

March 2007

Petfood Industry

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Guide to
Petfood Forum
and Focus

RAW

The next big thing?

BARF pioneer
Dr. Ian Billinghurst, p. 20

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Europe preview

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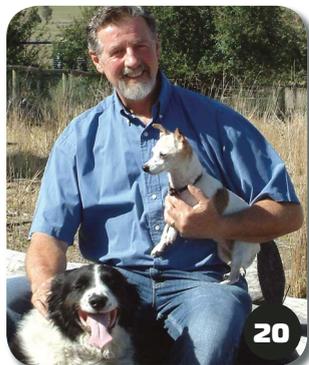
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Ian Billingham, DVM, of BARF Australia with Priscilla (on lap) and George.

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Looking for sales in all the right places

Multinational petfood marketers have a problem: the maturity of developed markets. More and more manufacturers have to generate value through new product developments that target evolving consumer trends. Hence they can increase value sales, even when tonnage sales are flat.

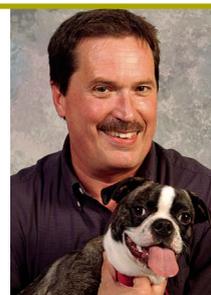
Major developed markets are becoming more polarized, with growing demand for premium and superpremium products at one end of the spectrum. At the other end, there is aggressive pricing competition among retailers and the expansion of private label products. Bad news for manufacturers in the mid-priced segment, including world leaders Mars and Nestlé, which are seeing their core brands face an identity crisis, notes Euromonitor. So we see Mars rolling out a high-end petfood brand called the Goodlife Recipe (www.goodliferecipe.com).

Emerging markets' role

With major developed markets seeing growth restrained by maturity, the leading multinational players have looked more to emerging regions to generate growth. These markets have come to play a greater role in the development of global petfood sales. According to Euromonitor, in regions such as Eastern Europe and Asia-Pacific, petfood manufacturers have found market conditions with significant potential as a result of urbanization. The migration to cities has fragmented traditional social structures in emerging markets. Living spaces are becoming smaller and people are delaying starting families due to a desire to pursue the educational and employment opportunities

Urbanization has helped raise disposable income levels in emerging markets.

— Tim Phillips



presented by urbanization.

Another result of urbanization is that animals have a much less prominent working role in cities than in rural environments. Consequently, urbanization has contributed to the establishment of the practical and emotional conditions for animals to go from working possessions to pets. Urbanization has also helped raise disposable income levels in emerging markets, reducing the need for animals to earn their keep.

The increase in purchasing power associated with urbanization, along with the improvement to distribution infrastructures resulting from sufficient densities of consumers to support large-scale retail formats such as supermarkets, has driven a significant shift in consumer behavior.

In order to take full advantage of evolving conditions in emerging markets, major multinational manufacturers have sought to deepen their penetration, making significant efforts to raise consumer awareness of petfood and pet care products through aggressive marketing activity. The geographic expansion of major manufacturers has been facilitated by the development of the supermarkets/hypermarkets channel, and the expansion of major retailers such as Wal-Mart, Tesco and Carrefour, with which they have formed strong relation-

ships in more developed markets.

As a result of such developments, the major cities of emerging markets such as China and Russia have witnessed the emergence of trends that mirror those in more developed markets. In emerging markets, most growth has been driven by the popularity of low-priced products. Low levels of disposable income, limited specialist distribution and the habit of feeding animals inexpensive scraps work against the development of higher value products. Besides, multinationals are not the only producers looking to exploit conditions in emerging markets, with a growing number of local manufacturers entering petfood with inexpensive goods that serve to increase the downward pressure on prices.

What's next?

Multinationals are expected to consolidate their global domination, says Euromonitor. They will adapt to evolving conditions in core developed markets and deepen penetration of fast growing emerging markets. ●

This column is derived from Euromonitor's November 2006 report, The World Market for Petfood and Pet Care Products. Go to www.petfoodindustry.com and click the Euromonitor link.

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Industry News

Nestlé builds its first petfood facility in China

Nestlé Purina reportedly opened its first petfood processing plant in China recently. According to *China Daily*, Nestlé invested an initial US\$10.26 million (80 million yuan) in the factory located in the Tianjin Economic Technological Development Area. Nestlé chose Tianjin, a port city close to Beijing, to meet demand from the country's two largest markets—Beijing and Shanghai. The Tianjin factory is expected to produce some 20,000 tons of petfood a year.

Before building this first domestic plant, Nestlé's cat and dog food sold in the Chinese market was imported from the United States. The Tianjin factory increases Nestlé's competitiveness with Mars, which started producing petfood domestically in Beijing about 10 years ago.



PFI calls for renewal of TPA

The Pet Food Institute (PFI), the national trade association representing US dog and cat food companies, has joined with business, food and agricultural associations across the country in urging the United States Congress to act quickly and renew the president's Trade Promotion Authority (TPA), which is set to expire June 30, 2007.

"It is imperative for the president to retain his legal authority to negotiate international trade agreements without the fear of countless amendments," said PFI vice president of technical and regulatory affairs, Nancy K. Cook. "Our trading partners will not negotiate agreements with the United States if they believe the time and effort spent in those negotia-

tions will be undone by congressional amendments," she added.

AAFCO midyear meeting concluded

The 2007 Association of American Feed Control Officials (AAFCO) Midyear Meeting was held in January in Savannah, Georgia, USA. During this meeting, the Pet Food Committee (headed by Dave Syverson of Minnesota) met and discussed many agenda items. Dr. Bill Burkholder named nine members of the AAFCO expert committee charged with reviewing the new NRC *Nutrient Requirements of Dogs and Cats* publication for AAFCO.

Those named were Dr. Tiffany Bierer (Mars Petcare US); Dr. Andrew Crawford (Nutro Products Inc.); Dr. Gail Maulden (Nestlé Purina PetCare); Dr. Dennis Jewell (Hill's Pet Nutrition); Dr. Claudia Kirk (University of Tennessee); Dr. Gail Kuhlman (P&G Pet Care); Dr. Mike Panasevich (Summit Ridge Farms); Dr. Rebecca Remillard (Angell Animal Medical Center); Dr. Angele Thompson (Thompson Pet Tech). For more updates from the recent meeting, see Dr. David Dzanis' *Petfood Insights* column on page 64.

The next AAFCO meeting will be at the Annual Association of American Control Officials Conference in Grand Rapids, Michigan, USA, from August 1-4, 2007, at the Amway Grand Plaza Hotel. For more information, go to www.aacomichigan2007.com.

Behnken, founder of American Nutrition, dies

Jack Behnken Jr., who founded and operated American Nutrition Inc. in Ogden, Utah, USA, died of cancer February 18. He was 80.

Behnken had a degree in industrial engineering and worked for the Welch Grape Juice Co. and the Kellogg Co. before founding American Nutrition in

Ogden in 1972. He never retired. When he died, he held engineering licenses in six states. He also had petfood plants in Phoenix, Arizona, and Woodland, Washington, USA.

In a 1997 profile, Behnken said he was proud of his company's contributions to the community, including the 450 jobs it provides. He said he chose Ogden as the startup point for his company because of its central location in the western US and good access to both rail transportation and grain-producing companies. Behnken was an active member of the Pet Food Institute.

Viliesis joins Dogmatic

Dogmatic Products announced recently that it has appointed Paul Viliesis as vice president of sales and marketing. Viliesis comes from Mar's Inc., where he was national sales director. He will be responsible for overseeing Dogmatic's US accounts, while growing its global sales and distribution. Dogmatic is expanding its offerings with "hyperpremium" natural dog treats.



UC Davis launches study on FMD

The Center for Animal Disease Modeling and Surveillance (CADMS) in the School of Veterinary Medicine at the University of California (UC) at Davis, California, USA, has launched a US-wide research study aimed at protecting the livestock industry from the devastating consequences of foot and mouth disease (FMD).

US livestock producers are being asked to participate in an online survey to gather data on animal movements and husbandry practices. The data will be used in a simulation model to pre-

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dict the duration and magnitude of an FMD outbreak, as well as determine the best strategies for containment. This project is being conducted in collaboration with the National Center for Foreign Animal and Zoonotic Diseases and is supported by the US Department of Agriculture and the Department of

Homeland Security. The survey can be found at www.cadms.ucdavis.edu.

Nestlé Purina PetCare announces 2007 forum

The 2007 Nestlé Purina Nutrition Organizing Committee has announced that the 2007 Nestlé Purina Nutrition



Forum will be held September 20-23, 2007, at the Ballpark Hilton Hotel in St. Louis, Missouri, USA.

The theme for 2007 is Focus on Felines. Topics related to feline nutrition and metabolism, plus research abstracts and a special workshop on communication in veterinary medicine, will be featured. Abstracts are being sought now for any area of canine and feline nutrition; the deadline is June 15, 2007. To submit an abstract, contact Dr. Dorothy Laflamme at dorothy.laflamme@rdmo.nestle.com, Tel: +1.540.745.2841.

General registration will open after April 1 and will close September 1 or when available space has been filled. Registration forms will be available by contacting Charlene Lackey at charlene.lackey@rdmo.nestle.com.

Call for abstracts: AAVN symposium

The 7th Annual American Academy of Veterinary Nutrition (AAVN) Nutrition and Research Symposium (in conjunction with the annual American College of Veterinary Internal Medicine Forum; www.acvim.org) will be held in Seattle, Washington, USA, on Wednesday, June 6, 2007. Graduate students, residents, interns, clinicians and researchers interested in large animal, small animal and exotic species are invited to submit abstracts of practical and scientific topics related to nutrition.

Abstracts can be focused on basic or applied/clinical research. Case reports describing unusual or difficult cases are also encouraged. Abstract deadline is March 7, 2007. All abstracts must be submitted electronically by the deadline to Dr. Sean Delaney. Authors will be notified of acceptance via E-mail on or before April 4, 2007. For additional information contact: Dr.

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Sales reach all-time record level at Hill's

Colgate-Palmolive Co. announced worldwide sales and unit

volume growth for the fourth quarter of 2006. Worldwide sales grew 10.5% to US\$3.2 billion and unit volume grew 7.0%, as reported. The very strong top-line growth was supported by a double-digit increase in worldwide advertising spending to a record level.

Hill's (14% of company sales) sales and unit volume grew 11.5% and 6.5%, respectively, to an all-time record level, according to the company. Strong sales of Science Diet Indoor Cat food continued to drive growth in the US specialty retail channel during the quarter.

Internationally, growth was strong led by Belgium, Germany, Denmark, Italy, the United Kingdom, Australia, Brazil, Taiwan and Russia. New pet-food products contributing to the international growth included Prescription Diet j/d Canine, Prescription Diet Feline Chunks in Gravy pouches and Science Plan Neutered Cat, a new veterinary exclusive product.

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New Wellness dry cat food recipes launched

The Wellness brand of natural pet-food and treats has announced that its feline dry nutrition line has been re-designed. According to the company, it has created customized nutrition based on a cat's lifestyle. Wellness says it selected ingredients that help solve some of the most challenging health problems for cats, including urinary tract health and weight management, as the foundation for its special all-new Wellness Dietary Solutions recipes.

Kent Feeds to focus on petfood growth

Kent Feeds Inc. has announced the creation of a new Pet Solutions unit to build on the success of its growing petfood business. Plans for the new Pet Solutions unit include a larger portfolio of performance pet-foods and an expanded sales structure with a focus on regional and national accounts. John Howard has been named to lead the new business unit as director.

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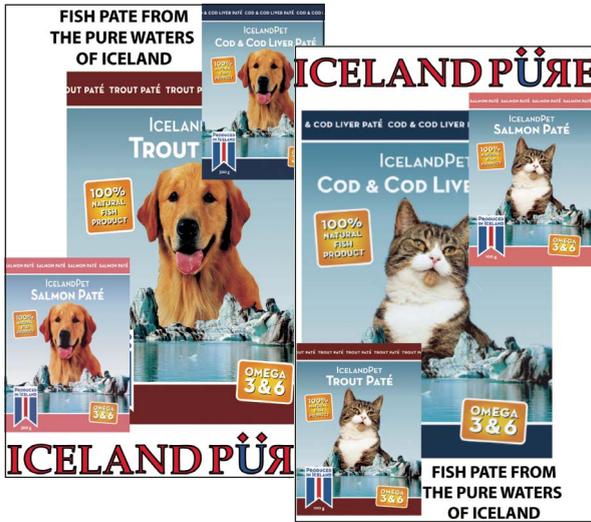
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Editor's note: Submissions and feedback are welcome. Contact Jenny Kvamme, Tel: +1.815.734.5637, Fax: +1.815.734.5649, E-mail: jkvamme@wattnet.net.



100% Icelandic fish

Iceland Pure has used Iceland's fish bounty to create a gourmet wet pet food from fish pâté. According to the manufacturer, the product is made from 100% Icelandic fish and is high in protein and omega-3 and omega-6 fatty acids, with no added preservatives, no coloring, no artificial flavor and 0% ash content. www.icelandpure.com

Choice cuts of meat

Zuke's Z-Filets are choice cuts of premium meat, says the company. Zuke's starts with US beef and chicken (no organ meats used), then glazes with maple syrup, seasons with garlic and finally dusts its treats with rice flour and sea salt. These wheat-free and corn-free products are a healthy, human-grade protein source available in Basted Beef and Glazed Chicken, according to Zuke's. www.zukes.com



Shih Tzu 24 formula

Shih Tzu 24 dry dog food by Royal Canin is made for the special needs/physiology of the Shih Tzu breed. L-cystine and methionine (essential for renewing the haircoat) combine with linoleic acid to promote a glossy coat. The kibbles have a special texture that produces a brushing effect, reducing dental plaque formation. According to Royal Canin, special chelating agents slow tartar development by fixing the calcium present in the saliva. www.royalcanin.us

Just add water

Merrick Pet Care now offers three of its dry dog food entrées in a gravy version. Just add water to the Cowboy Cookout, Wilderness Blend and Grammy's Pot Pie dry dog food varieties to create a savory beef-, venison- or chicken-flavored gravy, respectively. According to Merrick's, their dry recipes average 40+% meat in the formulation. www.merrickpetcare.com





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RAW

Australian Ian Billinghamurst believes grain-based diets are unsuitable for dogs and cats

BY TIM PHILLIPS, DVM

Business basics

Headquarters: Bathurst, Australia.

Annual sales: Just under 1,000 metric tons of product per year. "Growth over the last three years has been phenomenal," says Billinghamurst.

Manufacturing: BARF Australia has a dedicated manufacturer of its raw food products based in Queensland.

Employees: The company remains small. Its manufacturer has seven employees and there are six major distributors—each with numerous sub-distributors.

Brands: Dr. B's Genuine Aussie RAW.

