

## Research Note

### HYDROCYANIC ACID POISONING IN DAIRY COWS—A CASE REPORT<sup>1</sup>

Early one morning in November 1975, nine Holstein-Friesian cows in a dairy farm in Barrio Canovanillas, Carolina, Puerto Rico, were found dead on a strip of dark green pasture which the farmer thought was stargrass. These 9 cows were part of a group of 23 bought some 3 months earlier from a farmer from Barrio Cedro of the same municipality.

Autopsy revealed frothy bloody discharge from the mouth and anus and blood tinged feces. The viscera showed no apparent changes, but a bright red color of the blood was noticed.

HCN poisoning was suspected. A plant taxonomist from the University of Puerto Rico, Río Piedras Campus, inspected the area but found no poisonous plants except *madre de cacao* (*Gliricidia sepium*) which is toxic to rats, dogs and horses but not to cattle<sup>2</sup>. Although HCN content of young stargrass is rather high, no case or evidence of poisoning in cattle due to ingestion of stargrass has been reported in Puerto Rico, where thousands of hectares of this grass have been grazed for years. In that respect, no ill effects were observed when "a field of heavily fertilized stargrass was grazed at intervals of 15 days by heifers receiving no feed for 36 hours previous to the test"<sup>3</sup>.

Nitrite poisoning was also suspected because of the dark green color of the pasture in the particular strip where the animals were last seen grazing since the topography permits water, and perhaps fertilizer, from the upper pasture to drain into it. Another reason for suspecting nitrite poisoning was the presence near the milking barn of a cart filled with bags of fertilizer, one or two of which were broken and torn. However, investigations revealed that the pasture was not fertilized that year and that cows were never observed licking the fertilizer bags.

The farmer agreed to fast overnight a cow from the group of 23 from which the 9 had died. At 10:00 A.M. the following day the cow was tethered on the strip of dark green pasture. The cow grazed avidly for approximately 2 h at which time she suddenly stopped eating. The cow became glass-eyed and drooled profusely; her respiration became deep

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<sup>2</sup> Little, E. L., Wadsworth, F. H., and Marrero, J., *Arboles Comunes de Puerto Rico e Islas Virgenes*, Editorial U.P.R. 277-8, 1967.

<sup>3</sup> Caro-Costas, R., Abruña, F., and Vicente-Chandler, J., Comparison of heavily fertilized Pangola and Stargrass in the humid mountain region of Puerto Rico, *J. Agr. Univ. P.R.* 56(2):104-9, 1972.

and fast; then she staggered and fell. Blood taken immediately from the jugular vein was cherry red.

About 100 ml of a 1% methylene blue solution were immediately administered intravenously as antidote against presumed cyanide poisoning. After gaining her feet, the cow was walked to the barn; she started eating concentrate feed an hour after treatment. Blood taken from the cow 2 h after treatment was dark red, a normal appearance.

Forage specialists from the Agricultural Research Service, USDA, in the Agricultural Experiment Station, University of Puerto Rico, collected and examined samples of the pasture. They reported that it looked like stargrass but did not have the standard characteristics of *Cynodon nlemfuensis*. Perhaps it is a variety of *Cynodon*, or even some other species, such as *C. dactylon* or *C. plectostachyus*. Laboratory analyses showed the HCN content of the grass to be 1,264 p/m, which is more than twice the highest HCN content found in stargrass in Puerto Rico by Figarella<sup>4</sup>.

The 9 cows that died of HCN poisoning were part of a group of 23 animals recently transferred from another farm where only pangolagrass (*Digitaria decumbens*) was used. In the Canovanillas farm there are 27 ha of pangolagrass and 8 ha of stargrass and the stargrass-like pasture. None of the original 140 cows from the Canovanillas farm herd died of poisoning from grazing concurrently that night on the strip of pasture where the 9 cows died. In fact, 3 days after the fatal incident the Canovanillas cows broke loose into the same pasture and grazed it for almost a day without harmful effects. Perhaps the Canovanillas cows have sufficient amounts of the enzyme rhodanase<sup>5</sup> well distributed in their bodies as a result of gradual exposure to cyanide by pasture rotation, a condition that would enable them to convert cyanide to much less toxic cyanate.

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<sup>4</sup> Figarella, J., Unpublished data, ARS, USDA, Agr. Exp. Sta., Univ. PR., Mayagüez Campus, Río Piedras, PR.

<sup>5</sup> Radeleff, R. D., Veterinary Toxicology, Lea and Febiger, Philadelphia, Penn., U.S.A., 1964.