

## A survey of ethnoveterinary botanical remedies in Ogun State and their public health implications

Awoyomi, O.J., Biobaku, K.T., Kehinde, O.O. Adebowale, O.O. and Oyewusi, J. A.

College of Veterinary Medicine, FUNAAB  
jojuawoyomi@yahoo.com



### Abstract

Twenty four villages were visited during a cross sectional survey of ethno veterinary botanic remedies used for the management of animal diseases in four local government areas randomly selected cutting across the four geopolitical zones in Ogun State. A total of 323 households were purposively selected and administered with a semi structured questionnaire. A total of 3 questionnaires out of 323 were used for the analysis in the study. The farmers were assisted by the enumerators to fill the questionnaires in their homes; information on household demography, common animal diseases in the area, botanical remedies used for treatment, part of plant used, and source of prescription, methods of preparation and administration of the remedies were gathered. Most of the respondents were farmers, majority keeping goats. Out of the 319 respondents 110 (34.4%) admitted using plants in treatment of livestock diseases. Two plant species were identified in the study area for treating livestock ailments. Leaves were the plant part mostly used. *Adenopus breviflorus* (*Pseudocolocynth*) is the most commonly used plant for treatment of many animal diseases in both ruminants and poultry. Most common livestock diseases condition is mange followed by Peste des petits ruminants; however in poultry the most important diseases are Newcastle disease and diarrhoea. Losses to livestock owners were mostly due to infection. There is need for government and non-government intervention curbing the menace of diseases in livestock production. Reasons for utilization of botanic remedies were identified and public health implications of usage of these herbs were discussed. In conclusion, there is an urgent need for more of this documentation with scientific and clinical validation of the claims; if not ethno-veterinary botanical knowledge faces the risk of going into extinction due to increasing modern veterinary medical intervention.

**Keywords:** Ethnoveterinary, Botanical remedies, Public Health.

### Introduction

Ethno-veterinary medicine covers people's knowledge, skills, methods, practices and beliefs about the care of their animals (McCorkle, 1986). Ethnoveterinary medicine, the scientific term for traditional animal health care, provides low-cost alternatives to allopathic drugs, (FAO, 2008). Many of these medicines involve the use of botanicals. The implication of ethno-veterinary botanicals is of

importance to public health. Many people using these products have the wrong notion of absolute safety vis-à-vis the conventional drugs in animals. The FAO, (2008) redefined the perspective of public health implication of a particular product for human consumers. It involves physical, mental and social effect of the particular issue or product. It is important to understand the different botanicals and pharmacological products have impact on environment and food safety.

In recent times, there has been an increased awareness of the importance of herbal medicine in the human health care. Efforts are being made in different countries to carry out researches into herbal medicine. Hence there is a need to take a current inventory of common medications used by local farmers in the treatment of rural household livestock diseases.

Animal diseases are a major constraint to livestock production. There is no doubt that plants are very effective in the treatment of diseases and serve as food. The contribution of plant-derived drugs in modern times is still significant and much interest is being focused on exploiting the wide diversity of traditional systems of Medicare and modern drug development. The original profession practiced by man includes plant identification, farming and hunting. Traditional medicine is the most ancient method of curing diseases and it has been said that plants are the very first and the only one true medicine ever used. Rural dwellers in developing countries including Nigeria wholly or partially rely on traditional herbal medicine for treatment and control of animal and human diseases (Sofowora, 1993). In Nigeria traditional veterinary practices play important roles in many rural areas (Kudi and Myint, 1999). Many farmers are aware of animal diseases, but they often resort to various means and use of traditional method of Medicare as the main method of treatment due to unavailability and high cost of veterinary drugs in most pharmaceutical shops and local markets (Musa *et al.*, 2008).

