



# Evaluation of alternative feed resource in milk yield and milk quality of Lactating West African Dwarf goats

Ibhaze, G.A., Ogunjemite, G. E., Adebayo, O.A.,  
Department of Animal Production and Health, Federal University of Technology,  
Akure, P.M.B. 704, Ondo State, Nigeria



## Introduction

- Goats have been found to be alternative source of milk to cow.
- However, dry season feeding is a major challenge to ruminant farmers and these animals as this results in their low productivity (meat and milk), death and economic loss to the farmer. (Ibhaze *et al.*, 2020).
- Hence, the need to search for alternative sustainable feed resources in circumventing this occurrence

## Materials and Methods

- The study was carried out in the small ruminant unit of the Teaching and Research Farm of the Federal University of Technology, Akure, Ondo State, Nigeria.
- Akure is located on longitude 4.944055°E and 5.82864°E, and latitude 7.491780°N with annual rainfall ranging between 1300 and 1650 mm and annual daily temperature ranging between 27° and 38° C (Daniel, 2015).
- Four experimental diets were prepared from cassava peel (CsP)-*Gmelina arborea* (GML) leaves as silage at varying proportions (100GML, 90GML+10CsP, 70GML+30CSP and 50GML+50CSP) and fed to sixteen West African Dwarf (WAD) does to evaluate their intake, milk yield and milk constituents.
- The does were divided into four (4) groups of four animals per group as each animal served as a replicate for each treatment in a completely randomized design (CRD). The experiment lasted for 56 days
- Data obtained were subjected to analysis of variance and means were separated by Duncan's multiple range tests using the SPSS (2012) version 21 procedures

## Results

**Table 1: Chemical Composition of Cassava peel-*Gmelina arborea* Leaves Silage**

Parameter	Diets				SEM
	100GML	90GML+ 10 CSP	70GML+ 30 CSP	50GML+ 50 CSP	
Dry matter	26.43 <sup>c</sup>	26.25 <sup>c</sup>	28.54 <sup>b</sup>	30.75 <sup>a</sup>	3.24
Crude protein	13.93	13.46	13.14	12.11	1.87
Crude fibre	34.79 <sup>a</sup>	32.56 <sup>b</sup>	29.62 <sup>c</sup>	29.31 <sup>c</sup>	3.68
Ether extract	4.34	4.09	4.12	4.23	0.12
Ash	5.87 <sup>b</sup>	6.34 <sup>ab</sup>	7.21 <sup>a</sup>	5.99 <sup>b</sup>	0.25
Neutral detergent fibre	41.39 <sup>a</sup>	38.67 <sup>b</sup>	31.51 <sup>c</sup>	27.45 <sup>d</sup>	5.34
Non-structural carbohydrate	34.47 <sup>d</sup>	37.44 <sup>c</sup>	44.02 <sup>b</sup>	50.22 <sup>a</sup>	5.75
Nitrogen free extract	41.07	43.55	45.91	48.36	5.23
Acid detergent fibre	35.38 <sup>a</sup>	24.67 <sup>b</sup>	22.85 <sup>c</sup>	20.98 <sup>d</sup>	4.81
Acid detergent lignin	40.63 <sup>a</sup>	35.45 <sup>b</sup>	31.52 <sup>c</sup>	26.87 <sup>d</sup>	5.24
Calculated ME (Kcal/g)	2314.47	2365.15	2439.86	2498.75	

## References

- Ibhaze, G.A., Ogunmola, A.T., Ogunjemite, G.E. (2020). Assessment of silage quality of phytogenic fortified feed samples in mini-silos for ruminants. *Acta fytotechn zootechn*, 23 (1): 24–28
- Daniel, O.A. (2015) Urban extreme weather: a challenge for a healthy Living environment in Akure, Ondo State, Nigeria. *Climate*, 3(4): 775 – 791.
- SPSS Inc. Statistical package for the social sciences SPSS version (2012.), 21 for Windows. Chicago, IL.

## Results Continued

**Table 2: Feed Intake, Milk yield and Feed conversion ratio of Lactating WAD goats Fed Cassava peel - *Gmelina arborea* Leaves Silage**

Variables	Diets				SEM
	100GML	90GML+ 10 CSP	70GML+ 30 CSP	50GML+ 50 CSP	
Silage intake (g/day)	289.23 <sup>d</sup>	335.56 <sup>c</sup>	475.21 <sup>b</sup>	520.96 <sup>a</sup>	2.14
Concentrate intake (g/day)	150.00	150.00	150.00	150.00	3.21
Total feed intake (g/day)	439.23 <sup>c</sup>	485.56 <sup>c</sup>	625.21 <sup>b</sup>	670.96 <sup>a</sup>	4.35
Dry matter intake (% BW)	2.65 <sup>c</sup>	3.45 <sup>b</sup>	3.89 <sup>b</sup>	4.25 <sup>a</sup>	0.32
Milk yield (g/day)	192.89 <sup>d</sup>	214.02 <sup>c</sup>	282.20 <sup>b</sup>	323.51 <sup>a</sup>	21.03
Feed conversion ratio (intake/milk yield)	2.28 <sup>a</sup>	2.26 <sup>a</sup>	2.21 <sup>b</sup>	2.07 <sup>c</sup>	0.05

**Table 3 : Milk Constituents of Lactating WAD goats Fed Cassava peel - *Gmelina arborea* leaves silage.**

Variables	Diets				SEM
	100GML	90GML+ 10 CSP	70GML+ 30 CSP	50GML+ 50 CSP	
Total solid	13.18	13.00	12.95	13.09	0.47
Protein	3.86	3.82	3.65	3.57	0.18
Fat	4.32	4.02	4.21	4.22	0.23
Lactose	4.11	4.33	4.30	4.59	0.16
Ash	0.89	0.83	0.79	0.71	0.07
Protein/ Fat ratio	0.89	0.95	0.86	0.84	0.06
Solid- not –fat	8.86	8.98	8.74	8.87	0.19
Milk energy (MJ/Kg)	3.24	3.16	3.18	3.21	0.14
Calcium ( mg/100g)	113.45	129.56	134.23	133.21	3.02
Potassium	148.38	158.45	150.34	152.62	3.45
Phosphorus	88.55	95.45	93.74	94.42	2.12
Magnesium	13.68	14.76	15.21	15.87	0.31
Sodium	55.34	51.82	49.67	57.32	1.85
Zinc	0.31	0.38	0.35	0.31	0.21

**Table 4: Correlation Coefficient of milk yield and milk constituents of West African does fed cassava peel - *Gmelina arborea* leaves silage.**

Variables	Milk yield	Protein	Fat	Lactose	Total solid	Ash	Solid –not-fat	Milk Energy
Milk yield	1.00							
Protein	-0.35*	1.00						
Fat	-0.48*	0.62*	1.00					
Lactose	-0.51*	-0.10	0.12	1.00				
Total solid	-0.29*	0.71*	0.59*	0.52	1.00			
Ash	-0.39*	-0.23	-0.42	-0.47	0.56	1.00		
Solid-not-fat	-0.45*	0.63	-0.67	0.62*	0.45	0.71*	1.00	
Milk Energy	-0.35*	0.74	0.78	0.74	0.59	0.42	0.23	1.00

## Conclusion

•Results showed that incorporating Cassava peel at equal proportion with *Gmelina arborea* (50:50) leaves could sustain milk production in West African Dwarf goats