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Research article

THE CONTROL OF *SARCOPTES SCABIEI* INFECTION ON WEST AFRICAN DWARF (WAD) PIGS ON FREE RANGE MANAGEMENT SYSTEM

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ABSTRACT

Trials were carried out to compare effective use of local and scientific control of S. scabiei in the treatment levels during 2012 and 2013 dry seasons across 3 locations (South, Central and North zones) in Delta State. A total of 180 West African Dwarf Pigs under the free range management system were selected from 36 farmers. Treatments consisted of three systemic control: Treatment I (control: No systemic control) treatment II (local control) and treatment III (Scientific control). Each location served as a replicate in Complete Randomized Design (CRD). Statistical analysis showed that there was no significant differences (P<0.05) in the mean value of Pigs infested by Sarcoptcs scabiei across the. Treatments with a mean of 7-7 ('38.3 %), 5-7 (28.3 %) and 6.7 (33.3 %) for treatment I, II and III respectively. However, across the locations, significant differences (p>0.05) existed with the southern zone having the highest infestation of sarcopatic mange with a mean value 9.7 (48.3 %) followed by the central zone and Northern zone with least means and percentage infestation of 7.0 (35 %) and 3.3 (16.7 %) respectively. The findings revealed that local control of sarcopatic mange should be used by farmers practicing free range management system.

Keywords: WAD Pig, free range, systemic control, Sarcoptes scabiei, mange, infestation.

INTRODUCTION

In Delta State, indigenous Pigs production contributes immensely to the livelihood of a large number of the rural households. It was observed that a rural area in the state has the widest spread of sarcoptes scabiei infestation than urban centers. However, this infestation span from birth to maturity of the animal which range from 10 to more than 50 per cent and represent a serious constraint in population turnover of Pig. *Sarcoptes scabiei* is sarcoptid mite belonging to the suborder Astigmata (Bowman, 2003). He further stated that the female *Sacrcoptes scabiei* burrows through the epidermis and suck blood producing tunnels filled with eggs and feces. Their burrowing causes the skin to become inflamed and swollen. Thepretarsus of *S. scabiei* has a long unsegmented stalk, also known as the pedicel (Dittmar. 2002). The activities of .V. *scabiei* is within dry season (October- March) while the less activites period is observed to be in rainy season (April-September). The free range management system being practice predispose the healthy pigs to sarcopatic mange. Olomu and Oboh (1995) stated that *S. scabiei* is the most serious infection caused b\ ectoparasites in Nigeria. It is also the highest factors that cause huge economic losses to farmers nutritionally and financially.

In order to realize the potential of increases productivity of indigenous pigs in the state, the high incidence could he reduce through the systemic control of *S. scabiei.* The objectives of this study are therefore to compare effective use of local and scientific control of *S. scabiei* in the treatment levels, it also determine the economies of production of WAD pigs reared under these treatment levels.

MATERIALS AND METHODS

A total of 180 West African Dwarf (WAD) pigs under the free range system of management were selected from 36 farmers across the 3 locations. Four (4) each in the South, Central and North zones at 12 farmers per zone (3 farmers per treatment) each farmer supplied 5 Pigs. The study was conducted between October, 2012 to March. 2013. There were three treatments: Treatment 1 (Control: No Systemic Control), treatment II (Local control) and treatment III (Scientific Control). Each location served as a replicate in Complete Randomized Design (CRD) and data collected were analyzed using the Genstat package.

Locally, 50 g per 20 Pigs of Tobacco (Snuff) was dissolved in 4 litres of palm oil. Three soil brushes were used for application of the mixture of Palm oil and Tobacco to hairs of the animal. These were done in the morning thereafter to free range. While in scientific state, Ivormectin (0.5 mg/kg) was dissolved in 500 ml of water. Knapsack was used to spray the mixture content in the body of the animals. This experiment as repealed once per

week. Numbers were inscribed with indelible blue marker for treatment 1. Green for treatment II and pink for treatment III on the ear and back of the animal for easy identification. This practice was repeated 2 days per week. It was observed in the course of this experiment that the Ivormectin washed off the pig's hair more often during scavenging in pond of mud or dirty water especially in the southern zone where fishing ponds dominated.

