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**DYNAMICS OF THE
AUSTRALIAN PETFOOD
INDUSTRY**

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Executive Summary

In 2002, the Australian grocery trade sold in excess of \$AUS1.1 billion of pet products through supermarkets – some 400,000 tonnes of wet and dry pet food products. Petfood products exported from Australia add about another 50% to this total. This project was designed to investigate the current situation and trends in the usage of meat and meat by-products by the Petfood industry, and explore opportunities for joint development projects between the Australian Meat Industry and the Petfood industry.

The Australian petfood industry is dominated – in terms of volume and value – by two multinational companies, Masterfoods Australia and Nestle Purina. However, the rapid growth of Australian based Greens Foods (Supercoat Petcare Pty) and house brand products in dry petfoods is beginning to shift the balance toward local ownership. Ten other companies manufacture the remaining volumes.

The highest volume sectors of the market are the wet and dry dog foods, and wet cat foods. However the pet snacks sectors, while smaller in terms of volume, have been growing strongly, and this trend is expected to continue. The fresh petfood sector has shown by far the highest level of growth over the last few years.

The survey carried out in preparing this report provides a snapshot of the priority concerns and opportunities with regard to red meat by-products used in the petfood industry. While the number of respondents was limited, the companies represented by these respondents produce around 85% of the petfood manufactured in Australia.

The survey revealed that the petfood industry is constantly looking for raw materials that will give its products an edge in the international arena, though the industry is still dependant upon sales within Australia for their mainstream livelihood. A focus on long term strategic research between the meat processing industry and petfood companies would enable meat companies to produce raw materials of greater value to the petfood industry, resulting in higher sales of meat products and greater competitiveness of the petfood industry.

The red meat industry needs to position itself to supply high quality by-products to the growing petfood market. Increased usage of meat based materials will be driven by the same factors that drive the petfood industry as a whole – increased palatability (over an extended storage life), absence of contamination (physical and disease based), and good functional properties during manufacture. Recommended specific areas of cooperative development include the following.

Short term projects (3 to 12 months duration):

Improvements to meat meal quality:

- High protein meat meals
- Nutritionally improved meat and meal products

Medium term projects (1 to 2 years duration):

- High palatability Meat based digests for extruded products
- Meat based flavour systems for inclusion into canned and extruded products

Long term projects (3 to 5 years duration) are of a more strategic nature. These projects would look to emerging industry trends here and overseas to position the Australian petfood industry. An example is the organic petfood industry. As BSE and FMD threaten to derail our international competitors, Australian manufacturers need to be fully equipped with products and processes to fill any opportunistic or long term markets that may emerge.

Introduction

In 2002, the Australian grocery trade sold in excess of \$AUS1.1 billion of pet products through supermarket outlets¹. This figure does not include sales through pet stores, feed merchants and other wholesale channels. More importantly this figure does not include any pet foods that were produced and exported from Australia. Several of the major producers such as Masterfoods, Nestle-Purina and Bushes Petfood are focused on supply to the Asia Pacific region and as a result their plants are geared to mainly produce for export markets. Therefore the total amount of petfood manufactured in Australia is significantly larger than the grocery trade figures indicate.

The Australian grocery trade alone accounts for 400,000 tones of wet and dry pet food products. Over the past ten years, the percentage of meat and meat by-products used by the petfood industry has fallen with the increased usage of poultry and seafood by-products. To date there has been no comprehensive investigation into this decline.

This project was designed to investigate the current situation and trends in the usage of meat and meat by-products by the industry. This project also sought to explore joint development project opportunities between the Australian Meat Industry and the Petfood industry.

Background

In the United States, a survey of the number of petfood producers and feed mills using meat meals has shown a 40% decline in the period from 1997 to 2002². Anecdotal evidence indicates that while total use of red meat products has increased due to industry growth, the percentage of meat and meat by-products used by the Australian petfood industry has also been declining.

This project sought to illuminate the issue by surveying the key players in the Australian petfood industry to discover the current trends in the use of meat and meat by-products.

Project Definition

Overall this project sought to gain an insight into the dynamics of the Australian petfood industry and assess the current markets and future market trends for meat and meat by-products

- Identify new and improved products and processes
- Potential enhancements for existing products and processes
- Potential new products for the meat processing sector to investigate
- Identify potential industry partners for this development process.

The project surveyed Petfood manufacturers, seeking input on the following questions:

1. What are the current usage levels of meat and meat by-products derived from beef, pork, sheep, chicken and fish?
2. What are the industry expectations for meat and meat by-product usage for the future?
3. What areas of improvements can the petfood industry identify that would assist in an increased usage of meat and meat products?
4. The industry was asked to rate a selection of products and processes under the areas of quality improvement to existing materials sold to the petfood industry, the palatability impacts of raw materials and new ingredients.

¹Retail World Australasian Grocery Guide 2003 (13th Edition)

² April 2003 Render "Meat and Bone Meal Use Plummet"

Overview of the Australian Petfood Industry

Table #1 shows the current petfood markets and dominant manufacturer in each sector.

Table #1 Petfood Market Sectors and dominant manufacturers

Petfood Sector	Major Manufacturer
Dog food Wet (canned product)	Masterfoods Australia
Cat Food Wet (canned, tray & single serve packs)	Masterfoods Australia
Chilled Petfood (both dog and cat products)	VIP Petfoods
Dog Food Dry	Masterfoods Australia
Cat Food Dry	Nestle Purina
Dog Treats	Masterfoods Australia
Cat Treats	Masterfoods Australia and Nature's Gift

Tables #2 and #3 show Australian grocery sales volumes across all petfood sectors for 2002. Note that these figures do not include exports and non-supermarket sales. It was reported by several of the main companies that their export sales accounted for up to 30% of their total throughput.

The pet food industry as a whole is dominated by Masterfoods Australia (previously Uncle Bens). Masterfoods have a market presence in almost all sectors except Chilled pet foods and dry catfood which are dominated by VIP Petfoods and Nestle Purina respectively. The recent acquisition of Ralston Purina by Nestle (Friskies) has resulted in the new combined company (named the Nestle-Purina Petcare Company). The new company now holds the dominant share of the US pet care market (30%). Sales in the US topped \$US3.82 billion.³

The chilled petfood sector shows the greatest growth rate of all the current sectors. VIP Petfoods, a relative newcomer to the industry, which specialises in chilled petfood, has market dominance in this sector. Both value and volume growth in the chilled sector is very high (43.8% and 31.3% respectively). Ten years ago this sector did not exist apart from small offerings from local small volume processors such as butchers. This rapid growth demonstrates a potential preference toward "fresh-style" products.

Nature's Gift is a small but growing enterprise in fourth place, mainly due to their high quality offerings in the dog and cat treat market. This again shows a trend away from the traditional "commodity" products. Both chilled pet foods and treats have much higher meat content than traditional processed pet foods.

HJ Heinz, in fifth place by value, uses production capacity at its New Zealand operation and contract manufacturers in Australia. Bush's in sixth place is the only remaining company with more than 10% of the market. Bush's main market is based in South East Asia.

The survey targeted the top thirteen petfood manufacturers.

³ "Major Players", J. Kvamme. In PETFOOD INDUSTRY November 2002.

