Effectiveness of Indigenous Knowledge Practices among Sheep and Goat Farmers in Igbomina Land in Osun and Kwara States, Nigeria

[1]Ajala, A. O.,[2]Oyawoye, E. O., [1]Bamiro,O.M.,[2]Alabi, O.O. and [2]Ajayi, B.A.

[1]Department of Agricultural Economics and Extension, Landmark University, Omu-Aran, Kwara State, Nigeria.

[2]Department of Animal Science, Landmark University, Omu-Aran, Kwara State, Nigeria.

Corresponding author: ajala.abiodun@lmu.edu.ng; abiodunajala66@yahoo.com; 07068617924

ABSTRACT

Modern veterinary inputs are not always available and accessible and sometimes too expensive for the poor marginal farmers or pastoralists whereas Indigenous Knowledge Practices (IKPs) provide cheap, easy to use alternative to the resource poor farmers. This study therefore investigated the perceived effectiveness of IKPS of sheep and goat farmers among the Igbomina land. Multistage sampling procedure was employed to select two hundred and forty sheep and goat farmers. Data were summarised with frequency counts, percentages, mean and correlation coefficient. The mean age of the farmers was 50.8±10.1 years and majority (67%) were males. Results showed that the following IKPs were widely used by sheep and goat farmers in the study area:bark of Iroko (*Milicia excelsa*), /Tagiri (*Adenopus breviflorus*)/Unripe pawpaw for intestinal worms, Ground Tobacco leaves in water for tick infestation, Igi-Erin (*Hunteria unbellata*) /seeds of Iroko tree*(Chlorophora excels)*/Sand paper leaf (*Ficus exasperata*) and Palm oil for lice infestion, Sheabutter and salt, roast seeds of Iroko tree(*Milicia excelsa*)/effirin-Basil plant (*Occimomum Basilicum.*) for foot rot, ground alligator pepper for Orf, Igi Emi(Vitellariav paradoxa*)* for wound treatment, Palm oil for bloat treatment,Oloora (*Rauvolfia vomitoria)* bark andPalm oil for treating ingestion of poisonous plants, fermented ground maize and millet flour for sheep and goat pox, *Jatropha curcas* squeeze andPalm oil for treating retained placenta, Wood ash for broken horn, Onion solution and Charcoal mill fordiarrhea and dysentary among others. The levels of awareness, usage and effectiveness of the IKPs were high with a positive and significant relationship between effectiveness of IKPs and years of schooling (r= 0.217≤0.05) and annual income(r = 0.67≤0.01) while there is a negative and significant relationship with amountof savings(r = - 0.19≤0.05). It is recommended that extension should forward the IKPs to the various research organizations with samples for investigation and authentication. Also, extension should teach the poor marginal farmers or pastoralists how to identify the plants, and the best way to prepare and administer the preparations.

Keywords: Effectiveness, Indigenous Knowledge, Sheep, Goat, Farmers

INTRODUCTION

Sheep and goats are important domestic animals in the tropical livestock systems as they enjoy a wider distribution and greater flock dynamism than other livestock species within Africa (Enwelu, *et al.,*2015). In Nigeria, they are embedded in the social and ceremonial life to an extent unequalled by other animal species (FDLPCS, 1992). The ownership of these small ruminants is considered as investment as they constitute a major source of animal protein in Nigeria.

In Nigeria, management of small ruminants is largely in traditional hands (Ajala, 1995) and in the South-western region of Nigeria like in many parts of the country, small ruminants' production and productivity is impeded by various health related constraints. This is as a result of the climate which is characterised by high relative humidity which predisposes the environment to diseases and pests. Although these constraints can adequately be alleviated by modern or western–style technologies such as vaccination, chemoprophylaxis/chemotherapy, feeding animals with formulated rations and proper housing (Chah,*et al*.,2009). This is   not always effective because sheep and goat husbandry in the study area are largely in the hands of rural farmers. Since these farmers are mostly located in the rural areas, they are scarcely aware of veterinary and improved management services. In   some cases, many of those who are   aware of the services cannot afford to pay for them because they are expensive.

