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## A survey of gastrointestinal parasites in pigs of the Plateau and Rivers States, Nigeria

SALIFU (D.A.), MANGA (T.B.), ONYALI (I.O.). Enquête sur les parasites gastro-intestinaux chez des porcs du Nigeria (Plateau State et Rivers State). *Revue Elev. Méd. vét. Pays trop.*, 1990, 43 (2) : 193-196.

Des prélèvements de fèces provenant de 1 000 porcs ont été recueillis dans les régions de Jos et de Port Harcourt (Plateau et Rivers State) entre janvier 1987 et mars 1988. Dans la région de Jos, l'incidence parasitaire était la suivante : *Ascaris suum* 53,1 p. 100, *Trichuris suis* 8,5 p. 100, *Hyostromylus rubidus* 13,1 p. 100, *Metastrongylus salmi* 3,7 p. 100, *Strongyloides ransomi* 87,7 p. 100, *Oesophagostomum dentatum* 35,1 p. 100 et *Eimeria* spp. 2,4 p. 100 alors qu'à Port Harcourt elle se répartissait ainsi : *Ascaris suum* 10,4 p. 100, *Trichuris suis* 47,2 p. 100, *Oesophagostomum dentatum* 50 p. 100, *Hyostromylus rubidus* 2 p. 100, *Ancylostoma duodenale* 83,2 p. 100 et *Eimeria* spp. 3,6 p. 100. La proportion élevée d'helminthoses était due au mauvais entretien comme aux conditions sanitaires déficientes. Le contact avec des excréments humains, une alimentation pauvre et le manque de vermifugation étaient aussi très évidents. Les différents taux de l'incidence parasitaire à Jos et à Port Harcourt étaient aussi dus aux conditions d'humidité, variables dans ces États. *Mots clés* : Porcin - Helminthe gastro-intestinal - *Eimeria* - Nigeria.

### INTRODUCTION

The most important diseases of pigs in Nigeria are due to parasitic infections (2). The epizootiological factors affecting outbreaks of parasitic diseases have not been extensively studied in this country although investigations carried out by EUSOBIO (2) and FABIYI (3) have given some indications of the factors involved.

With the increasing awareness of pig farming in Nigeria, the danger from parasites is undoubtedly greatest when large numbers of pigs are kept especially under poor management conditions, indicated by poor sanitary conditions, access to human faeces and lack of veterinary attention. The expanding pig industry in Nigeria calls for extensive studies on parasitic infections under free range and intensive management systems. In Nigeria, there is also the possibility that the pig serves as an alternative host for human parasites.

This study was therefore carried out to establish the incidence of pig parasites in the Jos area of the

Plateau State, characterized by defined rainy and dry seasons, and in the Port Harcourt area of the Rivers State, which is moist all the year round, as a first step of effective control measures.

### MATERIALS AND METHODS

#### Collection of faecal samples

Faecal samples were collected rectally from a total of 1 000 pigs of various breeds, which were mainly Large White, Duroc and their crosses, between January 1987 and March 1988. The pigs for examination were randomly selected and as far as possible included an equal number of animals of each sex. These animals ranged from one month to three years in age and were raised under the intensive and semi-intensive systems.

A total of 250 and 750 faecal samples were collected from the Port Harcourt and Jos areas, respectively. Egg counts were carried out by the method of MAFF (5) and eggs were identified as described by SOULSBY (6).

#### Faecal culture

When necessary, faeces were cultured using the Hadori-Mori culture filter techniques (8). Larvae were identified as described by SOULSBY (6).

**Adult worms** : Adult worms recovered during meat inspection were identified as described by SOULSBY (6, 7).

### RESULTS

The gastrointestinal parasites encountered during this study and their infection rates in each age group and sex, in both Port Harcourt and Jos areas have been reported in tables I and II, respectively. Eight species were identified after faecal culture.

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**TABLE I** Parasite species and infection rates in each age group and sex in the Port Harcourt area.

