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Evaluation of *Leucaena Leucocephala*, *Caliandra Calothyrsus*, *Gliricidia Sepium* and *Sesbania Sesban Leaves* as Basal Feeds for Growing Rabbits (*Oryctolagus cunniculus*)

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Abstract:

Effect of multipurpose legume plants (MPTs); Leucaena Leucocephala (Ll), Caliandra calothyrsus (Cc), Gliricidia sepium (Gs) and Sesbania sesban (Ss) on Dry Matter Intake (DMI), Body Weight(BW) and Growth Rate(GR) of growing rabbits was evaluated. Six female (6) and two(2) male crossbred rabbits with an average weight of 2.12kg were fed wilted leaves of Ll, Cs, Gs and Ss in a 2, 4 x 4 Latin Square Design(LSD) with four feeding periods lasting fifteen(15) days. Each rabbit was offered 50g of broiler starter between 06.00 and 12.00hours daily and 100g of wilted leaves of the test feed between 12.00 and 06.00hours the following morning in each of the four feeding periods. The effect of feed type on DMI was highly significant ($p<0.01$). Rabbits consumed higher (48g) levels of Ll followed by Gs (40g) and then Cc (24g) per day. The daily DMI of Ss (17g) was the lowest among the four test feeds. BW and GR were significantly ($P<0.01$) higher for Ss (2.56kg) and (45g) respectively. Results of this study indicate that Ll was the most preferred among the four feeds, followed by Gs while Ss was the least preferred. Results of this study have shown that rabbits would prefer Ll when fed in a cafeteria system with Cc, Gs and Ss. However, if a farmer has an

objective of achieving higher GR, then Ss should be used.

Key words: Multipurpose Legume Trees; Dry Matter intake; Body Weight; Growth rate; Chemical Composition; Rabbit

Introduction

Rabbit production in Zambia has received little attention from both farmers and researchers inspite of their high productivity. According to FAO (1978), 85% of the world's protein source will be obtained from pork, chicken and rabbits by the year 2000. Rabbits thus have an important role to play in the provision of meat. They are small animals requiring low initial investment and are the most efficient convertors of feed into proteins next only to broilers (Kiwuwa 1994).

Rabbits are most competitive compared to other sources of animal protein because they survive well on forages rather than expensive grain-based diets. Other advantages of rabbits are that they grow rapidly and have higher yields of good quality meat (Reddy et al. 1977; Schlolaut 1982). Furthermore, rabbits have a good meat-to-bone ratio compared with other livestock, high in protein, low in fat and a mineral percentage higher than all other meats (MAFF 1978; Hunt 1980; Schlolaut 1982).

Although the total meat supply from rabbits is difficult to quantify, it is a delicacy for most Zambians. Therefore, the rabbit seems to have good potential as a meat producing animal in this country especially when its prolificacy and growth rate are considered.

Rabbit meat production has been promoted in Zambia since early 1960s. However, rabbit meat production is not very popular largely because of lack of knowledge on type and nutritive value of the available feed resources which may be used in rabbit feeding, especially during the dry season. Forage and crop by-products have for a long time been the basis for rabbit feeding in many parts of the world (Kiwuwa 1981). In

Zambia, there is a wide variety of tropical legumes and other forage plants which have potential as feeds for rabbits but are normally not used by farmers due to limited information concerning their nutritive value. Most plants are not toxic and could supply nutrients and satisfy the nutrient requirements of rabbits and crude protein is highest for *Leucaena leucocephala* (24.76%) (Obua, Okocha and Nwaoha 2012). Fielding (1991) established that multipurpose trees are high in crude protein and gross energy when compared to non-legume forages such as *Bidens pilosa* and *Pennisetum purpureum* which are commonly fed to rabbits. The same worker further reported that multipurpose trees (MPTs) increased nitrogen available to rumen and caecal microbes, increased rate of passage of particulate matter by 23-53% and of liquid matter by 9-43%.Work at ILRI on evaluation of MPTs demonstrated that type, form and quantity of forage affect microbe-MPT interactions and consequently the utilisation of the basal diet (Osuji and Odenyo 1997).