Animal production plays an important role in livelihoods of rural dwellers. The nomads and most people engaged in farming are peasants whose philosophies encourage the use of effective herbal remedies. The herbs used in our rural areas need to be standardized to minimize

associated misuse and toxicities. Furthermore the protection of our rich flora including medicinal plants should be a matter of great concern, and conservation of plants is necessary as it ensures the availability of plants for traditional herbalists, traditional healers and herb sellers. There are, however, certain problems faced by the local farmers who use ethno-veterinary approach to treat their animals. These problems include inconvenience involved in the use or preparation of certain remedies; seasonal availability of certain medicinal plants; paucity of treatments against epidemic diseases; existence of harmful practices; difficulty of standardizing herbal remedies (since the concentration of a critical ingredient in a plant often varies from one location to another); and vagueness of local treatment schedules (Mathias and McCorkle, 1989). In fact, Keengweand Benalo (1996) had revealed that in Nigeria, ethnobotanical knowledge and methods have not been fully documented, studied and popularized for use together with modern veterinary medicine as has been done in Kenya, another African country. Thus this study sought to describe the socio-economic characteristics of the farmers, find out of botanical ethno veterinary remedies used for the management of animal diseases, collect and identify the botanicals and finally examine public health implication of these remedies.

### **Methodology**

Twenty four villages were visited during a cross sectional survey in four local government areas randomly selected cutting across the four geopolitical zones in Ogun state. The State is located on latitude 3°35'E and longitude 7°00'N with an area of 16,762cm<sup>2</sup> and a population of 4,054,272. A total of 323 households purposively

selected were administered with a semi structured questionnaire based on livestock ownership. A total of 319 questionnaires out of 323 were used for the analysis of which 46 are from villages in Remo, 102 from Egba, 117 from Yewa and 54 from Ijebu (Table 1). The number of respondent was based on the willingness of the prospective respondent to participate as many thought the information was for taxation purpose. All the respondent were Yoruba speaking communities except 40 respondents from Alabata village located in Egba zone, who were Fulani cattle herdsmen.

Information on household demography, common animal **diseases** in the area, botanical remedies used for treatment, part of plant used, sources of prescription, and methods of preparation and administration of these remedies were gathered. The farmers were assisted by the enumerators to fill the questionnaires in their homes. Some of the plant were collected and identified at the herbarium of the Department of Forestry, Federal University of Agriculture Abeokuta, Nigeria.

### Results and Discussion

One hundred and eighty three (57.4%) of the respondent were males and the rest females. Most of the respondents were adult, married with average family size of

five. Most of the respondents were Muslims (61.8%) and with only 76 (23.8%) having more than primary school education (Table 2).

Primary occupation of most of the respondents was farming (273 or 85.6%), only three were civil servants while the remaining were traders and artisans. Of the total respondents, 287 (90%) practiced mixed farming i.e. crop and livestock production while 30 (9.4%) were into animal production only.

Livestock reared by the respondents included goats, sheep, chicken, pigs, cattle and rabbits. Majority keep goats (253 or 79.3%) while very few keep rabbit (11 or 0.03%) Cattle were mainly reared by the Fulani in Alabata village. Pig keeping predominated in Yewa (Table 3). Livestock were reared mainly for the purpose of income generation (245 or 76.8%) (Figures 1) and the sources of food for the livestock were through both pasture/brownses and farm by-products (Table 4).

Out of the 319 respondents 110 (34.4%) admitted using plants in treatment of livestock diseases, while 209 (65.6%) had no knowledge of herbs usage in animal care. The information about the herbs was mostly gathered from parent (93 or 84.6%) while only 17 (15.4%) obtained information from neighbours. The respondents that use plants for treatment have confidence in the effectiveness of this remedy. Seventy seven

**Table 1: Geopolitical zones distribution of the respondents**

Geopolitical zone	Herb user No. (%)	Non herb users No (%)	Total(100%)
Remo	11( 23.9)	35(76.1 )	46
Egba	43(42.2)	59(57.8 )	102
Yewa	36(30.8 )	81(69.2 )	117
Ijebu	20(37.0 )	34(63.0 )	54
Total	110( 34.5)	209(65.5 )	319

