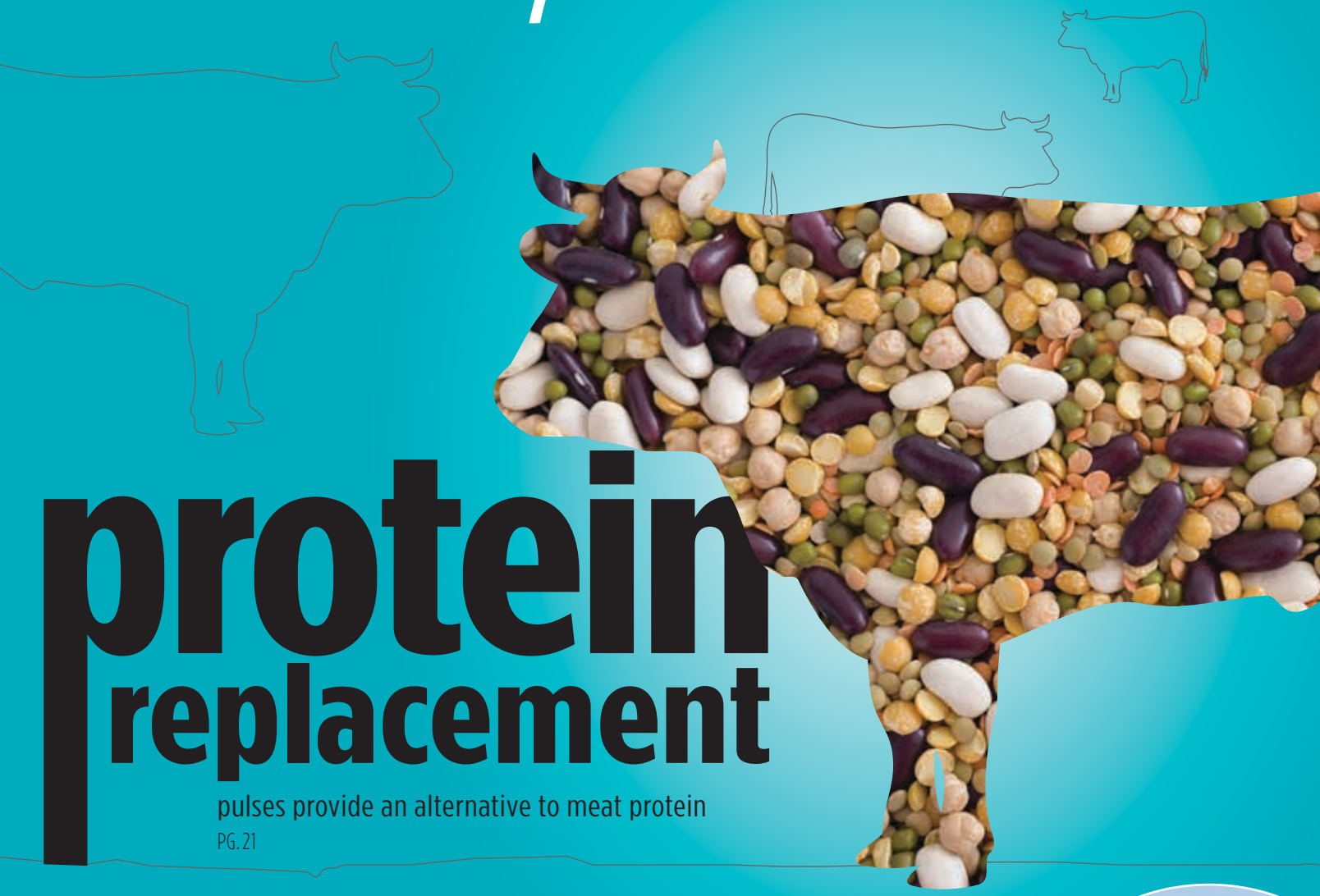
> VOLUME 1, ISSUE 1 > SUMMER 2013

Canadian food Insights



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Cleaning up ingredient decks PG. 28

In the Spotlight

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The Minister of Agriculture on Canada's evolving place in the industry PG. 16