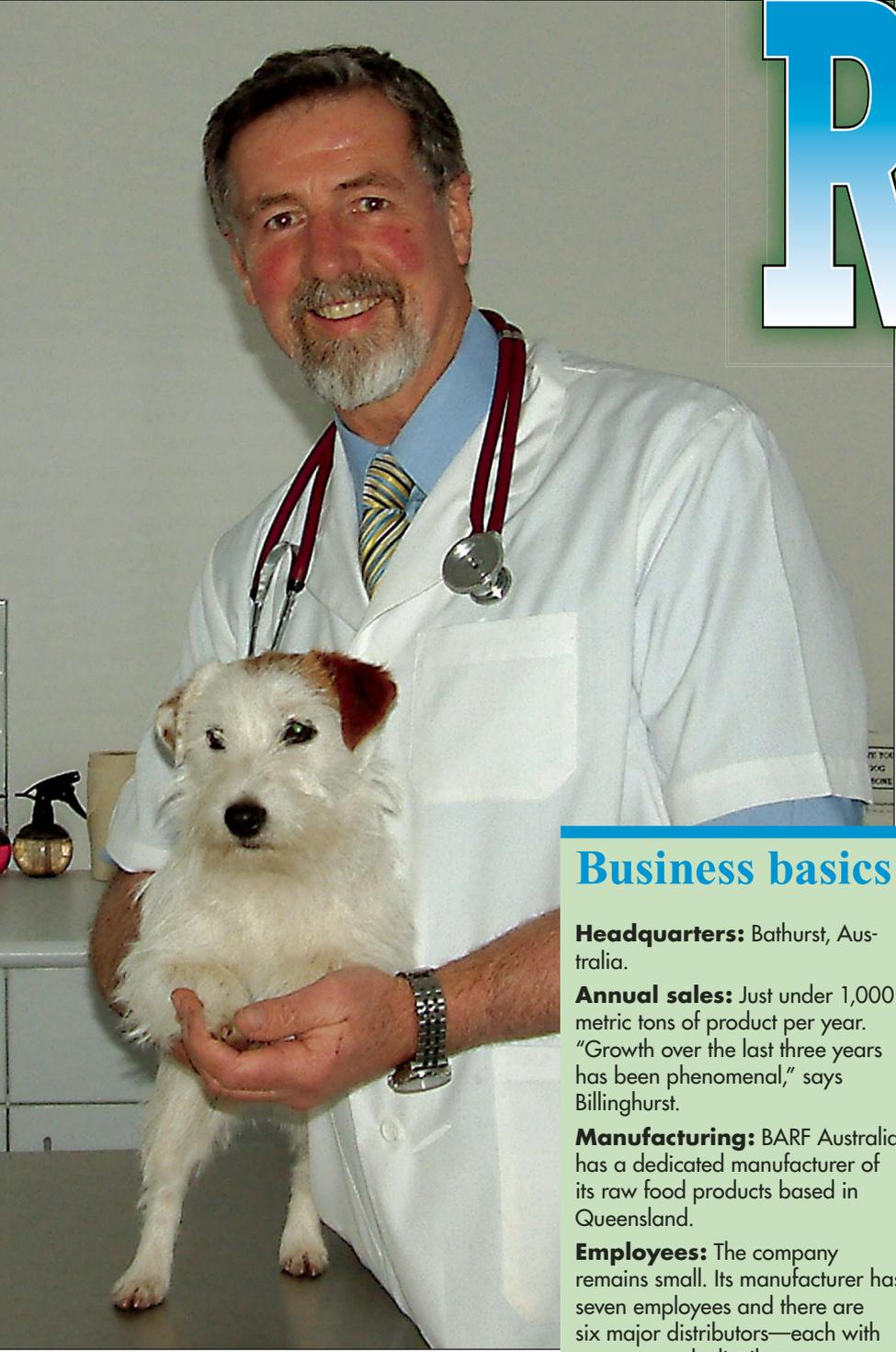
New products: The company's goal is to offer a full spectrum of nutritional solutions for companion animals.

Website: www.barfaustralia.com.

I clearly recall Dr. Ian Billinghamurst speaking at Petfood Forum 2003. He gave a thought-provoking lecture, earnestly facing a highly skeptical audience. At the time, I think what he said seemed rather far out to most of his audience, including me. Four years later, his message seems to be working its way into the mainstream. Demand for raw petfoods is steadily increasing, and Packaged Facts market research is calling raw petfood "the next big thing."

Billinghamurst is a veterinary surgeon in general practice in Australia. He believes that, because of the dictates of evolution, "grain-based diets are unsuitable for dogs and cats."

I recently had the chance to talk with him about his RAW business and beliefs. His company, BARF Australia, manufactures raw petfoods and distributes them in the Australian and Japanese markets under the trademark



Dr. Ian Billinghamurst is a veterinary surgeon in general practice in Australia.

The next big thing?

Dr. B's Genuine Aussie RAW. In addition to its common meaning, RAW stands for "restoring animal wellness." BARF stands for "bones and raw food" or "biologically appropriate raw food."

The evidence

"The hypothesis behind BARF," says Billinghamurst, "is that the diet a dog or cat evolved to eat is the best way to feed it." This is the hypothesis accepted by most modern zoos, notes Billinghamurst.

He explains that "evolutionary biology holds if properly formulated raw foods are fed to an animal, all of the nutritional requirements of that animal are met." The reasoning here is that such a diet supplies the nutrients we know and *do not* know to be essential.

"BARF nutrition," states Billinghamurst, "does not rely on double-blinded trials or peer-reviewed research. It does not rely on a detailed knowledge of an animal's supposed requirements." He also notes that "the hypothesis that the best way to feed an animal is to formulate a diet based on the opinions of an expert committee, has never been formally tested in any peer-reviewed research."

He adds that the hypothesis underpinning the production of BARF Australia's products was not developed as a theoretical construct. It was developed in an attempt to explain what Billinghamurst observed, namely "the differences in lifetime health between the often poor health of companion animals forced to eat processed foods vs. the excellent health of animals that eat a diet based on the principles of evolutionary nutrition."

The evolution of BARF

Australia has always had a thriving raw petfood industry, with approximately 20% of the Australian petfood dollar spent on raw foods. This contrasts strongly with the US, where approximately 5% of the petfood dollar is

spent on raw foods.

In the early 1990s, there were proponents of raw foods in both Australia and North America. However, "it was only in Australia that there remained a coherent concept of raw foods as being able to provide a complete diet for companion animals," notes Billinghamurst. "And even in Australia, that tradition was rapidly disappearing."

He became aware of the importance of the raw concept early in his veterinary career. But, it was not until 1993 that he finished his first book, *Give Your Dog a Bone*. He says this book

Why RAW?

"A properly formulated raw diet is the most complete and balanced diet possible," contends Dr. Ian Billinghamurst, "because it supplies all essential nutrients that we know and *do not* know about."

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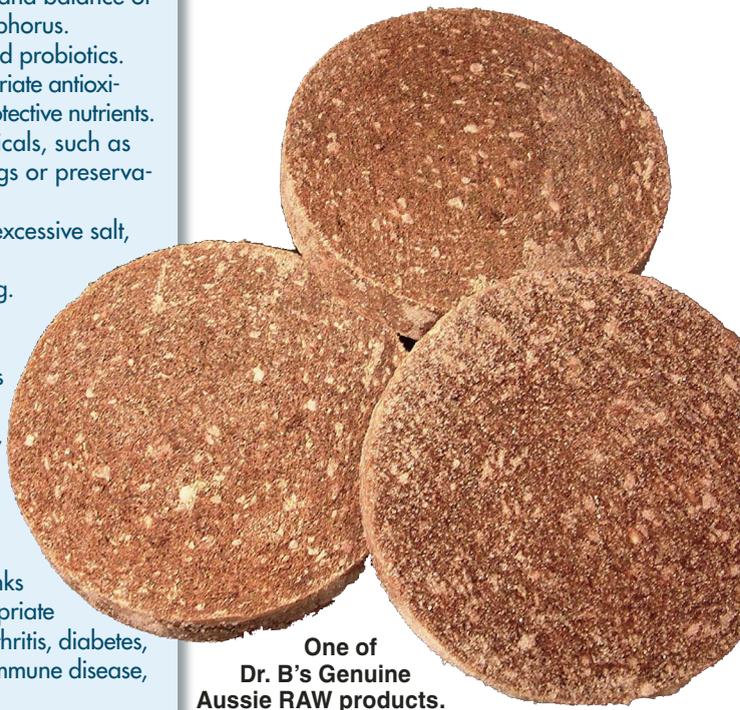
Says Billinghamurst, "High-carbohydrate diets cause problems in people, dogs and cats, such as obesity, hyperinsulinemia, insulin resistance, inflammation and hyperglycemia."

What's more, he thinks biologically inappropriate diets could cause arthritis, diabetes, renal disease, autoimmune disease, epilepsy and cancer.

"kick-started" the worldwide raw petfood industry as we know it today.

BARF Australia was formed in the late 1990s and had a slow beginning. The company initially concentrated on developing the raw petfood market in the US and Canada, rather than in Australia. In 2000, BARF Australia accepted the offer to join with three other companies focused on North America, to form BARFWorld.

"A diet based on the opinions of an expert committee has never been formally tested in any peer-reviewed research."



One of Dr. B's Genuine Aussie RAW products.

Since 2003, Billinghamurst has concentrated on BARF Australia, an independent petfood company already showing profitability. He hopes BARF Australia will soon be able to bring the benefits of Australian beef, lamb and kangaroo to US dogs and cats. A major reason he is optimistic is his company's

shift from using small independent distributors toward directly supplying nationwide pet chain stores.

Veterinary Nutrition Essentials

In addition to the RAW petfood line, Billinghamurst is working with Veterinary Nutrition Essentials LLC (VNE)

Biologically Appropriate Raw Food (BARF) fresh frozen patties.

to develop canine nutritional products for the North American market. These include supplements formulated to address either the deficiencies of modern commercial petfoods or as a safety net for those already feeding BARF. Together with VNE, Billinghamurst plans to develop and offer healthier petfood and treat options. They will be minimally processed and contain biologically appropriate raw foods. The first of these products will be available in the first half of this year.



His message seems to be working its way into the mainstream.

His own eating habits

How does Billinghamurst use the raw philosophy in his own eating habits? He explains, "Simply by following the principles of evolutionary nutrition for humans, which means staying away from grain-based foods, sugars and processed foods, and eating whole raw foods as much as possible." ●

Editor's note: An abstract of a paper by Dr. Billinghamurst on nutrition and neoplasia is in our Research Notes column, p. 74.



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Petfood Forum 2007, with a new format, is on track to set an attendance record. This unique event is the meeting place for petfood professionals—an opportunity to learn, network and visit with suppliers. Scheduled for April 16-18 at the Hyatt Regency O'Hare near Chicago, Illinois, USA, Petfood Forum offers so many good ideas, you can't afford to miss it. New this year, three general sessions on Wednesday, April 18, will provide distinct insights from petfood company and pet retailing executives, plus exclusive research on the future of the industry.

Following is the most accurate and up-to-date scheduling, topic and speaker information available at press time. Topics in the same time slot are concurrent. For regular updates, bookmark www.wattnet.com/petfoodforum. If you have specific questions, contact Marcia Riddle (attendees) at E-mail: mriddle@wattnet.net; Tel: +1.815.734.5633 or Ginny Stadel (exhibitors) at E-mail: gstadel@wattnet.net; Tel: +1.815.734.5691.

Tuesday, April 17
8:00-8:40 am



The latest packaging materials and equipment

Tom Egan, VP of industry services at the Packaging Machinery Manufacturers Institute, discusses rapid consumer shifts in packaging preferences and needs, plus the constant pressure to maximize packaging operations. This presentation covers the latest packaging material and machinery solutions to help you remain relevant in 2007.

Cognitive palatability testing

Joseph Araujo, PhD, of CanCog Technologies, explains an alternative approach to palatability testing. Instead of relying on quantity consumed, the cognitive palatability assessment protocol attempts to directly ask an animal, "Which food do you prefer?"

8:45-9:25 am

New product trends



David Lummis, market researcher from Packaged Facts, talks about riding the premium petfood wave in mature markets. He examines key drivers in the premium market, along with numerous product examples, with a special focus on the next big thing: fresh, frozen and raw petfood.



US regulatory report

David Dzanis, DVM, PhD, Dzanis Consulting & Collaborations, updates the US petfood regulation outlook, including: new federal and state feed safety initiatives; pending revision of the AAFCO Dog and Cat Food Nutrient Profiles; a proposal that would require calorie content statements on labels; and new rules expressly for organic petfoods.

10:15-10:55 am

Popular functional ingredients



Greg Aldrich, PhD, of Petfood & Ingredient Technology Inc., notes that blueberries, cranberries, spinach, carrots and other fruits and vegetables are becoming popular ingredients in petfoods. However, many companies are adding them to generate market attention rather than support nutritional benefit to the animal. This presentation explores whether these ingredients are nutritionally available and beneficial.

Obesity prevention

Sean Delaney, DVM, ACVN, Davis Veterinary Medical Consulting, says more than a third of dogs and cats are overweight or obese in North America and many developed nations. He presents



nutritional strategies that can be incorporated into petfoods to address the unique needs of overweight-prone, overweight and obese pets.

11:00-11:40 am

Packaging: preferences + willingness to pay

Mike Dennis, director of marketing at Alcan Packaging, declares that today's petfood purchasers are looking for packaging solutions that go beyond containment. He presents research that uncovers some interesting data as it relates to consumer preferences and their willingness to pay for innovative packaging solutions.

New and significant global regulations



Terry Plant, regulatory consultant, elucidates some of the recent and forthcoming changes in regulations that may impact international trade in petfoods. He notes the plethora of regulatory changes over the last 10 years and that they seem to be speeding up. Are these changes leading to convergence or divergence?

1:00-1:40 pm

Scrutinizing superpremium petfoods



Nancy Kerns is editor of *Whole Dog Journal*, a subscriber-supported, advertising-free monthly newsletter. She shares how her magazine scrutinizes petfoods, describing the methodology and factors considered to make recommendations. In addition, she analyzes the premium petfood sector.

Nutrition for skin and gut health



Sally Perea, DVM, Davis Veterinary Medical Consulting, states that food allergies in dogs and cats can manifest in both the skin and gastrointestinal tract. She discusses nutritional approaches for skin and gut health, including foods formulated with uncommon antigen ingredients, hydrolyzed proteins, supplemental omega-3 fatty acids and vitamin and mineral modifications.

1:45-2:25 pm

The future of petfood retailing

Jon Hauptman, MBA, a partner at Wil-



lard Bishop Consulting, examines the rapidly changing retail industry and addresses questions that are top-of-mind among petfood retailers and suppliers. In particular, what are emerging trends, challenges and opportunities that will help drive your future success?

Genomics—customized diets

Keith Murphy, DVM, PhD, Texas A&M University, presents an overview of canine genetics and how it relates to taste. Little regarding the molecular basis of taste perception in dogs has been published. However, sequencing of the canine genome allows us to more accurately dissect the genetics of taste in the dog.

3:15-3:55 pm

Global sales trends

Elizabeth Higgins, head research analyst for the petfood market at Euromonitor International, analyzes key trends and developments in the global petfood and pet care products industry. She offers unique forecasts on market growth over the next five years.



Innovative treats

Ken Meyers, CEO of Chomp Inc., observes that today's consumers have more product intelligence, greater access to variety and a more jaded view of the marketplace than ever before. He says marketers must make even bolder product promises and step farther away from the competitive mainstream to draw attention and dollars.



4:00-4:40 pm

Production—what's new and innovative

Sajid Alavi, PhD, Kansas State University, says many recent developments in petfood production have been extrusion hardware advances that enable flexibility and precise control over product characteristics. He describes innovations that have enabled this including: new extruder and screw designs; post-extrusion pressure control; in-line process control; and die-interchange systems.

NRC—response to critics

George Fahey, PhD, University of Illinois, discusses the 2006 National Research Council publication detailing the nutrient requirements of dogs and cats. He presents key features of the document and addresses positive and negative comments about it.