**Table 2: Socio-economic characteristics of the respondents**

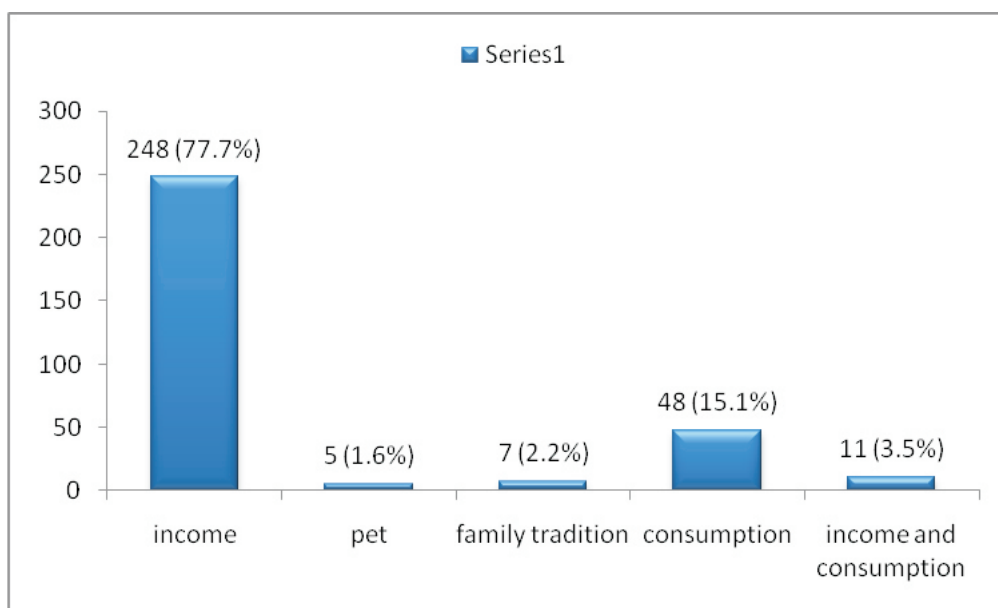
<b>Respondent characteristics</b>	<b>Herb users (%)</b>	<b>No. Non herb users No (%)</b>	<b>Total (100%)</b>	<b><math>\chi^2</math> value</b>
<b>Gender</b>				
Male	76(41.5 )	107(58.5)	183(57.4)	8.89
Female	34(25.0)	102(75.0)	136(42.6)	
<b>Religion</b>				
Islam	79 (40.0)	118 (60.0)	197(61.8)	6.4
Christianity	22 (25.3)	65(74.7)	87 (27.3)	
Traditional Religion	92(5.7)	26(74.3)	35(11.0)	
<b>Marital Status</b>				
Single	4(20.0)	16(80.0 )	20(6.7 )	10.53
Married	90(40.5 )	132(59.5 )	222(69.6 )	
Divorced	12(26.7 )	33(73.3 )	45( 14.1 )	
Widowed	4(12.5 )	28(87.5 )	32( 10.0 )	
<b>Family size</b>				
Less than 5	32(27.8 )	83( 73.2 )	115( 36.1 )	6.12
5-7	70(40.0)	105(60.0 )	175(54.9 )	
8-10	8(30.8)	18( 69.2 )	26(8.2 )	
Above 10	0(0.0)	3( 100.0 )	3( 0.9 )	
<b>Highest educational level</b>				
None	61(50.8 )	59(49.2 )	120(37.6 )	30.15
Primary	30(24.4 )	93(75.6 )	123(38.6 )	
Secondary	19(28.4 )	48(71.6 )	67(21.0 )	
Tertiary	0( 0.0)	9(100.0 )	9(2.8 )	
<b>Primary Occupation</b>				
<b>Farming</b>	103(37.9)	169 (62.1)	272 (85.3)	10.83
Trading	6 (20.6)	23 (79.3)	29 (9.1)	
Artisan	1 (6.7)	14 (93.3)	15 (4.7)	
Civil servants	0 (0)	3 (100)	3 (0.9)	
<b>Monthly Income</b>				
Less than N20,000	26 (25.2)	77(74.8)	103(32.3 )	31.04
N21,000- N40,000	27 (22.0)	96 (78.2 )	123(38.6 )	
N41,000- N60,000	11(29.7)	26(70.3 )	37(11.6 )	
N61,000- N80,000	1 (20.0)	4(80.0 )	5(1.6 )	
N81,000- N100,000	2 (33.0)	4(66.7 )	6(1.9 )	
Above N100,000	43 (91.5)	4(8.5 )	47(14.7 )	
<b>Farming scope</b>				
Animal production only	15(50.0)	15(50.0)	30(9.4)	0.14
Crop production only	0(0.0)	2(100.0)	2(0.63)	
Mixed farming	95(33.1)	192(60.2)	287(90.0)	

