

Public Abstract

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Title:Reducing Ergovaline and Ergot Alkaloid Concentrations through Fertilizer, Herbicide and Clipping Management

Fescue toxicosis is a serious livestock disorder that limits farm income. It is linked to the neurotoxins ergot alkaloids, in particular ergovaline, produced by the fungal endophyte *Neotyphodium coenophialum* in Kentucky-31 tall fescue.

One experiment compared ergovaline and ergot alkaloid concentrations produced after a single application of poultry litter or chemical NPK equivalent fertilizer. Chemical treated forage contained more ergovaline than the poultry litter treated forage in the first year. There was no carryover effect in the second or third year.

Two experiments had plots located in Georgia, South Carolina and Missouri. In one such experiment, from April to October at all three locations regrowth ergovaline concentration in April was less than 300 microgram per kilogram dry matter. Regrowth ergovaline increased at all three locations to peak in September at greater than 800 microgram per kilogram dry matter. In the other experiment, ergovaline concentrations were low in accumulated forage and increased in early summer. It decreased during late summer and increased to peak in early autumn.

Another experiment showed a low rate application of the herbicide clethodim caused up to a 70% reduction in ergovaline in tall fescue.

Using the above field results, economic analysis predicted the clethodim treatment produced up to a 77% calving rate. It also predicted the highest average daily gain for stockers, 1.8 pound per day. Clethodim suppressed seedhead development. Because most ergovaline is located in seedheads, clethodim decreased animal exposure to ergovaline. Clethodim was estimated to have the least cost to a cattle producer.