

# Does Palatability Affect the Intake of Peas in Pigs?

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## SUMMARY

The primary use for field peas is as animal feed, particularly swine diets, where they are an economical source of energy and protein. The palatability of peas is a significant concern because it limits the use of this valuable ingredient. In this project, we studied the palatability of peas in swine diets. Our results show that peas used did not cause aversion in pigs, even when inclusion rates were as high as 60%. Pea diets did not cause a taste or post-ingestive aversion, and resulted in consumption levels equivalent to those for soybean meal diets.

## INTRODUCTION

With an annual production ranging from 3 to 3.7 million tonnes, field peas constitute a major source of income for farmers in Western Canada. Thanks to their high content in digestible energy and certain essential amino acids, field peas constitute an excellent feed ingredient for swine. A recent survey (Pulse Canada; Feed Pea Network, 2007)

among Canadian farmers showed that they were reluctant to use high levels of peas in swine diets mainly because of concerns about taste and feed intake. The aim of this study is to generate information on the possible origin of the problem that reduces feed intake.

## MATERIALS AND METHODS

Experiment 1 (Time Course Experiment). The first experiment (Time Course Experiment) examined the effect of pea concentration in the diet on feed consumption; while exp. 2 (Flavour Association Experiment) examined post-ingestive feed-back effects

*“Using peas with inclusion rates as high as 60% did not cause any reduction in feed intake”*

of pea consumption on feed intake. In the Time Course Experiment, 50 mixed-gender pigs were randomly assigned, at 9 weeks of age, to one of five dietary treatments: a soybean meal (SBM)-based control diet, a canola-based control diet and three test diets containing 20, 40 or 60% peas (Table 1). The peas used in the study were a commercial mix of peas obtained from the mill.



Research Technician Karu Bandaralage Feeding Pigs

**Table 1.** Ingredient and Calculated Nutrient Composition of Diets

Ingredient, %	SBM	Canola	20%	40%	60%
	Control	Control	Peas	Peas	Peas
Wheat	51.45	47.57	35.64	21.84	8.19
Soybean Meal	30.60	24.00	26.50	20.30	15.00
Oatgroats	10.00	10.00	10.00	10.00	10.00
Fish Meal	4.50	4.50	4.50	4.50	4.50
Peas	-	-	20.00	39.99	58.98
Canola	-	10.00	-	-	-
Tallow	1.00	1.50	1.00	1.00	1.00
Minerals <sup>1</sup>	1.93	1.93	1.93	1.93	1.93
Vitamins <sup>2</sup>	0.17	0.17	0.17	0.17	0.17
DL-Methionine	0.02	0.01	0.05	0.10	0.15
L-Threonine	0.08	0.06	0.08	0.10	0.13
L-Tryptophan	-	-	-	-	0.05
Lysine-HCl	0.26	0.26	0.14	0.07	0.01
<b>Nutrient</b>					
DE, Mcal/kg	3.50	3.46	3.48	3.46	3.45
Dlys/Mcal DE, g/Mcal	3.79	3.79	3.80	3.80	3.83
Crude Protein, %	26.99	27.03	27.00	26.39	26.05
Dlys, %	1.33	1.31	1.32	1.32	1.32

<sup>1</sup> 1.00% Mono-Di Cal, 0.50% limestone, 0.20% salt, 0.20% mineral premix and 0.03% zinc oxide

<sup>2</sup> 0.10% vitamin premix and 0.07% choline

Experiment 2 (Flavour Association Experiment). In the Flavour Association Experiment, pigs were trained, over a 10-day period, to associate a unique flavour (grape or orange) with a particular diet; either the canola control diet or the 60% pea diet from exp. 1 (Table 1). Diets were flavoured by the addition of 6g/kg of grape or orange Kool-Aid™ immediately prior to feeding, resulting in four dietary treatments (orange/canola, grape/canola, orange/peas and grape/peas). Dietary treatments were assigned in pairs and fed on alternate days, such that 10 pigs alternated between the pea/grape and canola/orange diets and 10 pigs alternated between the pea/orange and canola/grape treatments. A 5-day “wash-out” period, during which all animals received the SBM control diet followed the experimental period. Subsequently, a preference test was carried out. Pigs were simultaneously offered both grape and orange-flavoured SBM control diet and their intakes of each were determined.

## RESULTS AND CONCLUSIONS

In Time Course Experiment, the intake of all the diets was lowest on day 1 (Figure 2). By day 4, the intake of pea diets was higher than control, suggesting that a high inclusion rate of peas does not necessarily result in reduced feed intake. Consumption levels during the first 3 days and the final 3 days showed no difference for 20, 40 or 60 % pea diets compared to the soy- or canola-based control diets ( $P > 0.10$ ).

In the Flavour Association Experiment, pigs exhibited a slight preference for grape vs. orange flavour ( $0.92 \pm 0.3$  versus  $0.85 \pm 0.2$  kg, respectively; mean  $\pm$  SD). This was irrespective of which diet had previously been associated with grape flavouring, as evidenced by the similarity in feed intake associated with the two diets ( $0.88 \pm 0.3$  and  $0.89 \pm 0.2$  kg for pea- and canola-based diets, respectively; mean  $\pm$  SD). The results indicate that the palatability of pea- and canola-based diets in this study were similar.

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