New Zealand Feed Manufacturers Association

Feed Forum

No 5, Autumn 2008

Inside this issue:

Remember to visit our website
www.nzfma.org.nz

Mill Run

The Annual Compound Feed Production and Raw Material Usage Statistics for 2007 were released via the NZFMA website in early March 2008. These statistics showed a relatively large increase in the total volume of complete feed produced by members of the NZFMA compared with previous years. The increase observed between 2007 and 2006 was in the order of 5.7%, compared with the 2.5% observed between 2006 and 2005, and the 0.04% change observed between 2005 and 2004. This increase is largely a result of a significant increase in the reported tonnage of dairy and other ruminant feeds.

The considerable increase in the usage of other grains and grain by-products reflected the increasing pressure on grain supplies in general and the increasing need to evaluate alternative raw material sources for animal feed production in the light of global pressures on raw material supply.

This issue of **Feed Forum** looks at one alternative raw material - faba beans. Much of the information used in the evaluation reported is based on work carried out at Massey University and funded by the NZFMA, FAR and the Sustainable Farming Fund. The article, included on pages 3 and 4, highlights the value of using linear programming formulation software and techniques such as parametric evaluation in determining the most cost-effective use of raw materials.

2008 is already shaping up to be a year of considerable interaction with regulatory bodies, with reviews by both the NZFSA and Biosecurity New Zealand currently on the table. The NZFMA is aware of member concerns relating to these reviews and, in particular the possible time frames for introduction of new legislation. The NZFMA office continues to work with both NZFSA and Biosecurity New Zealand to ensure members are as up-to-date as possible with regards to any proposed changes. Moreover, the office continues to work towards ensuring proper and appropriate representation of member concerns at all levels.

Recently, a number of NZFMA Position Statements have been developed for member comment and are available for you to view on the NZFMA website. Your comments on these issues are important to us, so please let us know your thoughts.

Finally, most members will realise that this is the 5th edition of **Feed Forum** and it is a year since the 1st edition was published. Feedback to date has been positive and Members are welcome to contact Natalie Gerber in the NZFMA Office if they have any specific issues they would like to see addressed in future issues.

Industry Seminar 2008

The Annual NZFMA Industry Seminar will be held at the James Cook, Hotel Grand Chancellor in Wellington on the 21st of May 2008.

This year, presentations will focus on the Biosecurity New Zealand review of the ruminant protein regulations and the implementation of amendments to the ACVM Act. Both of these regulatory reviews and the subsequent implementation have the potential to impact on the operation of feed mills in New Zealand.

Recently, the NZFMA has made submissions to Biosecurity New Zealand on proposed OIE Guidelines for animal feeds. This is an increasingly important role of the NZFMA and Stuart MacDiarmid (from Biosecurity New Zealand) will be speaking on the role of international organisations such as the World Organisation for Animal Health (the OIE) in standard setting for animal feed manufacture. The role of Codex Alimentarius (Codex) will also be highlighted.

A keynote speaker at this years Seminar will be John Spragg, Executive Officer for the Stock Feed Manufacturers' Council of Australia. John will focus his presentation on the FeedSafe® Quality Assurance Accreditation Scheme currently in place in Australia. With the proposed review of the NZFMA Code of Practice, this presentation is sure to be of particular interest to members.

Members can download the seminar programme and register their attendance online at www.nzfma.org.nz/Members/seminars.php. The deadline for confirming your attendance is the 9th of May 2008.

International News

Recent Approvals for the Use of GM Ingredients in Animal Feeds

The European Food Safety Authority (EFSA) has recently approved the genetically modified rice LLRICE62 for food and feed uses. On completion of an extensive review, the GMO Panel concluded that this rice is unlikely to have any adverse effect on human and animal health or on the environment in the context of its intended uses.

