



## CRC for High Integrity Australian Pork



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# Canola Meal NIR Calibration Implementation Project



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- Joint project funded by Pork CRC and Australian Oilseed Federation
- Final stage in developing and implementing NIR calibrations for canola meal

## Background

- Previous total & reactive lysine NIR calibrations required further improvement.
- Required additional samples and more extreme heat damaged samples

## Methodology

- 53 canola meal samples from 11 crushing plants (7 expeller & 4 solvent)
- Autoclaved samples: 0, 5, 10, 15, 20, 25 and 30 min at 135 °C

## Methodology

- Total and reactive lysine analysis
- Wet chemistry analysis
- NIR scanning and additional data included in NIR calibrations

# Results

***Table: Total lysine, reactive lysine and reactive/total lysine content of canola meal (g/kg, as received), min and max values are not from the same samples***

		Total Lysine	Reactive Lysine	Reactive/Total Lysine
<b>Expeller</b> n = 30	Min	15.4	14.0	85.0%
	Mean	17.9	16.8	93.8%
	Max	19.7	18.8	102.5%
	Std Dev	1.09	1.30	
<b>Solvent</b> N = 23	Min	16.1	14.0	81.0%
	Mean	18.9	16.6	87.6%
	Max	20.9	19.9	96.4%
	Std Dev	1.14	1.36	

***Large variation in meal lysine content***

# Results

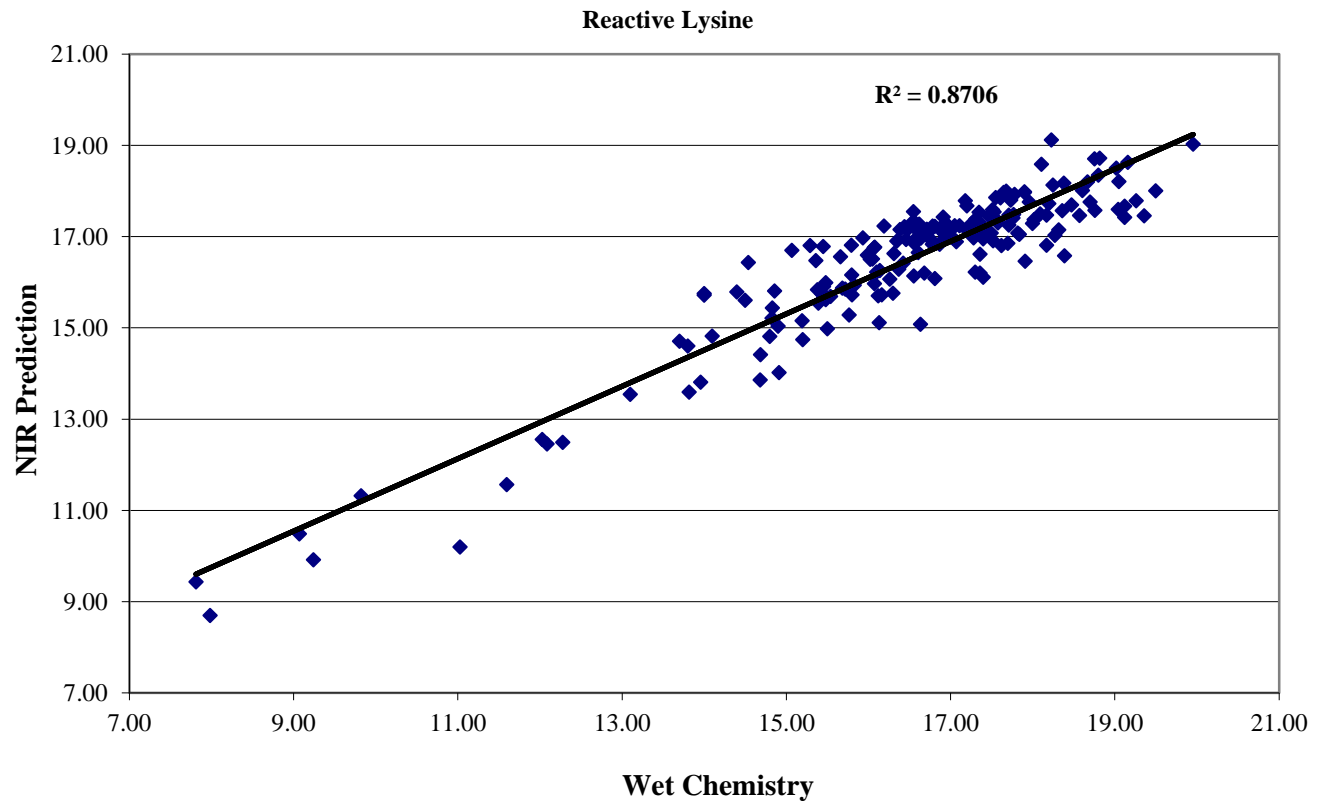
***Table: NIR calibration statistics for reactive lysine and total lysine in canola meal***

Description	N	Mean	SD	Min	Max	RSQ	SECV	1-VR	RPD
<b><u>Previous Stage 3 calibrations</u></b>									
Total lysine (g/kg, as received)	126	19.425	1.633	15.821	24.440	0.901	0.764	0.780	2.14
Reactive lysine (g/kg, as received)	124	16.612	1.851	11.773	23.521	0.843	0.927	0.750	2.00
<b><u>Revised Stage 4 calibrations</u></b>									
Total lysine (g/kg, as received)	184	18.974	1.905	13.258	24.690	0.901	0.766	0.838	2.49
Reactive lysine (g/kg, as received)	183	16.454	2.001	10.447	22.480	0.863	0.934	0.782	2.15

Improved calibration statistics

# Results

*Figure. Relationship between wet chemistry and NIR for reactive lysine content (as received) in canola meal*





# Outcomes

- Increased the number of samples in NIR calibrations and the ability to predict meal quality.
- More robust NIR calibrations for prediction of total and reactive lysine content. The variability between commercial crushing plant samples identifies the value in utilising NIR calibrations in providing rapid and lower cost meal quality assessment.
- Revised calibration equations suitable for commercial release through AusScan for use by the oilseed, livestock and feed industries.