September 1989

A FENCING TECHNIQUE TO REDUCE RACCOON FEEDING DAMAGE TO SUGARCANE RESEARCH PLOTS

Hugh P. Fanguy
U.S. Department of Agriculture

Dwight LeBlanc
U.S. Department of Agriculture, Animal and Plant Health Inspection Services

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by Hugh P. Fanguy[1/] and Dwight LeBlanc[2/]

ABSTRACT

Damage caused by the feeding of raccoons (Procyon lotor) on stalks of sugarcane (Saccharum sp.) has occurred for several years on the 200-acre U.S. Department of Agriculture, Agricultural Research Service (USDA-ARS) research farm located near Houma, Terrebonne Parish, Louisiana. Damage begins when sugarcane mature internodes begin to from in late June and early July, and continues until the completion of harvest in late December. Raccoons appear to prefer varieties having low fiber and/or high sugar content and can severely damage these varieties (personal observation). Depredation by these animals frequently result in loss of data as preferred varieties are systematically removed from established experiments. In an effort to stop or reduce depredation, three sides of the research farm were protected with an electrified fence in 1988. Fencing was considered to be very successful because estimated sugarcane losses on certain varieties decreased from 80-90% in 1987 to less than 1% in 1988. A single block of standing sugarcane used to evaluate cold tolerance was kept free from raccoon damage three months past the normal harvest season by the fence.

INTRODUCTION

Sugarcane varieties (Saccharum sp.) high in sucrose content and/or low in fiber are consumed by various forms of wildlife in many parts of the world. In Louisiana, black bear (Ursus/americanus) (Baudoin 1989, Irvine et al., 1983), nutria (Myocastor/coypu) (Evans 1920), and northern raccoon (Procyon/lotor) have all been reported to depredate sugarcane. Noel Kinier (Louisiana Department of Wildlife and Fisheries, personal communication) also observed raccoons gnawing the bases of freshly-harvested sugarcane plants in Iberia Parish, Louisiana, apparently to obtain the sucrose-rich juice that oozed from the cut stalks.

Feeding of raccoons on stalks of sugarcane has occurred sporadically on the 200-acre USDA-ARS research farm located near Houma, Terrebonne Parish, Louisiana, and was especially severe from 1980 through 1987. In addition to affecting data collection on selected sugarcane cultivars, raccoons were responsible for eliminating plants from new crosses in the breeding program.

Mature sugarcane becomes vulnerable to raccoon damage upon emergence of internodes above ground in late June-early July and remain vulnerable until harvested. Frequently internodes are gnawed just above ground level causing some mature sugarcane stalks to lodge. Raccoons appeared to prefer varieties of sugarcane that accumulate sugar early in the growing season, although other factors also may influence their preference. Additionally, the animals appeared to select against varieties that had a high stalk fiber content (Legendre, 1987).

To combat the problem, a depredation permit was obtained from the Louisiana Department of Wildlife and Fisheries in 1983, and an effort was made to eliminate raccoons from

1/Research Agronomist, Sugarcane Research Unit, Agricultural Research Service, U.S. Department of Agriculture, Houma, LA
2/State Director, Animal Damage Control, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Baton Rouge, LA

the research farm by night hunting and trapping. Many raccoons were removed from the immediate area, but sugarcane depredation remained unacceptable to research personnel.

In 1987 personnel at the Sugarcane Research Station successfully excluded raccoons from experimental plots by surrounding individual blocks of sugarcane with a single strand of wire energized by a battery-operated fence charger. The design of this fence is described by Boggess (1983) and consisted of one strand of 16-gauge wire attached to wooden posts using insulators located 4 to 6 inches above the ground. This fence was subsequently modified by adding a second electrified strand of wire 6 inches above the first.

Reduction of raccoon-caused damage in small plots by this method prompted USDA-ARS personnel to begin installing a permanent fence around the research farm in 1988. This paper describes its construction which was a modification of a fence described by San Julian et al., 1984.