Wednesday, April 18— General sessions

8:00-9:30 am

Executive roundtable

Doug Cahill of Mars PetCare Inc., **Ladd Hardy** of Nutro Products, **Marcel Blok** of Change Stranamics and **Brian Connolly** of Castor & Pollux share their insights on the petfood industry today and tomorrow.

10:15-10:55 am

What pet owners want

A pet retail executive will address the questions: What do pet owners want? What are the hot-selling petfoods today?

11:00-11:40 am

The petfood industry 2007-2012

David Lummis, Packaged Facts, shares exclusive, primary research surveying hundreds of petfood industry executives from around the world. He examines the direction the market will take through 2012.

Focus on Treats



PETFOOD
T R E A T S

Petfood Focus on Treats, April 18-19, will follow Petfood Forum 2007, providing an in-depth educational program on the exploding market for pet treats. Following is the most

up-to-date scheduling, topic and speaker information available at press time. For more information, contact Marcia Riddle at E-mail: mriddle@wattnet.net; Tel: +1.815.734.5633.

Wednesday, April 18

3:00-3:40 pm

Treat market overview



Euromonitor International's data on treat sales and trends, presented by **Bruce McKay**, an experienced petfood industry professional who has served in various senior management positions. He covers the changing role of treats in health and nutrition, comparing petfood trends to similar developments in the human supplement market.

4:10-4:50 pm

Functional ingredients in treats

Dr. Robert Taylor, Alameda East Hospital, is on the Discovery Channel's *E-Vet Interns* TV show. He discusses the efficacy of functional ingredients and whether

edible chews and baked treats will become dosing alternatives to tablets and capsules.

4:50-5:30 pm

Treat product innovations

Paul McKeithan from Aeroglide focuses on the different types of treat manufacturing currently in use and looks at new approaches. In addition to treat making, he covers the drying and baking process used in most treat manufacturing processes.

Thursday, April 19

Treats for other species

Andrew Messinger of Vitakraft looks at treat market development for species other than dogs and cats. The German company Vitakraft is one of the largest international producers of petfood and supplies, including treats for reptiles and rodents.

8:40-9:20 am

Greenies case study



Tiffany Bierer, PhD, is the health sciences and nutrition manager for Mars PetCare US. She reports on the science behind the design of the next generation of Greenies dog chews.

9:20-10:00 am

Packaging—new ideas for treats

Paul Kearns, Exopack, shares his insights on major petfood packaging themes including convenience, sustainability and merchandising.

10:30-11:10 am

Treats for dental health



Jennifer Larsen, DVM, a consultant for Davis Veterinary Medical Consulting, speaks about strategies to address the common problem of periodontal disease, including specially formulated diets, the

wide variety of approaches with dental treats and the importance of confirming efficacy.

11:10-11:50 am

Regulatory issues with treats

David Dzanis, DVM, PhD, notes that with a few exceptions, the regulation of treats is similar to that of other petfoods. Rawhides and similar items may be exempt from some, but not all, requirements. But, there are additional regulatory considerations for treats with added nutrients.

Petfood Forum 2007 Exhibitors

As of press time, the following companies are exhibiting at Petfood Forum 2007, listed by category. The number following the name is the booth number. Starting at the bottom of this page, you'll find contact information and company descriptions received as of press time, with advertisers in this issue indicated.

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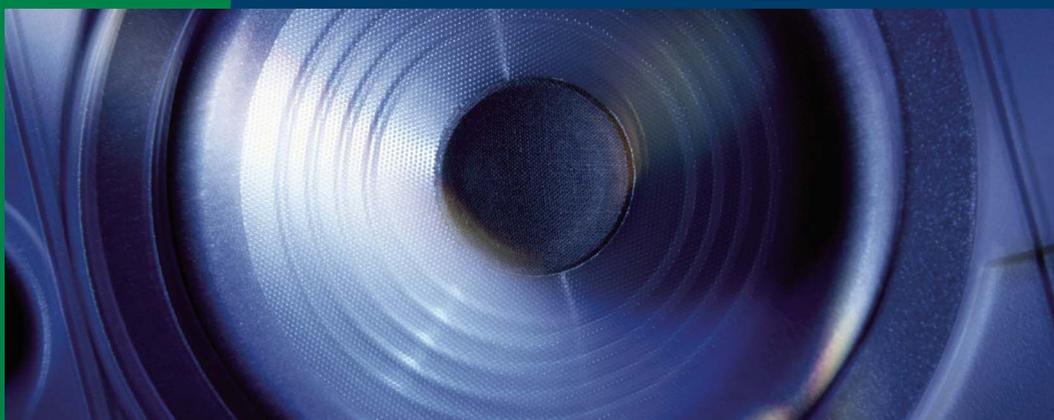
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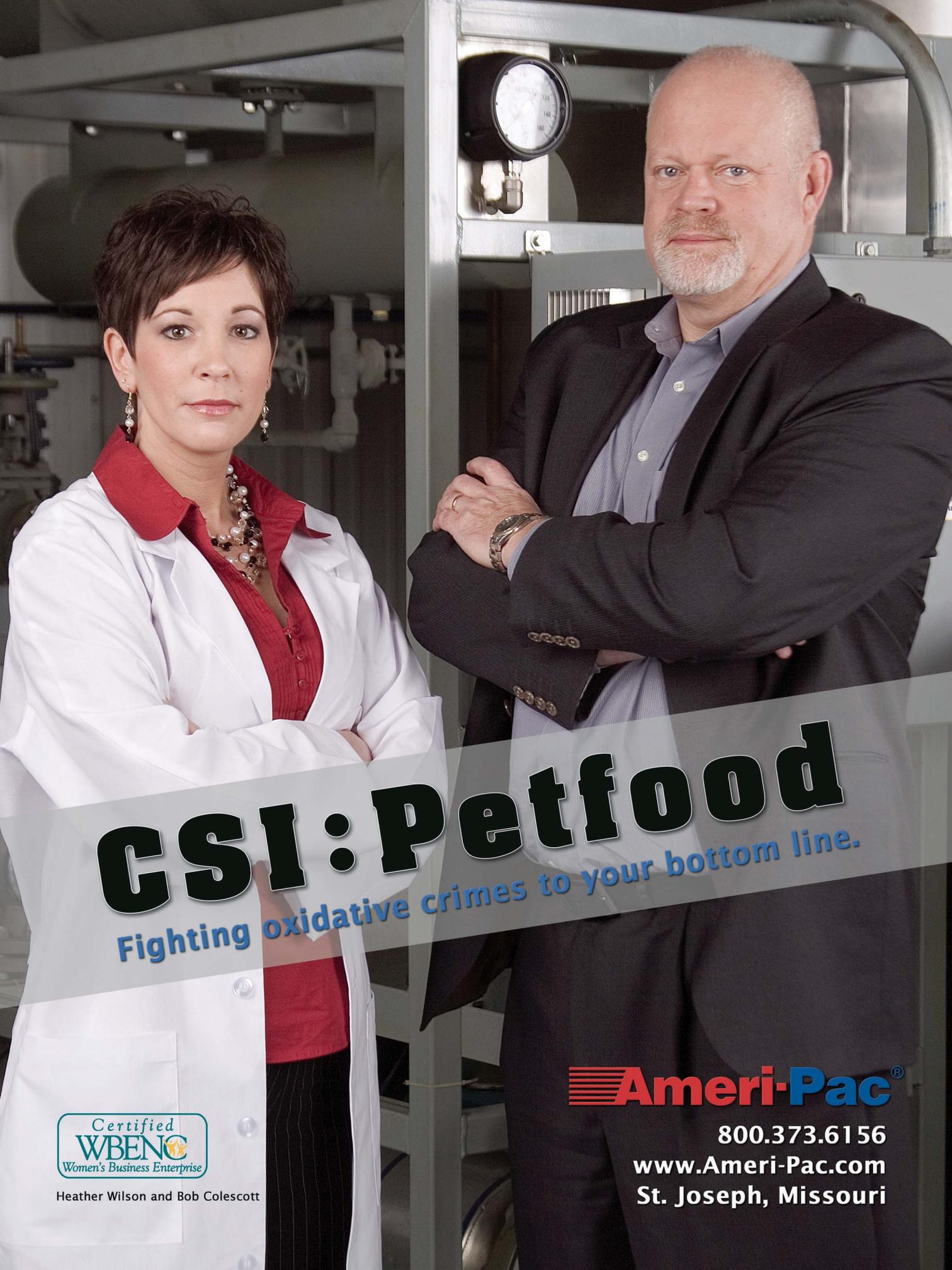
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Beijing 100098 CHINA
Tel: +86.10.58731162 Fax: +86.10.58731169
E-mail: jamesxjz58@yahoo.com.cn

The leading manufacturer of stable vitamin C in the world. Core business is vitamin C for feed and petfood key products.



Bi-Pro Marketing Ltd., Asanimay Co.

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Tel: +1.519.824.2381 Fax: +1.519.824.9472
E-mail: laura.feick@bi-pro.com
Website: www.bi-pro.com

Our recent merger with the Sanimax family allows us to leverage our corporate expertise in the production and distribution of quality ingredients and continue to build relationships with other like-minded partners.

See ad on p. 63, 82

BioOregon Protein Inc.

P.O. Box 429; Warrenton, OR 97146 USA
Tel: +1.503.861.2256 Fax: +1.503.861.3701
E-mail: biooreg@pacifier.com
Website: www.biooregonprotein.com

BioOregon Protein develops, manufactures and markets novel fish-based nutritional products derived from marine fish and shellfish. We are experts at processing seafood by-products and by-catch from commercial fisheries.



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Website: www.bliss-industries.com

Bliss manufactures hammermills and counterflow coolers. Stop by our booth and visit about our medium fine grinder, which produces granulations in the 40-100 mesh range.

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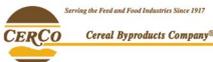


Bühler Inc.

13105 12th Ave. N.
Plymouth, MN 55441 USA
Tel: +1.763.847.9900 Fax: +1.763.847.9911
E-mail: Michael.ehr@buhlergroup.com
Website: www.buhlergroup.com

Bühler is a leader in the food processing industry. We bring our expertise, sizing, mixing, conditioning, extrusion and drying of products to the petfood and aquafeed industries.

See ad on p. 39



Cereal Byproducts Co.

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Ste. 410
Mount Prospect, IL 60056 USA
Tel: +1.847.818.1550 Fax: +1.847.818.1659
E-mail: dale@cerealybyproducts.com
Website: www.cerealybyproducts.com

Since 1917, we have supplied macro-ingredients/products: alfalfa; barley; beef, lamb and pork products; beet pulp; brewers dried yeast; corn; flax; fish; milk; oats; poultry; rice; soybeans; and wheat.

See ad on p. 83

Cetec Industrie

BP 210; F-24052 Perigueux CT
Cedex 9 FRANCE
Tel: +33.553.028500 Fax: +33.553.028510
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Website: www.cetec.net

Packaging machinery manufacturer offering weighers, bagging machines, closing systems, bag collators and shrinkwrappers, as well as palletizers for petfood or cat litter products.

CFS

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Website: www.cfs.com

One-stop supplier of solutions for preparation, processing, slicing and packaging of food products. From enabling product/packaging innovation and improving output to reducing operating cost, our customers' end results are what count.

ChemNutra Inc.

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Las Vegas, NV 89145 USA
Tel: +1.702.799.9800 Fax: +1.702.799.9820
E-mail: steve.miller@chemnutra.com
Website: www.chemnutra.com

ChemNutra imports quality ingredients from China for the US petfood industry. We are among the largest distributors of taurine, L-cysteine, glycine, wheat gluten, rice protein concentrate, STPP and D-xylose.



CJ Foods Inc.

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Tel: +1.785.336.6132
C.J. Foods, Inc. Fax: +1.785.336.6370

E-mail: tmars@cjfoodsinc.com
Website: www.extrudedpetfood.com
"Cutting edge" custom creator, producer and packager of superpremium companion pet diets. CJ Foods' focus is on providing complete, start-to-finish, high-value service. CJ Foods produces/packages a wide variety of superpremium petfoods and treats.

See ad on p. 82

Cletral Inc.

14450 Carlson Circle; Tampa, FL 33626 USA
Tel: +1.404.944.4134 Fax: +1.813.855.2269
E-mail: mshaw@cletralusa.com
Website: www.cletral.com

Cletral Inc. manufactures twin screw extruders and complete production lines for petfood and pet treats. Cletral also offers a pilot plant facility for confidential new product development and testing.

Coating Excellence International

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Website: www.coating-excellence.com

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Manufacturer of robotic palletizing and depalletizing systems for precise placement of paper bags, boxes, trays and small bundles. Our palletizers combine reliability and flexibility into a design that is easy-to-use and operate.

See ad on p. 75



Conforma Clad

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Tel: +1.812.948.2118 Fax: +1.812.944.3254
E-Mail: dcrowdis@conformaclad.com; Website: www.conformaclad.com

Tungsten carbide technology provides superior resistance to wear from abrasion, erosion and corrosion, even under conditions of impact or elevated temperatures. Advanced wear protection can drastically reduce the cost of manufacturing quality petfood.

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Coperion Corp.

663 E. Crescent Ave.; Ramsey, NJ 07446 USA
Tel: +1.201.825.6446 Fax: +1.201.825.6494
E-mail: dan.mielcarek@coperion.com
Website: www.coperion.com

Coperion's Mega volume line of twin screw extruders improves the intake of flour, starches and additives with low bulk density. Coperion can design a cost-effective solution for your extrusion line.

Cozzini Inc.

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Tel: +1.773.478.9700 Fax: +1.773.478.2510
E-mail: kfoley@cozzini.com
Website: www.cozzini.com

The Cozzini AR901 Gravity-Fed Reduction System replaces conventional bowl choppers as well as product-handling equipment. A 7-ft3 (200 liter) square hopper feeds the reduction chamber.



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Website: www.cpmroskamp.com

CPM and Roskamp Champion offer customers the lowest operating cost solution backed by the industry's best application, engineering and customer service support. Diverse product lines include high-speed hammermills, coolers and step grinding systems.

See ad on p. 34



CPM Wolverine Proctor LLC

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Horsham, PA 19044 USA
Tel: +1.215.443.5200 Fax: +1.215.443.5206
E-mail: smithp@cpmwolverineproctor.com
Website: www.cpmwolverineproctor.com

High-velocity through circulation combined with standard conveyor drying provides faster, more uniform drying; improved product quality; and lower operating costs. Also offered are fluidization and impingement ovens, feeders and coolers.

See ad on p. 38

Creative Formulation Concepts, LLC



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Tel: +1.410.267.5540 Fax: +1.410.267.5542
E-mail: alicep@creativeformulation.com
Website: www.creativeformulation.com

The Concept 5/Petfood Formulation Model is an uncomplicated approach to designing, formulating and managing complex petfood products. Its unique capabilities distinguish it from similar formulation systems. It simultaneously optimizes products comprised of multiple components.

See ad on p. 79



Dakota Gold Marketing
4506 N. Lewis Ave. Sioux Falls, SD 57104 USA

Tel: +1.605.965.6239 Fax: +1.605.332.2266
E-mail: mschweitzer@dakotagoldmarketing.com
Website: www.dakotagoldmarketing.com

Our ethanol production technology yields Dakota Gold BPX, with precise nutrient concentrations, providing premium nutritional value. Dakota Gold BPX is always consistent, and always loaded with high levels of protein, energy and other nutrients.

See ad on p. 17

Hesco Dakota Organic Products Inc./ Hesco Inc.