Similarly, the New Zealand Food Safety Authority (NZFSA), in conjunction with Food Standards Australia New Zealand (FSANZ), has recently approved high lysine corn for use in animal feeds in New Zealand. The safety of this product in human foods was also assessed. The approval does not allow for high lysine corn to be grown in New Zealand.

Proposals for the authorisation for food and feed uses of four GM maize products and a GM potato are currently under review by European Commission Ministers.

Sources: EFSA (October 2007)
NZFSA (December 2007)
AllAboutFeed e-Newsletter (December 2007)

AAFCO and FDA Agree on Feed Ingredient Listing

The Association of American Feed Control Officials (AAFCO) and the US Food and Drug Administration (FDA) have signed an MOU which allows the FDA to formally recognise the AAFCO list of feed ingredients and allows for FDA input in determining the suitability of the feed ingredients offered for addition to the list.

AAFCO publishes an annual *Official Publication* (*OP*) that includes a list of all ingredient definitions that AAFCO has reviewed and found suitable for use in animal feeds. For a copy of the order form go to the AAFCO website (www.aafco.org).

Source: AAFCO

Salinomycin Contamination of Horse and Camel Feeds

In a case involving horses, ponies and other equips in French Guiana, horse feed manufactured in France was found to be contaminated with salinomycin as well as type D botulism toxins. The feed company involved reported that contamination occurred when workers confused a feed additive intended for inclusion, with one that contained salinomycin. A total of 15 tonnes of horse feed were recalled and destroyed.

In another case in Saudi Arabia, an extensive battery of tests implicated feed contaminated with salinomycin in the death of more than 2400 camels throughout the kingdom. The feed is also reported to have been contaminated with the fungus *A. clavatus* and aluminium. The payment of compensation of €3600 per camel to those owners who camels died as a result of the contamination has been ordered.

Both cases highlight the importance of quality assurance systems and traceability for feed manufacturers. The French case demonstrates the importance of quality procedures which prevent mixing errors and cross contamination, while the Saudi Arabian case highlights the importance of purchasing raw materials from approved suppliers and the implementation of an appropriate random sampling plan for quality control purposes.

Traceability is increasingly important for consumers, but also plays an important role in ensuring that any recalls are effective and the impacts on the business minimised. It is impossible to effective recall product if you cannot trace it. At the same time, feed mills will be expected to bear the consequences of feed contaminations if they cannot demonstrate that contamination did not occur in their plant.

Sources: Science (November 2007)
AllAboutFeed e-Newsletter (September 2007)
AllAboutFeed e-Newsletter (December 2007)

EFSA Opinion on BSE-related public health risk for certain animal proteins in animal feed

The EFSA Scientific Panel on Biological Hazards recently concluded that the risk of transmitting BSE to pigs using poultry Processed Animal Proteins (PAPs) in pig feed was negligible. The risk of transmission to poultry when including pig PAPs in poultry feed was also determined to be negligible. In contrast, the panel found that the transmission of BSE to ruminants through small quantities of products containing BSE contaminated animal proteins, even when present below 0.1% in feed, could not be excluded. The panel also noted that if TSEs were ever identified as having occurred in birds or pigs under natural conditions, the assessment would no longer be valid.

Source: The EFSA Journal (2007), 576, 1-41

Industry Profiles

Alun Faulkner:
Chief Nutritionist, Tegel Foods / NRM

Alun Faulkner started his career as a Research Nutritionist for Rainbow Chicken Farms, the largest broiler producer in South Africa in 1993, having graduated from the University of Natal in Pietermaritzburg, South Africa. Alun gained a BSc. Agriculture (majoring in Animal Science) followed by an MSc. Agriculture (specialising in poultry nutrition).

In 1997, Alun joined Bokomo Feeds, an animal feed company, as a Poultry Specialist and later joined a subsidiary of the same company called Nulaid, the largest egg producer in South Africa, as a livestock Production Manager. Alun also worked as an animal nutritionist for Meadow Feeds in Paarl, South Africa before being offered a position with Tegel Foods Ltd / NRM in February 2002 as a multi-species animal nutritionist. Alun emigrated with his wife Kathy and two children (who both now support the All Blacks!)

