

Beef Cattle Handbook



BCH-3801

Product of Extension Beef Cattle Resource Committee

Non-chemical Horn Fly Traps

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Introduction

In the mid-1930's, Willis G. Bruce devised a walk-through fly trap to reduce the numbers of horn flies on cattle without using insecticides. In principle, the trap was similar to window traps which were in use to trap house flies in barns. The flies are trapped in a screened chamber in a manner similar to a lobster trap, designed to funnel the catch in through a small opening (or series of openings). Once a fly enters the trap chamber it usually cannot find the small opening(s) to escape.

The trap design described by Bruce was largely forgotten because of the success of modern chemical pesticides which followed the introduction of DDT. However, because of heavy reliance on pesticides and, in part, due to more effective chemical application technologies, pest populations have become resistant to some of our most

commonly used cattle insecticides. Once again there may be a place for mechanical fly traps in an overall control program. Presented here are modifications of the classic Bruce trap, designed to withstand the rigors of typical cow-calf operations with a minimum of maintenance costs.

Materials and Method of Construction

A completed trap is approximately nine feet long and the passage-way is three feet wide (Figure 1). Six trapping elements form the side walls of the trap. Figure 4 shows an isometric view of a wooden frame trap with one of the six trapping elements. Canvas strips hung in the center section of the trap brush against cattle passing through and dislodge flies on the animals (Figure 2). The flies respond to light and fly outward into the screened trap elements where they enter the trap chamber through perforations in the folded inner wall of the trap (Figure 3). Once the flies enter the trap chambers, very few manage to find an exit. The trap support frames can be constructed of 2-inch angle iron with base supports made from 2-inch square tubing. Alternatively, frames can be constructed of pressure-treated lumber. Trapping elements are fastened to the framework. The trap top, constructed of plywood, forms the roof of the trap. Each of the six trapping elements is constructed of 1" x 6" pine.

The inner trap screen is folded to form slanted surfaces with nearly horizontal overhangs approximately every 10 inches. The fold is then perforated every 4-5 inches using a screwdriver blade to form the entry points into the trap chamber. The screen is protected



Figure 1. Side view of a steel frame walk-through fly trap. Cattle pass through the trap to get water.



Figure 2. End-on view of the trap showing canvas in the middle of the walkway.



Figure 3. Folded screen punched through the apex of the fold. Flies which crawl in usually can't get back out.

from the cattle by the welded wire fence panels placed inside of the trap frame. Plans are available for both a wood frame and a steel frame model. Grommeted canvas strips are hung in the center section of the trap. Canvas should be lowered into place over a period of one to two weeks early in the season to allow the cattle to overcome reluctance to enter the trap.

Placement and Operation

The assembled trap should be located so that cattle are

forced to pass through it on a regular basis. The best place for a trap is between pasture and the cattle's source of water. An alternative is to make animals pass through the trap to get feed or a mineral supplement they want. In this respect, placement is similar to the use of a dust bag or oiler. The outside area surrounding the trap should be fenced to exclude cows. This will reduce frequency of repairs to the trapping elements. Removal of flies from the trap is not usually necessary; however, dead flies can be swept from the bottom of each trap unit via access doors. Typically, scavenger insects such as dermestid beetles will feed on the cadavers of the dead flies at the bottom of the trap. Below are some questions and answers about the Bruce trap based on our experiences over several seasons.

1. How many traps per pasture? Only one trap per pasture is necessary, but if there is more than one watering point in the pasture more traps would be necessary or additional watering places would have to be fenced to exclude livestock. The important thing to keep in mind is that all the animals should have to pass through a trap in order to get water.
2. How many cows per trap? Again, only one trap per herd is necessary as long as all the animals go through the trap on a regular basis.
3. Better for young cows, yearlings, 2- or 3-year-olds, or older animals? We haven't been able to determine any differences among age groups of cattle in their acceptance of the trap. One problem we have encountered was getting all the animals to go through the trap. That varied from herd to herd. In some locations there were no problem animals, but in other locations some animals were very reluctant to go through. Maybe the trap looks too much like the entrance into a squeeze chute to some cows. In these cases, some training was required to get the animals to pass through.
4. Should traps be left there during the breeding season? Is it dangerous to bulls or cows that are in heat? Traps have been used in pastures throughout the entire grazing season without ever noticing any problems in this regard. We also used one steel framed trap in a "bulls only" pasture without any problems. We're not aware of any problems experienced by researchers in either Illinois or Nebraska who have also conducted tests in their states. While we can't categorically rule out any problem - we've not had anything happen during our use.
5. Is the trap easily moved? The steel trap frame can be moved; however, as constructed it is not designed to be moved very easily. We have carried the entire trap in the bed of a full sized pick-up by loading the frame and then stacking the trap elements inside the frame. We have also moved the trap short distances by fastening a chain around the top of the trap frame and lifting the trap using a front end loader. Traps constructed of pressure treated lumber are designed to stay in one location, often along a fence line.

