ABSTRACT BOOK

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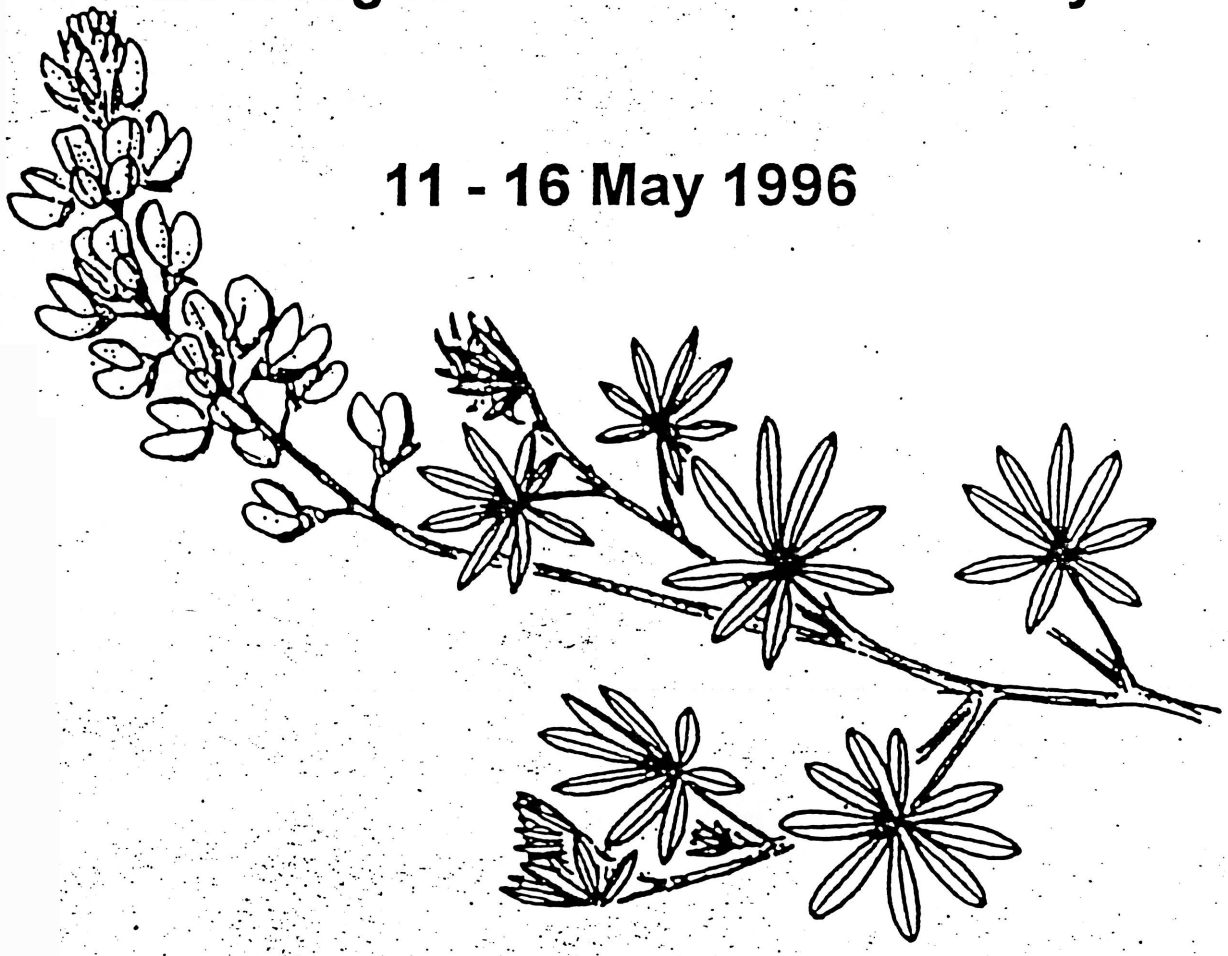

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ABSTRACT

LUPINS IN RUMINANT DIETS

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Lupins (*Lupinus* sp) have been fed as either grain or forage to different ruminants throughout the world. Sweet white lupin (*L. albus* L.) seed has potential as a protein-energy feed with a moderate crude protein (30-35%) and fiber [acid detergent fiber (ADF), 14-18%; neutral detergent fiber (NDF), 21-25%] content with energy values similar to soybean (*Glycine max* L. Merr.) meal. Decreased dry matter (DM) intake have occurred in both dairy and beef cattle as well as decreased milk production in dairy cattle when soybean meal was replaced with raw lupin seeds as the protein source. In studies in which 75-100% of soybean meal was replaced with lupin seed, similar intakes and production values were obtained. Different results with seeds have been attributed to particle size as grinding lupins has improved milk production. Decreased milk protein may occur when cows are on lupin grain diets. Lupin seed ruminal degradation is high (>60%), but protein supplements of low degradability are considered desirable for maximum amino acid availability. Heat treatment decreases the ruminal digestion of the protein in lupin seed and increases the total amino acid flow to the duodenum. Studies indicate that heat treatment is not always consistent in improving performance for beef or dairy cattle. Whole plant lupin may be a very benefical forage source, but information on this aspect is sparse. Grazing lupins has been successful with sheep (*Ovix aries*) and subjective observations indicate deer (*Odocoileus virginianus*) relish lupins but grazing limits management options. Silage is a good option resulting in high yields (20.2-33.6 Mg/ha of 35% DM silage). Ensiling is a challenge because of the high moisture content of the whole plant (71-78%), slow moisture loss from the stem coupled with leaf abscission and the difficulty in determining the optimum maturity for harvest which affect ensiling properties and nutrient values. The pH of lupin silage decreases rapidly and develops a desirable volatile fatty acid content when ensiled in laboratory silos. Reported whole plant (silage) values are: protein, 12-18%; soluble protein, >55%; ADF, 33-38%; NDF, 38-48% and DM digestibility, 56.0-66.5%. Beef cattle fed lupin silage had similar gains as those on grass silage. Milk production and feed intake were similar for cows receiving total mixed rations with either lupin or corn silage as the base. Initial data with an ongoing study indicate satisfactory intake of lupin silage and similar milk production when compared to low quality corn silage. Lupin provides an excellent opportunity for high quality forage, but further evaluations are needed.