Table #2 Current Retail Profile of the Wet Petfood Industry(2003) ⁴

	Dog Food Wet		Cat Food Wet		Chilled Petfoods	
Total Grocery Value (\$m)	\$280 M		\$244.9 M		\$98.9 M	
Value growth (%)	0.60%		2.90%		31.60%	
Total Volume (tonnes)	148,997		83,448		40,656	
Volume growth (%)	-6.00%		-4.60%		23.40%	
COMPANY	% Value	% Volume	% Value	% Volume	% Value	% Volume
Masterfoods Australia (Uncle Bens)	71.1	65.7	66.1	68.4		
Bush's	9.2	10.2	2.9	3		
Chubbak (no longer in the market)	3.8	3.5	0.4	0.5		
Nature's Gift	1.9	1.4				
Green's	0.9	0.6				
Nestle Purina (Friskies)	0.1	0	10.1	3.5		
Safcol			9	7.9		
Show Em Co						
Trisum						
HJ Heinz						
VIP Petfood					62.8	63.6
Prota Pet Meat					11.9	13.6
Prime Pet Care					4.3	2.5
Private Labels/Generics/Others	12.9	18.6	11.5	16.7	21	20.4

Table #3 Current Retail Profile of the Dry and Treat Markets(2003) ⁵

	Dog Food Dry		Cat Food Dry		Dog Treats		Cat Treats (2001 Data)	
Total Grocery Value (\$m)	\$155.5M		\$89.2M		\$75.2M		\$2.9M	
Value growth (%)	7.90%		14.50%		17.60%		3.90%	
Total Volume (tonnes)	95,923		27,894		6,215		159	
Volume growth (%)	-2.10%		1.00%		8.40%		71.50%	
COMPANY	% Value	% Volume	% Value	% Volume	% Value	% Volume	% Value	% Volume
Masterfoods (Uncle Bens)	51.5	45	45.8	40.4	56.2	34.3	34.1	43.8
Bush's								
Nature's Gift					4.2	2.6	33.6	38
Green's	8.9	7.6	0.7	0.6	4	11.3		
Nestle Purina (Friskies)	25	26.6	48.5	50.7	20.6	41.7	6.6	3.1
Safcol								
Show Em Co					4.4	1.4		
Trisum					3.7	0.5		
HJ Heinz							24.2	14.2
VIP Petfood								
Prota Pet Meat								
Prime Pet Care								
Private Labels/Generics/Others	14.6	20.8	5.1	8.3	6.9	8.3	1.5	0.8

⁴ From Retail World Australasian Grocery Guide 2003 (13th Edition)

⁵ From Retail World Australasian Grocery Guide 2003 (13th Edition)

Australian Petfood Market Growth

Over the past ten years, retail sales of petfood have grown by 43%. Consumption of various animal based protein sources has increased to keep pace with this ever expanding business.

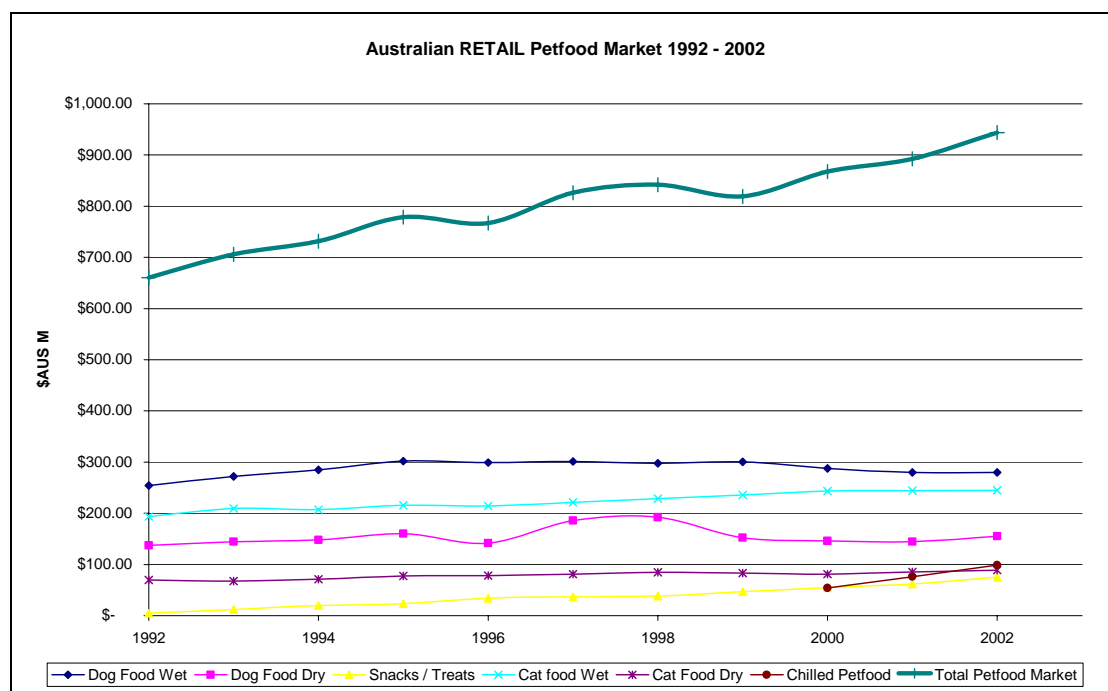


Figure #1 - Australian Retail Petfood Market Sales for the period 1992 to 2002

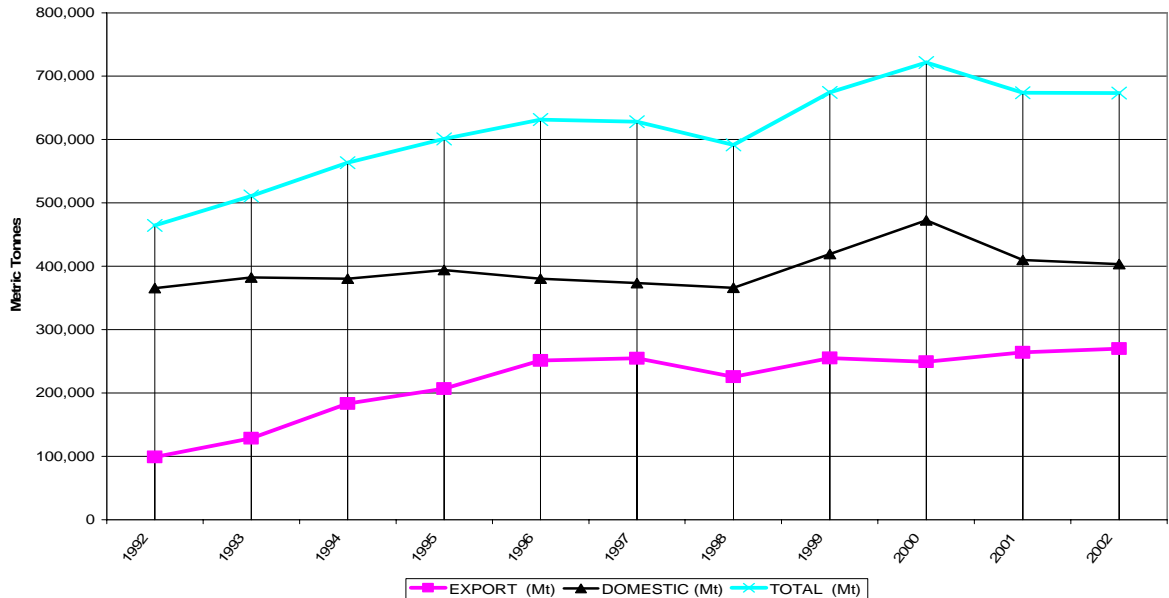
Export Growth has mirrored domestic growth over the past ten years.