Gary Bryson:
Owner, Golden Grain

Garry Bryson was born and raised in Patutahi, near Gisborne, where his family have been involved in the grain industry for more than three generations.

Garry started out, alongside his father, growing maize and contracting in Poverty Bay. Soon after Garry married his wife, Liz, they moved to the Bay of Plenty where he continued to grow and dry maize, and remained involved in agricultural contracting.

Garry's involvement with the stock feed industry began with selling crushed maize to the deer and goat industries.

After the company started to manufacture complete feeds, Golden Grain joined the NZFMA in the 1980's and has been a member ever since. "Our involvement with the NZFMA has been positive and we have found the NZFMA to be very helpful with all feed manufacturing policies".

Faba Beans: An Alternative Protein Source for Animal Feeds

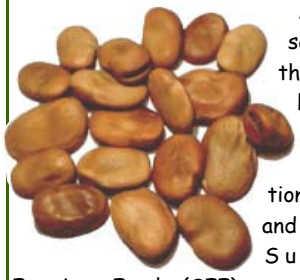
Natalie Gerber
Senior Executive Officer—Technical, NZFMA

The increased demand for vegetable-based protein sources both locally and internationally has resulted in an increased research focus on alternative plant protein sources. Historically, the use of faba beans (*Vicia faba*) in animal feeds has been limited due to the presence of antinutritional factors (ANF). However, recent advances in plant breeding have helped to reduce the presence of ANFs, while advances in animal feed processing technology and the use of feed additives (such as exogenous enzymes) means that the presence of certain ANFs can be more effectively managed.

Table 1: Nutrient composition of faba beans & soyabean meal (From NovaBase®).

	Faba beans	Soyabean meal (48%)
Crude Protein (%)	23 - 29	48 - 50
Lysine (%)	1.5 - 1.8	2.9 - 3.05
Methionine (%)	0.15 - 0.25	0.67 - 0.7
Energy (MJ/kg):		
Broiler (AME)	10.3 - 11.5	8.1 - 10.3
Layer (AME)	10.4 - 11.5	9.4 - 10.2
Pig (DE)	12.6 - 13.8	14.0 - 14.6
Ruminant (ME)	10.6 - 11.8	11.7
Crude Fat (%)	1.1 - 1.9	0.9 - 2.6
Crude Fibre (%)	6.3 - 8.4	3.3 - 6.2

The Grain Legumes Project (GLP), a project jointly funded by the Foundation for Arable Research (FAR), the New Zealand Feed Manufacturers Association (NZFMA) and the MAF Sustainable Farming Fund (SFF) was initiated in 2003/04 to examine the potential for the use of grain legumes as alternative protein sources for inclusion in animal feeds in New Zealand. More information on this project can be found on the NZFMA website (www.nzfma.org.nz).



Nutritional content of faba beans

A range of nutrient values has been reported for faba beans and some of the values reported are shown in Table 1. Comparative values for soyabean meal are also included.

Although faba beans are a good source of crude protein, they are low in the sulphur-containing amino acids such as methionine and cysteine. The amino acid profile will limit inclusion of faba beans in high density diets. In addition, the availability of amino acids is influenced by the presence of ANFs so there may be considerable variation between cultivars.

Antinutritional factors

Tannins present in the seed coat of faba beans have a negative impact on the availability of both amino acids and energy in monogastric diets. However, the problem is readily addressed by dehulling. In addition, tannin-free genotypes are now relatively easy to obtain. The presence of the glycosides, vicine and convicine (VC) are known to affect the metabolism of laying hens, but appear to have limited effect on broilers, pigs or ruminants. The discovery of a gene which can reduce the VC content by 90 to 95% means that low VC cultivars are now available on the market. The trypsin inhibitor activity in faba beans is not well documented but appears to be low.