METHODS AND MATERIALS

The fence was a combination of welded steel wire and strands of high tensile electric fencing energized by a high-voltage charging system. This fence surrounds the farm on three sides. Bordering the back of the farm is a large tract of bottomland hardwood forest providing suitable habitat for raccoons.

The back fence is constructed of 2-inch by 4-inch welded wire mesh that is five feet high and buried to a depth of 1 foot. Prior to burial, the bottom one third of welded wire mesh was treated with a tar or plastic coating to impede corrosion. The wire mesh fence was attached to 6-foot steel T-posts driven 1 foot into the ground and spaced at 10 foot intervals. The first strand of electric fencing was attached to the posts using insulators mounted approximately 2 inches above the outside of top strand of electric fence was mounted 6 inches above the lower on offset insulators that extended outward 6 inches from the steel post. The fence was strengthened with H-shaped braces at corners. Supports were fabricated with 2-inch steel pipe and were 6-feet tall. The lower 12-inches of the supports were cemented in the ground.

On each side of the farm, an electric fence consisting of three strands of high tensile electric wire was constructed. This fence extended from the back fence to the front of the farm, which borders a hard-surfaced road. The wire strands comprising the side fence were spaced at 4 inches apart, with the first strand being 4 inches above the ground. Insulators attached to steel T-posts, driven one foot into the ground and spaced 20 feet apart, were used for support. Raccoon entry via the front of the farm was considered insignificant, and no fencing was erected there.

Each of the 40 field culverts at the back of the research farm was lengthened by 10 feet so that a field road could be widened for the unrestricted passage of cultivating and harvesting equipment. Guards were installed across each culvert opening to prevent raccoons from entering fields through the culverts. These guards were constructed by welding ½-inch steel rods, spaced 2 inches apart, to a frame made of 1-inch by 1-inch by ¼ inch angle iron. The sides of the frames extended 12 inches beyond the culvert and were driven into the ground to hold the frame against the culvert.

The fence was charged with a Super 60 Energizer manufactured by Gallagher Snell.*

*Mention of a trademark or proprietary product does not constitute a guarantee of warranty of the product by the U.S.D.A. and does not imply its approval to the exclusion of other products that may also be suitable.

This charging device was powered by 120-volt alternating current and could energize up to 40 miles of fencing. The maximum output of the charger was 8,100 volts. The fence was checked daily for proper operation using a hand-held voltmeter. Any operational deficiencies were corrected when discovered.

No quantitative data on depredation were collected. Visual estimates of damage to sugarcane and observations of sugarcane researchers were used to gauge the efficiency of the electric fence.

RESULTS AND DISCUSSION

The combination of partially-buried 2-inch by 4-inch wire and electrified single-strand wires successfully kept raccoon damage to a minimum during the entire 1988 growing season. In 1987, we observed that 80 to 90 percent of the stalks of susceptible varieties were damaged by raccoons. In 1988, the damage was estimated at less than one percent. A single block of standing sugarcane used to evaluate cold tolerance was kept free from raccoon damage three months past the normal harvest season. Relatively few complaints were received from station scientists during 1988 and sign left by raccoons, i.e., tracks and scat was minimal. The few animals entering the research plots via the unfenced front portion of the research farm, were brought under control by trapping.

Fencing the perimeter of the Sugarcane Research Station was expensive and may preclude its use by the general farming community. Cost of materials for the 2-mile fence was approximately $17,000 or $1.61 per foot. In this situation, construction costs were not considered excessive because the fence protected unique, sugarcane germplasm and prevented the destruction of experiments costing thousands of dollars to initiate.

Following the 1988 harvest, the three strand fence on both sides of the farm was replaced with a low maintenance fence similar to that protecting the back of the farm. This fence, however, was constructed using 12-gauge vinyl coated welded wire that was less susceptible to corrosion. Since vinyl is an effective insulator, the installation of a third high tensile wire along the top of the fence as a ground was necessary.

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