Table #4 – Sales Volume and Value of Export and Domestic Petfood Sales⁶

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Exports											
EXPORT (Mt)	99,036	128,543	183,093	206,995	251,051	254,675	225,545	254,975	249,136	263,985	269,962
EXPORT (\$,000)	91.1	107.6	141.8	171.8	221.6	220.7	165.7	186.6	177.4	174.1	204.3
Domestic											
DOMESTIC (Mt)	365,501	382,265	380,337	393,901	380,315	373,210	366,104	419,296	472,487	409,788	403,292
DOMESTIC (\$,000)	655.4	693.8	708.2	915.2	767	804.4	841.70	916.6	991.4	879	947
Total Sales											
TOTAL (Mt)	464,537	510,808	563,430	600,896	631,366	627,885	591,649	674,271	721,623	673,773	673,254
TOTAL (\$,000)	746.5	801.4	850	1087	988.6	1025.05	1007.4	1103.15	1168.8	1053.1	1151.3

⁶ Information sourced from FAOSTAT - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS at web page <http://apps.fao.org/default.htm>

Australian Petfood Industry Domestic and Export Volumes 1992 - 2002 (Metric Tonnes)



Petfood Industry Survey

The MLA had initiated discussion with several petfood manufacturers with the view to developing a series of projects between the meat industry and the petfood manufacturers. It soon became apparent that there is a need to have base data that relates the requirements of the petfood manufacturers and the capability of the meat processors. This survey was designed to gather the necessary data to assist in future project design that will benefit both industries.

The survey was first introduced to the industry at a meeting of the Petfood Industry Association (PFIA)⁷ in October 2003. The survey was then sent to thirteen petfood manufacturers throughout Australia. Of the surveys, seven replies (53%) were received. The seven respondents represented over 85% of the sales value and volume, of the Australian petfood industry. The survey that was sent to the industry participants is shown in Appendix #1.

⁷ The PFIA is the peak body representing the Australian Petfood Industry

Survey Responses

The survey responses were received over an eight week period. Because of confidentiality requirements for the participants, the persons and the companies concerned can not be identified.

Current usage levels of animal based protein sources

Information relating to the actual volumes of animal proteins used by the petfood industry is not freely available. Table #4 was derived from a variety of sources, including grocery sales data combined with average petfood formulations and estimated additional export sales.⁸

In 2003, it has been estimated that the Australian petfood industry consumed the following sources of animal proteins.

Table #5 – Estimate of Consumption of Animal Based Protein Sources for 2003

Calculated Ranges	Fresh Red Meats	Fresh Chicken	Fresh Fish	Meat Meals	Poultry Meals	Fish Meal
Minimum	46,513	115,245	6,780	21,537	23,397	2,414
Maximum	147,899	300,986	21,695	48,910	53,309	4,829
Approximate Consumption (tonnes)	97,206	208,116	14,237	35,224	38,353	3,621

These tonnages allow for retail domestic and export sales. The current situation shows that the chicken industry is out-supplying the red meat industry in both fresh meats and meal meals.

Industry expectation of for meat and meat by-product usage

The petfood industry will always require meat for the production of petfood. However the amount of meat that is used is driven by cost, quality and availability. The rise in the use of chicken and poultry by-products over the past ten years has been driven by the focus on quality and consistency that these suppliers have managed to achieve.

While exchanges between red meats and chicken are common, the meat industry needs to be aware that the Petfood industry also uses artificial chunks such as Textured Vegetable Protein (TVP) chunk as a replacement for meat protein.

These exchanges are usually made on the basis of cost and quality requirements for different product ranges. For example, a low cost canned product may have TVP added to give visible “meat-like” chunk in the finished product, while a high grade name brand product will either use coarse diced lung or reformed meat based meat chunks.

Areas for improvements by the Meat Industry

Overall, the participants indicated that they are seeking higher quality feed stock from the red meat industry. They require a more consistent delivery of higher quality materials. This issue is covered in more detail later in the report.

⁸ Appendix #2 shows how these figures were calculated.

Areas of potential MLA Focus

The survey was divided into three main categories with each area being broken into more specific questions. The main categories were selected after a telephone poll of ten petfood manufacturers seeking the key interest areas for their businesses. These categories are:

Quality of incoming raw materials

Petfood manufacturers are very aware that any incoming raw material quality problems will very quickly translate into poor animal acceptance and therefore poor repeat sales for that product or at the extreme, animal illness. The nutritional aspects of raw materials are also of high interest. For example, various different processing methodologies for the production of meat meals can render vastly different nutrient availabilities to the target animal.

Palatability contribution of the meat based ingredients

Palatability of a petfood product is one of the key drivers of sales. Customers buying decisions will be driven by the perceived acceptance of their pet. Where a product is not eaten or the pet is slow to eat, the propensity to continue to purchase this particular product will lessen significantly. Palatability of dry petfood products is driven by high quality raw materials and meat protein based flavour coatings. In canned products, palatability is driven by meats selection and freshness as well as flavour chemistry driven by combination of various ingredients.

New opportunities for novel ingredients

Over the past ten years, the petfood industry has witnessed a great deal of research into the health benefits of various dietary supplements. These ingredients when combined into a base pet diet have been shown to yield beneficial effects. Examples such as the addition of Omega 3 and Omega 6 fatty acids, which initially were only used in only very expensive veterinary diets, are now used in main stream petfoods. Other ingredients such as high protein meat meals and fractionated tallow are also of interest to the industry as these areas may hold promise for the ongoing development of petfood products as the market matures.

The survey took the form of a list of potential activities in the three main categories. Petfood industry participants were then asked to rate their interest. The list of potential activities were:

1. Quality of incoming raw materials
 - a. High Quality Meat Meals
 - b. Focus on Nutritional sound raw materials and processing methodologies
2. Palatability contribution of the meat based ingredients
 - a. High Palatability meat Based Digests (Flavour Coatings)
 - b. Meat based flavour systems for canned products
3. New opportunities for novel ingredients
 - a. Supply of Organic calcium
 - b. High protein meat meals
 - c. Supply of Organic meat and meat meals
 - d. Fractioned tallow to improve handling and palatability
 - e. Half products i.e. a dried blend of meat and cereal that extends the shelf life of meat meal by up to 2 years.
 - f. Low cost production of new ingredients such as New ingredients such as Glucosamine and Chondroitin

The rating system used to indicate the level of interest of the participants was a 1 to 5 scale. The scale used 1 to represent no interest in a particular idea or concept, 2 to express low interest, 3 displayed some interest, 4 represented a medium level of interest and 5 indicated a

strong interest or very desirable area for further research. The total response for all the areas is shown in Figure #2.