**Table 3: Types of livestock reared by the respondent**

LIVESTOCK	FREQUENCIES	PERCENTAGE
Pig	10	3.13
Goat	36	11.29
Rabbit	2	.6
Sheep	34	10.2
Chicken	14	4.2
Cattle	2	0.6
Pig and chicken	2	0.6
Goat and Rabbit	2	0.6
Goat and Sheep	112	35.1
Goat and Chicken	16	5.0
Rabbit and Sheep	1	0.3
Rabbit and Chicken	1	0.3
Sheep and Chicken	4	1.3
Sheep and Cattle	1	0.3
Pig, Goat and Sheep	1	0.3
Pig, Goat and Chicken	5	1.6
Pig, Rabbit and Chicken	2	0.6
Goat, Rabbit and Sheep	1	0.3
Goat, Rabbit and Chicken	1	0.3
Goat, Sheep and Chicken,	37	11.6
Pig, Goat, Rabbit and Chicken	1	0.3
Goat, Sheep ,Chicken and Cattle	34	10.7
TOTAL	319	100

(70%) of these respondents indicated that plants are more effective than modern veterinary medicine. Only ten (0.9%) respondents use plants because of the cost of veterinary services. This shows that high cost of treatment is not primarily reason for using herbs for treating livestock ailments as concluded by Abu and others

(2009). Rashid and others (2010) noted that livestock owners in non-industrialized nations of the world still use medicinal plants for the treatment of livestock diseases, either due to lack of access to trained veterinarians and high cost of orthodox medicines, or the held belief that herbal remedies are more efficacious. The



level of confidence imposed on the use of plants may also be due to upsurge of quacks in the field of Veterinary Medicine in the villages that exploit the farmers and at the end no positive results comes from the treatment given to livestock. Most of the plants used were obtained fresh from the farm or nearby forest by the livestock owners or members of the family as at when the need arose, an indication that the plants were not preserved for future use, but are looked for and prepared whenever animals are ill. Consequently, availability of the plant will depend solely on the level of

development in each village because the more a forest area is cleared for housing and other purposes less of the plants will be available for treatment of animal ailment (Table 5).

Thirty two plant species were identified in the study location in treating livestock ailment (Table 6). Leaves were the plant part mostly used (16 or 48.5%) followed by pod, fruit and seeds (9 or 27.3%) and mixed parts of the plant (8 or 24.4%). Some of the medicinal plants identified were pseudocolocynth (Tagiri), sand paper (Eepin), siam weed (Ewe Akintola),

**Table 4: Sources of livestock feed**

Sources of livestock feed	Frequency	Percentage
Pasture /browns	40	12.0
Farm by products	50	15.0
Others	7	2.1
Pasture /browns and Farm by products	207	62.1
Pasture /browns and others	5	1.5
Farm by products and others	3	0.9
Pasture /browns, Farm by products and others	7	2.1
TOTAL	319	100

Chasmanthera (Ato) and benth (ewe ira or bembeku), others included Rhabdiostylis (Ewe Abe apata), palm tree (ope), purge nut (Ojebotuje) and pawpaw (Ibepe). Pseudocolocynth was the most commonly used plant for treatment of many animal diseases in both ruminants and poultry. In ruminants it is used for treating mange, fever cold, and in poultry-cough, coryza, coccidiosis and New castle diseases, followed by Rhabdiostylis, which is used in the treatment of mange, diarrhoea and New Castle diseases. Most common livestock diseases condition is mange followed by Peste des petits ruminants (with clinical signs of diarrhoea, cough and fever) and wound in ruminants. However in poultry the most important diseases in the study area are Newcastle disease and diarrhoea. The most common cause of loss to livestock owners was infection followed by theft and then automobile accident. (Table 7). The livestock owners further indicated that the most needed help is in the area of treatment of animal diseases and vaccination against some preventable animal diseases. There is need for governmental and non-governmental organizations intervention in curbing the menace of diseases in livestock production. Animal vaccination programme against Peste des petits ruminants (PPR) will go along way in assisting the farmers. Routine vaccination programme is being carried out by extension agents (OGADEP) in some villages but 271 (85%) of the respondents indicated that no vaccination campaign was carried out in their villages for the past one year, this could be an indication that some villages are left out of the government annual vaccination campaign, (Table 8). Extension agents need to be more equipped with transport facilities in order to cover more villages in Ogun state.

This study documents a relative diversity of medicinal plants used in traditional medical and ethno-veterinary practices. The medicinal plants used in Ogun State are of different families of the plant kingdom with varying phytochemicals. Many of these plants are used for nutritional therapeutic and prophylactic use (Fahey, 2005). The frequent use of these medicinal plants may predispose the animal to residual tissue accumulation of some of the phytochemicals in the plants.

