

FEEDING WHOLE COTTONSEED TO RUMINANTS -
SOME METABOLIC CONSEQUENCES

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Whole cotton seed (WCS) is a popular feed for ruminants, particularly as a drought feed and in high grain intensive finishing diets. Questions frequently asked by producers about WCS include; what production responses can be expected; will it impair reproductive performance; and what about gossypol toxicity.

The digestibility of sorghum based high grain intensive finishing diets with varying proportions of WCS up to 30% was measured in Brahman-cross steers fed to maintenance in a replicated 4x4 latin square experiment. In addition, 12 Brahman-cross steers (350 kg LW) were individually fed similar diets to ascertain the effects of WCS on various carcass characteristics.

Although organic matter (OM) digestibility decreased from 0.82 with the 10% WCS diet to 0.75 with the 20% and 30% WCS diets, there was no decline in OM intake (5.3 to 6.5 kg/d respectively) or live weight gain (0.81 to 0.86 kg/d respectively). At slaughter, variations in carcass fat could not be attributed to the level of WCS feeding. However, the proportion of linoleate in tissue lipids did increase with WCS intake.

To test the effects of WCS on fertility, rams were fed Rhodes grass hay supplemented with 0.2 to 0.8 kg WCS/d for 12 weeks. There were no apparent changes in semen quality or in the activity of LDH isoenzymes in either semen or blood plasma. Plasma lipid concentrations were doubled by feeding any amount of WCS. The proportion of linoleate increased linearly with WCS intake in both plasma cholesteryl esters (26% in controls to 69% at 0.8 kg WCS/d; $r=0.98$) and phospholipids (14% in controls to 40% at 0.8 kg WCS/d; $r=0.98$), as did n-6 esters in semen lipids (6% in controls to 11% at 0.8 kg WCS/d; $r=0.97$). Are these results a key to the value of WCS as a drought feed?

In all the above experiments, acceptance of WCS was sometimes a problem. Several of the rams wouldn't eat WCS as their total diet unless it was garnished with molasses (0.2 kg/d). However, there was never any evidence of gossypol toxicity. We have investigated deaths in a number of commercial feedlots where WCS was fed as a component of diets. In every case, deaths occurred in 6 to 9 month old weaner calves. Although certain pathologies were symptomatic of gossypol toxicity, this was never diagnosed as the primary cause of death.

In our experience, WCS can be used without detriment to at least 20% in intensive finishing diets, as a total feed during drought it won't upset Cecil's libido and may even sustain it, but be cautious when feeding WCS to young stock.

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