The most suitable feeding system for small scale rabbit producer is the semi-intensive system where forages are supplemented with concentrate feeds for maximum rabbit production (Fielding, 1991). In many cases, however, forages have been fed individually due to lack of knowledge on suitable feed combinations. In the system of combined feeding of roughage and concentrate, only the amount of concentrate is varied. Such a feeding regime helps in reducing the effects of toxic substances (e.g. mimosine) found in forages such as *Leucaena* by gradually increasing the proportion of concentrates. In general, natural feed stuffs contain most of the nutrients required by rabbits; but, do not meet rabbit nutrient requirements when offered individually. By mixing together feed stuffs of different nutrient composition, rations that can meet the needs of the animal can be provided, rather than with single feed stuffs (Mtimuni 1995).

Voluntary feed intake in rabbits appeared to be mostly regulated by physical factors such as fiber (Pari-Bini and Xiccato 1993). As a simple-stomached animal, the rabbit can utilise low-fiber diets with high efficiency. However, low-fiber diets were generally associated with increased incidences of digestive disturbance, which were frequently lethal for the growing rabbit (Gidenne 1996). This antagonism between feed efficiency and the health status of the animal constitutes one of the main problems for rabbit nutrition. It could be solved through a better understanding of the nutritional role of the dietary fiber. The level as well as the type of fiber could affect digestion and faecal microbial activity (CMA) (Bellier and Gidenne 1996). Gidenne et al 1998, found that improvement in fiber content helped to increase feed intake in rabbits from 60g/day to 76.94g/day.

One of the main challenges for an accurate assessment of optimum dietary nutrient levels and for predicting animal performance was the estimation of feed intake (NRC, 1997). This was because feed intake appeared to be highly variable between different groups of animals even if these animals were at the same stage of production. Feed composition was one of the main factors that affected feed intake (Vestergaard et al. 2000). Phenolic compounds reduced intake of feed by decreasing palatability or by negatively affecting digestion. Fortun-Lamothe and Gidenne (2000) observed that feed intake for growing rabbits ranged between 60g/day and 78.1g/day, while Prasad and Karim (1996) reported dry matter intake of 94.5g/day amounting to 3.2% of the body weight in rabbits.

Multipurpose Fodder Trees (MPTs) such as *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban* could provide the required food resources during the dry season. These MPTs both exotic and indigenous have been found to grow easily in most parts of Zambia and remain green throughout the year and hence ensure a continuous and reliable supply of alternative source of feed for

rabbits (Kwesiga and Chisumpa 1992). Fielding (1992) established that multipurpose trees are high in crude protein and gross energy when compared to non-legume forages such as *Bidens pilosa* and *Pennisetum purperium* which are commonly fed to rabbits. Cheeke (1987) stated that in addition to being excellent sources of protein, some of these green feeds are good sources of phosphorus, calcium, potassium and indigestible fibre.

The National Research Council of Nigeria (1994) reported that rabbits utilize green feeds efficiently and that under ideal conditions can grow so rapidly that their rate of gain is only slightly lower than that of broiler chickens. Cheeke (1984) reported that rabbits fed on a mixture of forages perform better because such a mixture is normally able to supply the requirements of proteins, minerals, vitamins and energy. Pote et al. (1981) observed that supplementation with greens reduced the amount of pelleted feed to about 50% without adversely affecting growth.

The purpose of the study was to evaluate the potential of perennial multipurpose fodder legume trees as basal feed for rabbits.

The specific objectives of the study were:

(a) To determine intake of *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban.*

(b) To determine body weight gain of rabbits fed wilted leaves of *Leucaena leucocephala*, *Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban.*

(c) To determine the growth rate of rabbits fed wilted leaves of *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban* as basal feeds.

Materials and Methods

Study site

The study was conducted at the University of Zambia, School of Agricultural Sciences Research Station. The study area was located between 15° 24' 29'S latitude and 28° 17'10'E longitude. The area lay 1257 m above sea level.

Animals and diets

Eight (8) cross-bred (6 females and 2 males) rabbits purchased as weanlings were used in the study. The average age and weight of the rabbits at the start of the experiment were 6 weeks and 2.12kg respectively. The diet consisted of Broiler Starter concentrate diet and *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban* as experimental forage diets. Forage feeds were wilted before being fed to rabbits.