Parasite species	Sows total n. = 51	Boars total n. = 51	Piglets total n. = 31	Weaners total n. = 80	Glits total n. = 18	Boars total n. = 31
<i>Ascaris suum</i>	42	18	6	52	15	18
<i>Trichuris suis</i>	15	17	6	56	7	17
<i>Oesophagostomum dentatum</i>	40	24	—	41	14	6
<i>Hyostromylyus rubidus</i>	—	—	—	3	2	—
<i>Ancylostoma duodenale</i>	42	34	23	32	15	22
<i>Eimeria</i> spp.	4	—	—	—	5	—

Figures in the table represent the number of infected animals.

**TABLE II** Parasite species and infection rates in each age group and sex in the Jos area.

Parasite species	Sows total n. = 100	Boars total n. = 100	Piglets total n. = 250	Weaners total n. = 100	Glits total n. = 100	Boars total n. = 100
<i>Ascaris suum</i>	90	75	20	84	80	50
<i>Trichuris suis</i>	10	20	—	14	20	—
<i>Strongyloides ransomi</i>	95	90	220	86	92	75
<i>Oesophagostomum dentatum</i>	63	73	—	32	60	35
<i>Hyostromylyus rubidus</i>	20	38	—	40	—	—
<i>Metastrongylyus salmi</i>	8	—	—	—	20	—
<i>Eimeria</i> spp.	9	—	10	20	—	—

Figures in the table represent the number of infected animals.

The rate and percentage of infection for each species encountered during this study have been reported in tables III and IV. The egg counts ranged from 6-1 6000 eggs per gram faeces (tables III, IV).

*Ancylostoma duodenale* had the highest prevalence in the Port Harcourt area while it was *Strongyloides ransomi* in the Jos area (tables III, IV).

## DISCUSSION

All age groups and sexes of pigs were susceptible to gastrointestinal parasite infection, but it appeared that the sows and the boars were the main source of transmission to the young ones. Infection was observed right from the piglet stage to the weaner stage.

**TABLE III** Number of infected pigs, percentage of infection and range of egg counts in the Port Harcourt area.

Parasites	Infected pigs	Percentage	Range of egg count/g faeces
<i>Ascaris suum</i>	151	60.4	10-2 000
<i>Trichuris suis</i>	118	47.2	400-600
<i>Oesophagostomum dentatum</i>	125	50.0	20-200
<i>Hyostromylyus rubidus</i>	5	2.0	6-20
<i>Ancylostoma duodenale</i>	208	83.2	200-15 000
<i>Eimeria</i> spp.	9	3.6	10-50

**TABLE IV** Number of infected pigs, percentage of infection and range of egg counts in the Jos area.

Parasites	Infected pigs	Percentage	Range of egg count/g faeces
<i>Ascaris suum</i>	398	53.10	10-15 000
<i>Trichuris suis</i>	64	8.50	20-200
<i>Strongyloides ransomi</i>	658	87.70	100-16 000
<i>Oesophagostomum dentatum</i>	263	35.10	30-400
<i>Hyostromylyus rubidus</i>	98	13.10	20-100
<i>Metastrongylyus salmi</i>	28	3.70	10-50
<i>Eimeria</i> spp.	18	2.40	20-100

The sows were infected with all the eight species encountered in this study and a similar picture was shown by the weaners that had all along been with the sows. This indicates that the weaners might have picked up these infections from their dams during suckling (tables I, II).

It was observed that no matter the cleanliness of the pen, complete prevention of gastrointestinal parasite infestation of pigs was not possible. Most of the gastrointestinal parasites encountered had high prevalence rates (tables III, IV). This high worm burden resulted in weight loss and increased the time of reaching market weight in most of the farms where this study was carried out. The dressing percentage loss will actually determine the losses in each pig farm. Accurately determining the percentage loss will not be possible since every farm has its own peculiarities. This actually agrees with the report of BLOOD *et*

*al.* (1) showing that it is impossible to give accurate estimates of losses resulting from parasitic infections.

Despite the high rate of infections observed, some pigs in some farms showed no clinical signs due to a good feeding regimen. This tends to confirm the report of BLOOD (1) indicating that the effect of parasitism on animals increases as a result of lack of good nutrition.