Faba beans in commercial diets

Recent work carried out around the world has shown that modern faba bean cultivars can be successfully included in both monogastric (e.g. pig and poultry) and ruminant (e.g. beef, dairy, sheep and goat) feeds. Some of the results of recently reported work are summarised below.

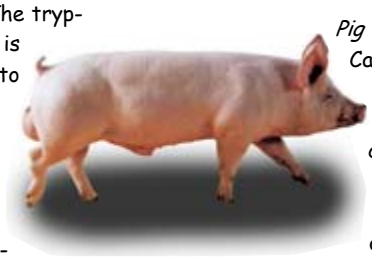
Broiler feeds

Recent work carried out in New Zealand (Ravindran *et al.*, 2007) showed that when diets are formulated on the basis of metabolisable energy and ileal digestible amino acids, faba beans can be used successfully in broiler diets up to levels of 20%. Similar results were reported by Farrell *et al.* (1999) while Crépon *et al.* (2004) reported that levels of up to 25% could be used in broiler diets.

Layer hen feeds

Layer hens are more sensitive to the presence of VC in faba beans, with reduced egg size and feed intake commonly reported for birds fed diets containing faba beans. Perez-Maldonado *et al.* (1999) reported that the inclusion of faba beans at levels of 25% in laying hen diets in Australia resulted in reduced performance. In 2003, researchers working with low-VC faba beans in Germany reported that faba beans with 0.69% VC could be used without negative effects on egg production and feed intake at levels of up to 30% in laying hen diets (Dänner, 2003). More recently German researchers (Fru-Nji *et al.*, 2007) concluded that faba beans (with a VC content of 0.88%) could be included in layer hen diet at levels of up to 16% without a significant reduction in production or egg quality.

Pig feeds



Canadian researchers (Lopetinsky *et al.*, 2004) concluded that zero-tannin faba beans could be included at rates of up to 30% in pig diets without a negative effect on feed intake. These authors reported that average daily gain across the entire experimental period was not significantly different between pigs fed soyabean meal or faba beans. However, barrows fed soyabean meal in the grower phase had a significantly greater average daily gain and feed conversion ratio than those fed faba beans. The authors hypothesised that this may have been a result of an overestimation of the digestible amino acid or net energy content of the faba beans.

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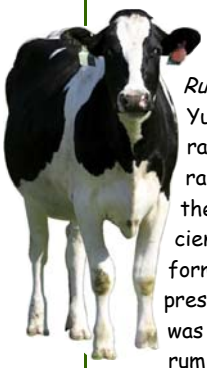
Faba Beans: An Alternative Protein Source for Animal Feeds (continued)



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Ruminant feeds

Yu *et al.* (2000) reported that rapid and extensive ruminal degradation of faba beans makes them unsuitable and/or inefficient for use in an unprocessed form. These authors found that pressure toasting of faba beans was an effective way of reducing ruminal protein degradation. In contrast, Matthews and Marcellos (2003), reported that faba beans can be used in dairy rations at inclusion levels of up to 35%. However, these authors did not state whether or not processing of the beans would improve their nutritional value.

Valuing faba beans in commercial diets

As with any raw material, the relative value of faba beans in commercial diets will depend on a range of factors such as the nutrient content of the raw material itself, the cost of the raw material and the relative value of other available raw materials. Consequently, each raw material will have a different relative value for each feed and each feed manufacturer. Individual feed manufacturers must therefore make their own decision on whether or not any given raw material, at any given price, will prove cost effective in their feed formulations, given the range of products they produce. This can easily be done using the parametric evaluation features available in standard commercial feed formulation software.