Housing and Feeding Trial

The rabbits were housed individually in wooden cages measuring 104 x 52 x 104 cm. The eight rabbits in two groups of four(4) rabbits comprising three (3) females and one (1) male were randomly allotted to four (4) cages in a 2, 4 x 4 Latin Square Design.

Rabbits in each Latin Square were allotted to the four (4) cages by picking lots. The four (4) test feeds were randomly assigned to the rabbits in each Latin Square such that each rabbit had an opportunity to feed on each of the four wilted leaf meal once during the study period. Clean water and food were provided to each rabbit everyday using drinkers and feeders mounted in each cage. The experimental feeds (*Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban*) were harvested fresh and then wilted before being offered to the rabbits. The study was conducted over four (4) periods each lasting 15 days. The first ten (10) days of each

period were used as adaptation period and data collection was done in the last five (5) days of each experimental period. After each period the test feeds were re-randomized and re-assigned to the rabbits for another 15 days.

Every morning at 6 o'clock rabbits were offered 50g of Broiler Starter. The Broiler Starter diet was removed at 12 o'clock after the weight of the remains was recorded. Hundred (100g) of the test feeds were weighed and offered to rabbits according to allotment. The rabbits were fed the test feeds from 12 o'clock to 6 o'clock the following day. The remaining feed in feeders was weighed, placed in plastic bags, labelled and stored as weighbags in a freezer at 4^{o}C. The difference in amounts of feed offered and the weighbags was determined as the daily intake of each feed. Daily body weights of the rabbits were recorded during the last five (5) days of the recording period.

Proximate Analysis

After wilting a sample of each of each feed was collected in a plastic bag and immediately stored in a freezer at 4^{o}C to prevent further physiological changes. These representative samples were thawed, dried and pooled. Representative samples of each test feed were selected and ground to pass through a 2mm sieve. The ground samples of the test feeds were analysed for Crude Protein (**CP**), Dry Matter (**DM**), Neutral Detergent Fibre (**NDF**), Acid Detergent Fibre (**ADF**), Calcium (**Ca**) and Phosphorus (**P**) using the methods outlined in the AOAC (1970).

Results

Table 1: Average Body Weight, Dry Matter Intake and Growth rate of Rabbits fed *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban*

FEED TYPE[1]	BWT[2] (Kg)	DMI[3] (g)	GR[4] (g)
Ll	2.31	236	50
Gs	2.37	200	64
Cc	2.35	112	100
Ss	2.57	86	289

Ll=Leucaena leucania, Gs=Gliricidia sepium, Cc=Caliandra calothyrsus, Ss=Sesbania sesban, BWT=Body Weight, DMI=Dry Matter Intake, GR= Growth Rate

The effect of feed type on body weight change across the four periods was highly significant (P<0.01) (Table 2). The body weight of the rabbits fed *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus and Sesbania sesban* were 2.31kg; S.E=±0.71, 2.37kg; S.E=±0.73, 2.35kg; S.E=±0.71 and 2.57kg; S.E=±0.79 respectively (Table 3). Thus on average *Sesbanias sesban* had the highest (P<0.01) positive effect on body weight followed by *Caliandra calothyrsus* and then *Gliricidia sepium* while *Leucaena leucocephala* had the least positive effect (Table 3).

Table 2: Analysis of Variance for Body Weight

Source of Variation	DF	SS	MS	F-Value	Pr>F
Square	1	9.64702812	9.64702812	82.27*	0.0001
Period	3	0.95485938	0.31828646	2.75	0.0795
Diet	3	7.34203437	2.44734479	21.13*	0.0001
Animal	6	0.85169375	0.14194896	1.23	0.3472
Error	17	1.73769687	0.11584646		
Total	30	20.61754687			

**=Significant (P<0.01), DF=Degrees of freedom, Ss=Sum of Squares, Ms=Mean Square, Pr=Probability value, CV=2.67%*

Table 3: LSmeans for Body Weight(Kg) of rabbits fed *Leucaena leucocephala*, *Gliricidia sepium*, *Caliandra calothyrsus* and *Sesbania sesban*

Source of Variation	n	LSmeans	Stderr
Ll	2	2.31	0.71
Gs	2	2.37	0.73
Cc	2	2.35	0.73
Ss	2	2.57	0.79

Ll=Leucaena leucania, Gs=Gliricidia sepium, Cc=Caliandra calothyrsus, Ss=Sesbania sesban, BWT=Body Weight, DMI=Dry Matter Intake, GR= Growth Rate

There was a highly significant (P<0.01) effect of feed type on dry matter intake (Table 4).When averaged across periods, daily dry matter intakes for *Leucaena leucocephala*, *Gliricidia sepium*, *Caliandra calothyrsus* and *Sesbania sesban* were 47g, 40g, 24g and 17g respectively. *Leucaena leucocephala* was the most preferred among the four feeds.

