

## *Research Note*

### *GARBAGE AS FEED FOR SWINE<sup>1, 2</sup>*

Garbage or kitchen waste varies in composition depending on its origin. It is a significant potential source of feed for swine production in densely populated areas like Puerto Rico, in view of the world demand for grains as a source of food for the increasing population.

Institutional garbage (predominantly rice and beans) and wet poultry waste (as collected daily) were evaluated as feed for growing swine.

In study 1 (table 1), four barrows and four females of different crosses, weighing approximately 18 kg (40 lb), were assigned at random in each treatment. One group was fed garbage ad libitum supplemented with 0.9 kg (2 lb)/animal/day of a 16% crude protein concentrate, while the other received the conventional system of concentrate alone. The experimental period lasted three weeks.

Rate of gain, over a pound/animal/day average, with a satisfactory efficiency of conversion factor of approximately 3, resulted in both cases. These non significant differences indicate that institutional garbage supplemented with 0.9 kg of 16% crude protein concentrate per pig/day is as good a feed for very young growing pigs, as 1.8 kg of the concentrate.

In study 2, (table 1) a follow up evaluation comparing two concentrate supplements with different crude protein levels (16 and 24%) as complement to garbage, and evaluating wet (boiled) poultry waste supplemented with either garbage or concentrate, was conducted. Two barrows and two females of different crosses, weighing approximately 27 kg (60 lb) were assigned at random to each treatment. The trial period lasted 6 weeks.

Larger growing pigs than those used in study 1 grew at an equivalent non significantly different satisfactory rate when the garbage was complemented with either a 16 or 24% crude protein concentrate (that provided approximately 40% of the ration). When garbage was fed alone, a slightly non significant slower growth rate (84 vs. 100% of those receiving concentrate also) with a better efficiency of utilization resulted. This appears to be due to the fact that the dry matter intake, about 70% of that from the concentrate complemented groups, forced a more efficient utilization of the limited intake.

<sup>1</sup> Manuscript submitted to Editorial Board February 22, 1977.

<sup>2</sup> The author wishes to express appreciation to Gustavo Rivera-Negrón, Isaac N. Rojas-Náter and Jorge Bauermeister-Sureda for their continuous support. Tomás Miranda was responsible for the day to day care of animals and data collection.

TABLE 1. — *Weight gain, feed consumption and efficiency of feed utilization by pigs<sup>1</sup>*

Diet Description	Weight-kg (lb)				Net consumption-kg (lb)				Efficiency of feed utiliza- tion <sup>5</sup>	
	Initial	Final	Net gain	Daily gain	Garbage <sup>4</sup>	Concentrate	Poultry waste	Total <sup>4</sup>		
<i>Study 1<sup>2</sup></i>										
Institutional garbage ad libi- tum + 0.9 kg (2 lb) 16% crude protein concentrate <sup>6</sup> daily	16.5(36.4)	29.0(63.8)	12.5(27.4)	0.6(1.3) A	22.3(49.0)	19.1(42.0)	—	41.4(91.0)	3.32	
1.8 kg (4 lb) 16% crude protein concentrate daily	16.0(35.3)	29.5(64.9)	13.5(29.6)	0.6(1.4) A	—	37.5(82.5)	—	37.5(82.5)	2.78	
<i>Study 2<sup>2</sup></i>										
6.8 kg (15 lb) institutional gar- bage daily	29.7(65.3)	55.7(122.6)	26.0(57.3)	0.6(1.4) A	80.8(177.8)	—	—	80.8(177.8)	3.10	
5.7 kg (12.5 lb) institutional garbage + 1.1 kg (2.5 lb) 24% crude protein concentrate <sup>6</sup> daily	25.8(56.8)	56.5(124.3)	30.7(67.5)	0.7(1.6) A	67.4(148.2)	47.7(105.0)	—	115.1(253.2)	3.75	
5.7 kg (12.5 lb) institutional garbage + 1.1 kg (2.5 lb) 16% crude protein concentrate <sup>6</sup> daily	30.2(66.5)	61.4(135.1)	31.2(68.6)	0.7(1.6) A	67.4 (148.2)	47.7(105.0)	—	115.1(253.2)	3.69	
3.4 kg (7.5 lb) poultry waste <sup>7</sup> + 3.4 kg (7.5 lb) institutional garbage daily	24.5(53.8)	34.9(76.8)	10.4(23.0)	0.2(0.5) B	40.4(88.9)	—	41.4(91.0)	81.8(179.9)	7.82	
3.4 kg (7.5 lb) poultry waste <sup>7</sup> + 1.1 kg (2.5 lb) 16% crude pro- tein concentrate <sup>6</sup> daily	29.2(64.3)	41.8(92.0)	12.6(27.7)	0.3(0.7) B	—	47.7(105.0)	41.4(91.0)	89.1(196.0)	7.08	

<sup>1</sup> Conducted at the Guavate Penal Facility, using the institutional garbage (predominately rice and beans) and poultry waste produced there. The garbage and the poultry waste were boiled at 100°C for 30 minutes, as required by law, to prevent the spread of swine diseases such as cholera, tuberculosis, salmonellosis and trichinosis.

<sup>2</sup> Study 1 lasted 3 weeks, while study 2 lasted 6 weeks. Means followed by a common letter do not differ significantly at the P = .01 level.

<sup>3</sup> Adjusted to 90% dry basis. The garbage (as fed) contained 25.4% dry-matter, with a chemical composition (as fed) of 3.1% crude protein and 4.0% ether extract (fat).

<sup>4</sup> The total was calculated by adding the amount of concentrate consumed plus the amount of garbage consumed adjusted to 90% dry matter.

<sup>5</sup> Based on consumption data adjusted to 90% dry basis and expressed as kg gained/kg consumed.

<sup>6</sup> Contained 2X normal concentration of vitamins, trace elements and NaCl.

<sup>7</sup> The poultry waste contained (as fed) 26.0% dry matter, with a crude protein content (as fed) of 6.9%.

Wet poultry waste (as collected daily) boiled for 30 min was a very poor pig feed when complemented with either garbage or concentrate. The odor produced in the boiling process was nauseating and the product fed, even when mixed with other ingredients, was not very palatable. A study using non-boiled wet waste or properly dried poultry waste, should be conducted.

Garbage, when fed alone or complemented with the equivalent of a 16% crude protein commercial growing concentrate, is an adequate feed, comparable to concentrate alone, for growing swine. Boiled wet poultry waste was not a satisfactory partial substitute for garbage or concentrate in this study.

*Manuel Soldevila*  
*Department of Animal Husbandry*