Poor health remains one of the main factors limiting livestock production in Nigeria. Many of the major diseases (endemic and epidemic) can be controlled economically, and considerable progress has been made in the past (Bello, 1997). Under these conditions, traditional animal health, also called `ethno veterinary medicine' or indigenous knowledge provides a readily available low cost alternative. Tafara Matekaire, *et.al*., (2004) noted that among the various indigenous methods is the use of herbs to manage animal diseases. The knowledge base of these herbs differs not only from region to region but also within communities. It has been developed through trial and error and deliberate experimentation. Therefore it is less systematic, less formalized, and not universally recognized as a valid method of disease control in animals (Chah, *et al*., 2009). It is established that small ruminant farmers have an excellent knowledge of ethnobotany, which has formed the basis for screening plant materials as potential sources of medicinal drugs (Spore, 1992) In many countries, there has been little documentation of the traditional knowledge rather it has been transmitted across generations by an oral tradition and therefore is in danger of extinction (Tafara Matekaire, *et.al*., 2004). Titilola (2004), reported that the local knowledge and practices of small farmers are key inputs in the continuing evolution of farming and resource management systems. It is the responsibility of the extension system therefore to improve on the research-extension-farmer linkage, which is a prerequisite for effective traditional practice in Nigeria. (Umaru, 1999) Among the various indigenous methods is the use of herbs to manage animal diseases. The knowledge base of these herbs differs not only from region to region but also within communities. It has been developed through trial and error and deliberate experimentation. Therefore it is less systematic, less formalized, and not universally recognized as a valid method of disease control in animals (Tafara Matekaire, *et al*., 2004).

According to Unamma (2000), extension agents are supposed to catalogue information on available effective herbal preparations in various locations in the country and forward same

to the various research organizations with samples for investigation and authentication. After validation of research results, extension agents are supposed to disseminate such results to farmers for adoption and use. It is in the light of the foregoing that this study investigated the effectiveness of IKPs on sheep and goats in the study area.

The main objective of the study is to examine the perceived effectiveness of indigenous knowledge practices among sheep and goat farmers in Igbomina kingdom of Kwara State with a view to enhancing the health status of the animals and to disseminate same to farmers for adoption and use.

MATERIALS AND METHODS

The study area

The study was conducted in Igbomina kingdom in Osun and Kwara States, Nigeria. Igbomina Kingdom consists of five Local Government Areas (LGAs): Ila and Ifedayo LGAs in Osun State and Irepodun, Ifelodun and Isin LGAs in Kwara State. The areas occupied by the Igbominas in the two States fall within the humid climate with two distinct seasons (the wet and the dry season) The wet season lasts between April and November while the dry season is between November and March (KWSMI, 2002). Animals especially sheep and goats are reared with the free range system of management in the rural and urban areas of the study area.

Sample Selection and Sampling Procedure

Igbomina kingdom was purposively selected because of its high level of rurality and preponderance of sheep and goat farmers. Multistage sampling procedure employed involved the random selection of five out of the six LGAs in the kingdom. In the second stage, four communities were randomly selected from each the LGAs making twenty communities. The third stage involved the random selection of twelve farmers from each of the twenty communities giving a total of two hundred and forty farmers.

Data Analysis

Descriptive statistical techniques such as frequency counts, means, standard deviation and charts were used to describe and summarize the data collected. Pearson's Product Moment Correlation Coefficient was used to determine the direction of relationship between the dependent variable (effectiveness of the IKPs) and the independent variables such as age, household size, years of schooling, extension contact, income, amount in savings etc. while coefficient of determination (r^2) was employed to determine the magnitude of change in the effectiveness of the IKPs as explained by each of the independent variables. Chi – square analysis (χ^2) was used to establish the association between some related nominal variables such as marital status, sex, religion and occupation.