500 19th St. S.W.
Watertown, SD 57201 USA
Tel: +1.605.884.1100 Fax: +1.605.884.1133

E-mail: bradh@hesco-inc.com
Website: www.hesco-inc.com

We supply both organic and conventional grain and grain-related products, in addition to custom milling. Our main focus is on small grains such as wheat, flax, barley, oats, durum, rye, etc.

See ad on p. 79



Danisco Canada Inc.
230 Midwest Road
Scarborough, ON M1P 3A9

CANADA
Tel: +1.416.701.2661 Fax: +1.416.757.9243

E-mail: fizul.bacchus@danisco.com
Website: www.danisco.com

Danisco supplies antimicrobials, antioxidants, cultures, emulsifiers, enzymes, flavors, hydrocolloids and tailored blends. We offer a wide range of packaging options and technical assistance in solving petfood process problems.

See ad on p. 82

Decagon Devices Inc.

2365 N.E. Nelson Court
Pullman, WA 99163 USA
Tel: +1.509.332.2756 Fax: +1.509.332.5158

E-mail: sales@decagon.com
Website: www.decagon.com

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Sevenum; NETHERLANDS

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E-mail: h.michiels@dinnissen.nl

Website: www.dinnissen.nl

Vertical dryers; rotary sifters; vacuum core coating; Magi-N.ext Extrusion technology systems; multi-layer coating (liquid/powder) mixing systems; high-accuracy feeding of digest; fine-grinding equipment; and liquid powder addition systems.

See ad on p. 78

DSM DSM Nutritional Products/
Unlimited. Penford Food Ingredients Co.

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Tel: +1.973.257.8504 Fax: +1.973.257.8650

E-mail: jeff.alix@dsm.com
Website: www.dsm.com

DSM Nutritional Products delivers quality product and

custom premixes to the petfood industry. Custom services are driven by product innovation, based on our experiences in nutritional research to provide complete solutions.

See ad on p. 42

EDL Packaging Engineers Inc.

1260 Parkview Road
Green Bay, WI 54304 USA
Tel: +1.920.336.7744 Fax: +1.920.336.8585

E-Mail: jarlath.h@edlpackaging.com
Website: www.edlpackaging.com

EDL petfood packaging solutions enable our customers to revolutionize filling, sealing, bundling, palletizing, placing and wrapping petfood products. EDL supplies and integrates complete petfood packaging systems engineered for paper or plastic.

Enzyme Development Corp.

360 W. 31st St., Ste. 1102
New York, NY 10001 USA
Tel: +1.212.736.1580 Fax: +1.212.279.0056

E-mail: info@enzymedevelopment.com
Website: www.enzymedevelopment.com
Enzymes for production and digest/flavors or as a direct feed additive.

ESE & Intec

P.O. Box 99; Caney, KS 67333 USA
Tel: +1.620.879.5841 Fax: +1.620.879.5844
E-mail: jbarbi@midlandindustrialgroup.com
Website: www.midlandindustrialgroup.com

ESE offers extruders, pelletizers, thermo-conditioners, grinders, texturizers, pulverizers, dryers/coolers, mixers, micro-ingredient systems, fat/oil coaters, baggers, rollers, flakers, toasters, cookers, etc. Intec provides process and nutrition technologies and nutrient products.

Eurofins Scientific

345 Adams Ave.; Memphis, TN 38103 USA
Tel: +1.901.521.4500

E-mail: larsreimann@eurofinsus.com
Website: www.eurofinsus.com

Eurofins Scientific supports the petfood industry with analytical and consulting services addressing all aspects of product and ingredient quality, as well as compliance with regulatory guidelines and manufacturing standards.

Evanger's Dog & Cat Food Co.

221 Wheeling Road; Wheeling, IL 60090 USA
Tel: +1.847.537.0102 Fax: +1.847.537.0179

E-mail: hollys@evangersdogfood.com
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Tel: +1.864.596.7166
E-mail: paul.kearns@exopack.com
Website: www.exopack.com

Exopack is strategically positioned as a North American leader in paper and plastic flexible packaging for consumer and industrial products. For more information, visit our booth, see our website or call us.

See ad on p. 14



Extru-Tech Inc.
100 Airport Road; Sabetha, KS
66534 USA

Tel: +1.785.284.2153 Fax: +1.785.284.3143
E-mail: dannn@extru-techinc.com
Website: www.extru-techinc.com

Technically superior extrusion solutions for multiple types of petfood and pet treat production, aquatic feeds and feed ingredients. Our extrusion equipment line supports capacity rates from 300 to 33,000 pounds per hour.

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FISCHBEIN Fischbein Co.
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Tel: +1.704.838.4602
E-mail: garrysls@fischbein.com
Website: www.fischbein.com

Fischbein will spotlight its new 500 HPS high-production synchronous sewing systems designed closing laminated woven polypropylene bags. Other products featured include our In-let weigh scales and handling systems, Saxon and Fischbein bag sealers.

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experience the difference



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TX 78216 USA

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E-mail: lab@food-safetynet.com
Website: www.food-safetynet.com

Network of services to improve the effectiveness of food safety and quality programs. Combining A2LA and USDA-accredited laboratory services with consulting and auditing services, educational and crisis management programs and regulatory support.

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Tel: +1.800.574.6275 Fax: +1.952.974.9823

E-mail: nbedore@fossnorthamerica.com
Website: www.fossnorthamerica.com

Foss solutions analyze and control your products during production—helping you to optimize both quality and profit. Foss solutions provide analysis and control throughout the production process.

Fres-co System USA Inc.

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Tel: +1.215.721.4600 Fax: +1.215.721.4414

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Website: www.fresco.com

Full spectrum of petfood packaging material and packaging equipment. Fres-pet has allowed the petfood industry to deliver fresher, more natural, healthier diets in spite of the rigors of shipping and storage.

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Website: www.gatewayspackaging.com

This year, Gateway's design for profit solution is the Colorpak System, which combines high-quality, quick-change offset printing, state-of-the-art digital pre-press and direct computer-to-plate technology, as well as EB inks and coatings.

Geelen Counterflow® Geelen Counterflow USA Inc.

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Orlando, FL 32819 USA
Tel: +1.772.559.4338
E-mail: tomstrong@geelencounterflow.com
Website: www.geelencounterflow.com
Dryers and coolers.

See ad on p. 11

Genpak® Genpak LLC
9611 James Ave. S.

Bloomington, MN 55431 USA
Tel: +1.952.881.8673 Fax: +1.952.881.9617
E-mail: handerson@genpak.com
Website: www.genpak.com
Custom-printed, high and low density polyethylene products for the petfood industry. GenPak will help you create a consumer-friendly recyclable package that offers recloseable features

with strength and durability, giving your product an edge.

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Griffin Cardwell
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Tel: +1.502.636.1374 Fax: +1.502.636.0125
E-mail: lphillips@griffincardwell.com
Website: www.griffincardwell.com
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Cold Spring, KY 41076

USA
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E-mail: kstockelman@griffinind.com
Website: www.griffinind.com
Supplier of value-added specialty proteins, bakery by-products and fats and oils. Griffin successfully combines flexibility with process efficiency, consistency with innovative production capabilities with dependable, on-time deliveries.

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GTC NUTRITION GTC Nutrition
600 Corporate Circle,
Ste. H; Golden, CO 80401 USA
Tel: +1.303.216.2489 Fax: +1.303.216.2477
E-mail: mmoffett@gtcnutrition.com
Website: www.gtcnutrition.com

GTC Nutrition is a recognized leader in providing value-added, science-based ingredients and customized solutions. The company's flagship animal ingredient, Fortifeed probiotic fiber, offers numerous health and functional benefits.

See ad on p. 68

H HARPAK E Harpak Inc.
117 Eastman St.;

Easton, MA 02375 USA
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E-mail: heidiharlfinger@harpak.com
Website: www.harpak.com

Harpak offers a complete line of packaging/filling equipment including tray sealers, piston fillers, pocket fillers, form/fill/seal, RSC cartoning and wrap-around, tray erecting, case packing, robotics and sleeving units.

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Hood Packaging Corp.
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Spartanburg, SC 29302 USA
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See ad on p. 84



Sea the Difference

Research has shown the use of Omega Protein's menhaden fish meal and oil can provide a variety of benefits such as reduced inflammation in joints, higher trainability, lower exercising heart rate, a heightened immune system, healthier skin and a shiny coat.



Special Select: Menhaden fish meal, a proven stable and reliable source of balanced amino acids and essential fatty acids used in quality pet food and pet treats.



Natural Nautic: Menhaden fish meal now preserved with mixed tocopherols, the natural choice for providing these rich nutrients.



Virginia Prime: Refined menhaden fish oil, a direct source of EPA and DHA, long-chain omega-3 fatty acids that are essential to a pet's diet and health.

Omega Protein. giving you the options to provide pet owners what they want most - healthy pets. Send us an email, inquire@omegaproteininc.com, visit our website or call us for more information.



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Good digestive health, through the power of prebiotics, contributes to improved nutrient absorption, increased immunity, shiny coat, healthy stools and improved nitrogen metabolism. Furthermore, our scientifically trained staff can inform you of ORAFTI's latest scientific results and share upcoming trends so you can offer the best and most advanced pet nutrition in your products.

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ORAFTI Animal Nutrition
Aandorenstraat 1 - B-3300 Tienen - Belgium
Phone: +32 (0)16 801 301 - Fax: +32 (0)16 801 308
E-mail: info@orafti.com





International Ingredient Corp.

150 Larkin Williams Industrial Ct.
Fenton, MO 63026 USA

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International Protein Colloids Inc.

P.O. Box 100429; Fort Worth, TX 76185 USA
Tel: +1.817.795.7744 Fax: +1.817.795.9745

E-mail: ipc@proteincolloids.com

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St. Joseph Chamber of Commerce

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St. Joseph, MO 64506 USA

Tel: +1.816.364.4109 Fax: +1.816.364.4873

E-mail: blau@saintjoseph.com

Website: www.saintjoseph.com

The St. Joseph Chamber of Commerce can provide a complete package of economic development assistance to companies looking for a cost-effective location for their next facility.



Kemin Nutrinsurance Inc.

600 E. Court Ave.; Ste. 600-D

Des Moines, IA 50309 USA

Tel: +1.515.559.5100

E-mail: Steve.Siembieda@kemin.com

Website: www.kemin.com

Kemin manufactures and markets quality ingredients and provides a full range of customer laboratory services to support them. Kemin is a pioneer in the development of natural antioxidants with our Naturox brand.

See ad on p. 23

KENNELWOOD INC. Kennelwood Inc.

1913 N. Staley Road-

Champaign, IL 61822 USA

Tel: +1.217.356.3539 Fax: +1.217.356.4959

E-mail: swatts8147@aol.com

Kennelwood offers petfood testing for palatability and nutritional adequacy.

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La Crosse Milling Co.

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E-mail: caraleew@lacrosemilling.com

Website: www.lacrosemilling.com

Variety of high-quality manufactured grain products: whole oat groats; steam-rolled groats; or ground, steam-rolled groats; stem-rolled barley; whole or ground pearled barley; dog food cut barley; organic oat products.

See ad on p. 82

See Yourself with CPM

People know they can count on you. And you can count on CPM.

That's because our equipment is tough, reliable and efficient. Just like you.

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Atlantic Salmon Oil is rich in omega-3 long chain polyunsaturated fatty acids (LCPUFA). The addition of LCPUFA's DHA and EPA in the diets of dogs and, to a greater extent cats, are essential for health and longevity. Over the past 20 years there has been extensive research establishing the important physiological and metabolic roles of LCPUFA with specific interest in the two key omega-3 long chain polyunsaturated fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). These two omega-3 fatty acids provide structure to the cell membranes in all tissues, aid the healthy development of unborn litters and help limit the synthesis of pro-inflammatory prostaglandins. DHA is specifically fundamental in providing structure to the cell membranes in all tissues, particularly in the brain, eye, sperm, heart and skin.

For more information on the beneficial health affects of Atlantic Salmon Oil, please contact us for reference material.



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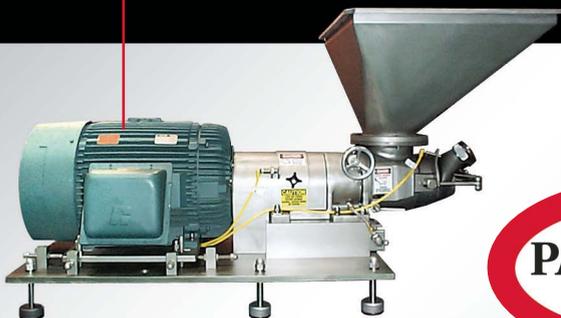
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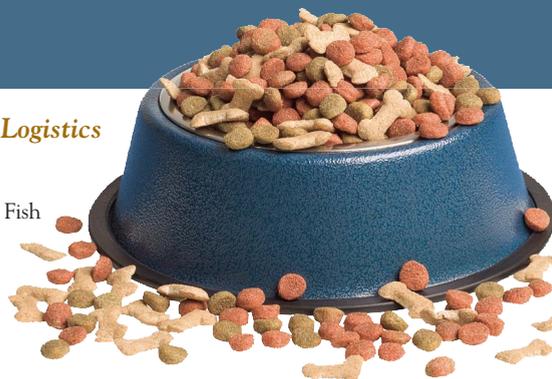
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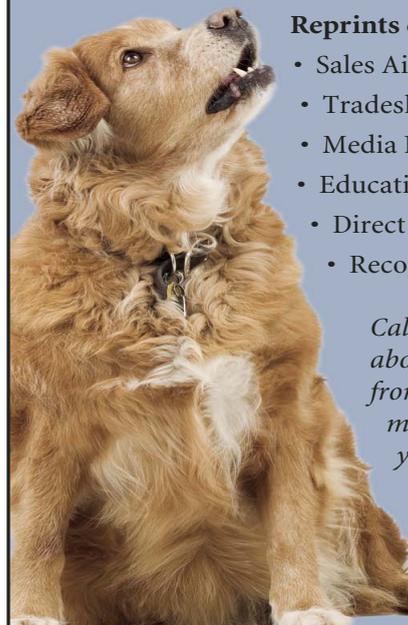
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Petfood Forum Europe

PREVIEW

Customized for European petfood manufacturers at Victam

Petfood Forum Europe 2007 offers insights into new products and contacts with new business and networking opportunities. The event takes place May 8, 2007, at Jaarbeurs Halls, Utrecht, Netherlands, in association with Victam International.

Victam International organizes feed and petfood trade fairs and conferences all over the world. At Victam Utrecht, you'll have the chance to visit many feed and petfood industry suppliers (equipment and ingredients). For free online registration to the Victam exhibition, go to www.victam.com/international.php—you'll need your passport number. Also at this site, you will find several hotel options.

Jaarbeurs Utrecht is easily accessible by train and car. There is a direct train from Schiphol Airport in Amsterdam to Utrecht, which stops just a short walk away from Jaarbeurs. For cars, there are 5,800 parking places.

The Jaarbeurs facility has several restaurants, the Beatrix Theater and the Holland Casino. In addition, Utrecht's attractive city center is less than a 10-minute walk away. There you can visit historic buildings, canals, shops and museums.