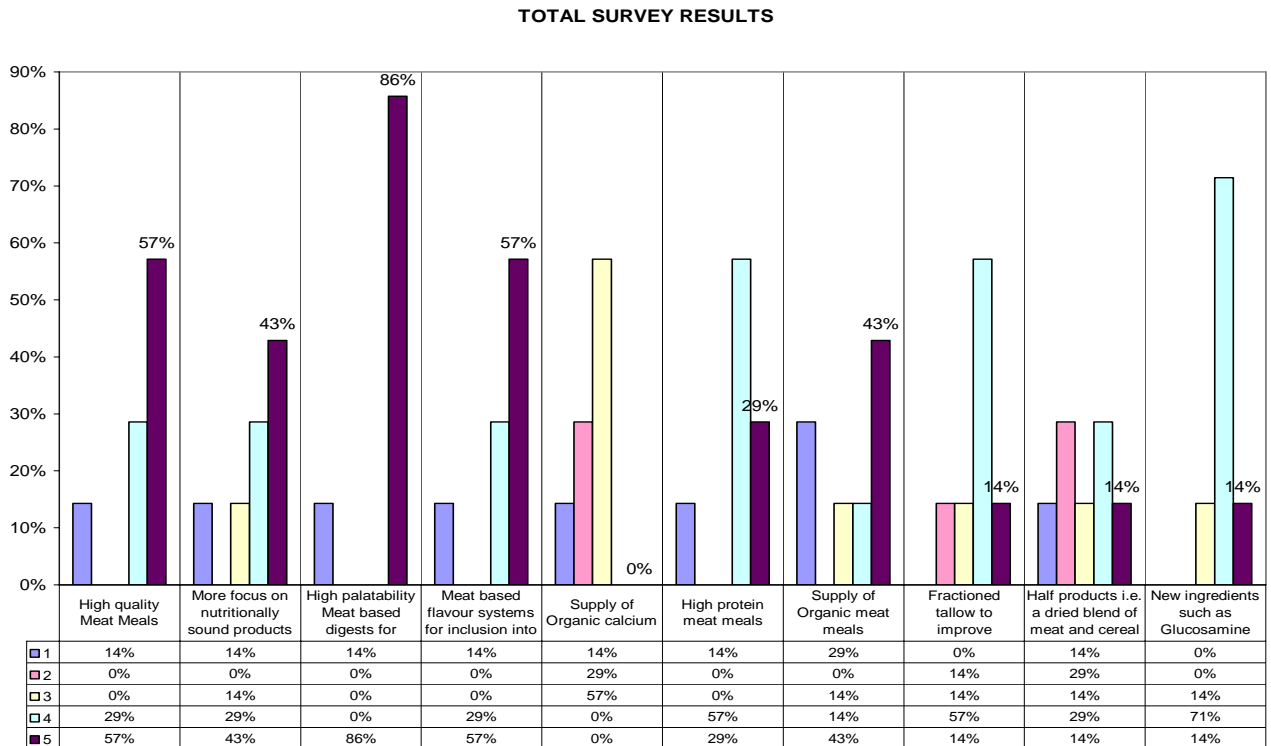


Figure #2 - Survey response for all categories

Quality of incoming raw materials

The area investigating the quality of raw materials that are supplied to petfood processors is examined from the perspective of meat meals and nutritional aspects of meats and meals processing.

High Quality Meat Meals

Meat meal has been the backbone of nutrition and palatability for pet foods almost since their inception. Several of the participants commented that poultry meals are now seen as the meal of choice for both consistency and palatability of the finished product. The quality of meat meal is dependant upon many factors, from differing types of feedstock resulting from variations in daily kills, to differing rendering systems that are used in production. All participants agreed that Lamb meal is very important as it is a key ingredient in high value speciality products such as "LAMB and RICE" formulated diets. Figure #3 shows the survey results for meat meals.

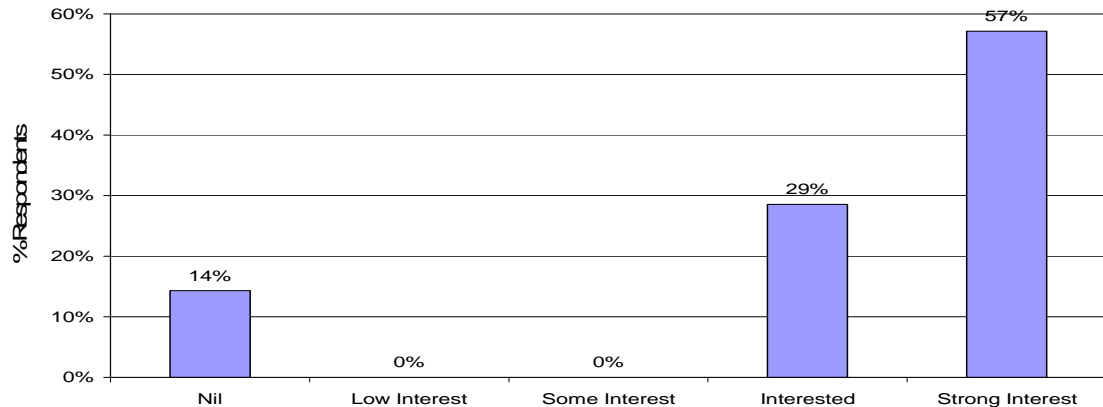


Figure #3 – High Quality Meat Meals

The results of the survey showed that approximately 86% of the participants indicated an interest in improvement to the quality of meat meals. This area is currently being addressed by projects being undertaken through a joint project between the MLA and the Australian Rendering Association (ARA).

Several other areas of particular interest with survey participants were:

“Antioxidant usage seems to vary. Therefore stability of the finished meals also varies.”

“We seem to have palatability problems from batch to batch when we use certain renderers.”

Nutritional aspects of meat and meat by-products

The nutritional aspects of meats and meals relates to the quality of the proteins that are being supplied. For example, over-heated or “scorched” meals have a poor food value when compared to materials that has been more gently processed. Protein availability factors are used as key quality factors when considered meals produced for the stock feed and aquaculture industries.

However, the results of the survey (72% of the respondents) indicate that the petfood manufacturers feel that they would appreciate more focus on the quality of proteins and fats supplied into their operations.

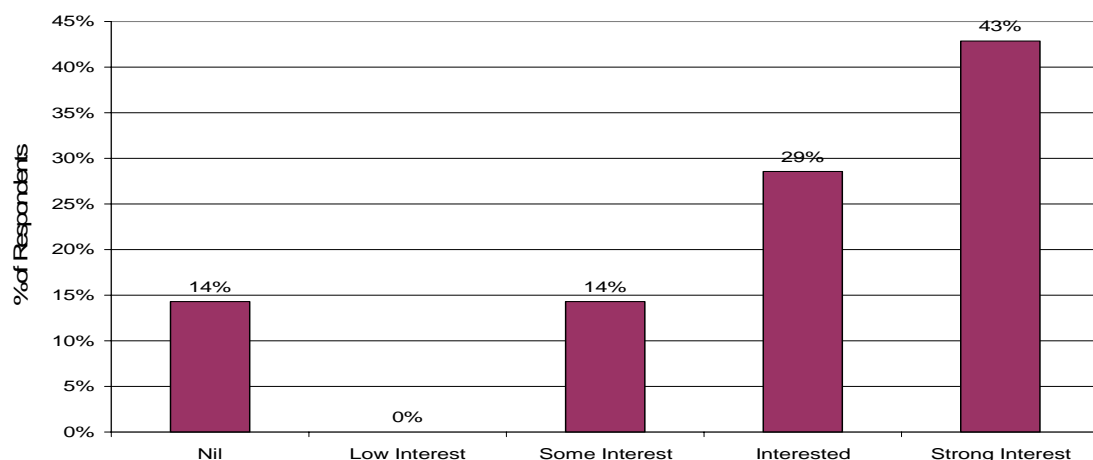


Figure #4 – Focus on nutritionally sound products

Figure #4 shows the survey results for more focus on the availability of nutritionally sound products.

Petfood Palatability Enhancement

Palatability of petfood is paramount to the success of a brand. High palatability in a pet food product is a key factor to ensure repeat sales and hence business success. There are many factors to the palatability equation. These factors are not unlike the same equation for human food. That is, we like to eat fresh, wholesome and tasty foods. Pets and their owners have shown over the years that they decide on the success or otherwise based upon the similar selection criteria. In a recent article by Jackie Dent in the Bulletin, the following observations were made in relation to pet health and pet food product quality

“This anthropomorphosis⁹ is most noticeable in the dinner bowl. Like us, we want our pets to be healthy, live longer, be free from halitosis, but also have the odd treat. Pet food companies pander to these dreams. TOP vows to strengthen your cat's immune system, making it look and feel younger. Whiskas offers pâté for eight-year-olds and over. Pedigree Dentabone, a bone-shaped chewy thing for dogs, pledges to fight plaque and freshen breath. My Dog serves up tender chicken and spinach. (Perhaps the improving menus have come about because staff at pet-food companies are regularly required to try the food. Imagine going to one of those meetings with a hangover.)