RESULTS AND DISCUSSION

As shown in Table 1, the mean age of the farmers was 50±10.1 years. This implies that majority (65%) of the farmers are between the age bracket of 40-59 years. They are still relatively young to cope with the rigorous task of animal production. Ajala, *et.al*, (2013), cited Tsoho (2004), reported that young farmers have higher aspiration to accept new technologies than conservative older farmer that always seem to be more satisfied with their traditional methods. The gender distribution revealed that 67.1 % were males while 32.9% were females. This depicts that both male and female were appreciably involved in sheep and goat farming but the dominance of men could be as a result of the rigorous nature of sheep and goat farming. The marital status of the farmers revealed that a high majority (84.6%) were married revealing that most of them have family responsibilities and this can enhance their commitments to the task of sheep and goat farming. Above average (57%) have household size of more than ten members. This finding is in line with Ogunjimi, *et al.,* (2013) report that the mean household size of rural areas of farmers in South-Western Nigeria was 8.0. The implication of the large household size is that there will be availability of family labour to attend to the multitask nature of sheep and goat rearing. The distribution of the farmers based on religion shows that 49.2 are Christians while 48.8% are Muslims while a small minority (2.5%) are traditional worshippers. This implies that there is no religious restriction to the use of IKPs for sheep and goat. The major mode of farmland acquisition was inheritance (44.2%), closely followed by village land which was 38.3%. This implies that majority of the farmers in the locality are indigenes thereby making them more favourably disposed to the use of IKPs in the area. Also, Table 2 shows that a high majority (75%) of the farmers had one form of education or the other while 25.4% had none. The mean number of years spent in school was 7.9±3.8 years.The high level of education of most of the farmers will enable them use their initiative in the usage of the IKPs. The mean number of number of contact with extension agent and the mean of trainings attended in the last two year were   3.8 and 1.36 respectively. This shows that extension contact in the study area was very poor. This might be unconnected with the poor funding, remuneration and motivation of extension staff in most of the South western states. Aphunu and Okojie (2011) reported that majority (75.7%) of the small ruminant farmers in Delta State, Nigeria never had contact with extension agents.The mean flock size for male sheep and goat was 2.3 while that of female sheep and goat was 3.8.This implies that majority of sheep and goat farmers were small scale farmers. Majority (72.4%) had personal savings as their major source of capital. As for the amount of capital sourced in the last one year, majority (65.4%) had sourced less than 20,000 naira. This is a further pointer to the smallness of the level of operation of the sheep and goat farmers. Average selling price of a goat and a sheep per unit was 7,000 naira while that of sheep was 9,000 naira and average amount spent on feed per month was 1,900 naira. The mean number of animals sold in the last 1 year was 6 for goat and 5 for sheep.The methods of management for majority (65.7%) was free range and semi-intensive (32.9%) respectively. This is because some communities in the study area were against free range rearing system of animals because of destruction of crops.

Table 1: Respondents demographic characteristics

Variable	Frequency	Percentage	Mean±Std. Dev
Age			
< 30.00	7	2.9	
30.00 - 39.00	22	9.2	50.8±10.1
40.00 - 49.00	70	29.2	
50.00 - 59.00	87	36.2	
60.00+	54	22.5	
Sex			
Male	161	67.1	
Female	79	32.9	
Household size			
< 5.00	1	0.4	
5.00 - 9.00	20	8.3	
10.00+	137	57.1	15.6±5.6
No response	82	34.2	
Marital status			
Single	4	1.7	
Separated	6	2.5	
Married	203	84.6	
Widowed	27	11.2	
Religion			
Christianity	118	49.2	
Traditional	6	2.5	
Islam	116	48.3	
Mode of farmland acquisition			
Inheritance	106	44.2	
Purchase	10	4.2	
Rented	28	11.7	
Lease	4	1.7	
Village land	92	38.3	

Table 2: Respondents demographic characteristics

Variable	Frequency	Percentage
Level of education		
Primary	30	12.5
JSS	15	6.2
SSS	56	23.3
University	65	27.1
Adult literacy	13	5.4
None	61	25.4

Source of fundation stock		
No response	2	0.8
Purchase	168	70.0
Gift	23	9.6
Contractual agreement	6	2.5
Purchase and contractual agreement	29	12.1
Purchase and gift	8	3.3
Gift and contractual agreement	4	1.7
Mean flock size		
Sheep(male)		**2.3**
Sheep(female)		**2.3**
Goat(male)		3.8
Goat(female)		4.5
Mean extension contact		**3.8**
Mean training attended		**1.36**
Mean number of years spent on formal education		7.9±3.8 years
Who takes care of animals		
Father	25	10.4
Mother	40	16.7
Children	14	5.8
Everybody	151	62.9
No response	10	4.2
Source of financial support		
Personal savings		74.4
Moneylender		9.2
Friends and family		11.7
Agric. Bank		0.8
Cooperative society		4.1
Amount of capital saved		
<10,000		6.7
10,000- 20,000		23.8
>20,000		65.4
No response		4.2
System of management		
Free range		65.7
Semi-intensive		32.9
Others		1.4

Source: Field survey, 2015.

Usage of IKPs

Thus, results in Table 3 showed that wood ash for broken horn, Palm oil for bloat treatment, Bark of Iroko(*Milicia excelsa* /Tagiri(*Adenopus breviflorus*) /Unripe pawpaw for iintestinal worms,Ground Tobacco leaves in water for tick infestation were the highest ranking used IKPs. Furthermore, it was revealed that majority (91.7%) of the farmers had high level of usage of the IKPs as shown in Fig.1 This implies that the IKPs are not only accessible to the farmers but useful and this could be as a result of the fact that the IKPs are compatible with the customs and traditions of the people in the study area.