Thus, predisposing the pigs to *S. scabiei* infection. Head counts were taken every week till the pigs were in their sixth month, the shortfall adduced to *S. scabiei* infection and other parameters were accounted for.

RESULTS AND DISCUSSION

The percentage infestations of *S. Scabiei* in pigs within the treatment and across location are shown in Table 1. Statistical analysis showed that there was no significant differences ($P < 0.05$) in the mean of pigs infested by *sarcoptes scabiei* across the treatment with a mean of 7.7 (38.3 %), 5.7 (28.3 %) and 6.7 (33.3 %) for treatment I, II and III respectively. However, across the locations, significant differences ($P> 0.05$) existed with the southern zone having the highest infestation of *S. scabiei,* with a mean value of 9.7 (48,3 %) followed by the central zone and Northern Zone having the least with mean and percentage infestation of 7.0 (35 %) and 3.3 (16.7 %) respectively. Table 2 showed the percentages of death by diseases and other parameters of the pigs stocked. The southern zone recorded the highest mortality of 46.7 % followed by northern zone 30 % and 23.3 % for the central zone. The high mortality of pigs at the southern zone was attributed more to deaths by diseases, vehicular and other forms of mobility. The central zone had the lowest mortality due to the rurally of the area.

Table 3 showed the number of pigs that survived in each treatment termed. "Survivors". Treatment II showed the highest survival rate with a total of 31 pigs (51.7%) followed by treatment III with 18 pigs (30 %) and least, treatment 1 with 11 pigs (18.3 %) see fig. I. The study reveals that farmers reaction was positive in this trial since it was obvious that reduction in the losses attributed to infection of *S. scabiei* on the pigs was low in treatment II and III when compared to treatment I. The economic analysis of the results revealed that he Marginal Revenue for treatment II (₦2.000) was higher than the marginal cost (₦1,800), while that for treatment III (₦1,300) was lower than its marginal cost (₦7,800). The findings revealed that the profit obtained was higher in treatment II than treatment III (Table 4). This may be attributed that the cost of insecticides for scientific control are more expensive compared to local control materials.

CONCLUSION AND RECOMMENDATIONS

In conclusion, the infestation *of Sarcoptes scabiei* on pigs that predispose them to disease and other

means is significant in the state, thus the effective use of local method where available should be advocated. However, where insecticides like ivormectin, marathon, lindane, permethrin etc cannot be sourced, the local method should be used by farmers practicing free range system of management.

Olomu and Oboh (1995) reported that the best remedy for sarcopatic mange is local control by the roughly rub the affected areas with palm oil or waste engine oil. The findings revealed that the mixture of palm oil and tobacco is more effective in control of *S. scabiei*, as a result of nicotine found in tobacco which inhibits the activities of ectoparasites. Confining of pigs would also reduce death attributed to vehicular which is more in the southern zone due to high urbanization.

The following recommendations have been advocated to enhance adoption of local control of mange in WAD pigs

(i) use of palm oil and tobacco is less expensive and more effective in the control of sarcopatic mange indigenous pigs.

(ii) prevent loss due to deaths of pigs from disease and others, housing facilities and vaccination should be provided.

(iii) The result of this study should therefore be passed to ADP for adoption in reducing infection of sarcopatic mange in pigs.

In order to achieve this, state, federal government and NGOs should provide incentives such as allowance, vehicle for easy transportation/ mobility etc and organizations of in-service training programmes to extension workers for effective campaign of using local method to control sarcopatic mange on WAD pigs.

Table 1: Pigs Infested by *Sarcoptes scabiei* across Location and Systemic Control.

	Location	No Systemic Control	Local Control	Scientifc Control	Total	Mean (×)	%
	Pigs Stocked	60	60	60	180		
.	South Zone	11	8	10	29	60 9.7	48.3
.	Central Zone	8	7	6	21	7.0	35.0
.	North Zone	4	2	4	10	3.3	16.7
	Total	23	17	20	60	20	
	Mean	7.7	5.7	6.7	20		
	%	38.3	28.3	33.3	33/3		

Table 2: Pigs Predispose to Diseases and other Mean Across Location and Treatments.