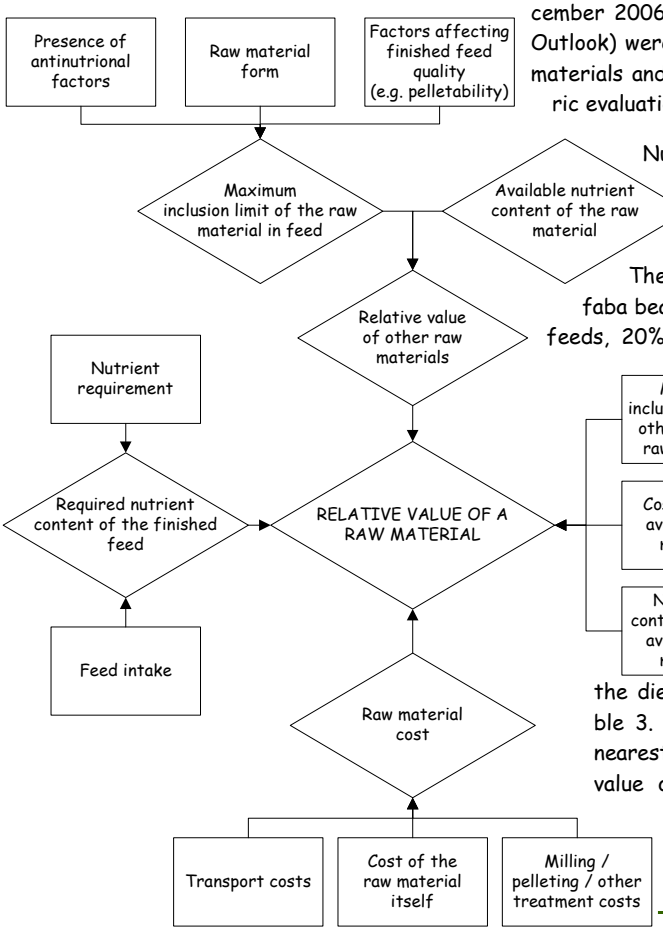
In addition, the use of technologies such as Multi-Mix® (from Format International) will allow nutritionist and feed manufactures to determine the relative value of a raw material across their entire product range (Kleyn, 2005).

Estimated relative values for faba beans

A parametric evaluation was carried out using WinFeed®(EFG Software) in order to estimate the relative value of faba beans in poultry and pig diets commonly used in New Zealand.

To illustrate the effect of price changes on the relative value of a raw material, two raw material price sets (from the December 2006 and 2007 editions of Pork Outlook) were used for this example. Raw materials and prices used in the parametric evaluation are shown in Table 2.

Figure 1: Factors affecting the relative value of a raw material in an animal feed



Nutrient specifications for faba beans were those reported by the CVB (Novus Compendium, 1995). The maximum inclusion levels for faba beans were set at 15% for layer feeds, 20% for all broiler, pig grower, finisher and lactating sow diets, with a maximum inclusion level of 30% set for dry sow and boar diets.

The relative value of faba beans in each of the diets evaluated is shown in Table 3. Values were rounded to the nearest $5. The estimated relative value of faba beans ranged from $440/t (broiler starter) to $490/t (dry sow and boar) for the 2007 cost set.

Table 2: Raw material prices used in a parametric evaluation to determine the relative value of faba beans in NZ broiler and pig diets

	Raw Material Price (NZ $ / t)	
	2006	2007
Barley	393	465
Maize	350	450
Wheat	410	485
Broll	280	320
Meat and bone meal	627	690
Extruded soya meal	568	700
Soya Oil	1940	1580
Tallow	650	950
Lysine	3100	3275
Methionine	5390	5000

With the current high raw material prices, the value of faba beans is increased. However, in order for faba beans to be attractive in the more nutrient dense diets (e.g. broiler diets) a good energy source maybe required (e.g. maize or oil). The effect of the use of exogenous enzymes in the diet was not considered in this example but should be evaluated by individual feed manufacturers.