CIFST

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1. Research conducted by IPSOS-ASI Ltd., January 2010
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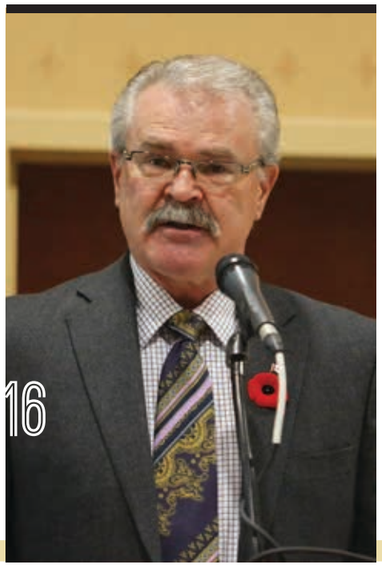
The role that pulses play 21

Although they are largely ignored domestically, Canada is the world's leading exporter of pulses. But value-added processing of proteins and starches in beans, peas, lentils and chickpeas could see pulses gain a foothold in Canada.

feature stories

regular departments



feature REVIEWS

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For:
Canadian Institute of Food Science and Technology
3-1750 The Queensway Suite 1311
Toronto, ON Canada M9C 5H5
905-271-8338
Fax: 905-271-8344
www.cifst.ca

Nicolas Heffernan

EDITOR FOR
CANADIAN FOOD INSIGHTS

Simplifying the difficult

Welcome to the first edition of *Canadian Food Insights* magazine! Unlike any other food magazine out there, we've blended easy-to-read academic research articles with trend-based stories. But, it's amazing how difficult something seemly simple can be sometimes.

Getting this magazine off the ground, while being very rewarding, has been a slow, painstaking process. You start in one direction before you veer off on another road and then realize that this way won't work so you have to start from scratch. Repeated multiple times, that cycle can be taxing. It takes time, patience and a willingness to accept that what you thought would be great, really isn't.

Come to think of it, it's very similar to what McCain went through when it reformulated its products to include more natural ingredients and changed its labels to make them more understandable. Turn to page 28 (after you're done reading this of course!) and read how it took the company more than 100 attempts to get just the desserts right, let alone the other 70 different products that have been revamped.

But it turned out to be a huge success. And with all the chopping and changing, adding and subtracting, and just plain tearing it all down and starting from scratch, we think we've developed something special with *Canadian Food Insights*.

So sit down, relax and dig in to the first of many servings of *Canadian Food Insights*.

Bon appétit!

REGULAR FEATURES INCLUDE:

Michael T. Nickerson, Ph.D., P.Ag.

SASKATCHEWAN MINISTRY OF AGRICULTURE
RESEARCH CHAIR
(Protein Quality and Utilization)

Department of Food and Bioproduct Sciences
University of Saskatchewan

As Editor-in-Chief of *Canadian Food Insights*, I'd like to welcome all industry, university and government members of CIFST and beyond to this exciting new endeavour aimed at keeping Canada's food and beverage sector informed on important developments related to industry trends, science and innovation and, policy and regulations, while at the same time highlighting the successes and achievements of our members.

Canadian Food Insights is a digital publication released four times a year, and features articles about some of the most important global and national areas of interest impacting our industry written with special attention to what it all means from a Canadian perspective. *Canadian Food Insights* is a uniquely Canadian publication. I'd like to draw your attention in this inaugural edition to some of our innovation sections that will run throughout future publications, such as 'Shopping Cart' which highlights people and companies in the news, important events and success stories, or 'In the Spotlight', which gives more in-depth stories of people on the move, new regulatory issues and polices, and industry success stories. Another key aspect of each issue which makes us distinct will be short 'Technical Reviews' on hot topic areas important to Canadian industries written in layman terms. The reviews will be preceding 'Trending Now', a section that highlights important market, product and, consumer trends and insights of the Canadian food and beverage sector, before reaching 'Checkout', which includes larger stories of both regional and national reach.

Canadian Food Insights fills a missing gap in our sector, moving beyond a superficial look at topics, by bringing readers a more in-depth understanding of key areas and why they're important to Canada. I'd like to thank my colleagues on the editorial board, Ann Manley (CIFST), Mr. Dave Bender (Griffith Laboratories), Dr. Eunice Li-Chan (University of British Columbia), Dr. Joyce Boyce (Agriculture and Agri-Food Canada), Alphonsus Utioh (Manitoba Food Development Centre), Dr. Vasanthan Rupasinghe (Dalhousie University) for their time and dedication as we developed the strategic focus of *Canadian Food Insights* and the content. I'd also like to thank Dovetail Communications for their work in implementing the board's vision to make this publication a reality. We hope you enjoy our inaugural edition, and we look forward to working for you on important issues in the future.