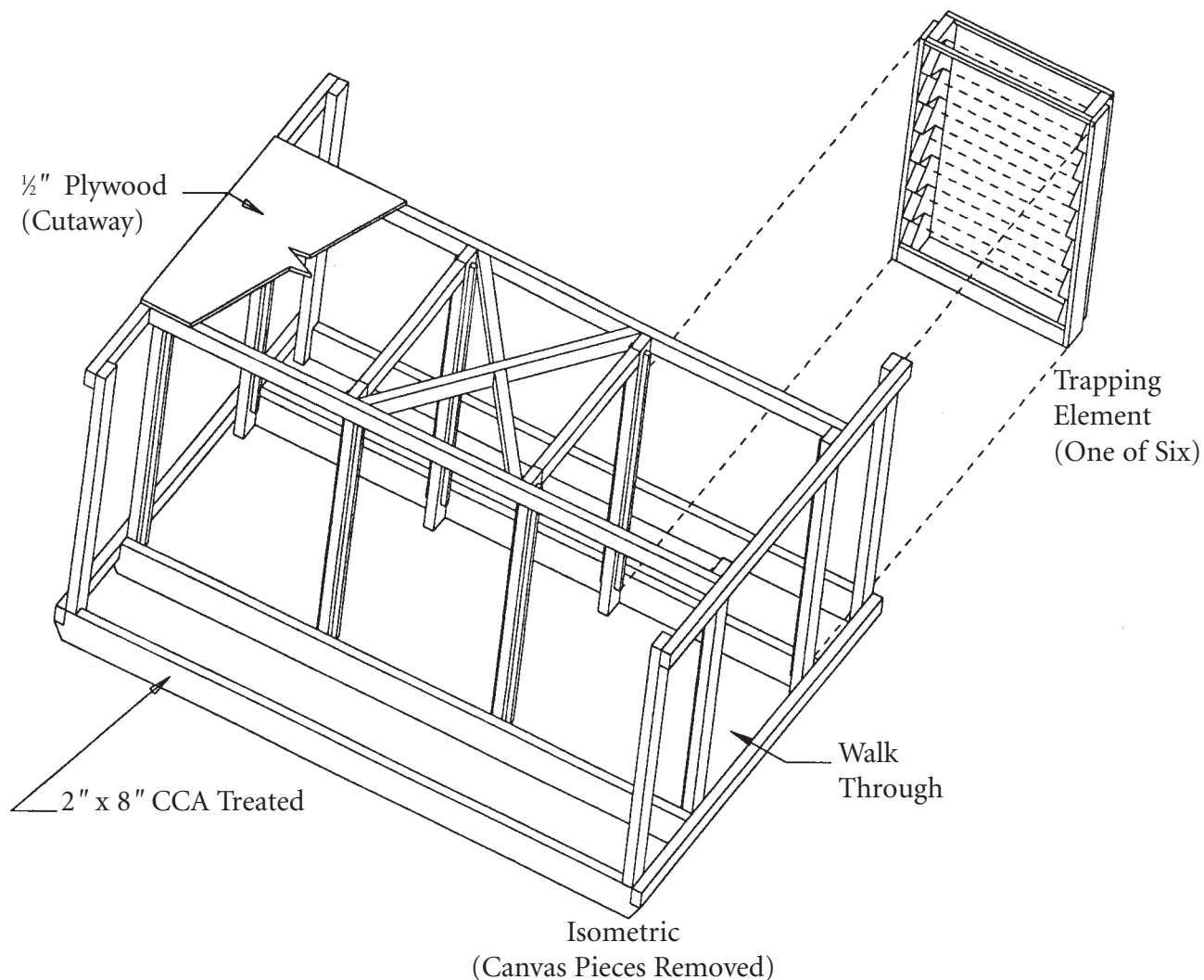


Figure 4. Isometric drawing of a wood framed walk-through fly trap showing one of six trapping elements.

6. What is the expected life of a trap? The frame of tubular steel should last for many years. The canvas or carpet strips may need replacement every few years and the wooden trap units may require painting or treating and screen may need repair every two or three years. Some screen repairs may be necessary every year, depending on where the trap is located and whether trap elements are left in place over winter or are stored in a protected location. Wood frame models are most durable if pressure-treated lumber is used to resist rot.
7. What problems have you encountered using the traps?
 - a) Not all animals will go through the trap — in some instances this was corrected by removing some of the canvas in the interior of the trap until the reluctant animals were used to going through. In some cases, no matter what, some cows just would not go through.
 - b) We had a few screen repairs to make — we basically solved this problem by using a 2" x 4" mesh welded wire panel on the inside of each trap section. Damage to the inside screen evidently came primarily from calves mouthing the folded parts of the trap elements. 2" x 4" mesh wire eliminated this damage.
 - c) We had some traps moved by animals rubbing against them — solved by anchoring traps to good solid fence posts. Damage to the outside of the trap was eliminated by using panel fencing to prevent cattle from reaching the trap units.
 - d) Some canvas straps tore out, probably due to high wind; this problem was solved by replacing canvas.
 - e) One trap top had to be replaced when it was destroyed in a wind storm.
8. Are the traps available commercially? No, as far as we know, the traps have never been manufactured and North Dakota State University and the University of Missouri do not sell them nor do we plan to. An Australian company may soon market a

similar trap.

9. How can you get plans for a walk-through fly trap?
Plans for a wood frame model are available from the University of Missouri Agricultural Engineering Plan Service, Room 205, Agricultural Engineering, University of Missouri, Columbia, Missouri 65211. Specify Plan 1-904-C6, "Fly Trap".

Plans for a tubular steel framed trap are available from the Department of Entomology, 202 Hultz Hall, North Dakota State University, Fargo, North Dakota 58105-5346.

Cost of Construction

Materials to build either a wood frame or steel frame trap are likely to range from \$300-\$500 depending on your location and access to used construction materials. Time necessary to construct either steel or wood frame models should be considered. Although the metal work and carpentry are not particularly difficult; typically, several days to a week of work is required to complete construction.

Performance of the Trap

Field studies in both Missouri and North Dakota show that the traps will produce about a 50 percent control of horn flies when averaged over a season. Even though this is lower than the control which can be achieved using insecticidal ear tags or other chemical control methods, horn flies can be maintained below the injury level of about 200 flies per animal.

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This publication was prepared in cooperation with the Extension Beef Cattle Resource Committee and its member states and produced in an electronic format by the University of Wisconsin-Extension, Cooperative Extension. Issued in furtherance of Cooperative Extension work, ACTS of May 8 and June 30, 1914.

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