Table 3: Relative values (NZ $) for faba beans in different pig / poultry diets commonly used in NZ

	Price set (NZ $)	
	2006	2007
Broiler		
Starter	320	445
Grower	330	450
Finisher	345	440
Layer	340	465
Pig		
Grower	375	450
Finisher	395	480
Lactating Sow	400	480
Dry Sow and Boar	415	490

Regardless of the value of faba beans to individual feed manufacturers, market values and availability will play a key role in determining whether or not faba beans are used in commercial livestock feeds.

Adapting to Changing Times

From the centre of a very serious drought in the Wairarapa, commodity prices, dairy pressure on finite resources and the struggling meat industry are topics all rural people are discussing.

Those of us in the feed manufacturing industry will have opinions on the first two issues particularly, but rather than shorten our sleep hours any more I propose to comment briefly on the steps we as a 'small' private company are taking to improve our efficiencies and mitigate some of the challenges our industry faces.

This quarter's **Industry Comment** is written by Alastair Orsborn. Alastair is the Managing Director of Sharpes Stockfeeds and is the North Island Category B representative on the NZFMA Executive Committee.

As our family business enters its third generation and I prepare to take a back seat, we have employed a consultant - yes the world is drowning in them – to look at how our business operates and where we may improve. His brief was to look dispassionately at what we do and how we do it. He qualified for his 'ticket' by working for Toyota and Fisher and Paykel, two companies who, by reputation, are efficient and well organised. These two companies don't suffer the seasonal vagaries or pressures we are enduring at the moment but I am sure their challenges are no less. Having become a little crusty and set in my ways, this consultant has challenged us all and we have often not liked what we have heard. Apart from looking at our physical processes in the mill we have modified the way we use the huge amounts of data our electronic processes are able to provide.

I have to say this consultants 'black and white' look at how we did things on his first visit has modified somewhat. Change for change sake is not only a waste of time but it taxes staff morale. The compromises we have made are leading to improved use of our resources. Small businesses have a difficult job dealing with the many issues of compliance that are no different from a large company but without their resources.

The successful application for an Enterprise Development Grant for 50% of the funding for this exercise has been helpful and provided goals to meet.

In summary this has been a positive exercise in analysing our business and processes and will continue to meet our goal of providing an environment in which our most valuable resource, our staff, know that they are an important part of any improvement process.

Enterprise Development Grants

New Zealand TRADE & ENTERPRISE

If you are interested in finding out about Enterprise Development Grants and whether or not your business is eligible for one, visit the New Zealand Trade and Enterprise website:
http://www.nzte.govt.nz/section/12577.aspx

Recent & Current Consultations

Submissions have recently been made by the NZFMA Office on

- The proposed OIE Guidelines on the control of hazards of animal health and public health importance in animal feed
- An Import Risk Analysis for the importation of Fish Food into New Zealand
- The NZFSA proposal for the management of evaluation of Risk Based Management Plans (RMPs).

Members have also had the opportunity to comment on the draft Code of Practice for the Importation, Handling and Distribution of Copra in the dairy industry.

For more information on these and other submissions visit the NZFMA website:
www.nzfma.org.nz/Members/consultation.php

Review of the NZFMA Code of Practice

A draft proposal for a review of the NZFMA Code of Practice was made available on the NZFMA website for Industry comment in February 2008.

This document provided some background on the development of the Code and the reasons why a review of the Code should be considered. The document also highlighted key areas which should be considered during a review.

Comment from Industry members was sought prior to the 14th of March 2008. The proposed amendments to the Code were tabled for discussion at the Executive Committee Meeting held on the 18th of March.

Following extensive discussion by the Executive Committee, it was concluded that the Code of Practice should be based on the legislative requirements and that best practice recommendations could then be added around this. However, it was noted that the document would need to be generic and should not be too specific.

It has been agreed that the NZFMA Office will work towards drafting the framework of the Code of Practice with the intention that this is available for comment by the Executive Committee at the meeting to be held in November 2008.

