

## AGRO-INDUSTRIAL BY-PRODUCTS UTILISATION FOR SHEEP AND GOATS PRODUCTION IN OSUN STATE

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### ABSTRACT

Sheep and goats enterprise has been found to sustain economic growth and alleviate poverty among the farmers but inadequate feedstuff has posed a threat to their production beyond subsistence level. Therefore, this study investigated the agro-industrial by-products used by households and farmers in Osun State. Information on socio-economic background and utilisation of agro-industrial by-products for sheep and goats production was collected from 160 respondents using interview schedule. It was observed that more of the respondents were married (57.5%), had secondary education (46.9%) and majority (85.6%) earned about ₦49,000:00 monthly. Maize stover (57.5%) and cut grass (45.6%) were often used in feeding sheep and goats in the study area. Among the agro-industrial by-products used in sheep and goats feeding were from maize, sorghum, cowpea, rice, groundnut and millet production.

**Keywords:** Alternative feed resources, ruminant production, rural households

### INTRODUCTION

Essentially, sheep and goats contribute immensely to rural development in many parts of Nigeria yet; the output is not enough to meet the animal protein requirements of the populace. For instance, in Nigeria it has been estimated that there are about 22.1 million sheep and 34.5 million goats (FDLPCS, 1992) and about 70% of these were reared by smallholder farmers under semi-intensive and extensive systems. This has been attributed to farmers lack of interest in rearing sheep and goats as well as inadequate feedstuff with poor nutritional quality and low forage productivity (Amole and Ayantunde 2015; FAO, 2012; Olorunnisomo, 2011). To ameliorate these constraints, a coping mechanism whereby alternative feed resources are utilised in sheep and goats feeding has been suggested (Haile *et al.*, 2017; Garg *et al.* 2013; Ugwu, 2007). Hence, this study was aimed at investigating the utilisation of available and unconventional feedstuff in sheep and goats production in Osun State.

### MATERIALS AND METHODS

#### Study location

Osun State has 30 local government areas with three senatorial zones: Osun East, Osun West and Osun Central and it is situated in the tropical rain forest zone of Nigeria with abundant mineral resources and presence of rivers. It covers an area of approximately 1,487,500 hectares and lies between latitude 7° 30' 0" North and longitude 4° 30' 0" East with 3,423,535 people (NPC 2006). It has cultivatable land area of 1,190,000 hectares, with only 761,600 hectares cultivated with arable crops and 178,500 hectares cultivated with tree crops (Osun MTSS, 2019-2021). The state is estimated to have about 256,000 farm families. As an agrarian state, there is availability of both food and cash crops as well as animals like cattle, sheep, goats, poultry, rabbits and swine, hence the high economic activities in the state.

#### Sampling technique, data collection and analysis

Simple random sampling approach was used to obtain information from sheep and goat rearers in the three Agricultural Development Program (ADP) zones: Ife/Ijesa, Iwo and Oshogbo in Osun State. This was further subdivided into 16 sub-zones proportionate to the sizes of the ADPs (4 sub-zones each in Iwo and Oshogbo and 8 in Ife/Ijesa) for reliable data collection. Ten sheep and goat rearers were randomly selected in each area to respond to interview schedule that had 30 close-ended questions. Information were gathered on personal and socio-economic characteristics and utilisation of agro-industrial by-products for sheep and goats feeding and were analysed using simple descriptive statistics according to Adesoye (2004).

## RESULTS AND DISCUSSION

The personal socio-economic characteristics of the respondents presented in Table 1 showed that more married people (57.5%) were involved in sheep and goats production, while 18.8% widow/widower were also involved. Among the respondents, 16.3% had primary education, 46.9% and 10.0% had secondary and tertiary education, respectively. A total of 26.9% did not have formal education. Respondents were mostly Christians (57.5%), followed by Muslims (39.4%) while 3.1% practiced traditional religion. These observations corroborated the report of Fakoya and Oloruntoba (2009) that more married people with a level of education across the main religious groups in Osun State, are involved in small ruminant production. Though the respondents were basically farmers (40.6%) and traders (35.0%), majority of them (85.6%) earned about ₦49,000:00 only. One of the respondents (0.6%) earned about ₦200,000 monthly. Though an insignificant proportion, it suggests that sheep and goats rearing could be a veritable source of livelihood especially among the rural dwellers. This seemingly lent more credence to the assertions by many people, that sheep and goat rearing contributes immensely to household's income particularly, as source of cash to meet instant household financial obligations (Amole and Ayantunde, 2015; Legesse *et al.*, 2008; MoFA, 2006; Dibissa, 2000). Therefore, sheep and goats rearing should be encouraged to enhance the well-being of households in particular and the gross domestic product at large.