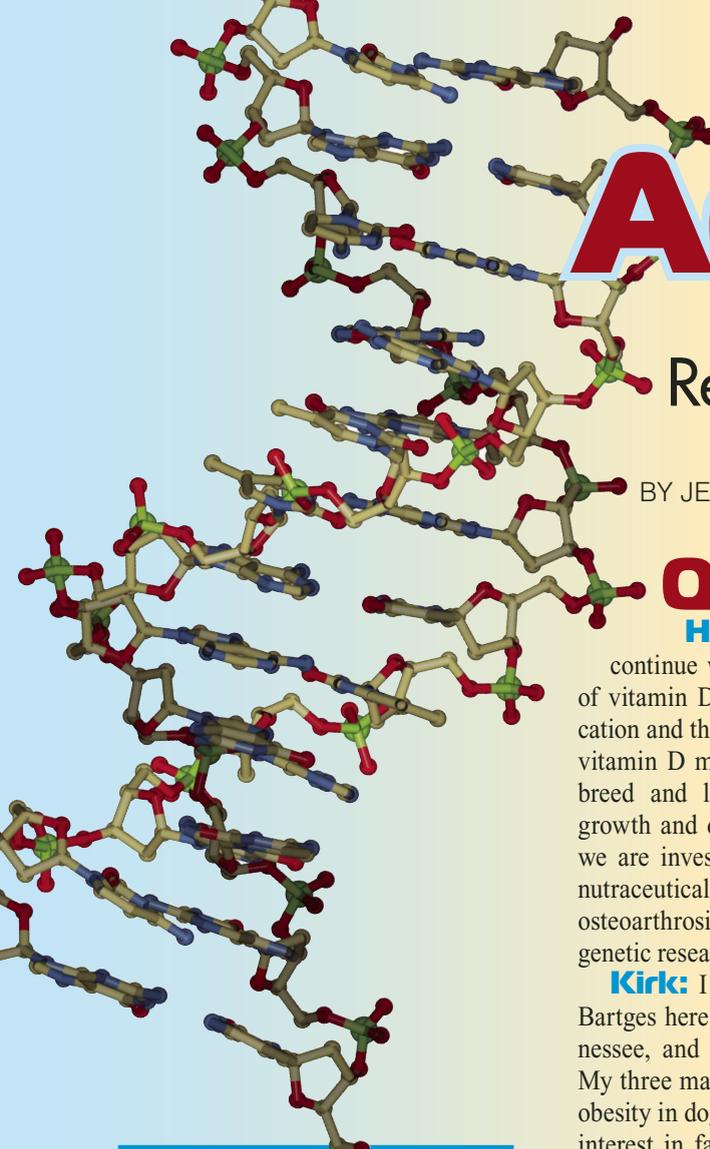
Following is the most up-to-date Petfood Forum Europe scheduling, topic and speaker information available at press time. More information will appear in the April issue. For regular updates, bookmark www.wattnet.com/petfoodforum/forumeurope.cfm. If you have specific questions, contact Marcia Riddle (attendees) at E-mail: mriddle@wattnet.net; Tel: +1.815.734.5633.

Tuesday, May 8

- **9:00-10:00—Registration and breakfast**
- **10:00-10:40—Nutrition and longevity:** Anton C. Beynen from Utrecht University Faculty of Veterinary Medicine delves into how controlling dietary elements might yield a long life of high quality.
- **10:40-11:20—Niche markets:** Lee Linthicum, who manages the research program for the global pet care products industry at Euromonitor International, provides insight into trends driving niche market opportunities.
- **11:20-12:00—Regulations update:** Thomas Meyer, secretary general of FEDIAF, the European petfood manufacturers trade association, discusses three major European Union (EU) regulations in the pipeline and efforts aimed at self-regulation, such as FEDIAF's *Guide to Good Practice on the Manufacture of Safe Pet Foods*, which received EU approval in 2007.

- **12:00-13:30—Lunch**
- **13:30-14:10—Advances in palatability testing:** Martin Hoogeward from Morgenstond Kennels focuses on what is new in the world of dog and cat palatability testing.
- **14:10-14:50—Global sales trends to 2012:** David Lummis from Packaged Facts shares exclusive, primary research surveying hundreds of pet industry executives from around the world, with a focus on Europe.
- **14:50-15:30—Break**
- **15:30-16:10—Production innovations:** Galen Rokey, process manager and well-known lecturer at Wenger Manufacturing Inc., covers reducing energy and recipe costs and better controlling product properties. John Blackett of Golden Acres petfood shares his practical experience.
- **16:10-16:50—New and functional ingredients:** John Lowe, PhD, Tuttons Hill Nutrition, looks at some of the most common ingredients fueling the hot functional products market today. ●





Advancing

Researchers evaluate the status

BY JENNY KVAMME, DVM

Q: What are you currently working on?

Hazewinkel:

We continue working on the influence of vitamin D on endochondral ossification and the significant difference in vitamin D metabolism between small breed and large breed dogs during growth and development. In addition, we are investigating the influence of nutraceuticals on the clinical effects of osteoarthritis. We perform molecular genetic research, too.

Kirk: I collaborate with Dr. Joe Bartges here at the University of Tennessee, and we have varied projects. My three main research areas include: obesity in dogs and cats, with a special interest in factors associated with insulin resistance; nutritional influence on lower urinary tract disease in cats, specifically calcium oxalate urolith formation; and nutritional regulation of feline diabetes.

Swanson: My laboratory is currently focused on three primary areas of research, including intestinal health and disease, appetite regulation and obesity and geriatric nutrition. For example, we are studying biomarker detection of adipotoxicity in dogs and effects of dietary manipulation on gene expression profiles of geriatric and young adult dogs.

Q: What has been the most important discovery recently, and why?

Hazewinkel: In my own research group, the discovery that vitamin D (which can reach a high level in homemade and commercial petfoods)

disturbs endochondral ossification even before it influences calcium metabolism. This makes it worthwhile for commercial petfood companies to consider measuring and indicating a guarantee for maximum vitamin D content of petfoods, as has been done for the calcium content in diets for fast-growing dogs.

Kirk: I have been most impressed with the body of work by Drs. Zicker, Milgram and colleagues describing the impact of oxidative stress on canine cognition and learning. Their studies defining how increased antioxidants help reverse cognitive dysfunction and prevent cognitive decline were well designed, novel and sound. Also, the fact that there is such strong “translational” value (application to humans and other species) was important.

Finally, these studies lend more credence to the newer nutritional paradigm that we must move beyond simply meeting basic nutrient requirements and start defining optimal nutritional status within various lifestages and animal populations.

Swanson: I think one of the most important findings was recently published in *Nature* by Jeffrey Gordon’s lab at Washington University, St. Louis, Missouri, USA. Turnbaugh et al. (2006) performed several experiments using gnotobiotic animal models and DNA-based microbial analyses, the results of which suggest that the gut microbiota are a contributing factor to the pathophysiology of obesity. Given the incidence of obesity and intestinal disease in the pet population, these findings are directly applicable to the petfood industry.

Dogs and cats benefit daily from the advances made in the field of veterinary nutrition. Because of the knowledge uncovered by researchers, companion animals are now living longer, healthier and more enriched lives. So, just what kinds of research are being conducted currently? Is the petfood industry helping or hampering the advancement of nutrition?

Petfood Industry asked some of the leaders in the field their opinion on topics such as this. Their answers follow.

pet nutrition

of companion animal nutrition and industry's role

Researchers include:



H.A.W. Hazewinkel, DVM, PhD, DECVS, DECVN—Dr. Hazewinkel is a professor in the Department of Clinical Sciences of Companion Animals at Utrecht University in the Netherlands.

Q: What key issues are at the forefront of nutrition research today?

Hazewinkel: Nutraceuticals are a key issue since they open up new ways of influencing health via supplementation of the daily ration and through marketing by commercial food companies without the interference of the pharmaceutical industry. The effects can be very subtle and very species-specific; what works in a rat might not work in the human or canine species. This notion is growing but not widespread yet. Since the dog genome became known, the influence of the environment on the expression of potential diseases is of growing interest, especially the influence of the diet. Nutritional components may either prevent or stimulate disease progression. I expect growing interest in this



Claudia Kirk, DVM, PhD, DACVN, DACVIM—Dr. Kirk is associate professor of medicine and nutrition at the University of Tennessee College of Veterinary Medicine.

field, since it can have a major impact on canine health.

Kirk: The overriding issue, in my opinion, is how to prevent obesity in our canine and feline population. The number of obesity-related health problems identified in dogs and cats suggests the overall impact on health and longevity is huge. Owners are footing the bill to manage health problems that are largely preventable. Thus, maintaining the human-animal bond associated with feeding pets without promoting obesity and impairing health will be a huge challenge. Learning the factors that affect appetite and satiety is one facet of the problem. Genomic response to breed, lifestage, nutrients, energy intake and activity will be another.

Swanson: Due to their importance in maintaining health and



Kelly Swanson, PhD—Dr. Swanson is an assistant professor in the Department of Animal Sciences at the University of Illinois.

preventing and treating disease, the following areas are currently on the forefront, in my opinion:

1. Understanding microbe-host interactions.
2. Identifying gene-nutrient interactions of importance.
3. Applying new technologies to nutritional science, including genomic biology, imaging methods, nanotools, etc. These tools and techniques are not only important for research purposes, but are also important for advancements in clinical diagnostics.

Q: Do you think petfood manufacturers are keeping up with current nutritional research findings?

Hazewinkel: A growing number of petfood companies do not (or not anymore) perform research in animals, but just copy the findings of

the leading companies, or are more focused on marketing their product rather than on improving it. The concept that companies work together with universities to research new nutrition strategies seems to be decreasing.

Kirk: Yes, I think the major pet-food companies are indeed up-to-date

and actively involved in all aspects of research. I have to put my personal kudos in to these companies because I feel that they are good citizens of pet nutrition research. They conduct millions of dollars worth of nutritional research annually, fund grants for academic research and their scientists

stay abreast and often lead the current research trends. Smaller companies without nutrition scientists or boarded nutritionists vary in their expertise, in my opinion. I find it very concerning when I call a company for nutritional information on a product and learn they can't give me basic information that would be used to establish nutritional adequacy (i.e., an AAFCO profile).

Swanson: The short answer is yes, I think most petfood manufacturers are aware of current research findings. However, I don't think that should overshadow the current problems pertaining to research in this industry. First, companies are likely aware of all the findings that are published in peer-reviewed journals. Despite the great number of abstracts presented at scientific meetings, however, very few are ever published in such journals. Abstracts are of little help to those in industry or academia.

The term "research" has dramatically changed over the past decade. At least from my perspective, it appears that a lot of traditional research funds have been shifted from fundamental research to marketing research, or to items that are only for altering public perception. These areas are important, but are self-serving.

Lastly, the current funding opportunities in canine and feline nutrition research are very limited. Large research grants (e.g., NIH or USDA) are only possible when using dogs and cats as animal models. While many non-profit or private organizations fund canine and feline research, most do not fund grants large enough to sustain a research program. If continued research advances in this field are expected, the current research climate must change.

Although my comments here may be somewhat depressing, it is not all bad. While the leaders in the petfood industry are commonly the target of criticism, I think many of them can be commended when it comes to funding and publishing research. Everybody in the industry should be very appreciative of the few companies that still perform fundamental canine and feline research. Advances in the field will not occur without them. ●

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Upgrading production

Keeping up with extrusion advances that have a practical impact

BY TIM PHILLIPS, DVM



Extrusion technologists have come up with a way to make multicolored extruded products on a continuous basis, using a single extruder.

Petfood company executives are determined to continuously improve plant performance. Whether or not they have formal programs such as Six Sigma and total quality management, there's usually constant pressure to improve quality and performance. Success often requires processing innovations.

Notes *Food Processing* magazine, "Processing innovation is alive and well." As proof, it cites five up and coming technologies:

► **Supersonic processing**—this mixing-heating-pumping system, called PDX Sonic, rolls as many as five processing steps into one.

► **High-pressure processing**—Avure Technologies Inc. offers a sterilization system that can greatly extend shelf-life.

► **Bioseparation**—on the way are more economical technologies to isolate and extract functional food ingredients.

► **Radio frequency heating**—a method still in development, this heats product at the molecular level, heating the surface and the center of a product at the same time.

► **Carbon dioxide extrusion**—allows extrusion at lower temperatures, so heat-sensitive ingredients can be added before extrusion.

Regarding CO₂ extrusion,



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Galen Rokey of Wenger Manufacturing doubts we will see anything commercially for petfood for some time. "Not because it isn't a feasible technology," he says, "but because there currently are no processing advantages for petfoods."

Following is input from three extruder manufacturers, covering new developments.

Multicolored kibbles with a single extruder

The extrusion technologists from Buhler have come up with a way to make multicolored extruded products on a continuous basis, using a single extruder. "The heart of the new process," notes Christian Gutmann, head of technology at Buhler, "is an additional module consisting of colorant tanks, each equipped with a pump and connected to the extruder."

Also, the process geometry has been adjusted so color blurs at the points of transition between the individual colors are prevented. During the production process, the colorants are fed alternately into the processing section of the extruder.

er. The special thing about this is that the time intervals are kept very short to eliminate the need for subsequent mixing in an additional step. Mixing during conveying, spraying and drying is sufficient to obtain a homogeneous mix. In addition, it is possible to utilize the color circle theory to obtain intermediate colors. This allows, for example, six

different extruded products to be made from three different colors.

The add-on module does not require its own control system. The metering pumps receive their signal directly from the control system of

Success often requires processing innovations.

the extruder.

The benefits of this new process are:

- The investment cost is lower because less equipment is needed.
- The space requirement is reduced.
- The elimination of the mixing process reduces the mechanical abrasion of the product.
- The modularity of the system enables existing lines to be easily retrofitted.

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Roughly 75% of all dog and cat food products are mixtures of different shapes and colors. Traditionally, producing multi-colored product was either through:

- Blending bin systems or
- Multiple extruder line systems.

However, both of these methods are costly and consume valuable production floor space. Thus, Extru-Tech Inc. developed a multicolored/multishaped die solution that allows simultaneous production of a blend of colored products from a single extruder system.

**In many cases the
single largest petfood
processing issue is the
product's bulk density.**

This supplier has also been working on new methods to allow existing extrusion equipment to produce soft-moist co-extruded and treat products. As a result, Extru-Tech is on the verge of releasing a single screw extrusion solution capable of producing a wide range of simple to complex co-extruded foods and treats that can currently only be realized through use of twin-screw technology. "This advancement in extrusion technology," says Extru-Tech's Norm Schmitt, "provides current single screw extrusion users the ability to move into complex co-extrusion production with a limited learning curve and much reduced capital expenditure."

Bulk density trouble-shooting

"In many cases the single largest petfood processing issue is the product's bulk density," says Brian Plattner, processing engineering manager at Wenger Manufacturing. If it is desirable to lower the bulk density of extrusion cooked petfoods, the following processing variables may be altered as described. Since the recipe has the single largest impact on density, keep in mind that these changes are subject to the formulation, as not all formulations will react in the same manner.

- **Moisture content:** Generally, lowering the water content injected into the product without decreasing the steam level added to the product will assist expansion. However, when extruding formulations containing high protein (above 23%) or high fat (above 5%), it is necessary to increase total moisture by adding both steam and water. Once the moisture level in the extruder barrel drops below 20%, further decreases in moisture will result in increases in product density.

- **Dry feed throughput:** Increasing the dry feed throughput will in effect reduce the open area in the final die per unit of throughput. This reduction in open area results in greater expansion. As the feed rate is increased beyond a certain point, the density begins to increase due to the loss of retention time in the preconditioner and extruder barrel.
- **Mechanical energy:** The mechanical energy input can be adjusted by changing the extruder screw speed, final die setup or screw profile. Higher screw speeds, less open area in the final die and the addition of cut-flight screws or shear locks all will add additional mechanical energy and decrease bulk densities.
- **Temperature:** Indicated temperature profiles of the product along the extruder barrel can be increased if the product is under expanded.
- **Preconditioning:** Increasing the residence time in the preconditioner and the amount of steam added to the product will assist in cook and expansion. The residence time in the preconditioner can be increased by changing the paddle configuration, adding a residence time control package or lowering the throughput.

