

EVALUATION OF WILD SUNFLOWER (*TITHONIA DIVERSIFOLIA*) AS A PROTEIN SUPPLEMENT FOR GROWING DAIRY GOATS IN WESTERN KENYA

Wambui Caroline Celina (MSs. 2005)

Egerton University

Supervisor: Prof. S.A. Abdulrazak

Egerton University

Abstract

Two studies were carried out to evaluate the nutritive value of *Tithonia diversifolia* (World sunflower) as a protein supplement for growing dairy goats at Bukura Agricultural College in Western Province of Kenya. The first study evaluated the chemical composition of *Tithonia* and effect of feeding graded levels of the foliage as a supplement to urea sprayed maize stover (USMS) on intake, digestibility and live weight gains of growing dairy goats. Fifteen crossbred bucks (German Alpine X Small East African) were used in a completely randomised design for duration of 7 weeks. The treatments, a control: the basal diet (maize stover sprayed with 1% urea) plus 100g maize germ was offered alone or supplemented with T1: 10, T2: 20; T3: 30 or T4: 40% *Tithonia* on dry matter basis. All animals were allowed free access to water and mineral lick. Supplementing USMS with *Tithonia* resulted in increased total DM intake ($P<0.05$) from 376.7 (control), to 444.1 (T1), 533.1 (T2) 519.7 (T3) and 578.9 g/day (T4). This was an equivalent of 18, 42, 38 and 54% increase from the control treatment. Supplementation significantly increased average daily gains (ADG) ($P<0.05$). T4 had the highest gains (43.8 g/day), though not statistically different from T3 (35.7g/day). It was concluded that the higher level of inclusion (40%) could be used for higher total output in terms of meat but with few animals.

In the second experiment, the aim was to compare the effect of *Tithonia* with *Calliandra* and *Sesbania* as supplement to urea treated maize stover (UTMS) on intake, digestibility, and live-weight changes on growing dairy goats. Sixteen goats averaging one year and weighing 11.7 ± 1.8 kg were used in a CRD for 7 weeks. The basal diet, UTMS plus 100g of maize germ

was offered alone (control) or supplement with 30% on DM basis of *Tithonia*, *Calliandra* and *Sesbania*. The intake of the basal diet was not significantly ($P < 0.05$) affected by supplementation with browse foliage but resulted in significant ($P < 0.05$) increase in total DM intake, diet digestibility and nitrogen retention compared to the control. Nitrogen retention was 2.1, 4.4, 1.1 and, 5.0 g/day for control, *Tithonia*, *Calliandra* and *Sesbania* respectively. Supplementation significantly ($P < 0.05$) increased the ADG from 20.9g/day for the control to 82.7, 57.1, and 39.3g/day for *Tithonia*, *Calliandra* and *Sesbania* respectively. *Tithonia* has potential as a protein supplement and could be used as a an alternative to multipurpose tree legumes in growing goats fed with low quality basal diets.