

Project: Evaluation of Juncea meal for growing pigs

ID: 1C-104
Status: Accepted proposal

Principle Investigator: Dr Cherie Collins
QAF Meats Pty Ltd

Program:

R&D Budget : \$6860

Probability of success : 100%

Project Net benefit: n/a

Aim:

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To evaluate Juncea meal as an alternative protein meal in diets for growing pigs

Background:

Brassica Juncea has been bred as a crop for low rainfall regions in Australia, producing a seed with similar properties to that of traditional canola. Increasing areas of the crop have been planted in the last 12 months, with approx 13,000 ha planted across 3 states. There is currently interest in the use of Juncea oil for bio-diesel production in southern Australia, and as such the remaining meal may be available for use in animal diets. Given the similarity of Juncea meal to traditional canola meal, there is the potential to utilize this product as an alternative protein meal in pig diets. Preliminary studies in Canada have shown that feeding up to 15 % Juncea meal (replacing canola meal in the diet 1:1) resulted in a 5 % improvement in growth performance and a 2.5 % improvement in feed efficiency compared to pigs offered the 15 % canola meal diet (Zijlstra and Patience 2010). In addition, studies with broilers have demonstrated that the inclusion of 20 % Juncea meal in diets for growing chicks did not have any adverse effects on growth performance compared to chicks offered diets containing either Brassica rapa (canola meal) or soybean meal (Newkirk et al. 1997). Given these positive preliminary growth performance studies and the potential availability of Juncea meal in the near future, there is a need to determine the growth response of growing pigs to increasing concentrations of Juncea meal in the diet. If the growth performance compares favourably with pigs offered diets containing canola meal, there will be the potential for the pig industry to utilise Juncea meal as an alternative protein source if competitively priced.

Methodology:

Experimental design

Seventy male grower pigs will be selected at 13 weeks of age (approx 40-45 kg) and transferred to individual pens in the Rivalea R&I boar test facility. Pigs will be offered a commercial Rivalea grower diet *ad libitum* for one week, after which time they will be randomly allocated to one of five test diets. The test diets will contain increasing concentrations of Juncea meal (0, 6, 12, 18 or 24 % expeller extracted Juncea meal) as a replacement for canola meal. Diets will be formulated to contain equal digestible energy (DE) and available lysine/ DE ratio's. Pigs will be offered their respective diets *ad libitum* for a five week test period. Pigs will be weighed at entry to the facility (day -7), day 0, day 21 and day 35 with feed intakes measured as feed disappearance during this time.

Outcomes/Deliverables:

Project outcomes:

This project will enable recommendations to be made on maximal inclusion concentrations of Juncea meal in diets for growing pigs.

Project deliverables:

Milestone	Description	Deliverable
September 2010	Start Experiment	
November 2010	Experiment completed	
January 2011		Final report completed

Benefit To Industry:

The information generated from this project will provide industry nutritionists, producers and consultants with the knowledge to utilise Juncea meal as an alternative protein source for growing pigs. If the growth performance from pigs offered diets containing Juncea meal compares favourably with canola meal, there is the potential for the pig industry to utilise Juncea meal as an alternative protein source if competitively priced.

The growth performance data obtained from this dose titration study will enable recommendations to be made on maximal inclusion concentrations of Juncea meal in diets for growing pigs.

Risks:

There are minimal risks associated with this project. Glucosinolate testing has been conducted on the Juncea meal that will be used in this study. The concentration of glucosinolates in the ten meal samples were between 13 and 19 umoles/g, with eight of the samples containing 13-16 umoles/g and one sample containing 18 umoles/g and one at 19 umoles/g. At these concentrations it is considered safe to include juncea meal in the test diets at concentrations up to 24 %.

Commercialization/Adoption:

The outcomes from this project will be disseminated to producers and grain growers via industry publications/ seminars. In addition, results will be presented at recognised scientific meetings such as APSA and published in peer reviewed journals.

Budget Justification:

Budget Justification

Total cash requested - \$0

Rivalea In kind 2010/11:

Salaries: Research manager 0.075 FTE @ \$120,000 = 9,000

Experimental overhead: Individual grower/finisher 70 x 35 days x \$1.35/pig = \$3,307.5

Non-experimental facility overhead: \$0

Rivalea base funding agreement 2010/11

70 pig equivalents - Base funding allocation \$98/pig = \$6,860

Smorgon Fuels In kind 2010/11:

Salaries: Manager 0.015 FTE @ \$120,000 = \$1,800

Other: Amino acid analyses of the expeller processed Juncea meal - \$550

Glucosinolate testing of 15 Juncea meal samples (10 representative samples of the meal direct from the expeller plant and one of each of the test diets) - \$400
 2000 kg of Juncea meal delivered to Rivalea - \$1200 incl meal, freight and bagging cost
Total Other in kind Smorgon Fuels: \$2,150

Funding per year	2010-11	
CRC cash requested	\$0	
Rivalea	\$0	
Smorgon Fuels	\$0	
Research Organisation Contribution Cash	\$0	
Capital	\$0	
Base Funding	\$6,860	
Rivalea	\$6,860	
Smorgon Fuels	\$0	
Total of All Funding Sources:	\$6,860	
Rivalea		
Category of in-kind staff (FTE)		
Dr Cherie Collins	0.075	FTE
	\$9,000	Cost
Sub-total 1 - in-kind contributions (\$)	\$9,000	
Experimental Overhead	\$3,307.5	
Type 2		
Sub-total 1 - other non-staff in-kind contributions (\$)	\$3,307.5	
Total in-kind contributions	\$9000	
Total other non-staff in-kind contributions	\$3,307.5	
Smorgon Fuels		
Category of in-kind staff (FTE)		
Mr Robert Gooden	0.015	FTE
	\$1,800	Cost
Sub-total 1 - in-kind contributions (\$)	\$1,800	
Type 2	2,150	
Sub-total 1 - other non-staff in-kind contributions (\$)	\$2,150	
Total in-kind contributions	\$1,800	
Total other non-staff in-kind contributions	\$2,150	

Animal Ethics Approval:

Animal Ethics approval will be sort through the Rivalea Animal Ethics Committee

Budget:

Year	Direct (\$)	In Kind (\$)
2010	6860	16257.5
Total	6860	16257.5

Tasks:

Task	Summary	Start date	End date
	Financial: N 0 % complete	1/09/2010	30/11/2010
	Financial: N 0 % complete	1/12/2010	31/01/2011