Sincerely

Michael T. Nickerson, Ph.D., P.Ag.

Belinda Elysée-Collen, M.Sc., P.Eng, CFS
PRESIDENT, CIFST NATIONAL

CIFST is proud to present the inaugural edition of *Canadian Food Insights*. This publication is intended to help bridge the gap between Canadian food researchers and industry professionals in a hybrid format that will be of interest to both audiences.

Several years ago, when the CIFST Board of Directors was beginning the strategic planning process, the concept of producing our own hybrid publication was suggested. There were numerous points made that supported the concept but, ultimately, the decision to move forward was due to member feedback that a publication of this nature would offer real member value.

Delivering on this idea was a daunting task. Special thanks go to Professor Rotimi Aluko for his guidance in leading a task force charged with the responsibility of determining how to move forward with this initiative, advising the Board of what needed to be done and sourcing a publisher to work with us as a strategic partner to both develop and deliver what we now refer to as *Canadian Food Insights*… a CIFST publication. CIFST is grateful to the hard-working and dedicated members of the task force that made the project possible.

Canadian Food Insights is reflective of the latest in publishing technology and will be produced exclusively in digital format. We believe that this modern method of publication, along with the blend of business and research news that is uniquely Canadian will not only benefit our members, but the Canadian food industry as a whole. This reflects the desire of Canadians for more efficient delivery of information in a way that is also friendly to the environment.

Collaboration and connections are essential to achieve success today and in the future. Our vision is that *Canadian Food Insights* helps foster relationships between research, government and industry; the sectors typical of our membership base. We have created a publication that is as uniquely Canadian as CIFST. We hope you enjoy it.

L'ICSTA est fier de présenter le premier numéro de « Perspectives alimentaires canadiennes. Cette publication a pour but de combler le fossé entre les chercheurs et les gens d'affaires canadiens dans un format hybride qui sera d'intérêt pour les deux publics.

Il y a plusieurs années, lorsque le conseil d'administration de l'ICSTA a entamé le processus de planification stratégique, l'idée de produire notre propre publication hybride est née. L'ICSTA tient à remercier le professeur Rotimi Aluko et tous les membres qui ont travaillé forts et se sont dévoués pour rendre ce projet possible.

Ce nouveau magazine reflète les plus récentes tendances en termes de publication et sera ainsi publié uniquement en format numérique. Nous pensons que cette approche de dissémination novatrice qui réunit les mondes des affaires et de la recherche avantagera nos membres ainsi que l'industrie agroalimentaire canadienne dans son ensemble. De plus, elle reflète le désir de nos membres d'avoir un accès rapide et efficace à l'information, en plus d'être respectueuse de l'environnement.

Bien que le présent budget ne nous permette pas pour l'instant de produire une publication bilingue, nous n'avons pas oublié nos collègues francophones partout au Canada, mais surtout au Québec. Vous verrez de temps en temps des messages en français tels que celui-ci.

Nous espérons que cette publication contribuera à favoriser les liens entre nos membres impliqués dans les universités, le gouvernement et l'industrie. Nous avons créer une publication à notre image, c'est-à-dire unique au Canada. J'espère que vous l'aimerez.

CIFST ICSTA
Canadian Institute of Food Science & Technology
Institut canadien de science & technologie alimentaires

July 2013

Canadian Institute of Food Science and Technology Unveils New Branding

The Canadian Institute of Food Science and Technology (CIFST) today unveiled a fresh look for the 63-year-old organization. The new branding, just one of a number of changes and initiatives undertaken by CIFST in the past year, offers a new look and feel that reflects CIFST's strategic focus on enhancing the Institute's identity, professionalism and voice.

The fresh and dynamic branding features three wheat shafts representing each of the sectors within CIFST's membership – academia, government and industry. The three-dimensional appearance gives the logo movement, and at the same time, the use of the wheat shaft in the design is a nod to the traditional and original logo.