But while the overall quality of supermarket pet food has generally improved in recent years, an emerging niche of consumers is finding it is simply, well, dog food. As some pet owners go glam with premium brands such as Eukanuba and Hills, which are sold only at vets and pet stores, others are more extreme.”¹⁰

Petfood palatability starts with the selection of good quality raw materials. Processing at the abattoir can involve operations such as rendering, freezing or chilling. These processes must be undertaken to ensure that there is minimal deterioration to the quality of the material. The product must then be shipped to the pet food manufacturer in such a manner as to preserve the product's integrity and quality. The focus of the manufacturing process is then maintain the quality and ideally the initial flavour profiles of the meat base.

In general, the supply chain from “Farm to Bowl” is not as tightly controlled as is required for the consistent delivery of high grade material.

Meat based digests

There are four discrete stages involved in a pet consuming petfood product. Each of these stages is impacted by the quality and attractiveness of the raw materials.

1. Attraction. The aroma of the food must be attractive to the animal and interesting enough for the animal to commence feeding. This stage is completely olfactory, in that it is driven by the smell of the product. Raw materials that bring off-odours to a finished product will reduce the products overall attractiveness to the target animal.
2. Initialisation. At this point, the animal starts eating the product. Here the animal not only continues to smell the product but now also tastes it.
3. Continuation. It is a measure of the total amount eaten. This stage is governed by many factors which have already been mentioned such as taste and smell. However additional factors such as texture and mouth feel become important. For example a good tasting product that feels like a mouthful of broken glass will not have a high consumption rate.

⁹ **an-thro-po-mor-phism** *n.*

Attribution of human motivation, characteristics, or behavior to inanimate objects, animals, or natural phenomena.

¹⁰ The Bulletin “News Week. HEAVY PETTING, January 15, 2003.

4. Termination. This occurs when the animal stops eating the product. Early termination indicates a poor quality petfood product or products that usually have low overall consumption. Pet owners are less likely to repurchase a particular brand as it is perceived that the animal did not like it.

Therefore for a product to be successful it must appeal to the animal in every one of these four stages. It must have a highly attractive aroma, It must taste good and have the correct texture to ensure that the animal does not terminate early and it must be nutritious to ensure the animal's well being.

Most petfood companies use flavour systems to help in attracting the animal to the product. We know that both cats and dogs use their olfactory senses to explore their food before tasting it. Flavour systems simply help products by giving the product a very pleasant aroma and taste.

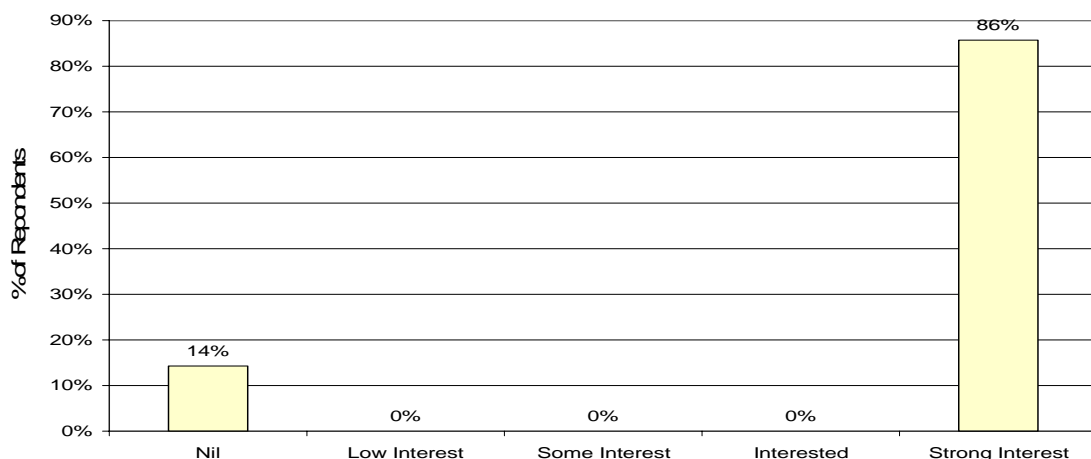


Figure #5 – High palatability Meat based digests for extruded products

Meat based digests are used in dry cat and dog foods. Meat based flavour systems are also used to enhance canned products.

Figure #5 shows the interest level in the use of high palatability meat based digests for extruded products. The participants showed a strong interest in this area. The predominant animal based digest in use in Australia today is based upon poultry by-products. Recently specialty digest companies such as SPF (French owned) and BioFlavour (US owned) have started operations in Australia. These companies are both based at poultry processing works.

The area of palatability enhancement is a closely guarded secret by petfood companies. It constitutes a consumption driver and therefore a key market distinctive. Several petfood companies manufacture their own digests in house. This is done to maintain the confidentiality of the recipes and processing. However, the problems with supply of suitable raw materials and the desire of larger companies to focus on their core competency, which is petfood manufacturing, has opened the opportunity for outside companies to supply gravy coating under strictly controlled confidentiality agreements.

The high result (see figure #5) indicates that this would be an area where a series of potential projects between individual meat processors and petfood companies could be possible.

Meat based flavour systems

The task of a meat based flavour system is similar to that mentioned earlier. That is, it must ensure that the animal is attracted to the product and also delivers taste to ensure that the animal eats a sufficient quantity to ensure nutritional requirements are met.

The area of the development of meat based flavour systems for wet pet foods (both canned and chilled), is shown in Figure #6. 86% of respondents expressed an interest in the area.

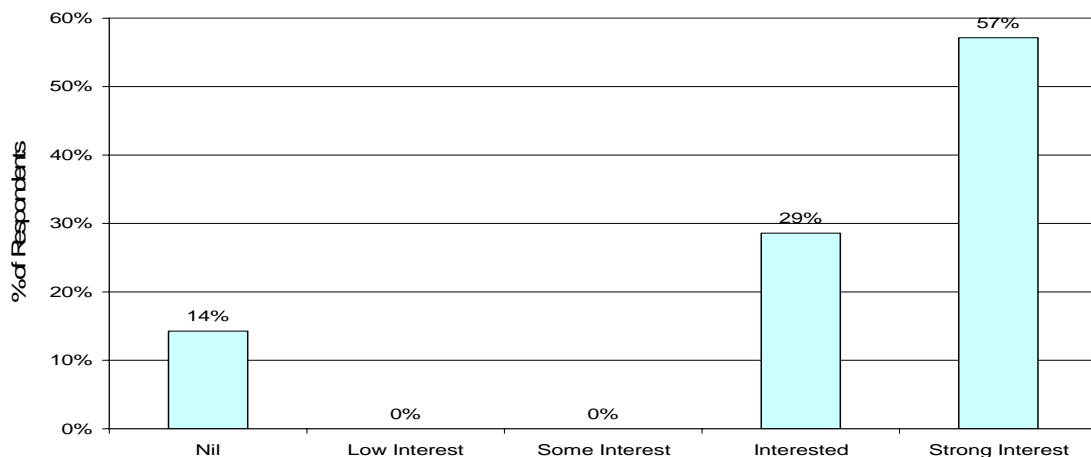


Figure #6 – Meat based flavour systems for inclusion into canned and extruded products

Projects of this nature would operate similarly to the meat based digest projects mentioned above. Projects would be a joint venture between individual meatworks and petfood manufacturers.

New Ingredients

Anthropomorphosis, as suggested by the dictionary definition, sees pet owners attribute human like characteristics to their pets. Anthropomorphic behaviour is one of the main drivers in the petfood industry. It has resulted in ingredients, recipes and marketing approaches being very similar to those used by the human food industry. Over the years, the range and function of novel ingredients in the human food arena has been mirrored in the petfood industry.