Table 4: Analysis of Variance for Feed Intake

Source of Variation	DF	SS	MS	F-Value	Pr>F
Square	1	0.01620000	0.01620000	8.31	0.0114
Period	3	0.00912500	0.00304167	1.56	0.2402
Diet	3	0.11727500	0.03909167	20.06*	0.0001
Animal	6	0.04080000	0.00680000	3.49	0.0231
Error	17	0.02922500	0.00194833		
Total	30	0.21600000			

**=Significant(P<0.01), DF=Degrees of freedom, Ss=Sum of Squares, Ms=Mean Square, Pr=Probability value CV=26.60%*

When evaluated across squares and rabbits total average feed intakes for *Leucaena leucocephala*, *Gliricidia sepium*, *Caliandra calothyrsus* and *Sesbania sesban* were 236g; S.E=±3, 200g; S.E=±2, 112g; S.E=±3 and 86g; S.E=±3 respectively (Table 5)

Table 5: LSmeans for Feed Intake (Kg) of rabbits fed *Leucaena leucocephala*, *Gliricidia sepium*, *Caliandra calothyrsus* and *Sesbania sesban*

Source of Variation	n	LSmeans	Stderr
Ll	2	236	1.30
Gs	2	200	0.12
Cc	2	112	1.03
Ss	2	86	0.03

Ll=Leucaena leucania, Gs=Gliricidia sepium, Cc=Caliandra calothyrsus, Ss=Sesbania sesban, BWT=Body Weight, DMI=Dry Matter Intake, GR= Growth Rate

Feed type had a highly significant (P<0.01) effect on growth rate (Table 6). The average growth rate of rabbits fed *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban* 50g/day; S.E=±4, 64g/day; S.E=±3, 100g/day; S.E=±5 and 289g/day; S.E=±2 respectively (Table 7). Growth rates were highest (289g/day; S.E=±2) when rabbits were fed *Sesbania sesban* and lowest (50g ±4/day) when rabbits were fed *Leucaena leucocephala*. Growth rate for rabbits fed *Sesbania sesban* was highest, yet the dry matter intake for this feed was the lowest. Conversely, dry matter intake for *Leucaena leucocephala* was highest, yet body weight and growth rate for rabbits fed this feed were lowest.

Table 6: Analysis of Variance for Growth Rate

Source of Variation	DF	Ss	Ms	F-Value	Pr>F
Square	1	0.00427813	0.00427813	0.86	0.3695
Period	3	0.02978437	0.00992812	1.99	0.1594
Diet	3	0.15053438	0.05017813	10.04*	0.0007
Animal	6	0.03591875	0.00598646	1.20	0.3596
Error	17	0.07497187	0.00499812		
Total	30	0.29992187			

**=Significant(P<0.01), DF=Degrees of freedom, SS=Sum of Squares, MS=Mean Square, Pr=Probability value CV=58.55%*

Table 7: LSmeans for Growth Rate(Kg) of rabbits fed *Leucaena leucocephala*, *Gliricidia sepium*, *Caliandra calothyrsus* and *Sesbania sesban*

Source of Variation	n	LSmeans	Stderr
Ll	2	50	0.14
Gs	2	64	0.33
Cc	2	100	0.05
Ss	2	289	1.02

Ll=Leucaena leucania, Gs=Gliricidia sepium, Cc=Caliandra calothyrsus, Ss=Sesbania sesban, BWT=Body Weight, DMI=Dry Matter Intake, GR= Growth Rate

