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Neem (*Azadirachta indica*) Leaf as Dewormer and as Component of Swine Ration

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ABSTRACT

The effect of varying levels of neem leaf meal on the growth performance and internal parasites of swine was investigated. Results indicated that there is no significant difference on swine growth performance in terms of average weight gain, average feed consumption, and feed conversion efficiency. However, there is a significant difference in the percentage reduction of internal parasites based on egg per gram count. Percentage parasite reduction is greater at higher proportion of neem leaf meal in the ration.

Keywords: Azadirachta indica, neem leaf meal, neem, dewormer

INTRODUCTION

Azadiracta indica A. Juss. (neem tree) is a member of the family Meliaceae in the order Fagales of the Dicotyledonous class in the plant kingdom. Native to South Asia, it is widely planted and naturalized in semi-arid areas throughout Asia and Africa. It was introduced in the Philippines as fodder trees and a source of biological pesticides against rice pests.

The neem has been reported to contain several biologically active constituents such as Azadirachtin (Naganishi, 1975), melinatriol (Lavie *et al.,* 1965), salanin (Warthen *et al.,* 1978), as well as nimbin and nimbidin (Shin-foon, 1984). Garg and Bhakuni (1984) reported salanolide, a meliacin as one of the bitter constituent in neem seed oil. Furthermore, Raman and Sathanagopalan (1979) reported tignic acid (5-methyl-2-butanoic acid) as part of its seed constituent. These compounds have shown diverse effects as medicine, germicides and pesticides.

Azadiracthin, a limonoid has been reported to have adverse effect on the endocrine system of insects (Schmuthere *et al.,* 1981). It also acts as repellent, feeding and oviposition deterrent, growth regulating, sterilant and impairs hatching of eggs.

Neem has also been extensively used in the livestock industry. The neem seed cake in purified form is a protein supplement in livestock feed while the neem leaf paste is used as feed supplement to control intestinal parasites (Intaran, 2000). Creams containing neem oil are used as animal wound dressing and also act as fly and mosquito repellents. In Kenya, neem seed powder is used to protect the native chicken from New Castle virus disease (crescentlife.com, 2004). In recognition of the importance of neem tree as livestock feed and wormicide, this effort is made to evaluate the effect of neem leaf meal on the growth performance and internal parasites of swine.

METHODOLOGY

Sixteen swine aging ninety to ninety-seven days old were randomly assigned to 4 treatments (T_1:control; T_2: ration with 5% NLM; T_3: ration with 10% NLM; T_4: ration with 15% NLM) with 4 observations each following the Completely Randomized Design.

Milled air-dried neem leaves were incorporated in the swine ration consisting of rice bran, corn meal, "binlid", fishmeal, soybean oil meal and copra meal. The proportion of the ration ingredients in the different treatments is shown in Table 1.

Table 1. Experimental Ration.

	TREATMENT			
INGREDIENTS	1	2	3	4
Rice bran	39.1	37.6	37.1	36.2
Corn meal	23.4	22.6	22.2	21.7
Binlid	15.6	15.1	14.5	14.5
Fishmeal	11.0	9.9	9.4	8.8
Soybean oil meal	6.6	5.9	5.6	5.3
Copra meal	4.4	3.9	3.7	3.5
Neem leaf meal (NLM)	0	5.0	7.5	10.0
TOTAL	100	100	100	100
Calculated CP, %	17%	17%	17%	17%

The data gathered were the following: average initial weight, average final weight, average gain in weight, average feed consumption, feed conversion efficiency and internal parasitic load.

The internal parasitic load of the animals was determined as egg per gram counts using the McMaster Counting Technique.

All data were subjected to analysis of variance (ANOVA).

RESULTS AND DISCUSSION

Growth Performance

There is no significant difference in the average weight gain and feed consumption of swine after 117 days of rearing (Table 2). However, data indicated that average weight gain and feed consumption decrease with increasing proportion of neem leaf meal in the ration. The animals fed with ration without neem leaf had the highest average weight gain of 54.50 kg and feed consumption of 216.7 kg, while those fed with ration containing 15% neem leaf meal had the lowest of only 48.25 kg weight gain and 205 kg feed consumption. The low weight gain can be attributed to lower feed consumption of animals in the treatment with neem leaf meal.

Table 2. Mean average weight (AWG), feed consumption (FC), feed conversion efficiency(FCE), and reduction in parasite egg (RPE) per gram count.

Treatment	AWG	FC	FCE	RPE (%)
0% NML	54.50	216.7	3.98	1.43
5% NML	50.25	212.7	4.28	38.35
10% NML	51.66	206.3	4.03	96.73
15% NML	48.25	205.0	4.27	223.33

A factor contributing to low feed consumption is the taste of neem leaves. The bitter taste to its meliacin compounds has affected the palatability of the ration. It was observed that the animals fed with 15% neem meal consumed their ration very slowly and even left some of it for sometime (although most of the time, the animals returned to finished the ration). Those fed with 10% neem meal, consumed their ration slowly but usually finish the ration before leaving the feeding trough.

Though animals fed with neem meal leaf ration has lower feed consumption, statistical analysis indicated that the difference in feed consumption is not significant. The average daily feed consumption of the animals is within the normal swine feed consumption of 1.7 to 2.0 kg per day under Philippine condition (Sayoc *et. al.* ___).

The animals fed with 15% neem leaf meal showed the highest feed conversion efficiency of 17% (Table 2) despite consuming lesser amount of the ration. Analysis of variance however indicated that the difference in the feed conversion efficiency between treatments is not significant.

Effect on Internal Parasites

The eggs seen under direct fecal smear and counted under the McMaster Counting Chamber resemble the morphological structure of *Ascaris* spp. Exact

species identification was not conducted since the study is only after the total percentage reduction in egg per gram count and not in the percentage reduction of individual species of worms.

Egg per gram count at the start of the study revealed that the experimental animals have mild, if not negligible, nematode worm infestation. However, the number of eggs of other parasites is high, ranging from 4,200 to 6,000 eggs per gram fecal smear.

After feeding the animals with neem leaf meal, the number of parasite eggs was reduced (Table 6). Reduction in the number of parasites was greatest in animals fed with 15% neem leaf meal. The egg per gram count was reduced by more than two hundred percent in this treatment, while only one-percent reduction was observed in the control group. This work demonstrates the potency of *A. indica* in the control of swine internal parasites.

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