During this study, it was observed that *Ancylostoma duodenale*, a human hookworm, had the highest prevalence in the Port Harcourt area where 83.2 % of the 250 pigs were infected. This was possible because pigs had access to human faeces. This led to parasitological examination of some of the human faeces that were indiscriminately disposed in areas where pigs had this infection and it was observed that a high percentage (56.7 %) of the 205 human faeces were positive for *A. duodenale*. This finding thus confirms the reports of SOULSBY (6, 7) indicating that *A.*

*duodenale*, a human hookworm, had been reported in pigs in Europe, Asia, North Africa, China and Japan. The adult worms that were recovered from some slaughtered pigs in abattoirs on microscopical examination had dorsally bent mouth opening guarded by two pairs of ventral tooth and one small tooth on either side. In the Jos area, it was *Strongyloides ransomi* infecting 87.7 % of the 750 pigs examined which exhibited the highest infection rates in pigs.

In both states, *Ascaris suum* infected a high percentage of pigs (tables III, IV), in keeping with the reports of FORSUM *et al.* and STEPHENSON *et al.* and ZIMMERMAN (4, 8, 10).

There was not much difference in terms of sex susceptibility to the various parasites encountered. The devastating effects of these parasites on pigs can be prevented by combining an efficient sanitary programme with a good deworming and a balanced nutrition.

SALIFU (D.A.), MANGA (T.B.), ONYALI (I.O.). A survey of gastrointestinal parasites in pigs of the Plateau and Rivers States, Nigeria. *Revue Élev. Méd. vét. Pays trop.*, 1990, 43 (2) : 193-196.

Faecal samples were collected from a total of 1 000 pigs from the Port Harcourt and Jos areas of the Rivers and Plateau States, respectively, between January 1987 and March 1988. In the Jos area the parasite incidence was : *Ascaris suum* 53.1 %, *Trichuris suis* 8.5 %, *Hyostrogylus rubidus* 13.1 %, *Metastrongylus salmi* 3.7 %, *Strongyloides ransomi* 87.7 %, *Oesophagostomum dentatum* 35.1 % and *Eimeria* spp. 2.4 % while in Port Harcourt the incidence rate was *Ascaris suum* 10.4 %, *Trichuris suis* 47.2 %, *Oesophagostomum dentatum* 50 %, *Hyostrogylus rubidus* 2 %, *Ancylostoma duodenale* 83.2 % and *Eimeria* spp. 3.6 %. The high rate of parasitic infections was due to poor management practices as shown by poor sanitary conditions. Access to human faeces, poor feeding and lack of deworming were also very evident. The different rates in the incidence of parasites in Jos and Port Harcourt areas were due to the varying moisture conditions in these states. *Key words* : Pig - Gastrointestinal helminth - *Eimeria* - Nigeria.

SALIFU (D.A.), MANGA (T.B.), ONYALI (I.O.). Estudio sobre los parásitos gastro-intestinales en cerdos de la meseta y la rivera, Nigeria. *Revue Élev. Méd. vét. Pays trop.*, 1990, 43 (2) : 193-196.

Se colectaron un total de 1 000 muestras de heces de cerdos de PortHarcourt y Jos, zonas de la rivera y la meseta, entre enero 1987 y marzo 1988 respectivamente. En la zona de Jos, la incidencia parasitaria fue : *Ascaris suum* 53,1 p. 100, *Trichuris suis* 8,5 p. 100, *Hyostrogylus rubidus* 13,1 p. 100, *Metastrongylus salmi* 3,7 p. 100, *Strongyloides ransomi* 87,7 p. 100, *Oesophagostomum dentatum* 35,1 p. 100 y *Eimeria* spp. 2,4 p. 100. En PortHarcourt la incidencia fue : *Ascaris suum* 10,4 p. 100, *Trichuris suis* 47,2 p. 100, *Oesophagostomum dentatum* 50 p. 100, *Hyostrogylus rubidus* 2 p. 100, *Ancylostoma duodenale* 83,2 p. 100 y *Eimeria* spp. 3,6 p. 100. La alta incidencia de infecciones parasitarias se debió a malas prácticas de manejo, evidenciadas por malas condiciones sanitarias. También fue evidente la contaminación con heces humanas, la mala alimentación y la ausencia de prácticas de desparasitación. La diferencia en las tasas de incidencia entre Jos y PortHarcourt, se debió a las variaciones en las condiciones de humedad entre las dos zonas. *Palabras claves* : Cerdo - Helminto gastrointestinal - *Eimeria* - Nigeria.

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