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EFFECTS OF COTTONSEED MEAL ON RAM FERTILITY

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Several studies (1986, 1987, 1988) at New Mexico State University have shown that cottonseed meal (CSM) or whole cottonseed (WCS) reduced semen quality ($P > .10$) and damaged spermatogenic tissues ($P < .01$) in young bulls. These findings suggested that free-gossypol content of cotton products may not be completely detoxified by rumen microbes in ruminant animals. Therefore, the potential effects of gossypol on fertility of replacement fine-wool rams was investigated, since cotton products are routinely used in their diets.

Twelve fine-wool rams, similar age (18 mo) and condition, were randomly selected and divided in two groups. One group ($n = 6$) received 12% CSM in their diet and the other group received a control diet (no source of gossypol) for 26 weeks. Semen was collected every other week and immediately evaluated throughout the study. Blood samples from individual rams were collected at three intervals (prior to treatment, 14 wk after treatment and at the end of the treatment) and analyzed for testosterone profile. One testicle was removed surgically from each animal for histological study and enzyme assay at the end of the treatment period.

Preliminary results show reduced semen quality ($P > .10$) with a high percentage of abnormal sperm observed in CSM-treated animals. Spermatogenic tissues and associated cells were damaged ($P < .01$) in rams fed CSM compared to control animals. Lactate dehydrogenase isozyme (LDH-X), a specific enzyme involved in spermatogenesis and sperm motility, was absent in the rams fed cottonseed meal. Testosterone assay indicated no difference in testosterone profile between treated rams and control rams. Serum testosterone levels were negatively influenced by gossypol in the diet.