CIFST's old logo

"I am excited and proud of CIFST's new brand," said Belinda Elysée-Collen, President of CIFST. "It not only represents the CIFST of the future, it also acknowledges CIFST's past and honours the Institute's roots reaching back to when it was founded in 1951. The introduction of this new logo is a milestone in CIFST's history that marks a new beginning for CIFST and its membership."

The new brand was developed in consultation with CIFST's volunteer leaders from across Canada and within all three of the food science sectors. The design was an immediate and early favourite from among the stakeholders consulted during the process. The branding will be adopted across CIFST, nationally and regionally, with full integration expected to be completed by the end of the year.

###

About CIFST
The Canadian Institute of Food Science and Technology is the national association for food industry professionals in Canada. Its membership of more than 1,200 is comprised of a diverse array of food professionals in industry, government and academia who are committed to advancing food science and technology. For more information, please visit www.cifst.ca.

For additional information:
Carol Ann Burrell
CIFST Executive Director
Tel: 905-271-8338
caburrell@cifst.ca

food EVENTS 2013

July 13 - 16, 2013
Institute of Food Technologists Annual Meeting and Food Expo
CHICAGO, ILLINOIS

September 10 - 12, 2013
Canada's Outdoor Farm Show
CANADA'S OUTDOOR PARK, WOODSTOCK, ON

September 24-26, 2013
4th Annual North American Tea Conference
BERMUDA, ON

PEOPLE PROFILE

Working his way out

DR. ROGER BEACHY PLANS ON ESTABLISHING THE GLOBAL INSTITUTE FOR FOOD SECURITY BEFORE MAKING A QUICK EXIT

By Nicolas Heffernan

Dr. Roger Beachy just started at Global Institute for Food Security (GIFS) but he's already eying the exit.

Beachy took the reins of GIFS as Founding Executive Director and CEO in December 2012 but is already looking for a successor. The province of Saskatchewan, the University of Saskatchewan and PotashCorp are collaborating to develop GIFS at the university to tackle the global challenge of feeding a growing population.

"I hope to work myself out of a job by the end of the year," he chuckles, "and then leave [GIFS] in the hands of a very skilled executive director in the future. I will stay involved as the chief science advisor for a few years after."

The institute, with initial commitments of up to $35 million from PotashCorp and $15 million from the province over the next seven years, hopes to address the increasing global demand for safe, reliable food.

And with more than 45 years as a researcher and founder of the Danforth Plant Science Center in Missouri, the First Director of the National Institute of Food and Agriculture and Chief Scientist of the U.S. Department of Agriculture, Beachy will use his experience to try and make GIFS a success.

"What I've come to learn in my 45 years in science... is to empower the scientists and team members – because this is really team science – to do their thing," he says. "I've really learned a lot from pitfalls along the road a lot of things I failed at and I think those experiences will be helpful at this point in time."

The institute will administer the no-strings attached funds that were contributed by the donors and oversee project management; help stimulate new science initiatives that will have global visibility and global impact; and to broaden the knowledge about GIFS and the university with the intention of bringing on additional financing and sponsors.

YOGURT LINKED TO **IMPROVED HEALTH**

There is a growing body of evidence linking yogurt consumption to improved health, scientists say.

The unique nutrient profile of yogurt has spurred research on its impact on a variety of topics such as bone and gut health, diabetes, body weight regulation, cancer and cardiovascular disease.

Much of what is known about the potential health effects of yogurt has come from studies examining overall consumption of dairy products, including milk and cheese. Fewer studies have focused on yogurt specifically.

Consumption of dairy products is associated with a reduced risk of developing some of the most prevalent and expensive diseases in modern society, including diabetes, hypertension and cancer. Intake of cultured milk and yogurt specifically has been linked to a reduced risk of developing bladder cancer, a lower risk of heart attack and heart disease, and a decrease in blood pressure.

"Current research on the potential impact of yogurt on health is encouraging and we look forward to learning more about the unique contribution that yogurt offers to individuals and overall public health," says Sharon M. Donovan, PhD, RD, Past President of the American Society for Nutrition and professor of nutrition at the University of Illinois. "Our goal in this initiative is to document what we know and what we do not know to guide future research efforts."