This section of the survey was included to gauge the level of interest in various new ingredients such as organic calcium, high protein meat meals, organic meats, tallow fractions, half products and novel ingredients such as Glucosamine and Chondroitin Sulphate.

Organic calcium

Organic ingredients such as calcium and organic meats have become small but significant new ingredients in the human food arena. Organic calcium in the form of calcium sourced from animal bone or dairy products are being preferred in some natural products for humans.

Figure #7 shows that the industry showed only a lukewarm response to the potential supply of organic calcium. The current industry usage of calcium phosphates is currently sourced from a variety of raw materials one of which is animal bone.

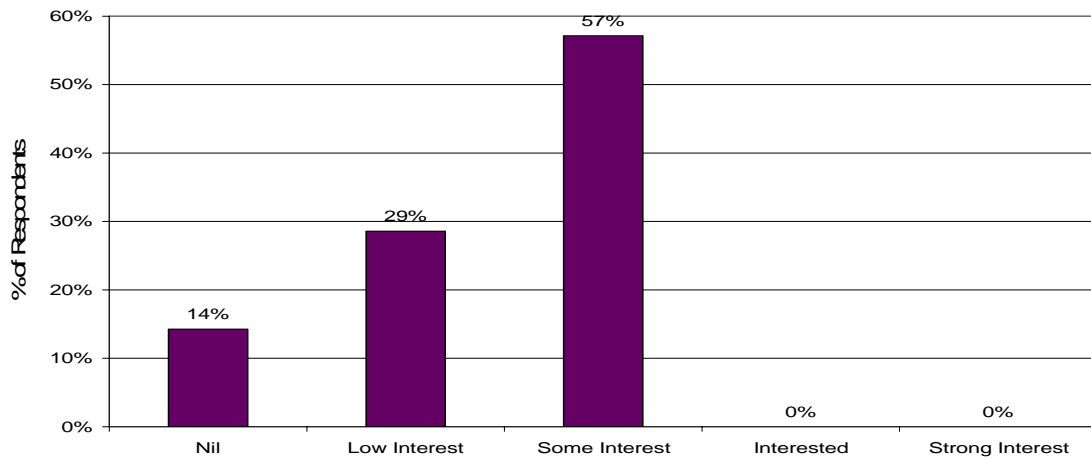


Figure #7 – Supply of Organic Calcium

High Protein Meat meals

Lamb meal as already mentioned is a valuable commodity in the global petfood market. The key problem with lamb meals is the lower protein content when compared to products such as poultry meals.

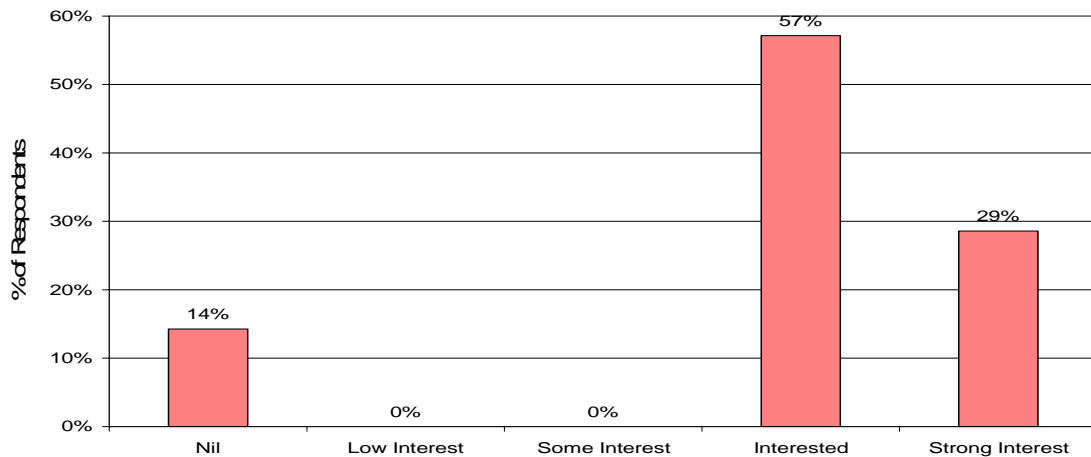


Figure #8 – High Protein Meat Meals

Separation technologies enable the removal of the bone fragments and thereby increase the protein content of the finished meal. One of the techniques in use is air classification where the different densities of the bone and meat fragments result in separation. Thereby allowing the removal of bone (non protein material) fragments and hence increasing the protein level by difference.

Survey results for high protein meat meals are shown in Figure #8. 86% of participants of the survey indicated that this area should be investigated. As this project could benefit the entire industry, a joint PFIA, ARA and MLA project should be considered.

Organic Meat and Meat By-products

Participants of the survey showed a broad spread of preferences to the supply of organic meats and meat meals. 57% of respondents indicated they were interested. This result, shown in Figure #9, is indicative of an emerging area of interest.

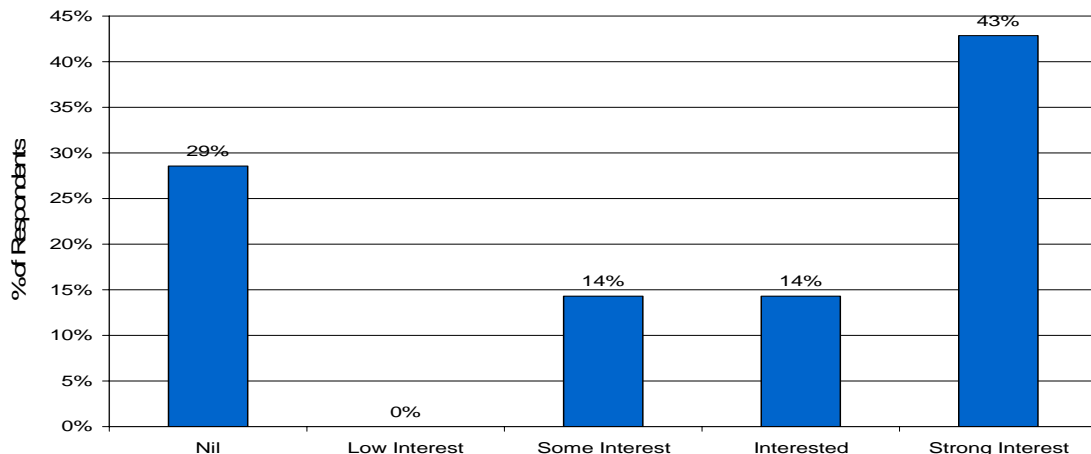


Figure #9 – Supply of Organic Meat Meals

The organic petfood market in Australia is currently very small. It is restricted to small manufacturers and local fresh meat suppliers. However, with the human food trend into the area of organic products, it is an area worth considering for a mid to long range project. Consumers are becoming aware of the potential health benefits of eating “organic”. However a more important aspect of the “organic” revolution is in the high confidence in the supply chain. The organic food delivery chain provides full tracking and therefore a high degree of product accountability. This leads to high consumer confidence in the finished product.

Tallow fractions

Tallow is made up of various fatty acid fractions as shown in Table #6¹¹

Table #6 – Nutritional breakdown of Beef Tallow

Lipids	g	100
Fatty acids, total saturated	g	49.8
12:00	g	0.9
14:00	g	3.7
16:00	g	24.9
18:00	g	18.9
Fatty acids, total monounsaturated	g	41.8
16:1 undifferentiated	g	4.2
18:1 undifferentiated	g	36
20:01	g	0.3
Fatty acids, total polyunsaturated	g	4
18:2 undifferentiated	g	3.1
18:3 undifferentiated	g	0.6
Cholesterol	mg	109

¹¹ Information sourced from the USDA National Nutrient Database for Standard Reference database found at http://www.nal.usda.gov/fnic/cgi-bin/nut_search.pl.

