Influence of Controlled Environmental Factors and Two Foliar Pathogens on Coumestrol in Alfalfa

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It has long been known that estrogenic substances occur in forage plants and that their occurrence may affect animal performance. As early as 1946, sheep infertility was associated with estrogenic subterranean clover (*Trifolium subterraneum* L.) in Australia (2), and the problem appeared to be greater when the soil was deficient in phosphorus (1). Naturally occurring plant estrogens have been reported to increase growth rate of sheep (13, 15). Cheng and Burroughs (6) stated that "while excessive intake of these estrogenic forages may produce adverse effects in reproduction, on the other hand, limited intake of estrogenic substances may produce beneficial effect in stimulating live weight gain similar to that produced by stilbestrol." They recommended the possibility of breeding varieties containing desired levels of estrogens.

Pieterse and Andrews (14) compared the estrogenic activity (determined by the mouse uterine weight assay) of alfalfa (*Medicago sativa* L.) cut at several stages of growth. In the first crop, there was a significant increase in estrogenicity in the early bud stage, followed by a decline in activity until one-fourth bloom. Activity then increased and remained relatively high throughout the growing season.