IMPROVED HEALTH

food EVENTS 2013

September 26 - 28, 2013
BioFach America – All Things Organic
BALTIMORE, MD

September 30 + October 1, 2013
Grocery Innovations Canada 2013
METRO TORONTO CONVENTION CENTRE, TORONTO, ON

October 3 - 6, 2013
Canadian Health Food Association Expo East
METRO TORONTO CONVENTION CENTRE, TORONTO, ON

Parents Call for Advertising Limits

More than 20 national and provincial health and scientific organizations have joined together in support of a policy statement calling for a restriction on marketing of foods and beverages high in fats, added sugars or sodium targeted to children under the age of 13.

Developed by a national group of health organizations led by Dr. Norm Campbell, Professor of Medicine at the University of Calgary and Canadian Institutes of Health Research/Heart and Stroke Foundation Chair in Hypertension Prevention and Control, the statement advocates for policies to restrict the marketing to children of unhealthy food and beverages and calls on food companies to immediately stop such marketing to children. A 2012 Environics survey indicated that the vast majority of Canadian parents (85 per cent) support restrictions on the marketing of unhealthy foods and beverages to children.

"It is expected that the current generation of Canadian children may live shorter, less healthy lives as a result of unhealthy behaviours, including poor diets," says Bobbe Wood, President of the Heart and Stroke Foundation. "Implementing policies that restrict the marketing of unhealthy foods and beverages to children has been proven as a cost-effective way to reduce some chronic diseases, including heart disease and stroke."

In May 2010, the World Health Organization (WHO) released a set of recommendations on the marketing of food and beverages to children and called on governments worldwide to reduce the exposure of children to advertising and to reduce the use of powerful marketing techniques employed by the manufacturers of foods and beverages high in saturated fats, trans-fatty acids, free (added) sugars or sodium. Canada has yet to act upon these recommendations.

"Food companies in Canada, with the exception of Quebec, are not required by law to restrict unhealthy food and beverage marketing to children," says Dr. Lynn McIntyre, Chair of the Canadian Public Health Association. "Studies show that up to 80 per cent of food and beverage products currently marketed to children in some parts of Canada are for "non-core" foods. We can and must do better for our children."

LOVE YOUR LENTILS

Canadian Lentils, in partnership with Chef Michael Smith, recently hosted a "Love Your Lentils Canada" competition, which challenged home chefs and food bloggers to develop and adapt recipes that could become a new favourite for family mealtime. All Canadians were invited to test them out and vote for their favourites.

"Lentils hit all the marks: they're easy to find, easy to cook with, healthy, tasty, inexpensive and best of all, Canadian," says Smith, who judged the finalists.

The competition was split into two divisions: Food Bloggers and Home Chefs.

Home chefs were asked to take one of Smith's existing lentil recipes and add their own twist to it, while bloggers were asked to submit completely unique lentil recipes.

Shopping Cart

food EVENTS 2013

October 5 - 9, 2013
Anuga 2013
COLOGNE, GERMANY

October 20 + 21, 2013
The Canadian Coffee & Tea Show
VANCOUVER, BC

October 25 + October 26, 2013
Meat Industry Expo
INTERNATIONAL CENTRE MISSISSAUGA, ONT.

October 28 - 30, 2013
NA Millers' Association 2013 Annual Meeting
WASHINGTON, DC

November 2013
Whole Life Expo 2013
METRO TORONTO CONVENTION CENTRE, TORONTO, ON

November 2013
CIFST Annual Suppliers' Night Table Top
INTERNATIONAL CENTRE TORONTO, ON

$3.7 BILLION

CANADA'S ORGANIC MARKET WORTH $3.7 BILLION

Canada's organic market grew to $3.7 billion in 2012, with national sales of certified organic food and non-alcoholic beverages reaching $3 billion.

The value of the Canadian organic food market has tripled since 2006, far outpacing the growth rate of other agri-food sectors. A diverse consumer base is driving the sector, with 58 per cent of Canadians buying organic products every week.

In B.C., the focus of the first phase of research, two-thirds of consumers—and over three-quarters of Vancouverites—are buying organic groceries weekly. B.C. generated 23 per cent of the value of the national organic food and beverage market, with strong sales across distribution channels.