**Table 1: Distribution of respondents by their personal and socio-economic characteristics**

| Variables          | Categories          | Frequency  | Percentage  |
|--------------------|---------------------|------------|-------------|
| Marital status     | Single              | 13         | 8.1         |
|                    | Married             | 92         | 57.5        |
|                    | Co habiting         | 2          | 1.3         |
|                    | Divorced            | 23         | 14.4        |
|                    | Widow/widower       | 30         | 18.7        |
|                    | <b>Total</b>        | <b>160</b> | <b>100</b>  |
| Education          | Primary             | 26         | 16.3        |
|                    | Secondary           | 75         | 46.9        |
|                    | Tertiary            | 16         | 10.0        |
|                    | No formal education | 43         | 26.8        |
|                    | <b>Total</b>        | <b>160</b> | <b>100</b>  |
| Religion           | Muslim              | 63         | 39.4        |
|                    | Christianity        | 92         | 57.5        |
|                    | Traditional         | 5          | 3.1         |
|                    | <b>Total</b>        | <b>160</b> | <b>100</b>  |
| Primary occupation | Civil servant       | 14         | 8.8         |
|                    | Trader              | 56         | 35.0        |
|                    | Farmer              | 65         | 40.6        |
|                    | Others              | 25         | 15.6        |
|                    | <b>Total</b>        | <b>160</b> | <b>100</b>  |
| Age (years)        | 20-39               | 36         | 22.5        |
|                    | 40-59               | 83         | 51.9        |
|                    | 60-79               | 37         | 23.1        |
|                    | 80 and above        | 4          | 2.5         |
|                    | <b>Total</b>        | <b>159</b> | <b>100</b>  |
| Income (₦)         | 0-49,000            | 143        | 89.3        |
|                    | 50,000-99,000       | 14         | 8.8         |
|                    | 100000-149000       | 2          | 1.3         |
|                    | 200000 and above    | 1          | 0.6         |
|                    | <b>Total</b>        | <b>154</b> | <b>96.3</b> |

Source: Field survey (2018)

Table 2 shows the agro-industrial by-products used by sheep and goats rearers in Osun State. Maize stover (57.5%) and cut grass (45.6%) were often used in feeding sheep and goats, compared to sorghum stover, sorghum grain residue, maize grain residue and cowpea haulm that were reported to be rarely used by 63.1%, 55.0%, 53.1% and 47.5% of respondents, respectively. Interestingly, it was observed that millet grain (81.3%), rice straw (74.4%) and rice grain (68.8%) were never used in feeding sheep and goats among the respondents. This could be possibly due to lack of awareness of the potentials of the feed resources and may also be due to unavailability of those resources. Also, it could be largely due to feedstuff selective behaviour of sheep and goats even in confinement that made *in situ* grazing still a better feeding option for sheep and goats (Oppong-Anane, 2013; Ugwu, 2007). Meanwhile, Haile *et al.* (2017) stated that pastures and stubbles are inadequate to meet the nutritional requirements of sheep and goats due to overgrazing and climate change adversities. Hence, the need for utilisation of agro-industrial by-products as a coping measure to boost animal protein availability in Osun State in particular and Nigeria at large.

**Table 2: Agro-industrial by-products utilisation in sheep and goats production in Osun State**

| <b>Agro-industrial by-products</b> | <b>Never</b> | <b>Rarely</b> | <b>Often</b> | <b>Very often</b> |
|------------------------------------|--------------|---------------|--------------|-------------------|
| Maize stover                       | 2 (1.3)      | 17 (10.6)     | 92 (57.5)    | 49 (30.6)         |
| Sorghum stover                     | 13 (8.1)     | 101 (63.1)    | 41 (25.6)    | 5 (3.2)           |
| Cowpea haulm                       | 54 (33.8)    | 76 (47.5)     | 29 (18.1)    | 1 (0.6)           |
| Rice straw                         | 119 (74.4)   | 37 (23.1)     | 4 (2.5)      | 0 (0.0)           |
| Groundnut haulm                    | 128 (80.0)   | 31 (19.4)     | 0 (0.0)      | 1 (0.6)           |
| Cut grass                          | 37 (23.1)    | 43 (26.9)     | 73 (45.6)    | 7 (4.4)           |
| Maize grain/residue                | 25 (15.6)    | 85 (53.1)     | 45 (28.1)    | 5 (3.1)           |
| Sorghum grain/residue              | 58 (36.2)    | 88 (55.0)     | 12 (7.5)     | 2 (1.3)           |
| Rice grain/residue                 | 110 (68.7)   | 44 (27.5)     | 4 (2.5)      | 2 (1.3)           |
| Millet grain/residue               | 130 (81.3)   | 24 (15)       | 6 (3.8)      | 0 (0.0)           |