The residues in meat would be of diverse chemical constituents that predispose to varying syndromes of chronic toxicities (Mikail *et al*, 2002). However, few of these medicinal plants could be fairly safe. But one or more of these phytochemical constituents could interact and results to additive toxicity that could be detrimental to human.

Humans may be predisposed to various toxicities such as skin allergy due to chemical irritation on mechanical contact from *Jatropha curcas* (Lampe and Fagerstrom, 1968). *Jatropha* treated animal products may cause neurological depression (Laxane *et al*, 2013), autonomic nervous signs, salivation and sweating (Consroe and Glow, 1975). Atropine-like toxicity (Aplin, 1976) with signs of mydriasis, dry mouth, hot skin, tachycardia, gastrointestinal involvement, hepatotoxicity, renotoxicity and in some instances carcinogenic tendencies (Sofowora, 1993) have been reported

Prolonged usage of *Ficus exasperates* leading to its residues in products of meat and milk could predispose to nephrotoxicity and renal insufficiency in the consumers. Adebayo *et al*. (2009), is of the opinion that its antimicrobial effects in animals may have adverse effects on man after the consumption of animal products with *Fiscus* phytochemical constituents

**Table 5: Information on herb usage by livestock farmers using herbs**

<b>Information on herb usage</b>	<b>Frequency of respondents</b>	<b>%</b>
<b>Sources of herbs</b>		
Personally collected from the farm/forest	60	54.5
Purchased in the market	0	0.0
Obtained from the herbalist	1	0.9
Obtained by family members from the farm/forest	49	44.6
<b>Total</b>	<b>110</b>	<b>100</b>
<b>Herb preparation</b>		
Self	61	55.5
Family Members	48	44.5
Herbalist	1	0.9
<b>Total</b>	<b>110</b>	<b>100</b>
<b>Sources of herbs information</b>		
Parents	92	83.6
Neighbours	17	15.4
Herbalist	1	0.9
<b>Total</b>	<b>110</b>	<b>100</b>
<b>Reason for using herbs</b>		
More effective than orthodox medicine	77	70.0
No veterinary attention	18	16.4
High cost of veterinary services	06	5.5
More effective and No veterinary attention	09	8.2
<b>Total</b>	<b>110</b>	<b>100</b>
<b>Herb form used</b>		
Freshly obtained	47	42.7
Already prepared	11	10
Both Freshly obtained and Already prepared	52	47.3
<b>Total</b>	<b>110</b>	<b>100</b>

consistently at a prolonged interval resulting to super-infection – gastrointestinal flora disturbance leading to diarrhea.

*Ocimum gratissimum* contains saponins, terpenes, and glycosides. These are suggested to cause hepatotoxicity. Their usage was found to cause a dose-dependent decrease in the liver enzymes secretion: alanine aminotransferase (ALT) aspartate aminotransferase (AST) and alkaline phosphatase (ALP) (Effraim et al., 2000)

The toxicities of these plants due to their active principles depend on various factors such as route of exposure, extent of exposure (toxic dose), species of animal, health status of the animal product, (meat or milk), method of processing of product, disease state of animal treated, disease involved, environmental factors such as temperature, relative humidity. Part of the plant used in medicine and concentration of active principles in such parts, time of harvest of the plant. Other factors that affect toxicities of these plants include health status of human subject consuming the food, age, sex, individual response to the active principles in botanicals in meat products, idiosyncrasy, and exposure to previous drugs are also amongst other factors that could influence the toxicity in human consumers

The present study recorded 32 plants used in villages for treatment of sixteen animal diseases, such as ectoparasitism, diarrhoea, PPR, cold, wound, coccidiosis, coryza and New Castle Disease. Due to the fact that the knowledge of ethno veterinary medicine is being passed on from generation to generation, it faces the risk of extinction due to increased western education and the young generations are less interested in learning traditional medicine. In order to safeguard extinction of traditional animal health care knowledge and also prevent

misuse of plants, local traditional medical knowledge should continue to be studied and documented. Also, efficacy and safety of these plants should be investigated to protect both animals and the public. The need to strengthen the existing extension services in Nigeria as a country through adequate and consistent funding cannot be over emphasized for ultimate efficiency. The efforts of both University based extension services and that of the Ogun state Agricultural Development Programme (OGADEP) should be synchronized for better efficiency.