- **Steam injection in the extruder barrel:** Injecting steam directly into the product along the extruder barrel will tend to lower the bulk density.
- **Oil addition:** Addition of oil will increase product densities. In general, for each 1% of fat above 12%, the bulk density of the final product will increase by up to 16 grams per liter. Once the total fat content in the extruder barrel exceeds 22%, product durability is difficult to maintain and could result in excessive fines. Typically as the fat level increases, the moisture must be increased as well for adequate processing.

Removing barriers

“The greatest barrier to the implementation of new processing technology,” notes *Food Processing* magazine, “is lack of internal support, whether caused by lack of funding, lack of knowledge or lack of interest.”

Lately, most research investment within petfood processing companies is directed at new products. This is a primary reason that few new processing technologies are supported at the processor level. R&D and engineering can encourage management to invest in technologies that have a good return on investment and allow the “first to market” advantage. ●

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Making petfood more palatable

New resources, ingredients and methods can help you improve product palatability

BY DEBBIE PHILLIPS-DONALDSON

No matter how well formulated and produced a petfood may be, all that nutrition and quality won't do any good if the animal won't eat it. Thus, suppliers are continually conducting research and offering innovations to help manufacturers make their products more palatable. From collaboration with clients to natural ingredients to processing techniques and equipment, examples of new ways to improve palatability abound.

New research center available to manufacturers

AFB International, a petfood palatability enhancement company, takes a partnership approach with its customers and aims to contribute to all aspects of petfood development and manufacturing, according to Cheryl Murphy, product manager. For these reasons, the company has established a new research facility, the Lovejoy Resource Center.

Opened in fall 2006 as part of the new AFB headquarters, the resource center gives petfood manufacturers access to a state-of-the-art facility for product development and flavor enhancement, Murphy says. The center is located on six acres in St. Charles, Missouri, USA, just west of St. Louis. It includes 16,000 square feet of labora-

tory space adjacent to a comprehensive process research lab.

"The Lovejoy Resource Center allows AFB's customers to improve current products and more efficiently and effectively develop the next generation of petfoods," says Murphy.

At the center, AFB's staff of flavor chemists, biochemists, food technologists, process engineers, animal scientists and process technicians can partner with customers in an environment that provides access to equipment and processes applicable to the marketplace. Testing can be conducted on the application of palatant systems and alternative kibble formulations.

Extruded products can be measured for texture and shape acceptance. Canned, semi-moist and dry petfood products can be evaluated in terms of palatability.

"AFB's scientific staff leads the industry in their understanding of petfood manufacture, flavor creation, sensory analysis, animal nutrition and analytical and protein chemistry," Murphy adds.

The scientists team up with AFB's process engineers who are experienced in all areas of flavor development. This allows AFB to produce a steady stream of new flavor products and innovations for their customers.

Natural palatants

Immediate acceptance of offered food is often the pet owner's criterion for nutritional desirability, says Slobodan Baskot, R&D assistant with BHJ Pet Food in Graasten, Denmark. Research with flavor enhancers has proliferated, and many different enhanc-

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ers, both liquid and dry, are available, ranging from ones added in minute quantities to macro-additives.

Baskot conducted an experiment to evaluate the effect of two palatability enhancers of dry extruded dog food: freeze-dried rumen of cattle and freeze-dried swine liver. The purpose was to show the importance of including natural palatability enhancers in petfood manufacturing, Baskot says.

The feed was processed in a twin screw extruder using the same conditions and equal conditioner temperature of 82°C (180°F) but carried out three times to produce three types of dry extruded dog food: feed 1 (control diet-Labb Active), feed 2 (Labb Active with 2% freeze dried cattle rumen) and feed 3 (Labb Active with 2% freeze-dried swine liver). Tests such as dry weight measurement, bulk density, Holmen durability and strength at rupture showed adding the freeze-dried rumen or liver to the control diet during and after extrusion caused only minor

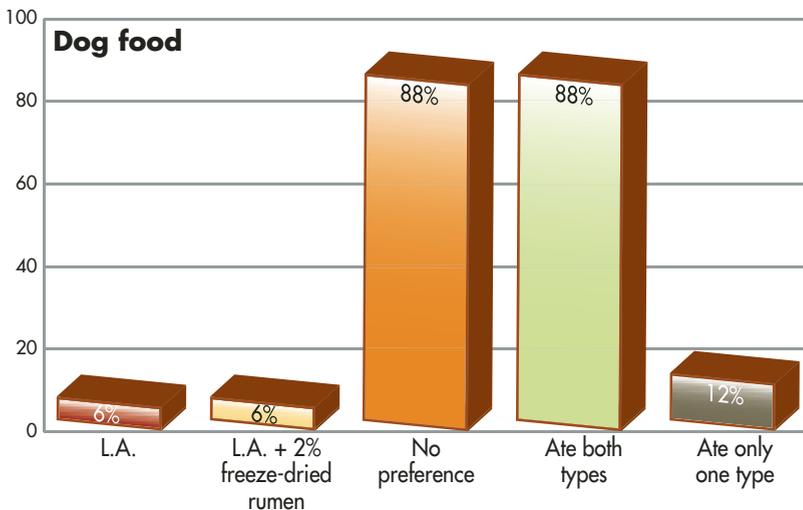


Figure 1. Preference tests with feed 1 (control-Labb Active, or L.A.) and feed 2 (L.A. + 2% freeze dried rumen). Feed 2 did not induce a preference.

changes in the chemical composition of the feed, Baskot explains.

For the preference tests, 40 dogs were divided into two groups. Food preference was determined entirely by the owners' interpretation of the dogs' response, Baskot says. Owners re-

corded daily the different kinds of dog food used and commented on the dogs' response. Each dog owner received the control feed (1) and one of the two flavor-enhanced feeds (feed 2 or feed 3). Each dog was offered equal amounts of both feeds simultaneously at feeding

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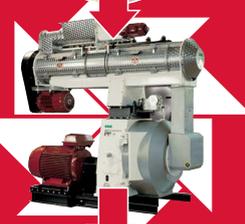
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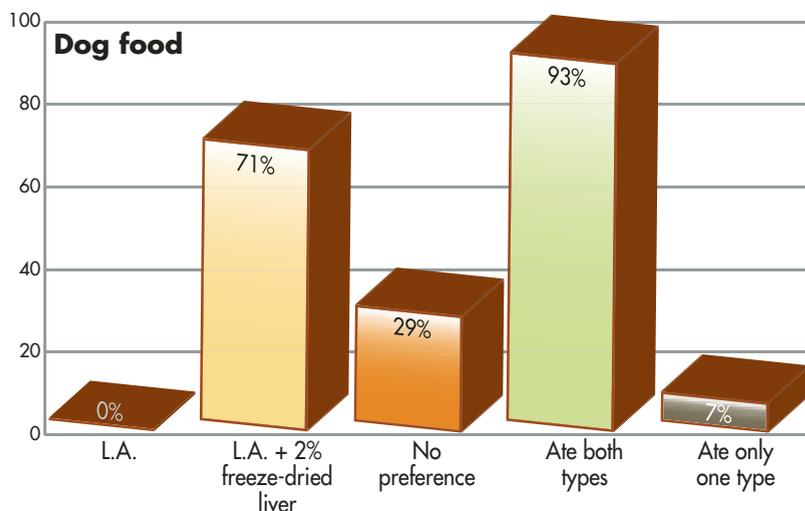


Figure 2. Preference tests with feed 1 (control-Labb Active, or L.A.) and feed 3 (L.A. + 2% freeze-dried liver). Feed 3 was consumed more than feed 1 or 2.

time, once or twice per day; no dogs had continuous access to feed.

The results (see Figures 1 and 2) showed feed 3, with freeze-dried swine liver as a pure natural palatant, was consumed by the dogs more than the other two types. Feed 2, with freeze-

dried rumen added, did not induce a preference over the other feeds. When a dog showed no preference, it chose a random feed from the two offered and chose not to consume the alternative feed more than 75% of the time. None of the dogs preferred feed 1 (the con-

trol) more than 75% of feeding times. Most dogs (93%) also ate the other feed type after eating the preferred feed first. This indicated the dogs involved had good appetite and that feed 1 also had satisfactory taste, Baskot says.

“These results point out the need for further research on dog feeding behavior and awareness of the importance of natural palatability enhancers for commercial petfood,” he concludes.

Palatability and processing

SPF, a palatability company, and Clextrel, a twin screw extruder manufacturer, have partnered during the last few years to quantify the effect of extrusion on palatability, according to Laurent Garcia of Clextrel. The companies have also investigated new ways, such as encapsulation, to enhance the palatability of extruded petfoods.

In one example of this partnership, the petfood sample was manufactured at the Clextrel research center in Firminy, France, using an Evolum53 twin



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screw extruder and the Rotante (rotary) dryer, Garcia says. “The kibbles were coated in the SPF laboratory in Elven, France. Finished products were then tested with cat and dog panels at Panelis. Each palatability test was conducted with 40 cats or dogs,” he adds.

To quantify the effects of density on palatability, the first trials included extruding and drying two different standard and premium formulations of cat kibbles to produce three densities: 330 g/l, 380 g/l and 440 g/l. Palatability tests were conducted using two different fat and palatability enhancer applications. The final moisture content was the same for all the trials, Garcia says, and the results showed cats significantly preferred the lowest kibble densities.

A second program, aimed at leveraging the capabilities of twin screw extrusion to incorporate encapsulated palatability enhancers in a matrix, involved injecting palatants directly into the extruder or premixer. “The extrusion parameters were set to properly



Dinnissen's Pegasus Paddle Mixer

control the mixing and shear rate in the extruder and preserve the ingredients, while producing a satisfactory kibble,” Garcia explains. Several levels of palatants were incorporated into the product and tested against product with no encapsulated enhancers.

Trials used four different kibbles for

cats and two types of kibbles for dogs. Overall, the cats and dogs showed a significant preference for several types of kibbles with encapsulated enhancers, even if the products were coated with fat and liquid palatability enhancers. “These promising results have encouraged SPF and Clextrol to pursue their cooperation for the benefit of petfood manufacturers,” Garcia says.

Mixer to improve kibble taste

According to Dinnissen Process Technology, a paddle mixer makes it possible to significantly improve the taste of cat kibbles. “The secret is quite simple: It allows you to add liquid as well as dry palatability enhancers—precisely and evenly—to each individual kibble,” says Peter Raeven, project manager, of Dinnissen Process Technology. “This is very important for cat food in particular, as cats have the habit of inspecting their meal, kibble for kibble, before eating.”

Besides selecting appropriate, high-quality palatants, ensuring they are added to the food the right way is important. A tool such as the Pegasus Paddle Mixer from Dinnissen offers such a way, Raeven says. A fixed and precisely weighed quantity of food is introduced into the sealed batch coater, where—in contrast to continuous operation systems—the entire process of adding liquid and dry palatability enhancers to the kibbles takes place. “For each batch of food, the exact quantity of fat, liquid and dry palatability enhancers needed can be weighed out and added. The process conditions, including temperature, kibble rotation speed, residence time of the food in the mixer and total processing time, can also be precisely controlled,” Raeven adds.

The result is a precise and even distribution of the palatability enhancers over the product, according to Dinnissen. In addition, the strength of the bond between the palatability enhancer and the kibble can be optimized, and each individual kibble can be coated with a tough protective layer to ensure the palatability enhancers remain intact during transport, Raeven says. ●

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Update on the AAFCO mid-year meeting

The Association of American Feed Control Officials (AAFCO) held its mid-year meeting in Savannah, Georgia, USA, on January 16-18, 2007. The mid-year meeting is when most of the committees finalize their proposals to go before the board and full membership for action at the annual meeting in August. If eventually passed, a number of proposals will affect the petfood industry.

Pet Food Committee

Certainly the most controversial issue before the Committee, and the one that took up the bulk of the session, was the American College of Veterinary Nutrition's proposal to amend the Model Pet Food Regulations that would, among other things, make calorie content statements mandatory on all dog and cat food labels. After extensive discussion, the matter was sent to a newly formed working group of committee members and advisors (including myself). The group is charged with reviewing the pros and cons of the proposal and reporting its findings back to the Committee.

Among other topics, the expert members of the panel charged with revision of the AAFCO Dog and Cat Food Nutrient Profiles and feeding trials were named (see Industry News, p. 10). The National Research Council's recently published *Nutrient Requirements of Dogs and Cats* will be among the new information to be considered in the Profile revisions.

The Committee also accepted "snouts" to be included in the list of pet chew items (e.g., rawhide, ears, bones) potentially exempt from state

Plans for a regulatory workshop on petfood labeling were announced.

— David Dzanis



registration and labeling requirements under Policy Statement No. 27, although "pizzles" was rejected from inclusion at this time. Finally, plans for a regulatory workshop on petfood labeling were announced, tentatively scheduled to take place at next January's meeting.

Ingredient Definitions Committee

While not as contentious as the discussion on calorie statements in the Pet Food Committee session, a topic that really raised some eyebrows among the petfood industry audience at the Ingredient Definitions Committee session was the proposal to "clarify" the definition for meat meal. As proposed, it would eliminate all bone, organs and other mammalian tissues except for "meat" from inclusion in the meal. The trouble as I see it is that the ingredient as redefined doesn't exist, nor has it ever existed, on the market. Since this item was only recently proposed, no action was taken, and time is being given for interested parties to comment.

Other pertinent items include a change in the conversion factor used to estimate the amount of choline in choline chloride from 0.868 to 0.746. This is important information for

formulators to consider when determining whether a product meets the AAFCO Dog or Cat Food Nutrient Profiles. With the change in the conversion factor, more choline chloride will need to be used to assure adequate levels of choline in the product.

Model Bill and Regulations Committee

After many years of discussion and revision, the Committee finally accepted the Pet Food Committee's proposed Policy Statement No. 29. While there are several other steps before this policy can come into effect, when and if it does this would allow for "informational statements" regarding the physiological roles of nutrients in ingredients on petfood labels that would not trigger the need for supporting guarantees under the Model Bill. There will still be significant restrictions for the policy to apply, though. For example, the informational statements cannot appear on the principal display panel, nor can they make any quantitative or comparative claims.

With respect to other issues, the Committee had made progress in making the Model Bill gender neutral (i.e., eliminating words such as "he" and "his" from the document),

but further revisions are needed to correct some grammatical issues. The Committee is also making final changes to the Non-Commercial Feed Bill, revising the definition of “feed ingredient” to make it consistent with other uses of the term in the AAFCO *Official Publication*, and may be looking at revising net quantity statement regulations to specify both avoirdupois and metric units.

Other committees

There was an effort to make final revisions to the proposed feed safety regulations during the Feed Manufacturing Committee session, but the process was quickly bogged down. It was difficult even to reach consensus on the name of the document (I believe it’s now “AAFCO Model Regulations for Safe Feed and Feed Ingredient Manufacturing”). The Committee intends to work on changes further before the next meeting. Assuming the remaining issues can be resolved, the new regulations will have significant impact on the petfood industry, since they will mandate what essentially are good manufacturing practices on all manufacturers.

