

Ergot (*Claviceps africana*) contamination of sorghum grain reduces milk production

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Sorghum ergot (*Claviceps africana*) appeared in Australia in 1996. Overseas it was thought fairly benign, but in 1997 milk yields of grazing cows in Central Queensland were reduced when they were given a supplement containing contaminated sorghum, and piglets died when sows failed to lactate after consuming grain with up to 20% ergots. Related rye ergot (*C. purpurea*) is known to depress intake, production, blood prolactin and impair thermo-regulation. Studies were made of its effects on Holstein-Friesian cows in early and in mid lactation.

In Experiment 1, 18 freshly calved cows (three per treatment) were individually fed 5 kg clean rolled sorghum grain and 2 kg cottonseed meal as two feeds per day after milkings. Ergots were also added for two weeks at 0, 2% (100 g), 4% (200 g), 6% (300 g); 8% (400 g) and 10% (500 g) of the grain fraction. Cows were fed maize silage (10 kg per cow daily) with Rhodes grass pasture (daytime) and grazed lucerne or pangola at night. Ergot depressed milk yields (Figure 1) and at 8–10% caused concentrate refusals. Refusals and milk depression were greatest in the second week of feeding when temperatures exceeded 30°C. Blood prolactins were reduced at all levels of contamination. Cows fed 10% ergot had consistently higher rectal temperatures. There was little milk recovery 7 weeks after ergot feeding ceased.

In Experiment 2, 40 spring calved cows (eight per treatment) were individually fed 5 kg sorghum grain once

daily (a.m.). Ergots were added at 0, 25 g, 50 g, 100 g, or 200 g for 8 weeks in late summer. Cows were fed a mixed ration (PMR) of 15 kg maize silage, 2 kg whole cotton seed, 5 kg lucerne green chop (as fed) per cow (daytime) and grazed irrigated temperate pastures (night). At 25 g and 50 g ergot, milk yield depression was small, but at 100 g (2%) and 200 g (4%) yields declined from commencement of feeding (Figure 1). At 200 g ergot, milk yield fell by 30% after five weeks and ergot was withdrawn. At the two highest ergot levels cows failed to gain weight. Blood prolactin was lower and ergot impaired the cows' ability to dissipate heat, with higher rectal temperatures above 100 g ergots/day. At low ergot levels there was little effect on grain consumption, but with 200 g ergots 10–20% was rejected. Group consumption of PMR was depressed. After cessation of ergot feeding, PMR intake increased and milk yields recovered to near control levels after one month, but with 200 g after eight weeks.

These experiments showed that sorghum ergot can cause a large reduction in milk production, possibly through depressed prolactin directly affecting the mammary glands, or indirectly by reducing feed intake. In early lactation or at high ergot levels this effect may be irreversible after only a short period of feeding. Sorghum ergot also impaired thermo-regulation. Given that high temperature and humidity already limit milk production in the sub-tropics, the economic impact of sorghum ergot in grain and forage sorghum is likely to be severe.

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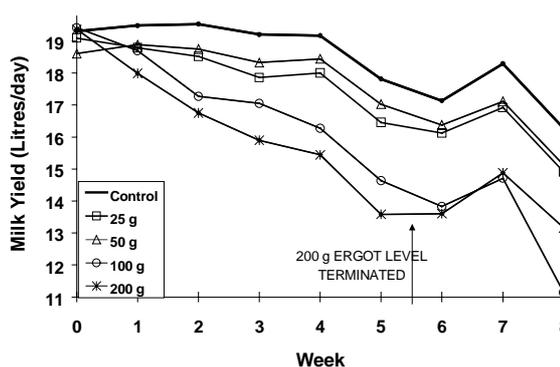
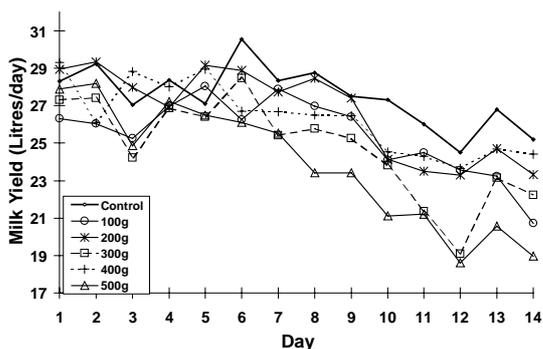


Figure 1 Milk yield (litres/day), Experiments 1 and 2.