	Location	No Systemic Control	Local Control	Scientific Control	Total	Mean (x)	%
	Pigs Stocked	60	60	60	180	60	
.	South Zone	16	5	7	28	9.3	46.7

.	Central Zone	6	3	5	14	4.7	23.3
.	North Zone	4	4	10	18	6	30.0
	Total	26	12	22	60	20	
	Mean	8.7	4	7.3	20		
	%	43.3	20	36.7	33.3		

Table 3: Pigs that Survived Deaths across Location.

	Location	**No Systemic Control**	**Local Control**	**Scientific Control**	**Total**	**Mean (x)**	**%**
	Pigs Stocked	60	60	60	180	60	
.	South Zone	5	13	7	25	8.3	41.7
.	Central Zone	2	10	5	17	5.7	28.3
.	North Zone	4	8	6	18	6.0	30.0
	Total	11	31	18	60	20	
	Mean	3.7	10.3	6.0	20	6.7	
	%	18.3	33.2	30.0	20		

Table 4: Economic Analysis.

	Item	**Unit**	**Unit cost**	**Quantity (q)**			**Total cost/Revenue (₦)**	
			Price (₦)	No Systemic No control	Local Control	Scientific control	No systemic control	Local Control	Scientific control
	Tobacco	g	30		50			1,50	
	Palm Oil	L	450		3			1350	
.	Ivormectin		150			50			7,500
	Brush		100		3	3		300	300
	Knapsack*								
	Bowl*								
.	Water*	ml						'	
	Labour*						0	1800	7,800
	TC							1800	7.800
	MC								
	Sales of grower pigs						9.500	11.500	10,800
	Ai 6 months								
	M R							2.000	1 ,300
	Profit						9,500	9.700	3,000

* Negligible **usually done during management control practices TC = Total Cost

MC = Marginal Cost

MR= Marginal Revenue

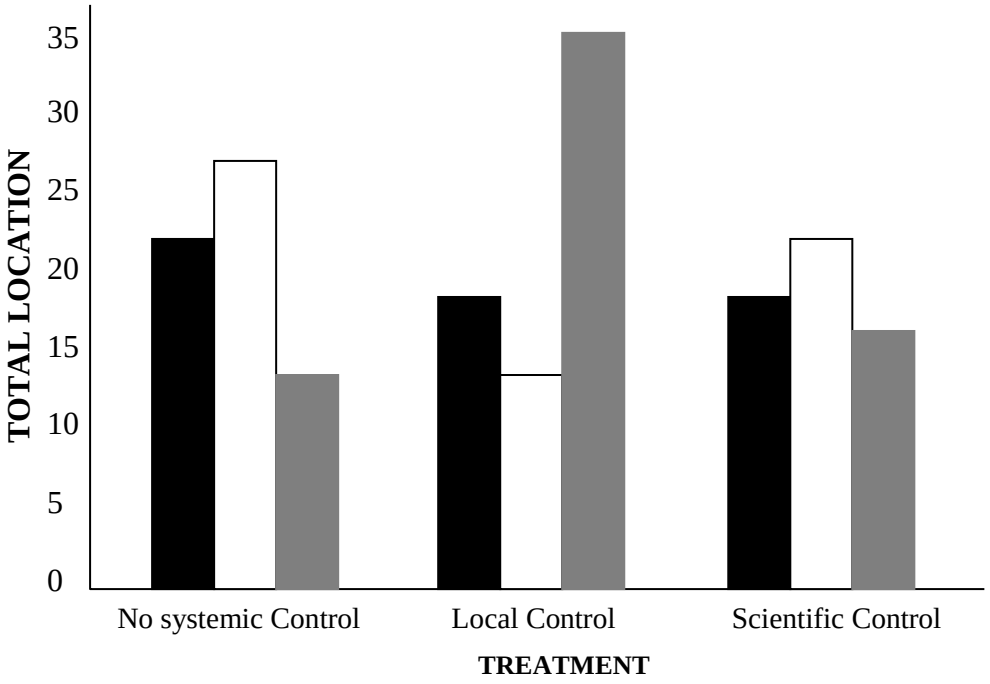

Figure 1: Bar chart pattern of *Sarcoptes scabiei* controls

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