

Nutritional value of locally Available African pig feed ingredients: A basis for improved pork production to improve human health

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Ecosanté/Ecohealth



Outline

- Introduction
- Challenges
- Methods
- Results - nutrients
- Summary



Study area



Local pigs



Photo credit: C. Dewey

Smallholder pig sales



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Reasons pigs sold	Number of pigs sold	
	2007	2008
School fees	11	12
Medical fees	7	7
Family was hungry	2	6
Buy seeds for planting	3	8
Funeral costs	3	4
No feed for the pig	0	2
Dewey et al. 2011		

Pig/pork industry challenges

- Lack of feed – seasonal
- High cost
- Lack of knowledge
- Low average daily gain
- Small litters
- Sold at low weight
- Butchers need 30kg pigs
- Waste e.g. blood



Carter et al. 2013; Levy unpublished; Mutua et al. 2012; Kagira et al. 2010

Estimating nutritional value of local pig feedstuffs

- 58 samples - 17 feeds
- Literature – 17 feeds
- Dry matter, crude protein, ether extract, NDF, ADF, Ca, P
- Digestible energy estimated (NRC 2012)
- Lysine approximated from CP and Lysine:CP similar feed



Local feedstuffs



Local feedstuffs



Results – protein

Ingredient	N	Mean crude protein (% of dry matter)	Crude protein range (% of dry matter)
Cattle blood ²	6	66.1	33.7 - 95.1
Sun-dried fish - <i>Rastrineobola argentea</i> 4,5,6,7	4	59.1	48.9 - 64.9
Cassava leaf – <i>Manihot esculenta</i> ^{1,3}	6	25.0	19.0 - 31.7
Pig weed – <i>Amaranthus</i>	6	26.0	20.5 - 29.0
Wandering Jew – <i>Commelina</i>	4	25.1	24.5 - 26.9
Black Jack – <i>Bidens pilosa</i>	5	22.6	15.0 - 31.8
Sweet potato vine - <i>Ipomoea batatas</i> 8,9	4	14.5	11.2 - 16.9

Results – ether extract

Ingredient	N	Mean ether extract (% of dry matter)	Ether extract range (% of dry matter)
Avocado – local	5	47.7	42.6 - 54.9
Avocado – improved	4	46.4	37.4 - 66.8
Soybean – toasted ¹	1	22	n/a
Maize brewers waste	4	4.9	4.1 - 6.1
Grist mill waste	5	2.8	1.6 - 4.3
Cassava root - <i>Manihot esculenta</i> ^{1,2,3}	4	1.3	0.6 - 1.9
Mango – <i>Mangifera indica</i>	4	1.3	0.6 - 2.6

Results – phosphorous

Ingredient	N	Mean phosphorous (% of dry matter)	Phosphorous (% of dry matter)
Sun-dried fish - <i>Rastrineobola argentea</i> 4,5,6,7	1	1.6	n/a
Cattle rumen contents	8	0.7	0.6 - 0.7
Cassava leaf – <i>Manihot esculenta</i> ^{1,10}	6	0.3	0.2 - 0.5
Rice bran ^{1,2}	2	0.6	0.4 - 0.7
Grist mill waste	5	0.1	0.03 - 0.2
Mango	4	0.09	0.07 - 0.09

Results – calcium

Ingredient	N	Mean calcium (% of dry matter)	Calcium (% of dry matter)
Pig weed - <i>Amaranthus</i>	6	2.5	1.7 - 3.5
Sun-dried fish - <i>Rastrineobola argentea</i> 4,5,6,7	2	2.4	1.5 - 3.2
Cattle rumen contents	8	1.9	1.5 - 2.3
Cassava leaf – <i>Manihot esculenta</i> ^{1,10}	5	1.6	1.4 - 2.1
Cassava root – <i>Manihot esculenta</i> ^{1,2,3}	5	1.0	0.3 - 2.2
Soybean – toasted ¹	1	0.34	n/a
Maize – <i>Zea mays</i> ¹	4	0.04	0.03 – 0.06

Summary



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