Proximate analysis results (Table 8) indicated that dry matter content was highest (89.75%) for *Sesbania sesban* and lowest(87.68%) for *Leucaena leucocephala*. Crude protein ranged from 18.12% and 23.24% for *Caliandra calothyrsus* and *Gliricidia sepium* respectively. The lowest Neutral Detergent Fibre (NDF) and Acid Detergent Fibre (ADF) were both lowest (16.92% and 10.50% respectively) in *Sesbania sesban*. Neutral Detergent Fibre was highest (34.76%) in *Gliricidia sepium* while Acid Detergent Fibre was highest (25.36%) in *Leucaena leucocephala*. Calcium was highest (1.78%) and lowest (1.01%) in *Leucaena leucocephala* and *Caliandra calothyrsus* respectively while Phosphorus was highest (0.20%) in *Caliandra calothyrsus* and lowest (0.18%) in *Leucaena leucocephala* and *Gliricidia sepium*.

Table 8: Chemical Composition of Wilted leaves of *Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban*

FORAGE	DM(%)	CP(%)	NDF(%)	ADF(%)	Ca(%)	P(%)
Ll	87.68	21.58	33.73	25.36	1.78	0.18
Gs	88.71	23.24	34.76	20.84	1.44	0.18
Cc	88.30	18.12	22.30	19.46	1.01	0.20
Ss	89.75	21.27	16.92	10.50	1.39	0.16

Ll=Leucaena leucania, Gs=Gliricidia sepium, Cc=Caliandra calothyrsus, Ss=Sesbania sesban

Discussion

The highly significant (P<0.01) dry matter intake observed in rabbits fed *Leucaena leucocephala* and *Gliricidia sepium* (Table 4) are in agreement with the findings of Cheeke (1987) who established that on a dry matter basis rabbits consume more of *Leaucaena* leaves than *Gliricidia* leaves suggesting that *Leucaena* is more palatable.

In a cafeteria type of feeding, *Sesbania sesban* was found to be less preferred than either *Leucaena leucocephala* or *Gliricidia sepium* (Fielding 1991). The highly significant (P<0.01) dry matter intake observed in rabbits fed *Leucaena leucocephala* can be attributed to differences in Crude Fibre content (Table 8). Neutral Detergent Fibre is an index of gut fill and is used to predict voluntary feed intake (Jurgens 1988). The higher the fibre content, the higher the dry matter intake.

Results of this study are in agreement with those reported by Spreadbury (1978) and Evans (1981) who established that rabbits tend to eat more food when diets offered are high in Crude Fibre and Crude protein. Mtenga and Laswai (1994) also reported that rabbits eat more of *Leucaena* leaves than *Gliricidia* leaves. They further established that though *Gliricidia sepium* is least preferred when compared to *Leucaena leucocephala*, *Gliricidia*-fed rabbits had a better weight gain than *Leucaena*-fed rabbits.

Though *Leucaena leucocephala* is preferred by rabbits, results of this study indicate that *Leucaena leucocephala* reduces rate of weight gain. Results observed in this study are in agreement with those reported by Onwundike (1992) where *Leucaena leucocephala* was found to reduce rate of weight gain compared to *Gliricidia sepium* when fed at higher rates of

incorporation. Conversely, *Sesbania sesban* although least preferred has been found to promote growth rate.

D'Mello and Taplin (1978) observed that *mimosine* is the factor that causes poor growth rate in *Leucaena*-fed rabbits. Results of the present study have shown that use of *leucaena leucocephala* as basal feed to supply all the green feed needed by rabbits leads to reduced growth rate although *Leucaena leucocephala* is preferred when offered with *Gliricidia sepium, caliandra calothyrsus* and *Sesbania seban* in a cafeteria system. According to Goering and Van Soest (1970) the lower the Neutral Detergent Fibre and Acid Detergent Fibre the more easily available the nutrients are for assimilation in a given green feed. This suggests that although *Leucaena leucocephala* and *Gliridia sepium* were preferred they had poor influence in body weight and growth rate because they are not easily digestible due to high fibre content. Furthermore, it was observed in this study that rabbits fed *Leucaena leucocephala* passed brownish urine. These observations may also be attributed to the presence of growth inhibitors (Evans 1981). *Leucaena leucocephala* contains the toxic amino acid *mimosine*, which has been shown in some animals to cause poor growth and alopecia (D'Mello and Taplin, 1978). Fayemi et al. (2011) observed that rabbits fed diets containing 20% Sun dried *Leucaena leucocephala* leaves had alopecia, necrotic spots, liver congestion, edema and highest percentage mortality. These workers also reported that diets containing more than 1% of mimosine and tannin impaired the growth performance and had deleterious effects on the liver of rabbits. Manoji et al, (2007) indicated that inspite of being an excellent source of nutrients *Leucaena leucocephala* forage as well as seed contains a number of toxic constituents which severely limit livestock performance. They further found out that tannin concentrations are higher in leaf meal than in seed and that these toxins reduce digestibility of proteins and results in marked low metabolizable value of Leucaena leaf meal in poultry.

