

## Short Communication

# Prevalence of intestinal parasitism of swine in a North Central State of Nigeria

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• Received: Feb 15, 2016 • Revised: April 13, 2016 • Accepted: April 16, 2016 • Published Online: April 27, 2016



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## ABSTRACT

**Objective:** Swine production is one of the most popular and promising livestock production industries in many parts of Nigeria. It prides itself in contributing to the supplementation of the overall national protein intake, gainfully engaging the citizenry in the industry and generating foreign exchange to the nation through export of produce and products. However, the swine production industry in Nigeria faced with religious and cultural constraints as well as several infectious diseases. The objective of this study was to investigate the prevalence of intestinal parasites in swine in the North Central State of Nigeria.

**Materials and methods:** A total of 920 pigs comprising of 874 (95%) and 46 (5%) foreign and indigenous breed of pigs respectively were investigated in this study. Quantitative McMaster egg-counting technique was used for counting eggs of parasites. Semi-structured questionnaires was used to generate demographic data during October 2014 to March 2015.

**Results:** Fifty five percent pigs were found to be positive for *Hyostrogylus rubidus*, while *Ascaris suum*, *Trichuris suis* and other unidentified eggs were present in 23, 17 and 5% pigs, respectively. 'Red Stomach Worm' infection in swine was the highest parasitic burden observed as compared to other parasites. Spreading of infection within sexes had a *P* value of >0.5.

**Conclusion:** The prevalence of parasites in pigs obtained in this work is a consequence of improper husbandry measures and irregular veterinary medical intervention.

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## KEYWORDS

Intestinal parasitism, Prevalence, Swine

**How to cite:** Aiyedun JO, Oludairo OO (2016). Prevalence of intestinal parasitism of swine in a North Central State of Nigeria. *Journal of Advanced Veterinary and Animal Research*, 3(3): 278-281.

## INTRODUCTION

Pigs are one of the most common livestock reared in Nigeria with a lot of potentials for economic development ([Pam et al., 2013](#); [Sowemimo et al., 2014](#)). However, intestinal parasitism is a debilitating condition in piggery. In spite of this, helminthiasis are often neglected because of its in apparent clinical signs. Losses of production ranges from stunted growth, prolonged fertility to reduced productivity ([Mutual et al., 2007](#); [Jufare et al., 2015](#)).

In the last 10 years, the pig industry has experienced unequalled patronage with commensurate increment in production. This has consequently led to the production of more protein of animal origin, increased employment opportunities, alleviation of poverty and generation of foreign exchange for economic development ([Akerejola, 1997](#); [Paulo and Nonga, 2015](#)). This branch of livestock industry in developing countries like Nigeria is however, saddled with religious, cultural, social and environmental challenges as well as infectious diseases ([Mutual et al., 2007](#); [Tomass et al., 2013](#)).

Most intestinal parasites are helminthes. They inhabit the gastrointestinal tracts of their host which transverses the mouth, oesophagus, stomach, small intestine, large intestine and the rectum ([Barbosa et al., 2015](#)). Unlike helminth, protozoa parasites are located within the tract. 'Helminth' is derived from a Greek word meaning all types of worms, both free living and parasitic which are classified as nematodes (round worms) and platyhelminthes (flatworms, trematodes and cestodes). They are eukaryotic multicellular parasitic cells that have digestive, circulatory, nervous, excretory and reproductive systems ([Schantz, 1991](#); [Agbolade et al., 2004](#); [Inpankaew et al., 2015](#)).

Parasitism is crucial in livestock production but often overlooked due to the fact that clinical signs are not obvious. Stunted growth and prolonged fertility are often associated with helminthiasis. This is a major setback to efficient, effective and result oriented livestock production ([Akerejola et al., 1997](#); [FAO, 2000](#); [Paul et al., 2009](#); [Geresu et al., 2015](#)). This study investigated the prevalence of intestinal parasites in swine in a North Central State of Nigeria.

## MATERIAL AND METHODS

**Study area:** Nigeria's North Central State of Kwara was used for the study. It lies on latitude 08°30'00" and longitude 04°32'59" with an altitude of 310 m. The State occupies 36, 825 square kilometers with a population of

2.37 M as at 2006. The average temperature is 27.5°C while the annual average rainfall is 1404.5 mm ([FGN, 2007](#); [Anonymous, 2014](#)).