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*A survey of ethnoveterinary botanical in Ogun State and their public health implications*

**Table 6: Plants used in ethnoveterinary medicine in Ogun state**

/N	Scientific name	Common name	Local name	Uses	Parts of Plant
1.	<i>Ficus exasperate</i>	Sand paper	“Epin”	Mange	Leaf
2.	<i>Adenopusbreviflorus</i>	Pseudocolocynth	“Tagiri”	Mange,PPR,cold,,cough,Newcastle disease,coccidiosis	Fruit
3.	<i>Ocimumgratissium</i>	Basil leaves	“Effirin-nla”	Diarrhoea	Leaf
4.	<i>Spiondiasombin</i>	Hogplum	“Iyeye”	Dystocia and diarrhoea	Whole plant
5.	<i>Moringaoleifera</i>	Drumstick benzolive	“Moringa”	Diarrhoea	Shoot
6.	<i>Citrus auriatifolia.</i>	Lime	“Osanwewe”	Mange and Diarrhoea	Fruit
7.	<i>Carica papaya</i>	Pawpaw	“Ibepe”	Worm infestation	Ripe fruit
8.	<i>Acacia albida</i>	Acacia	Kasia	Diarrhoea	Leaves
9.	<i>Allium sativum</i>	Garlic	“Ayu”	Newcastle disease and cough	Bulb
10.	<i>Arachis hypogeal (seed oil)</i>	Groundnut	“Epa”	wound and bloat	Fruit
11.	<i>Chromolaena odoranta</i>	Siam weed	“Ewe akintola”	Diarrhoea, wound	Leaves
12.	<i>mormordicacharata</i>	Melon	Egusi	Abscess	Seed
13.	<i>Cocosnucifera</i>	Coconut	“Agbon” olodu	Mange	Fruit
14.	<i>Jatrophacarcus</i>	Purge nut black vomit	“Ojebotuje”	wound	Sap
15.	<i>Nauclealatifolia</i>	African peach	“Egbon” egbesi	Diarrhoea	Leaves
16.	<i>Annonasenegalensi</i>	African custard apple	“Abo”	Eye infection	Leaves
17.	<i>Hexalobuscrispiflorus.</i>	Hexalous	Apara pod	mange	Pod
18.	<i>Anthoclestialiebrechtsiana</i>	Cabbage tree	Apaoro	Wound	Leaves
19.	<i>Phylanthusamarus</i>	Amarus plant	Eyinolobe	Eye infection	Leaves
20.	<i>Rhaphiostylisbeninensis</i>	Rhaphiostylis	Ewe-abeapata	Mange, Diarrhoea and Newcastle disease	Whole plant
21.	<i>Zea mays</i>	Pap	Ogi	diarrhoea	Grain
22.	<i>Caesalpiniabonduc</i>	Gray-nicker,bonduc nut	Ayoo	Dystocia,worm infestation	Whole plant
3.	<i>Ricinuscommunis</i>	Castor oil plant	Ewe-laaKayogi	wound	Leaves
4.	<i>Chasmantheradependens</i>	Chasmanthera	Atoo	Fracture	Leaves
5.	<i>Terminaliamacroptera</i>	Cluster leaf or kalum pit	IgiodanBodi	Dystocia, wounds and sores, infections, cough	Leaves and root
6.	<i>Vitexdoniana</i>	Black plum	OrinlaBodilohi	Eyeinfectionand diarrhoea	Leaves and stem
7.	<i>Oriza sativa</i>	Rice	Omi iresi	Diarrhoea	Seed
8.	<i>Capsicum frutescens</i>	Pepper	Ata ijosi	Newcastle disease	Fruit
9.	<i>Brideliaferruginea</i>	Benth	Ewe iraBembeku	Newcastle disease	Leaves
0.	<i>Nicotinarustica</i>	Tobacco leaves	Ewe taba	Lice and ticks infestation	Leaves
1.	<i>Jatrophagossypifolia</i>	Red fignut	<i>Lapalapa pupa</i>	Diarrhoea	Leaves
2.	<i>Elaeisguineensis</i>	Palm oil	Epo pupa	Mange,Newcastle disease and abscess	Fruit

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