Table 3: Level of use of IKPs

| IKP	Mean	Rank
Wood ash for broken horn	3.99*	1st
Palm oil for bloat treatment	3.85*	2nd
Bark of Iroko(*Milicia excelsa)* /tagiri(*Adenopus breviflorus* /Unripe pawpaw for intestinal worms	3.60*	3rd
Ground tobacco leaves in water for tick infestation	3.59*	4th
Oloora bark (*Rauvolfia vomitoria)*and palm oil for poisonous plants	3.57*	5th
Onion solution and Charcoal mill fordiarrhea anddysentery	3.57*	5th
Igi-Erin(*Hunteria unbellata*)/seeds of iroko tree(*Miliciaexcelsa)*/sand paper leaf & palm oil for mange infestion	3.43*	7th
Fermented ground maize and millet flour for sheepandgoatpox	3.42*	8th
Igi emi (*Vitellariav paradoxa)* for wound treatment	3.37*	9th
Jatropha curcas squeeze and palm oil for retained placenta	3.26*	10th
Sheabutter and salt, roast seeds of iroko tree(*Milicia excelsa)*/effirin(*Occimomum Basilicum.*) for foot rot	2.48	11th
Ground alligator pepper for Orf	2.41	12th

Source: Field survey, 2016.
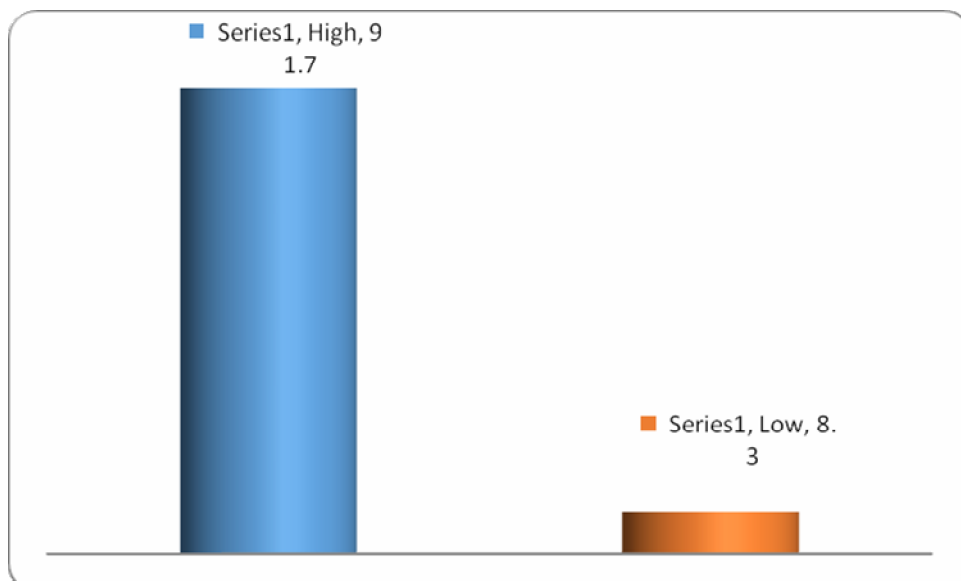
Fig. 1 Level of usage of IKPs.

Effectiveness of IKP

Results in Table 4 showed that the level of effectiveness of the following IKPs are the highest ranking IKPs: Palm oil for bloat treatment, Oloora (*Rauvolfia vomitoria)* bark andPalm oil for treating ingestion of poisonous plants, Ground tobacco leaves in water for tick infestation, Onion solution and Charcoal mill fordiarrhea and dysentery but all the IKPs were perceived effective by the farmers. Availability and commonality of the materials such as palm oil, onion, and charcoal could be a factor enhancing their availability, usage and hence effectiveness. Further analysis revealed that 100 percent of the farmers indicated that all the used identfied IKPs were effective.

Table 4: Effectiveness of IKPs

IKP	Mean	Rank
Palm oil for bloat treatment	3.89*	1st
Oloora bark (*Rauvolfia vomitoria)*andPalm oil for poisonousplants	3.86*	2nd
Ground tobacco leaves in water for tick infestation	3.79*	3rd
Onion solution and Charcoal mill fordiarrhea and dysentery	3.63*	4th
Bark of Iroko (*Milicia excelsa)* /tagiri(*Adenopus breviflorus)* /unripe pawpaw for intestinal worms	3.58*	5th
Igi emi (*Vitellariav paradoxa)* for wound treatment	3.56*	6th
Wood ash for brokenhorn	3.55*	7th
Igi-Erin (*Hunteria unbellata*)/seeds of iroko tree (*Milicia excelsa)*/sand paper leaf & palm oil for mange infestion	3.52*	8th
Jatropha curcas squeeze and palm oil for retained placenta	3.39*	9th
Sheabutter and salt, roast seeds of iroko tree (*Milicia excelsa)*/effirin (*Occimomum Basilicum.*) for footrot	3.37*	10th

Fermented ground maize and millet flour for sheep and goat pox	3.33*	11th
Ground alligator pepper for Orf	3.21*	12th

Source: Field survey, 2015.