Source: Field survey (2018). Values in parentheses are the corresponding percentages (%)

## CONCLUSION AND RECOMMENDATION

Myriads of agro-industrial by-products like those from maize, sorghum, cowpea, rice, groundnut and millet appeared to be available in Osun State but maize stover and cut grass were more utilised. However, all the identified agro-industrial by-products could be utilised in sheep and goats production to enhance the well-being of households. Consequently, awareness on the possible utilisation of these by-products in sheep and goats feeding becomes imperative.

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## REFERENCES

- Adesoye P. O 2004. Practical guides to statistical analysis for scientists. A Primer edition. *Debo Prints*, Ibadan, Pp 189.
- Amole, T. A. and Ayantude, A. A. 2016. Improving livestock productivity: Assessment of feed resources and livestock management practices in Sudan-Savanna zones of West Africa. *African Journal of Agricultural Research*, 1: 422 – 440.
- Dibissa, N. (2000). Sheep production on smallholder farms in the Ethiopian highlands – a farming system approach. *Doctoral Dissertation*, Humboldt Universit at Berlin, Institut f ur Nutztierwissenschaften.
- Fakoya, E. O. and Oloruntoba, O. 2009. Socio-economic determinants of small ruminant production among farmers in Osun State, Nigeria. *Journal of Humanities, Social Sciences and Creative Art*, 4(1): 90-100.
- FAO, 2012. Balanced Feeding for Improving Livestock Productivity: Increase in Milk Production and Nutrient, Use Efficiency and Decrease in Methane Emission. 1<sup>st</sup> Edn. *FAO, Rome, Italy*, Pp 42.
- FDLPCS (1992). Federal Department of Livestock and Pest Control Services (FDLPCS).
- Garg, M. R., Sherasia, P. L., Bhandari, B. M., Phondba, B. T., Shelke, S. K. and Makkar, H. P. S., 2013. Effects of feeding nutritionally balanced rations on animal productivity feed conversion efficiency, feed nitrogen use efficiency, microbial protein supply, parasitic load, immunity and enteric methane emissions of milking animals under field conditions. *Animal Feed Science and Technology*, 179, 24–35
- Haile, E., Gicheha, M., Njonge, F. K. and Asgedom, G. 2017. Determining Nutritive Value of Cereal Crop Residues and Lentil (*Lens esculanta*) Straw for Ruminants. *Open Journal of Animal Sciences*, 7: 19-29.
- Legesse, G., Abebe, G., Siegmund-Schultze, and Valle Zarate, A. 2008. Small Ruminant Production in two mixed-farming systems of Southern Ethiopia: Status and Prospects for Improvement. *Experimental Agriculture*, 44: 399-412.
- MoFA, 2006. Ministry of Food and Agriculture Development Plan (3 year plan 2007-2009). District Agricultural Development Unit. Talensi-Nabdam district. Pp 5-23.
- NPC, 2006. National Population Census, Abuja, Nigeria. National Population Commission Reports. NPC.
- Olorunnisomo, O. A. 2011. Intake and digestibility of elephant grass ensiled with cassava peels by Red Sokoto goats. Conference on International Research on Food Security, Natural Resource Management and Rural Development. University of Bonn, October 5-7.
- Oppong-Anane, K., 2013. Cassava as animal feed in Ghana: Past, present and future. B. Berhanu, L. Cheikh and P.S. Harinde (eds.), *FAO Country report Accra, Ghana*, pp, 42-56.
- Osun MTSS, 2018. State of Osun 2019-2021 Medium-Term Sector Strategy.
- Ugwu, D. S. 2007. The role of small ruminant in the household economy of southeastern zone of Nigeria. *Research Journal of Applied Sciences* 2(6): 726-732.