Similarly, the poor growth rates observed when rabbits are fed *Gliricidia sepium* may be attributed to the presence of some potentially toxic substances such as *Coumarin*, *O-coumaric acid* and *Hydrocyanic acid*. These substances have been isolated from various parts of *Gliricidia sepium* (Griffitts, 1962). These anti-nutritional factors inhibit normal processes of enzyme functioning on feeds.

Higher (>10%) incorporation of *Leucaena* Leaf Meal in broiler marsh have been shown to reduce growth rate and results in poor utilization of feed (Rosa and Springhall 1963). *Mimosine* content of *Leucaena leucocephala* is 4.5% (3.5% on dry weight basis of protein). Heating the leaves or adding Ferrous Sulphate reduces the *mimosine* or its toxicity (Mtenga 1978). Work by Cheeke (1987) and Onwundike (1992) suggested that *Gliricidia sepium* was a better green feed than *Leucaena leucocephala* but was not a common legume in many places. These same workers recommended that *Leucaena leucocephala* should not constitute more than 50% of the green feed given to rabbits (or more than 7% of the feed dry matter). Work by Fielding (1991) showed that in a cafeteria type of feeding, *Sesbania sesban* was found to be less preferred (17g DM/day) than either *Leucaena leucocephala* (80g DM/day) or *Gliricidia sepium* (40g DM/day). Onwundike (1992) showed that the use of *Leucaena leucocephala* as the sole green feed reduced the rate of gain and efficiency of feed utilisation compared to *Gliricidia sepium* or a diet with no green feed. Results of this study are in agreement with those of Onwundike (1992) who showed that reduced rate of grain and feed efficiency was attained although rabbits ate larger amounts of *Leucaena leucocephala* than *Gliricidia sepium*.

Results of today's work support those of Mtenga and Laswai (1995) who observed that more than 40% *Leucaena* inclusion in rabbit diets caused loss of hair (alopecia) and weight as well as cracked feet. *Leucaena*-fed-rabbits produced reddish-brown urine and serious degenerative changes in their

kidney as compared to *Glicidia*-fed-rabbits (Mtenga and Laswai 1995).

Conclusion

Results of this study revealed that rabbits would prefer *Leucaena leucocephala* when offered with *Gliricidia sepium*, *Caliandra calothyrsus* and *Sesbania sesban* in a cafeteria type of feeding. The study has further indicated that the most preferred feed is not necessarily the most nutritious. *Sesbania sesban* was the least preferred feed by rabbits, however higher growth rates and body weights were recorded when rabbits were fed on *Sesbania sesban*. Conversely, *Leucaena leucocephala* was the most preferred among the four feeds, but it had a negative effect on weight gain and growth rates.

Results of the present study suggest that *Sesbania sesban* may be used as a sole diet in rabbit feeding. However, more information is required to establish the aspect of intake and associated growth rates. Evaluation of the chemical composition of *Sesbania sesban* and identifying the possible anti-nutritional factors is necessary to justify its use as a rabbit feed. The study further showed that *Leucaena leucocephala* and *Gliricida sepium* are high fibre containing feeds when compared to *Caliandra calothyrsus* and *Sesbania sesban*. Consequently, *Leucaena leucocephala* and *Gliricidia sepium* are low in digestibility yet high in dry matter intake.

With reference to chemical composition(Table 8) and intake (Table 4) it can be concluded that dry matter intake and growth rate differences observed in the four feeds are due to differences in Crude Fibre (NDF and ADF), Crude Protein (CP) and mineral content (Ca and P).

Given the four feeds (*Leucaena leucocephala, Gliricidia sepium, Caliandra calothyrsus* and *Sesbania sesban*) farmers should use *Sesbania sesban* for better rabbit performance.

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