Constraints to IKPs usage

Results in Table 5 showed that 62.5 percent and 37.5 percent of the respondents revealed that the identified constraints were high and lowrespectively. Inadequate know how, inadequate storage facilities and inadequate information on usage technique were the highest ranking constraints to the effectiveness of IKPs. This is a pointer to the need for extension to document the procedures on the application and usage techniques of the IKPs and to forward the same to researchers for validation.

Table 5: Constraints to IKPs usage

Constraints	Mean	Rank
Inadequate know-how	3.45*	1st
Inadequate storage facilities	3.40*	2nd
Inadequate information on usage technique	3.32*	3rd
Inadequate infrastructural facilities	3.22*	4th
Lack of proper management skill	3.01*	5th
Inadequate credit facilities	2.19	6th
Untimely credit facilities	1.31	7th
High cost of materials	1.13	8th

*High

The result in Table 6 shows a positive and significant relationship between effectiveness of IKPs on sheep and goats and year of schooling (r= 0.217≤0.05) and annual income; annual income (r = 0.67≤0.01) while there is a negative and significant relationship between effectiveness of IKPs on sheep and goats and amountin savings(r = - 0.19≤0.05). Therefore the test of hypothesis assumed that the effectiveness of IKPs in the study area is influenced by years of schooling of the farmers, income and amount in savings while the result of the chi-square reveals the influence of marital status (χ^2=171.8**) at 0.05 level of significance and land acquisition (χ^2=149.2**) at 0.01 level of significance as influencing the effectiveness of the IKPs as shown in Table 7.This might be a result of the fact that married farmers operating on their own lands will be more committed to the use of IKPs because of the low cost involved and easy accessibility of the materials needed.

Table 6: Relationship between effectiveness of IKPs and socio-economic characteristics of farmers

Variable	Correlation Coeff (r)	P-value	Decision
Age	0.054	0.42	NS
	-0.002	0.97	NS
Household size			
Year of schooling	0.217**	0.05	S
Extension contact	0.011	0.86	NS
Training attendance	-0.01	0.82	NS
Annual income	0.67*	0.08	S
Amount in savings	-0.19**	0.04	S

Source: Field survey, 2015.*Sig at 0.01 level of significance**Sig at 0.05 level of significance NS= Not significant. S= Significant

Table 7: Results of Chi square analysis showing significant association between effectiveness of IKP and farmers socio-economic characteristics.

Characteristics	χ^2. value	Df	P-value	Decision
Sex	46.96	2	0.10	NS
Marital status	171.8**	3	0.01	S
Religion affiliation	45.31	2	0.14	NS
Mode of land acquisition	149.2**	3	0.01	S

Source: Field survey, 2015.

*Sig at 0.01 level of significance**Sig at 0.05 level of significance

NS= Not significance. S= Significance

The model in Table 8 shows a positive and significant relationship between effectiveness of IKPs on sheep and goats and their relative advantage (t=2.709*) that is a unit increase in relative advantage will result to 0.189% increase in the effectiveness of the IKPs. This shows that the relative advantage of the IKPs will affect the effectiveness there of.

Table 8: Relationship between characteristic of IKPs and effectiveness.

Model		Coefficient.	Std. Error	T value	Sig.
1	(Constant)	9.049	5.816	1.556	0.12
	Cost	0.118	0.100	1.190	0.24
	Complexity	0.109	0.096	1.142	0.26
	Communicability	0.018	0.088	0.201	0.84
	Relative advantage	0.189	0.110	2.709*	0.05
	Compatibility	0.107	0.672	0.160	0.87
	Accessibility	0.132	0.622	0.212	0.83
	Satisfaction	0.197	.135	1.451	0.15

a. Dependent Variable: effectiveness

Source: Field survey, 2015.

*Sig at 0.01 level of significance.

CONCLUSION AND RECOMMENDATION

The result reveals a high usage and effectiveness of the IKPs amongst sheep and goat farmers. Effectiveness of the IKPs were positively influenced by years of schooling, annual income, and negatively by amount of savings. It is recommended that extension should forward the IKPs to the various research organizations with samples for investigation, validation and authentication. Also, extension should teach the poor marginal farmers or pastoralists how to identify the plants, and the best way to prepare and administer the preparations and disseminate same to other farmers.

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