Some of these fractions have been shown to have different nutritional and palatably benefits. The participants have indicated significant interest (71%) in pursuing projects in this area. The result is shown in Figure #10.

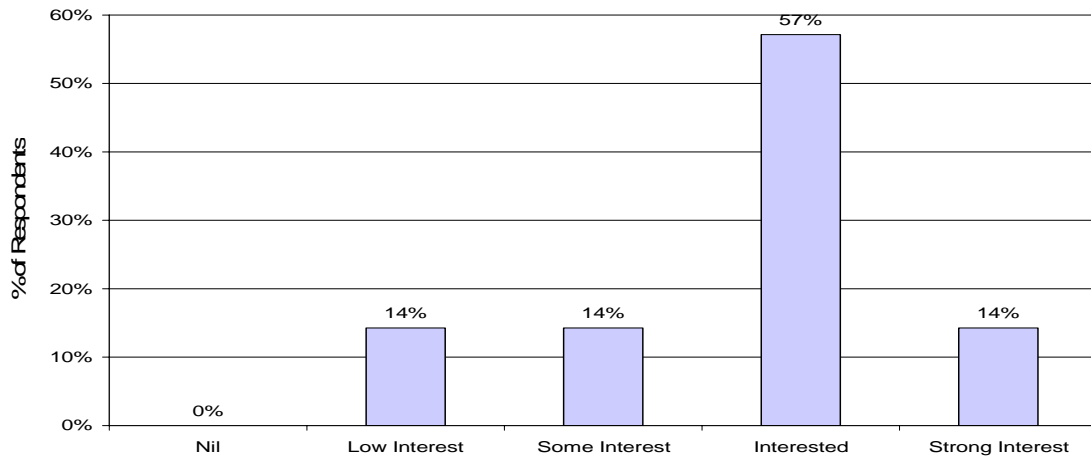


Figure #10 – Fractioned Tallow to improve handling and palatability

Half Products

A half product is a new idea in the area of the delivery of meat meals. The concept involves mixing the wet meal immediately after fat extraction, with a cereal base and a preservative system. This would enable the blended wet meal to be kept for up to 2 years at room temperatures without a decrease in palatability or nutritional benefits. The survey results are shown in Figure #11. The response shows that this area should be a middle priority for future exploration.

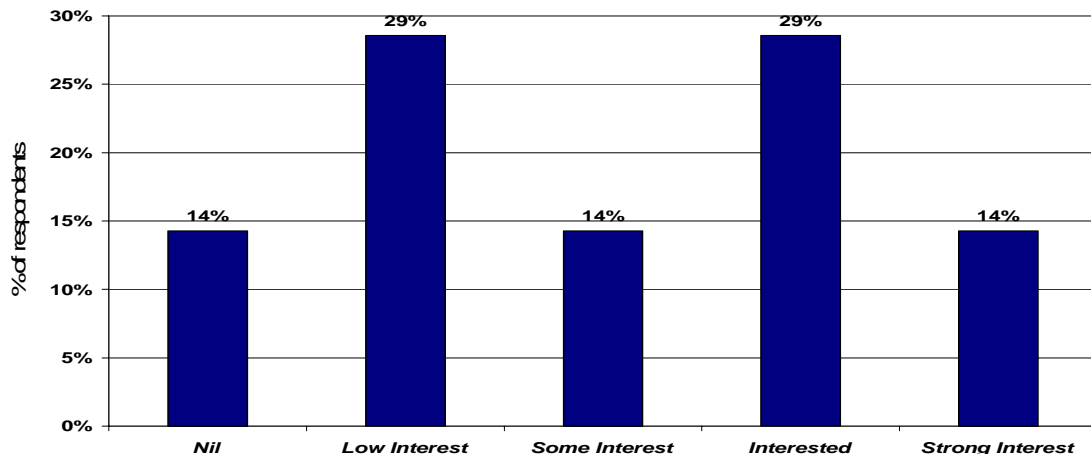


Figure #11 – Half products to extend shelf life of meat meal by up to 2 years

Novel Ingredients, e.g. Glucosamine and Chondroitin Sulphate

Glucosamine and Chondroitin Sulphate have become synonymous with the new breed of Nutraceutical pet foods. These ingredients are extracted from bovine cartilage and when administered in the correct manner, have been shown to give pets with arthritic conditions significant pain relief and major improvements in joint movement. The survey used

Glucosamine and Chondroitin Sulphate only as an example of the type of new ingredients that could be uncovered if more R&D focus could be brought to bear on other potential high value by-products from the meat processing industry.

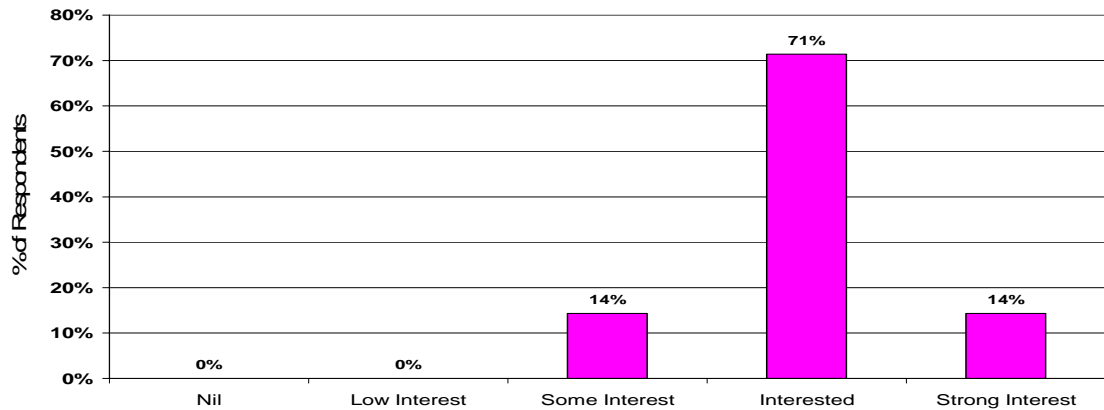


Figure #3 – New ingredients such as Glucosamine and Chondroitin

Figure #12 shows that a large percentage of the participants indicated an interest in this area. This area would benefit the entire Australian petfood and meat processing sectors, and joint projects should be investigated.

Survey Summary - Overall Rankings

The results from the survey were collated into table #7 below. The interest level score was arrived by first multiplying each of the raw scores for “Interested” and Strong Interest” by a weighting factor and then summing the preference results for each of the categories.

Table #7 – Summary of Survey results ranked in order of interest level.

RANK	Area of Interest	Interest level Score
1	High palatability Meat based digests for extruded products	4.29
2	High quality Meat Meals	4.00
2	Meat based flavour systems for inclusion into canned and extruded products	4.00
3	High protein meat meals	3.71
4	New ingredients such as Glucosamine and Chondroitin	3.57
5	More focus on nutritionally sound products	3.29
6	Fractioned tallow to improve handling and palatability	3.00
7	Supply of Organic meat meals	2.71
8	Half products that extends the shelf life of meat meal by up to 2 years	1.86
9	Supply of Organic calcium	-

Table #5 shows the order of preference for future projects as indicated by the Petfood industry. The preference scores demonstrate that the development of high palatability flavour systems and high quality meat based materials should be the focus for future developmental projects.


Summary and Recommendations

The highest volume sectors of the market are the wet and dry dog foods, and wet cat foods. These are therefore very important areas to be serviced with high quality meat by-products. However the pet snacks sectors, while smaller in terms of volume, have been growing strongly, and this trend is expected to continue. The quality, in terms of palatability, of these products is paramount, and so they demand premium ingredients

The fresh petfood sector has shown by far the highest level of growth over the last few years, but of course the nature of this product and its limited shelf life means it is not relevant to rendered meat by-products.

