

Cattle Grub Control

rotenone applied during larvae stage of heel fly most effective

Kenneth G. McKay

The cattle grub causes an annual estimated loss of \$100,000,000 to the beef and dairy industries of the nation.

The pest is held responsible for a 10% to 20% drop in milk production during the grub season.

At least 12,700,000 pounds of meat are lost annually because the cattle flesh around the encysted grubs—known as jellied beef—must be trimmed out and discarded.

A cowhide with many grub holes is considered worthless for tanning and is commonly sold for by-products. As the hide represents 7% of the live-weight and 11% of the value of the average steer, price docks due to hide damage average from \$50 to \$150 per carload of market cattle.

In California the grub—the larval stage of the heel fly—makes its appearance under the skin in the loin area of cattle during early fall.

The grubs must be destroyed at this stage. Otherwise they enlarge their breathing holes by means of a secretion that dissolves the skin tissue permitting the grubs to emerge and fall to the ground where they develop into adult heel flies.

Within half an hour after the grub emerges it becomes a heel fly able to sustain itself on the wing. In a few minutes it can fly freely and is ready to mate.

The female may begin laying her quota of from 300 to 500 fertile eggs on cattle 20 minutes after mating, or only slightly more than an hour from the time of emergence from the pupal case. When the eggs hatch, the tiny larvae enter the skin of

labor increase from 152 million to 158 million hours between 1950 and 1955.

If 1955 production goals are achieved, total labor required in California agriculture will increase from an estimated 703,288,000 man-hours in 1950 to a projected 1955 total of 727,304,000 hours in 1955—an increase of 3.4%.

To be continued

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the animal. In the animal tissues the larvae move about for 9 months until they reach the loin area on the back of the cow where they make a breathing hole through the hide. Soon a cyst forms around each larva where it stays until it drops from the animal's back.

Control

Rotenone is the only toxicant recommended for the control of cattle grubs and no benefits can be expected until the year after treatment. Killing the grub breaks the life cycle of the pest and reduces the heel fly population during the following season.

Tests have been made with a number of chlorinated hydrocarbon insecticides including DDT, DDD, methoxy-DDT, chlordane, toxaphene, and BHC. Counts of larvae in the backs of cattle six months later showed that there were as many grubs present in the sprayed animals as in the unsprayed controls.

Rotenone-bearing products—ground cube or derris root—should be of 325-mesh fineness, and contain 5% rotenone. When powders with less than 5% rotenone are used, the quantity of powder should be increased so the final spray, dust or wash will contain rotenone equivalent to the 5% product.

Spray

Powder spraying is the most rapid method of applying treatment, and is recommended for use on large herds of cattle.

From 7½ to 10 pounds of cube or derris powder containing 5% rotenone should be added to each 100 gallons of water. A wetting agent, at the rate of one pound per 100 gallons of water, is desirable.

The spray material must be kept agitated while spraying. A minimum pressure of 400 pounds per square inch at the nozzle is necessary. Even with pressures of 400 pounds or more per square inch a 100% kill can not be expected at each spraying.

In a 50-foot length of hose having one nozzle with a ¾" aperture, pressure is lost at the rate of a pound per foot of hose between pump and nozzle.

Nozzles producing either fan or cone shaped sprays may be used. In each case,

a driving spray is essential. With cone-producing nozzles, whirl plates must be removed. Disk openings should be ⅝" on multiple nozzle booms, and ⅝" on guns equipped with only one or two nozzles. Nozzles should be held within 12" of the backs of the cattle. The amount of spray required is generally one gallon per head. Only the area of the back where the swellings are observed needs to be sprayed.

Dusts

Dusts should consist of one part of cube or derris powder of 5% rotenone content, and two parts of carrier such as tripoli earth, pyrophyllite or frianite.

At least three ounces of dust should be used for each animal. The material should be distributed from shaker cans, and rubbed into the grub cyst opening with the fingers. Dusts are well adapted for use in very cold weather.

Washes

Washes result in high cattle grub mortalities, but the procedure is tedious. A good preparation consists of 12 ounces of cube or derris powder of 5% rotenone content, and approximately one-half ounce of a wetting agent per gallon of water. From one pint to one quart of wash is used per animal, depending upon the size of animal and length of hair coat and must be kept agitated during treatment. Stiff fiber brushes with bristles not shorter than 2" are used to distribute the washes over the back. The backs should be brushed vigorously to insure penetration into the grub cyst openings.

Oilcan Treatment

Commercial benzol may be applied in a common oilcan, but this type of treatment is not recommended because benzol is explosive.

Frequency of Application

No matter what method of application is used, correct timing of treatment is essential for adequate grub control. For most effective control, treatment should be applied approximately 30 days after the appearance of the first grubs in the backs, and thereafter at 30- to 45-day intervals throughout the grub season.

Rotenone is highly toxic to fish and drainage from spraying operations should not be permitted to get into streams, ponds, or lakes. Cattle recently treated should not be allowed access to such waters. Rotenone readily deteriorates when exposed to sun and air.

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