The Feed Labeling Committee is concerned about the misuse of trademarks, logos, seals and similar endorsements on labels. A proposal to provide feed control officials with guidance in assessing the truthfulness and appropriateness of third party claims is now open for comment. Due to the resignation of its chair, the Carbohydrate Working Group under the Feed Labeling Committee did not get an opportunity to meet, but a new chair has been appointed.

The open session of the Enforcement Committee lasted only a few minutes, possibly setting a new record for shortest meeting in AAFCO history. There was the hint of a possible “enforcement event” in upcoming months. No details were offered, but if similar to previous events, a group of states would conduct a coordinated effort against a targeted class or category of non-compliant products

over a short period of time.

Finally, a symposium on use of biofuel co-products in animal feed was held. Both regulators and industry members gave presentations on the subject. Details on the symposium will be discussed in an upcoming column. ●

Dr. Dzanis is a writer and independent consultant for the petfood and animal feed industries on matters related to veterinary nutrition, labeling and regulation. He can be reached at Tel: +1.661.251.3543, Fax: +1.661.251.3203, E-mail: dzanis@aol.com.

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Sunflower oil: flower power in a jug

The sunflower (*Helianthus annuus L.*) is a plant native to North America that owes much of its value to its extensive travels geographically, genetically and nutritionally. With the return of explorers from their adventures to the new world, sunflowers were carried back as specimen and curiosity. From this seed stock, selection and agronomic application in Europe and Western Asia has led to the progenitor of the modern oilseed sunflower we have today.

The next big leap in sunflower history occurred in the 1950s when it became a viable commercial oilseed around the world, helped in part by modern agricultural mechanization. Today, of the 26.4 million metric tons of oilseed sunflowers, more than half are produced by a pan-global group of countries like Russia, Ukraine, Argentina, China and Romania (FAO, 2004).

For dogs and cats

From a petfood perspective, the palatability of diets containing sunflower oil is well liked by dogs, but not as well received by cats (Peachey and Harper, 1998). While digestibility of sunflower oil is high and similar to other fat sources such as beef tallow and olive oil (Peachey et al., 1999), the big story relates to its content of the essential fatty acid linoleic acid, an omega-6 fatty acid.

Much has been learned in the past couple of decades regarding fatty acid nutrition of dogs and cats and has been well summarized in the recent *Nutrient Requirements of Dogs and Cats* (NRC, 2006). Sunflower oil, as a rich source of linoleic acid, has been pivotal in investigations leading to many of the conclu-

Sunflower oil is well liked by dogs, but not as well received by cats.

— Greg Aldrich



sions regarding fatty acid essentiality and as a “control” in research describing the complex relationship between omega-6 and omega-3 fatty acids.

In many conventional petfoods, the level of omega-6 fatty acids (linoleic acid being the principal one) is high and omega-3 fatty acids (think flax and fish oil) insufficient. Though sunflower oil may not be ideal for all diets, it does play a complementary role to meet linoleic acid requirements in diets that do not include large quantities of poultry, pork, corn or soy ingredients.

Issues with stability

As with other oil seeds, extraction of the oil from the sunflower seed begins with a mechanical crushing and/or expeller process followed by hexane extraction. Some cold-pressed or expeller oil (which avoids the solvent extraction step) is available on the market and is being used in some natural and confectionary products. However, most sunflower oil comes from solvent extraction that is then further refined, bleached and deodorized.

These procedures are intended to improve the flavor, aroma and stability of the oil. Unfortunately, despite these final “clean-up” steps, sunflower oil can be a real challenge to keep from oxidizing. That is because oils high in

the polyunsaturated fatty acids, and especially those high in linoleic acid like sunflower oil, are very susceptible to oxidation (rancidity).

The sunflower oil industry has made real strides to improve this oxidative stability issue, but in doing so they have created a nutritional-versus-stability dilemma. There are at least three different sunflower oils available: linoleic, NuSun (mid-oleic) and high oleic. The “linoleic” sunflower oil is the original and designated as such because it contains a very high proportion of linoleic acid (>55%).

To improve stability, there has been concerted genetic selection for sunflowers that produce oils with a lower content of linoleic acid in exchange for oleic acid—a much more stable fatty acid. One result has been NuSun, which is considered a mid-oleic acid (55-75%) sunflower oil (the linoleic acid content is 15-35%).

The third type is the high oleic sunflower oil that contains in excess of 80% oleic acid (linoleic acid < 20%). As the amount of oleic acid increases so does stability; however, for dogs and cats, the principal value of sunflower oil is in its content of linoleic acid.

Regardless of these stabilizing steps, all sunflower oils still require some form of preservation to retard rancidity. The preservative and amount



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needed depend on the type of sunflower oil and the petfood process and form. For example, a synthetic antioxidant like propyl gallate is often required to stabilize linoleic sunflower oil, but small amounts of a spice extract like rosemary may be all that is necessary to properly stabilize high oleic sun-

flower oil.

Interestingly, mixed tocopherols, the backbone of most natural antioxidant systems, is not very effective as a preservative in sunflower oil. The form of application also has an influence.

For example, adding sunflower oil to a canned food, to a food in a high

barrier package or to a package that is nitrogen flushed requires less extreme measures to keep from oxidizing. Whereas, it requires substantially more effort (and cost) to stabilize linoleic sunflower oil that is to be surface-coated onto a dry extruded kibble packaged in standard kraft multi-wall bags. When using sunflower oil in products it is also vital to carefully manage product inventory and turnover.

The principal value of sunflower oil is in its content of linoleic acid.

Given that sunflower oil can be difficult to use and quite expensive, why would one bother? For some, the answer would be marketing and product promotion. While it is true that consumers have a very positive perception of sunflower oil and the pictures of sunflowers are certainly pleasant on the package, the reality is that the contribution of linoleic acid from sunflower oil is a legitimate nutritional component of a diet for dogs and cats. The trick is balancing shelf life challenges with nutritional intent. ●

Dr. Greg Aldrich is president of Pet Food & Ingredient Technology Inc., which facilitates innovations in foods and ingredients for companion animals. Tel: +1.785.271.0238, E-mail: aldrich4@cox.net.

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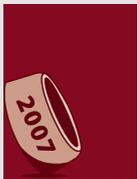


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What is petfood's connection to energy?

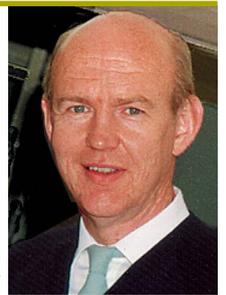
One of the challenges facing extruder operators in Europe arises from the way the market has progressively removed cereals from dry diets for dogs and cats. Wheat especially is far less frequently used today than even a year ago, victim to the sharp price rises seen in the later part of 2006. In extrusion, the difficulty now is how to cope with the non-cereal components that have appeared to fill the ingredients gap. Relatively little is known about these components in terms of their processing characteristics, and they can be quite variable for both physical structure and content.

Even before the extrusion know-how gets worked out, availability has become an issue for a variety of materials normally used in making food products, because of the latest international fascination with generating renewable forms of energy. Several examples already exist of by-products being put into biomass for gas generation instead of their former application in foods for animals. We are hearing advice that proteins will remain abundant, but energy-rich sources could slip into short supply.

This situation is ripe for exploita-

By-products are being put into biomass for gas generation instead of in foods for animals.

— Peter Best



tion by those with alternatives to offer. Among them is a manufacturer of full-fat soybean meal who has started European trials to include his material as an energy source for a dry dog or dry cat diet that contains meat products. He says the early results are encouraging. Applications might include use as a dietetic against obesity, and product development has solved the previous problem of flatulence experienced by dogs fed a full-fat version of soybean meal.

A processor measures its footprint

Every factory in Europe will be expected to know its carbon footprint as the battle intensifies against the greenhouse gases accused of leading to global

warning. Without effective action, up to 50% more carbon dioxide is likely to be generated by 2030. The effect on the average daily temperature is predicted as an increase of more than 2°C (36°F).

As a guide to recognizing how your company's footprint compares with others', an Irish based food group has worked out that 70% of the thousands of tons of carbon dioxide released by its activities in 2005 came from the manufacturing plant. Another 19% was traced back to packaging and ingredients, at least 2.5% to transport, more than 7.5% to waste disposal and the other 1% to water treatment.

The main impact in manufacturing was from the energy consumed in processing foods. Therefore, more energy-efficient



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Soon after Glee/Petindex 2006 ended, organizers announced a new, more visitor-friendly location for this year.

systems are desirable for both cost and climatic reasons, the company decided. It also started looking at carbonless technologies for its power sources, assessing renewable forms of energy such as wind turbines and the conversion of wastes into gas.

Layout change for UK's Petindex

British show Petindex has occupied the same exhibit hall in the National Exhibition Centre (NEC) in Birmingham,

United Kingdom, since it was made part of the Glee annual garden and leisure equipment event a few years ago. So both the hall and the overall layout have become a familiar sight to regular visitors.

Last year the Petindex section was well attended at times without seeming extraordinarily busy. Certainly it gave the impression that only a portion of the 24,500 people attending Glee 2006 were involved in the pet trade.

Soon after the 2006 edition of Glee

closed, the organizers announced a significant change in show layout for the next event, September 16-18, 2007. The intent is a more visitor-friendly version designed to improve traffic, match complementary products and create a more rewarding buying experience.

Several zones of the exhibition will move to new locations at the NEC. Petindex, together with a section on water gardening, moves to halls in a totally different part of the facility. The main difference for pet-business visitors is that these halls are served by a separate entrance on another side of the complex. The real test will be in the volume of traffic around the displays. With any luck the new location will prove to be a boost for business in the UK at the best possible moment. ●

Peter Best is the European editor for Petfood Industry magazine. He invites comments and suggestions from all readers about future topics for his column. He can be contacted at: best@watt-4.demon.co.uk.

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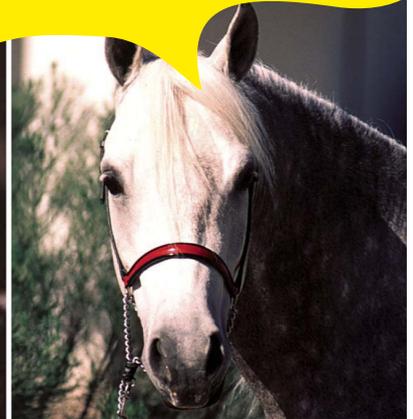
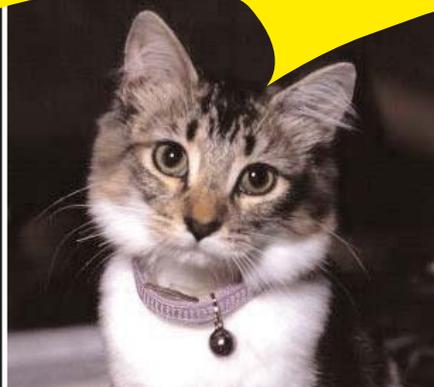
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Research Notes

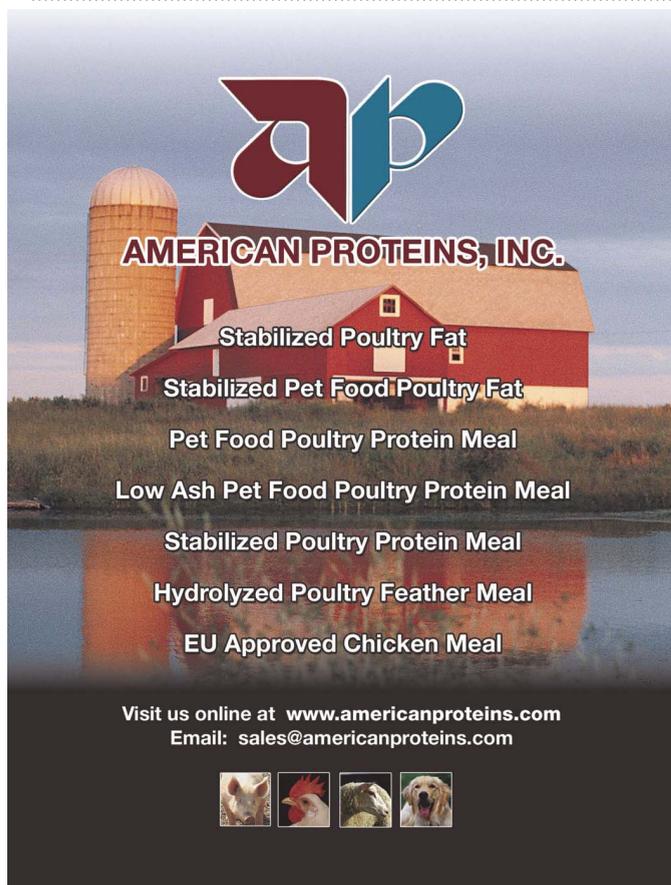
Nutritional treatment of cancer

Cancer is often treated via surgery, chemotherapy and radiation. These methods have definite benefits but also serious drawbacks. Thus researchers have sought other ways, such as nutrition, to prevent and treat cancer. Science has identified many effective nutritional strategies to supplement and/or re-

place the cut, poison and burn approaches to cancer therapy. These can be used as weapons with considerable power and little harm.

If genetic damage is the match that lights the fire of cancer, inflammation may provide the fuel that feeds the flames. Fortunately there are numerous nutritional strategies that have been shown to reduce inflammation, prevent mutations and favorably aid gene expression.

To prevent and treat cancer, some nutritionists suggest that the patient be fed an evolutionary diet (see p. 20) and be supplemented at the very least with omega-3 essential fatty acids, selenium, vitamin E and bovine tracheal cartilage. This is a program that supports the immune system, reduces inflammation, oxidation and angiogenesis.



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Key Concepts

► Nutritional treatment of cancer

(Australian Veterinary Society, 2006): Numerous nutritional strategies have been shown to reduce inflammation, prevent mutations and favorably aid gene expression.

► Blood vitamin concentrations in dogs

(JAPAN 91(1-2):40-47): This study investigated the blood vitamin concentrations in healthy dogs fed non-specified commercial complete diets. Effects of defined dietary vitamin intakes on blood vitamin levels and hair and skin condition were evaluated.

► Mycotoxins in petfood

(American Chemical Society, 2006): Dietary supplementation with amino acids, antioxidants and fatty acids, as well as inclusion of mycotoxin-sequestering agents and detoxifying microbes, may ameliorate effects of mycotoxins.



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Source: Billingham, I., 2006. The critical and fundamental role of nutrition in treating neoplastic disease. Australian Veterinary Association.

Blood vitamin concentrations in dogs

This study investigated the blood vitamin concentrations in healthy dogs fed non-specified commercial complete diets. The effects of defined dietary vitamin intake on hair and skin condition were evaluated. Sixty-four privately owned dogs, aged 1 to 8 years, without history of skin or coat problems were included. All animals were fed commercial complete diets with uncertain vitamin concentrations before enrollment. The animals were assigned, according to weight and gender, to four groups with graded vitamin intakes. The blood vitamin levels and skin and coat quality of the dogs were investigated at day 0 and day 122.

Coat and hair condition was not influenced by the experimental diets. The retinol concentrations were reduced at the end of the experiment compared with the baseline levels. Retinyl esters were not influenced, 25-Hydroxycholecalciferol decreased in all groups, alpha-tocopherol was constant or tended to decrease.

Source: Tran, J.L., et al., 2007. JAPAN 91(1-2):40-47.