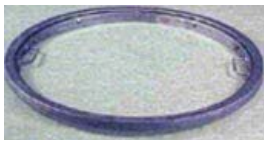
This issue is of considerable importance to the NZFMA and one on which member comment is of fundamental importance. Regular updates on the progress made on this issue will be provided to members and members should send any comments or concerns that they have on this issue to natalie@pianz.org.nz.

For more information on the proposed review of the NZFMA Code of Good Manufacturing Practice visit the NZFMA website:
www.nzfma.org.nz/Members/consultation.php

Matpack: Providing Materials Handling Solutions for the Feed Industry

Matpack provide material handling equipment aimed at increasing efficiency, improving safety and reducing costs. Some of the equipment specifically targeted at bag handling and recommend by Matpack are listed below.

Turntables Loading bags onto pallets by hand without a Turntable increases the risk of injury and utilises valuable resources (lost profitability).



- Back injuries account for more than 1/4 of all injury claims and nearly half of all injury costs. Using a Turntable reduces the stretching required to load a pallet, thus reducing the risk of injury.
- Productivity increases with easier loading and time saved not having to walk around the pallet.

Matpack will supply a 1100 mm diameter 2000 kg capacity Turntable free for a 2 week trial nationwide excluding freight costs to demonstrate how this will assist with your bag handling.

Stretch Wrap Machines Hand Wrapping Pallets is an extremely difficult job if it is done correctly, and a common source of employee back injuries when performed incorrectly.

- The human form is not designed to walk hunched over manipulating a 5 kg weight while also trying to pull enough tension into the film to hold the pallet together.
- Pallet Wrapping with a Stretch Wrapper eliminates this issue while providing the added benefits of improved load integrity, damage control & film savings.

Matpack are happy to discuss your Pallet Wrapping needs and recommend a cost effective solution

Matpack Ltd, P. O. Box 126, Greenhithe, 0632, Auckland
t (64-9) 413 6405 f (64-9) 413 6489 www.matpack.co.nz

matpack Limited

Australian Milling Conference

The Australian Milling Conference, organized by the Flour Millers Council of Australia, the Stock Feed Manufactures Council of Australia and the Australian Technical Millers Association will be held at the Rose Hill Gardens Conference Centre in Sydney from the 14th to the 16th of April 2008.

Topics which will be covered by presenters at the conference include

- By-product use in Animal Feeds
- Feed Mill design
- International developments in Feed Manufacturing
- Mould development and *Salmonella* Control in Feed Mills

More information is available on the conference website:
http://flourmillers.com.au/fmca//content/category/9/23/94/

Massey Tech Updates

The Massey Poultry Conference will be held on the 25th of June 2008 in Palmerston North. Some of the topics which will be covered at the meeting include Mycotoxins in DDGS, the influence of fat on broiler performance and the influence of extrusion on the nutritive value of peas. For more information contact Professor Ravi Ravindran (v.ravindran@massey.ac.nz) at Massey University.

WPSA Meetings

The 23rd World's Poultry Congress will be held in Queensland, Australia from the 30th of June to 4th July 2008. It will be run concurrently with the Australian Poultry Information Exchange (PIX2008) and other conferences. More information is available on the conference website: www.wpc2008.com.

education organization research

The New Zealand branch of the WPSA will be hosting the bi-annual New Zealand Poultry Conference with Massey University in Palmerston North on the 7th and 8th of October 2008. Contact Don Thomas (d.v.thomas@massey.ac.nz) for more information.

NZFMA AGM and Seminar 2008

The NZFMA AGM and Technical Seminar 2008 will be held on the 19th of November 2008 in Christchurch.

This year's technical seminar will focus on strategies for minimising the impact of increased raw material costs.

The New Zealand Feed Manufacturers Association
96 D Carlton Gore Road, Newmarket, Auckland, 1023
Tel: 09 520 4300 **Fax:** 09 520 1553 **Email:** info@pianz.org.nz **Web:** www.nzfma.org.nz