The survey carried out in preparing this report provides a snapshot of the priority concerns and opportunities with regard to red meat by-products used in the petfood industry.

The survey revealed that the petfood industry is constantly looking for raw materials that will give its products an edge in the international arena. The current “Clean Green” push by Austrade and the Federal Government agencies has had a positive impact on the petfood export market. However as shown previously, the industry is still dependent upon sales within Australia for its mainstream livelihood. A focus on long term strategic research between the meat processing industry and petfood companies would enable meat companies to manufacture products of greater value to the petfood industry, resulting in higher sales of the meat products and greater competitiveness of the petfood industry.



The red meat industry needs to position itself to supply high quality by-products to the growing petfood market. Increased usage of meat based materials will be driven by the same factors that drive the petfood industry as a whole – increased palatability (over an extended storage life), absence of contamination, and good functional properties during manufacture.

Recommendations & Opportunities for Partnerships

The survey revealed several layers of opportunity for collaboration between the meat industry and petfood manufacturers. These have been broken into short term covering 3 to 12 months, medium term projects taking from 1 to 2 years and long term strategic research 1 to 5 years.

Short Term Projects

Improvements to meat meal quality

- A project focusing on meal quality would need to cover the basic science of meal production and stability from the perspective of the requirements of the petfood industry.
- A high quality meal would need to command a premium over standard meat meals. This premium would be arrived at through comparative animal acceptance trials. This measure could be used a quality index for all meat meals. Therefore, meal purchasing would be tied to the quality index, rather than current generic protein content.

High protein meat meals

- Following on from the meal quality project, a second project examining the methodologies available for the development of high protein meals.
- A range of technologies such as the current equipment using air separation or simpler approaches such as raw material segregation should be examined from an engineering, quality and cost perspective.

Nutritionally sound products

- This project would firstly require extensive investigation into the main concerns of the petfood industry with respect to nutritional adequacy of the current raw material offerings.
- This project would look at the impact of various processing methodologies on nutritional aspects of products.
- The initial scanning project could be undertaken and resolved in under 6 to 8 months.
- This project would be of industry wide appeal and therefore approaches to the PFIA and several representative meat processing companies should be made with a view to forming a joint project.

Medium Term Projects

High palatability Meat based digests for extruded products

- The development of poultry digest replacements for the petfood industry would be a 1 to 2 year project. The project would involve recipe and process development work leading to a plant installation and commissioning.
- A small scale processing line producing up to 5 tonnes per day could be commissioned as a demonstration plant to prove the effectiveness of the process and its economics. The small scale plant would be able to supply a medium size petfood manufacturer. The plant could be operational in less than 6 months.

Meat based flavour systems for inclusion into canned and extruded products

- This project is similar to the previous digest development task.
- The development of Meat flavour systems will require extensive research and development to provide the basic information needed for plant and process design.
- Fortunately there are several systems available to enhance meat flavour.
- If a partnership with a larger petfood company could be forged with a meat processor the research and development cycle could be shortened.
- Therefore early results could be achieved in less than 1 to 2 years.

Long Term Projects

Long term projects are of a more strategic nature. These projects would look to emerging industry trends here and overseas to position the Australian petfood industry. An example cited earlier is the organic petfood industry. As BSE and FMD threaten to derail our international competitors, Australian manufacturers need to be fully equipped with products and processes to fill any opportunistic or long term markets that may emerge.

Appendix 1 – Petfood Industry Survey

Introduction

Meat & Livestock Australia Limited (MLA) is a producer-owned company that provides services to the entire Australian red meat industry including producers, processors, exporters, live exporters and retailers. MLA has 29,354 livestock producer ‘members’.

MLA is seeking to stimulate commercial investment in innovation by working with companies looking to break new ground in the meat industry. Jointly funded innovation projects are targeting real business issues and the participating companies are achieving positive outcomes for their own bottom line.

Importantly, projects are facilitated right through the innovation pathway up to, and including, full commercialisation. This greatly enhances the likelihood of a successful outcome and ensures partners -and ultimately industry- achieve real benefit and commercial returns.

Participating companies retain a high degree of control and ownership of their initiative and strict commercial principles apply including confidentiality of commercially sensitive information and partner exclusivity periods where appropriate.

MLA’s vision for the Program is to create a culture of success in the meat industry by providing the resources, skills and environment that develops capability and fosters innovation in individual enterprises.

Petfood Industry Survey

The MLA is seeking to survey the Australian pet food industry to gauge the current and projected uses of meat and meat by-products. The goal of the survey will be to highlight to the MLA where further research funds can be directed to enable the petfood industry to increase their uptake of meat and meat by-products.

This survey looks at potential areas for new and expanded work in the areas of new products or improvements to existing raw materials and finished goods.

PETFOOD INDUSTRY SURVEY

Name of Company:	
Person completing survey:	
Position:	
Date Completed:	

New and Improved products

This section looks at potential new and improved products that could be developed by the Australian Meat Industry through MLA funding. Please indicate which products your business would be interested in and the level of interest.

New or improved products	Level of your company's interest (1= nil, 2= low interest, 3= some interest, 4=interested, 5= very high interest)				
	1	2	3	4	5
1 High quality Meat Meals					
2. More focus on nutritionally sound products					
3. High palatability Meat based digests for extruded products					
4. Meat based flavour systems for inclusion into canned and extruded products					
5. Supply of Organic calcium					
6. High protein meat meals					
7. Supply of Organic meat meals					
8. Fractioned tallow to improve handling and palatability					
9. Half products i.e. a dried blend of meat and cereal that extends the shelf life of meat meal by up to 2 years					
10. New ingredients such as Glucosamine and Chondroitin					
Other areas of interest					

Initiatives and Partnerships

The MLA seeks to strategically position R&D initiatives and partnerships which are vital in ensuring the future growth and development of the meat industry.

Could you nominate a meat industry company who could partner with you in a project to explore any of the potential areas mentioned on the previous page?

Name of Company:	
Address of company:	
Contact Person:	
Position:	

Other Comments

Appendix 2 – Method used for calculation of meat utilisation

The approximate utilisation of meat based raw materials used by the petfood industry was calculated in the following manner.

- Collection of base volume data
 - Information relating to petfood volumes was gathered from reliable sources such as AC Nielsen and the FAO
 - The volumes were broken down by animal type and food type.
- Estimated ranges of meat inclusions
 - Sample recipes were devised and discussed with industry participants.
 - The estimated ranges of inclusion of different meat type allows for an accurate output range to be calculated.

Assumed percentages used:								
		Dog Food	Cat Food	Dog Food	Cat Food	Dog	Cat	Chilled
		Wet	Wet	Dry	Dry	Treats	Treats	
Fresh Red Meats	Min.	10%	15%	0%	0%	0%		5%
	Max.	25%	20%	20%	20%	15%		40%
Fresh Chicken	Min.	15%	50%	0%	0%	0%		25%
	Max.	60%	60%	25%	25%	20%		50%
Fresh Fish	Min.		5%					
	Max.		16%					
Red Meat Meal	Min.	0%		10%	10%	10%	10%	
	Max.	2%		20%	20%	30%	30%	
Chicken Meal	Min.			10%	15%	5%	5%	
	Max.			25%	25%	20%	20%	
Fish Meal	Min.				5%		5%	
	Max.				10%		10%	

From this data and an allowance for % of export production for each manufacturer, the final amounts of each meat type was calculated.

These base numbers were then further discussed with petfood and meat industry personnel to further confirm that the calculations were within expected ranges for each meat product.

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FAOSTAT - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS at web page <http://apps.fao.org/default.htm>