Mycotoxins in petfood

Mycotoxins contaminate cereal grains worldwide, and their presence in petfood has been a potential health threat to companion animals. Aflatoxins, ochratoxin A and *Fusarium* mycotoxins have been found in both raw ingredients and final products of petfood around the globe. Aflatoxin, a hepatotoxin and carcinogen, has caused several food poisoning outbreaks in dogs, and aflatoxin content is regulated in petfood in many countries. Ochratoxin A and *Fusarium* mycotoxins including trichothecenes, zearalenone and fumonisins may have chronic effects on the health of companion animals.

Food-processing techniques such as sieving, washing, pearling, ozonation and acid-based mold inhibition reduce the mycotoxin content of cereal grains.

Dietary supplementation with large neutral amino acids, antioxidants and omega-3 poly-saturated fatty acids, as well as inclusion of mycotoxin-sequestering agents and detoxifying microbes, may ameliorate the harmful effects of mycotoxins in contaminated petfood.

Source: Leung, M.C.K., Diaz-Llano, G. and Smith, T.K., 2006. American Chemical Society.

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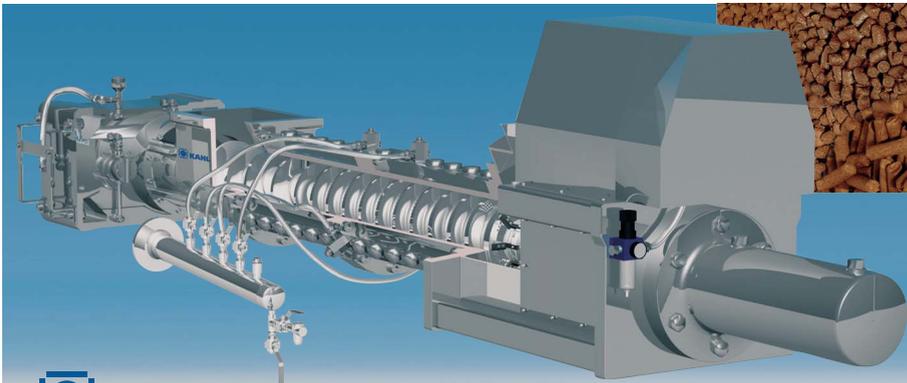
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Product News



Quick-clean centrifugal screener

A new Centri-Sifter centrifugal screener model "GO" from Kason Corp. features a cantilevered shaft with two externally mounted bearings between the screening chamber and motor drive, allowing all internals to slide freely from the shaft end for cleaning, screen changes or inspection. Wide spacing between the bearings, a large diameter shaft and a flexible shaft coupling combine to prevent vibration, even at high speeds under heavy, imbalanced loads, according to the company.

The new screener is intended for food, dairy and pharmaceutical applications requiring thorough wash-down, as well as other applications involving frequent screen changes/inspections or runs of multiple materials where cross-

contamination is of concern.

Kason Corp., 67-71 E. Willow St., Millburn, NJ 07041 USA, Tel: +1.973.467.8140, E-mail: info@kason.com, Website: www.kason.com.

Reversible rotor/stator mixer

Arde Barinco Inc. offers the new Model CJ-2A reversible homogenizer. The Model CJ-2A is designed to prepare fine grain emulsions and solid particle dispersions in small batches. All results obtained with the Model CJ-2A can be scaled-up to batches as high as 10,000 liters. A proprietary computer program can predict results developed utilizing this small high-shear mixer.

The Model CJ-2A has a 0.25 HP



15,000 RPM reversible motor. The unique down-mode is capable of drawing and wetting out floating powders. The down-mode can also be utilized to re-suspend any settled solids on the bottom of the process mixing vessel. The mixer comes complete with a stand and reversible variable-speed control box.

Arde Barinco Inc., 500 Walnut St., Norwood, NJ 07648 USA, Tel: +1.201.784.9880, Fax: +1.201.784.9710, E-mail: abmixer@ardeinc.com, Website: www.arde-barinco.com.

Compact stacker is power driven

Presto Lifts Inc. introduces a new line of fully powered stackers. The Power Stak has a narrow mast design and offset control handle to provide operators with a clear view of what's in front of them with virtually no blind spots.

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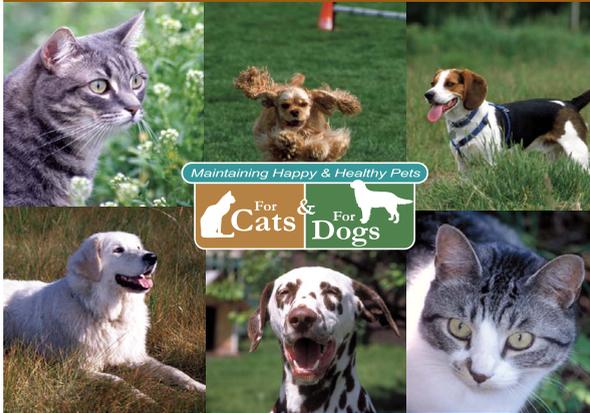
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► **H.H. Backer Spring Trade Show**, March 30-April 1, 2007, Atlantic City Convention Center, Atlantic City, New Jersey, USA. Contact: H.H. Backer Associates Inc., 200 S. Michigan Ave., Suite 840, Chicago, Illinois 60604 USA, Tel: +1.312.663.4040, Fax: +1.312.663.5676, E-mail: hhbacker@hhbacker.com, Website: www.hhbacker.com.

► **Petfood Forum**, April 16-18, 2007, Hyatt Regency O'Hare Hotel, Chicago, Illinois, USA. Contact: Marcia Riddle, Watt Publishing Company, 122 S. Wesley Ave., Mt. Morris, Illinois 61054 USA, Fax: +1.815.734.5631, E-mail: mriddle@wattnet.net, Website: www.wattnet.com/petfoodforum.

► **Petfood Focus on Treats**, April 18-19, 2007, Hyatt Regency O'Hare Hotel, Chicago, Illinois, USA. Contact: Marcia Riddle, Watt Publishing Company, 122 S. Wesley Ave., Mt. Morris, Illinois 61054 USA, Fax: +1.815.734.5631, E-mail: mriddle@wattnet.net, Website: www.wattnet.com/petfoodforum.

► **DeZooFa**, May 4-6, 2007, Wiesbaden, Germany. Contact: DeZooFa, Tel: +49.611.144.295, Fax: +49.611.144.6295, E-mail: dezoofa@rhein-main-hallen.de, Website: www.dezoofa.com.

► **Petfood Forum Europe**, May 8, 2007, Utrecht, Netherlands. Contact: Marcia Riddle, Watt Publishing Company, 122 S. Wesley Ave., Mt. Morris, Illinois 61054 USA, Fax: +1.815.734.5631, E-mail: mriddle@wattnet.net, Website: www.wattnet.com/petfoodforum.

► **Victam International**, May 8-10, 2007, Utrecht, Netherlands. Contact: Henk van de Bunt, Victam International B.V., P.O. Box 197, 3860 AD Nijkerk, Netherlands, Tel: +31.33.246.4404, Fax: +31.33.246.4706, E-mail: expo@victam.com, Website: www.victam.com.

► **Zoomark International**, May 10-13, 2007, Bologna, Italy. Contact: Piesse srl, via Rezzonico 23, 22100 Como, Italy, Tel: +39 31 301059, Fax: +39 31 301418, E-mail: vimax@zoomark.it, Website: www.zoomark.it.

► **VIV Russia**, May 21-23, 2007, Crocus Expo Exhibition Center, Moscow, Russia. Contact: Richard de Boer, VNU Exhibitions Europe, P.O. Box 8800, 3503 RV Utrecht, Netherlands, Tel: +31.30.295.2714, Fax: +31.30.295.2809, E-mail: richard.de.boer@vnuexhibitions.com, Website: www.vnuexhibitions.com or www.viv.net.

► **ACVIM Annual Forum**, June 6-8, 2007, Seattle, Washington, USA. Contact: ACVIM, 1997 Wadsworth Blvd., Suite A, Lakewood, Colorado 80214-5293 USA, Tel: +1.303.231.9933, Fax: +1.303.231.0880, E-mail: acvim@acvim.org, Website: www.acvim.org.

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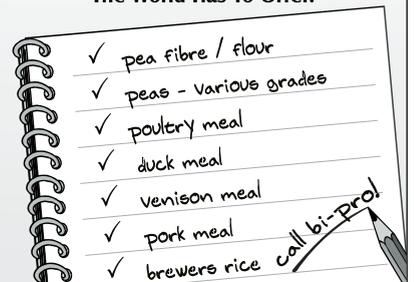
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A new report from the Intergovernmental Panel on Climate Change, a group of international scientists, shows “unequivocal” evidence of global warming and links it with 90% certainty to human activity—especially manmade greenhouse gases (see www.ipcc.ch). Just before the report was released in early February, US President George W. Bush called for quintupling production of bio-fuels such as corn ethanol by 2017.

If that happened, it would expand an ethanol industry that already has 113 US plants, with 78 more under construction, says the Renewable Fuels Association (www.ethanolrfa.org/industry/locations). Of the plants online, all but a few use corn as the main or only source of biomass.

What about petfood?

On p. 72, Peter Best discusses difficulties of European petfood producers as common ingredients are increasingly being used to make fuel. I’ve heard this from US producers trying to control commodity costs that are rising from the escalating use of starch crops like corn to produce ethanol. Even petfoods that don’t include corn suffer a trickle-down effect, because starch crops have traditionally been feedstock for animals from which meat ingredients derive. So, the low availability of corn increases demand—and, thus, prices—for other ingredients.

Even the National Corn Growers Association (NGCA), which touts the “ethanol sector’s rapid ascent” as the “greatest success story in modern agriculture” (see www.ngca.com), acknowledges the impact. “Ethanol production makes huge amounts of the nation’s corn disappear—some 1.4 billion

Commodity costs are rising from the escalating use of starch crops like corn to produce ethanol.

— Debbie Phillips-Donaldson



bushels went into ethanol production in 2004—and that affects overall corn supply and helps shore up corn prices nationwide,” reads NGCA’s website.

This is not necessarily good for other industries. Shortly after Bush made his call for more renewable fuels, Tyson Foods warned that increasing US ethanol production would lead to higher global food prices, according to a January 30 *Financial Times* article. In Mexico, the price of tortillas, a staple, has doubled over the last year, said a February 1 Associated Press article.

Though large ethanol producers like Archers Daniels Midland, cited in the *Financial Times* article, insist better technology will boost corn yields to meet the increasing demand, some scientists say ethanol lacks even potential to ameliorate greenhouse gases and global warming because making it takes more energy than what it creates in fuel savings. In a 2005 *San Diego Union-Tribune* article, David Pimental, a Cornell University ecology professor, was quoted saying it takes 1.29 gallons of gasoline to produce enough ethanol to replace 1 gallon at the pump.

Cracking the code

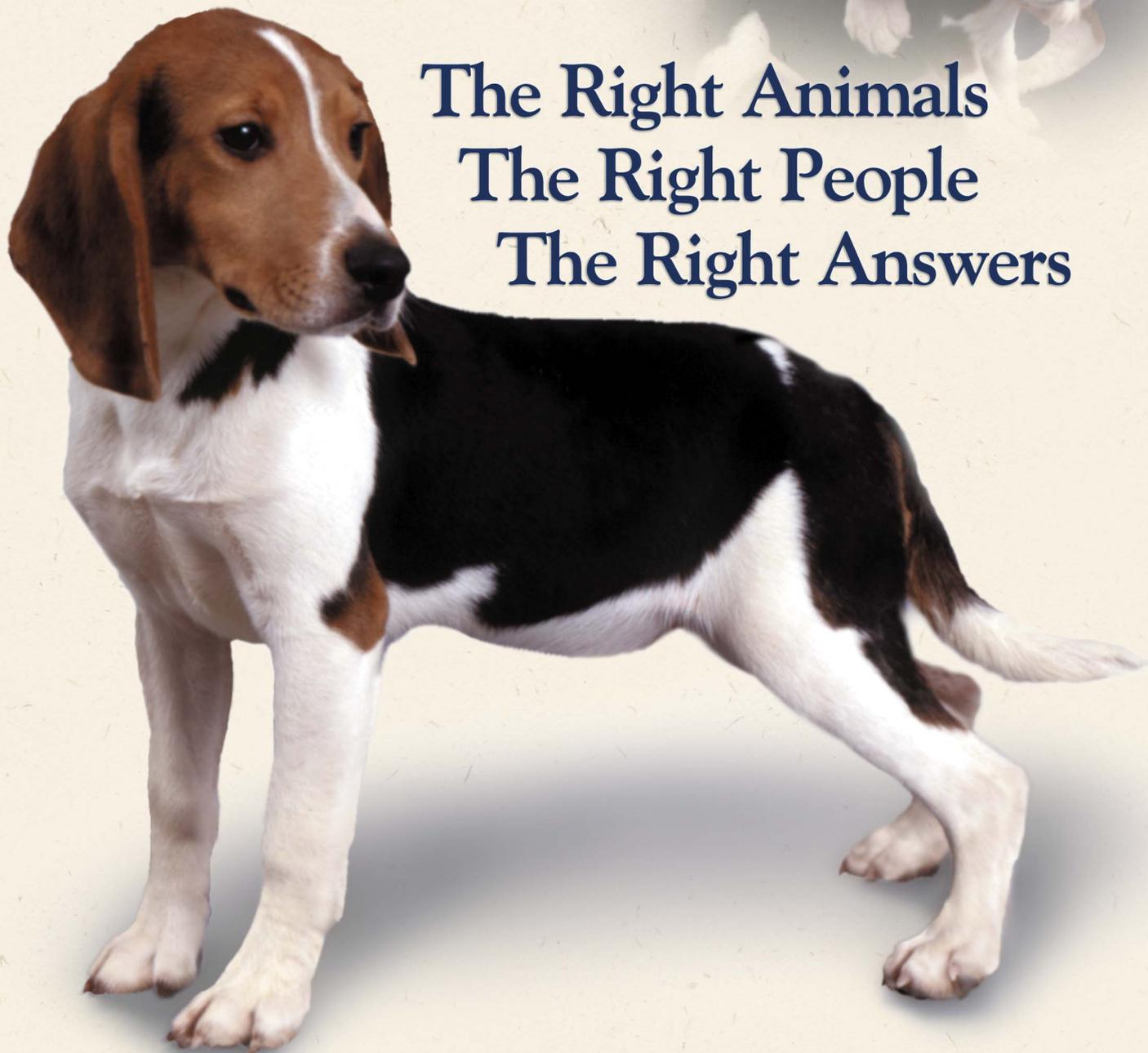
Many other sources of biomass besides corn exist. The US Dept. of Energy, via its Alternative Fuels Data Cen-

ter (www.eere.energy.gov/afdc/altfuel/ethanol.html), says advanced bioethanol technology allows fuel to be made from cellulosic biomass, such as agricultural residues, industrial waste, municipal solid waste, trees and grasses. That includes low-value plant materials like corn stalks, sawdust or waste paper.

Brazil has become the world’s largest producer of ethanol by capitalizing on its sugarcane crop, also the largest. According to Wikipedia.com, sugarcane is a more efficient source of fermentable carbohydrates and is easier to grow and process than corn—especially in Brazil with its ideal climate.

Why not turn the tons of manure produced by livestock, which often presents an environmental hazard and a large cost to farmers, into fuel? Then there are also non-biomass sources like wind, solar and hydrogen power. True, these and most biomass alternatives have a common problem: No one has yet cracked the code for mass production at a viable cost. But for petfood and other industries, they share the advantage of not monopolizing a valuable food source for questionable benefit. ●

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