**Sampling method and specimen collection:** Christian privately owned pig farms were sampled within the State. The spatula was used to collect fecal samples from pigs and placed in universal bottles for transportation to the laboratory in cold packs. The samples were stored in the refrigerator and analyzed within 2 days.

**Fecal examination:** This technique uses specialized counting chamber. It contains 2 slides with 3 or 4 slim transverse glass slides placed in between. Salt solution was used to homogenize the fecal samples which was then poured into the chamber until full. The Pasteur pipette was used to dispense homogenized fecal solution into the counting chamber. Floating eggs attached to the underneath of the slides while the debris settled at the bottom of the chamber. The microscope was then used to examine the slides and the debris for the presence and number of eggs.

**McMaster egg-counting technique:** Thirty ml of solution each was used to soak each swine fecal sample. After about 30 min each sample was homogenized and turned into solution. The fecal solutions were poured into the sieving chamber to obtain the filtrate. With the aid of a pipette, 8ml of the filtrates were poured into the two counting chambers until full. The eggs which floated in the two ruled areas of the chamber were counted and added together. Total number of eggs per gram is equal to the sum of the number of eggs in the two chambers multiply by one hundred. The student's t test was used to analyze the results. This technique could be influenced by the amount and texture of feces ([Ames, 1996](#)).

**Table 1:** The breeds of swine sampled for intestinal parasites pigs.

Breed	Pig quantity
Indigenous	46
Duroc	194
Landrace	310
Largewhite	370
<b>Total</b>	<b>920</b>

## RESULTS AND DISCUSSION

In this study, 920 pigs comprising of 874 (95%) and 46 (5%) foreign and indigenous breed respectively were investigated for intestinal parasitism (**Table 1**). *Trichuris suis*, unidentified eggs, *Ascaris suum* and *Hyostrogylus rubidius* were prevalent as 5% (n=46), 17% (n=156), 23%

(n=212) and 55% (n=506), respectively (**Table 2**). The red stomach worm infection caused by *Hyostrongylus rubidis* was the highest worm burden recorded, and *T. suis* was the least. All the indigenous breeds (100%) had significant levels of intestinal parasitism as compared to the relatively lower burden in foreign breeds (75%).

**Table 2:** Prevalence of intestinal parasites in sampled swine.

No of pigs	%	Type of helminth
506	55	<i>Hyostrongylus</i>
212	23	<i>Ascaris suum</i>
156	17	Unidentified eggs
46	5	<i>Trichuris suis</i>

**Table 3:** Intestinal parasitic burden of sampled swine population.

Breed of pigs	Parasitic load
Indigenous	1730 /gm feces
Foreign	580 /gm feces

The average total number of eggs per gram of feces was 1730 and 580 in indigenous and foreign breeds respectively (**Table 3**). The McMaster egg count technique revealed the extent of parasitism in the investigated swine population. Heavy parasitic burden is usually indicated by varying degrees of weight loss. While light burden causes retarded growth and delayed development. Swine population with improved husbandry systems have apparently healthy pig population compared to farms with poor management systems. The prevalence of intestinal parasitism recorded in foreign breeds raised intensively was lower than the indigenous breeds. Underfed animals were found to have higher susceptibility to intestinal parasitic infection burden ([Adejimi and Haniron, 1996](#); [Jufare et al., 2015](#); [Geresu et al., 2015](#); [Atawalna et al., 2016](#)).

## CONCLUSION

The study provides basic information about the distribution and spread of intestinal parasite of swine. This may be of immense value to farmers, policy makers and researchers especially in the contributing to the production of safe, wholesome pork for consumption of the public. Improved husbandry system and modern management practices should be embraced too enhance swine immunity against helminthiasis. Better and more balanced feeding regimes could be introduced aimed at having stronger, more resistant swine population. Informed preventive and control measures should be well structured to expel intestinal parasites from pigs and prevent their spread to other animals and human. These measures should include prophylactic and therapeutic

antihelmitic programmes which would ultimately lead to increase productivity. Indigenous free ranging piggeries should be discouraged. Proper meat inspection should be carried out at the point of slaughter. Pork meat should be thoroughly cooked to prevent infection spreading to man. There is need for more research on the epidemiology of parasitism in swine population.

## CONFLICT OF INTEREST

None of authors have any conflict of interest.

## ACKNOWLEDGEMENT

Nothing to declare.

## AUTHORS' CONTRIBUTION

Samples and field work were carried out by the first author while the write up and logistics were provided by the second author.

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