Weight Gain of Calves Nursing Cows Treated for Fly Control

<u>Treatment</u>	<u>No. Head</u>	<u>Weight Gain</u>	<u>Gain Head</u>	<u>ADG</u>
“Max Con”				
Steers	33	5807	176.0	2.63
Heifers	37	6418	173.5	2.57
“Tomahawk”				
BWF Steers	5	1104	220.8	3.30
Heifers	5	1014	202.8	3.03
Hereford Steers	4	754	188.5	2.81
Heifers	6	1136	189.3	2.83
MS (AxH) Steers	5	925	185.0	2.76
Heifers	5	936	187.2	2.80
Sim X Steers	4	759	189.8	2.83
Heifers	<u>6</u>	<u>1155</u>	<u>192.5</u>	<u>2.87</u>
Total “Tomahawk” Steers	18	3542	196.8	2.93
Heifers	22	4241	192.8	2.87
“Inhibitor” bolus				
Steers	36	6752	187.6	2.79
Heifers	16	2770	173.1	2.58
Control				
BWF Steers	4	725	181.2	2.71
Heifers	5	846	169.2	2.52
Hereford Steers	5	889	177.8	2.65
Heifers	4	671	167.8	2.50
MS (AxH) Steers	3	574	191.3	2.86
Heifers	4	749	187.2	2.79
Sim X Steers	3	640	212.3	3.18
Heifers	<u>6</u>	<u>1104</u>	<u>184.0</u>	<u>2.75</u>
Total Control Steers	15	2828	188.5	2.81
Heifers	19	3370	177.4	2.64

Literature Cited

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