IMPACT OF SORGHUM ERGOT (*CLAVICEPS AFRICANA)* ON MILK PRODUCTION

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Sorghum ergot is caused by the fungus *Claviceps africana*. It infects late-planted crops at pollination, reducing grain yield and quality due to presence of fungal sclerotia (ergots) (Blaney *et al.* 2000). In central Qld in 1997, and southern Qld in 2003, sorghum ergot caused dairy, feedlot and piggery losses. Two studies in 1997 and 1998 examined effects of sorghum ergot on production and health of Holstein-Friesian cows.

Experiment 1. Eighteen freshly calved cows (3/treatment) were individually fed 5 kg/day of clean rolled sorghum grain plus 1 kg cottonseed meal, as 2 feeds/day after milking. Ergots were added to the grain for 2 weeks (Dec 1997) at 0, 2%, 4%, 6%, 8% and 10%. Cows were offered maize silage (10 kg/cow) and grazed Rhodes grass pasture (day) and lucerne or pangola grass (night). Sorghum ergot depressed milk yields (Figure 1a) and at 8-10% resulted in grain refusals, which were greater in the second week of feeding when ambient temperatures exceeded 30^{o}C. Blood prolactin was reduced at all contamination levels. Cows fed 10% ergots had consistently higher rectal temperatures. There was little milk yield recovery 7 weeks after cessation of ergot feeding.

Experiment 2. Forty mid lactation cows (8/treatment) were individually fed 5 kg clean sorghum grain once/day, with ergots added at 0, 0.5%, 1%, 2% or 4% for 8 weeks (Feb – Apr 1998). Cows were group-fed a partial mixed ration (PMR) of 15 kg maize silage, 2 kg whole cottonseed, 5 kg lucerne chop/cow and grazed tropical grass at night. At 0.5% and 1% ergots, milk yield depression was small, but at 2% and 4%, yields declined from commencement of feeding (Figure 1b). At 4% ergots, milk yield fell by 30% after 5 weeks and ergot was withdrawn. At 2% and 4% ergots, body condition decreased. Blood prolactin was lower and ergot impaired the cows' ability to dissipate heat, with elevated rectal temperatures above 2% ergots. At low ergot levels, there was little effect on grain consumption, but with 4% ergots cows rejected 0.5-1.0 kg grain/cow.day. Group consumption of PMR was depressed. After cessation of ergot inclusion, PMR intake increased and milk yields recovered to near control levels after 2 months.

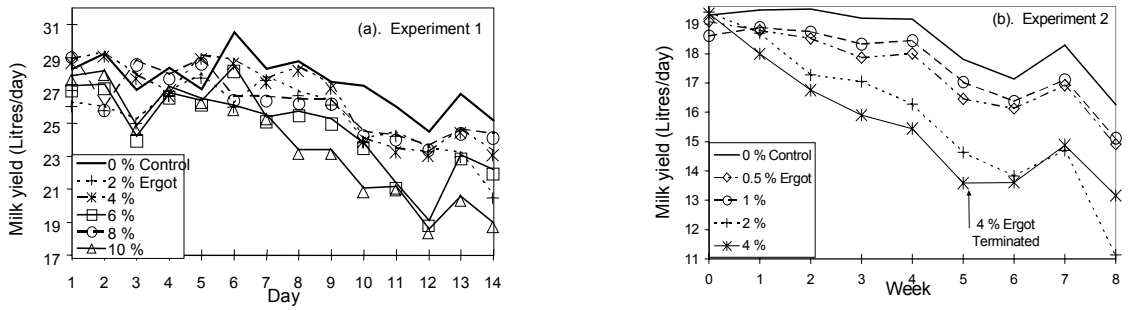

Figure 1. Effect of level of ergot in grain on milk yield of cows in early and mid lactation.

Sorghum ergot's action appears to be similar to rye ergot. It depresses milk production, either through a direct effect of decreased prolactin on mammary secretion, or indirectly by reduced feed intake. In early lactation or at high ergot levels this 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 can be severe. This work supports the limit at 0.3% sclerotia in sorghum grain for stock feed.

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