Funding for this research was provided through Loblaw Companies, Taste of Nature, UNFI Canada, Whole Foods Market and the Organic Sector Development Program (OSDP). Funding for the OSDP comes from Agriculture and Agri-Food Canada's Canadian Agricultural Adaptation Program, which is delivered by the Investment Agriculture Foundation in British Columbia.

Canadians More Frugal Due to Rising Food Prices

Eighty-four per cent of Canadians believe the food they typically purchase has increased in price over the past year, according to the quarterly RBC Canadian Consumer Outlook Index.

With rising food prices eating into their household budgets, an overwhelming majority of Canadians (91 per cent) say they will tighten their belts and make smarter decisions when purchasing food.

The survey found that the average Canadian spends $411 per month on groceries and one-third (33 per cent) say rising food prices has had a significant impact on their budget, with 43 per cent cutting back on other expenses. Also, increases in food prices are impacting shopping habits with more than half of Canadians (57 per cent) comparison shopping for food more than before, following a budget and buying less on impulse (41 per cent). Others are looking to other parts of their life to deal with rising food prices such as using their vehicle less (15 per cent).

Food inflation rose 2.4 per cent last year, after increases of 3.8 per cent and 1.4 per cent in 2011 and 2010, respectively. A 2012 RBC Economics report anticipated that last year's U.S. drought could send food prices back up between 3 and 4 per cent this year. The report also noted that it takes approximately six months for raw food commodity price changes to pass through to prices at the retail level.

RBC Economics is currently forecasting the Canadian economy will grow by 1.8 per cent in 2013, and will be releasing its next Economic and Financial Market Outlook in June.

CANOLA OIL CAN IMPROVE HEALTH

25 YEARS OF STUDIES

Twenty-five years of studies has confirmed that canola oil reduces the risk of heart disease and suggests that it may also protect against other chronic diseases.

A comprehensive review of scientific evidence over the last quarter-century shows consuming canola oil instead of other fat sources enhances health and can help consumers comply with expert dietary fat recommendations, as analyzed in the June 2013 peer-reviewed journal Nutrition Reviews.

"The objective of this review was to examine the health benefits of canola oil as a dietary component itself, rather than focus on the effects of individual types of fat in the oil," says Peter Jones, Ph.D., lead researcher and director of the Richardson Centre for Functional Foods and Nutraceuticals at the University of Manitoba. "This approach results in practical advice to consumers about including canola oil in the diet."

A total of 270 studies were evaluated of which 40 were considered directly relevant to the review. All 40 papers described human studies with the exception of those related to cancer conditions where only cell culture and animal studies exist to date.

"Canola oil can now be regarded as one of the healthiest edible vegetable oils in terms of its biological functions and its ability to improve health and aid in reducing disease-related risk factors," says Jones. "Current research is expected to provide more complete evidence to support the health-promoting effects of canola oil when consumed at levels consistent with dietary guidelines."

ATRIUM INNOVATIONS EXTENDS RESEARCH PARTNERSHIP WITH INAF

Atrium Innovations Inc. announced today that it has extended its research partnership with the Institute of Nutrition and Functional Foods (INAF).

The original program was launched in June 2011 and funded through the end of 2013. Atrium extended the collaboration until 2016. "We continue to see direct returns from this program in stimulating innovative product development, including the introduction of 16 new products to date," says Pierre Fitzgibbon, President and CEO of one of the leaders in the development, manufacturing, and commercialization of innovative, science-based natural health products.

Under the program, several ongoing studies are investigating small fruit polyphenols in glucose management and cognitive health, as well as the effects of enzymes on inflammation response, furthering a body of literature supporting the efficacy and mechanism of Wobenzym brand systemic enzymes.

COMPANY PROFILE

Ultima finds the ultimate yogurt with iögo

FOCUS ON DEVELOPMENT LEADS TO SUCCESS

By Nicolas Heffernan

When it came to R&D, Ultima Foods focused much more on development instead of research when it was launching its new brand, iögo.

"We spent a huge amount of money on development rather than research," says Gerry Doutre, President and CEO of Ultima Foods. "If you want to talk about pure research we didn't head off into what I'll call heavy duty pharmaceutical-type products. These are yogurts with points of difference versus other brands on the market."

This strategy paid off in early June at the Canadian Grand Prix where the company was the winner in the Most Appreciated New Consumer Product, with its iögo Nano product, a drinkable yogurt for little kids. "Basically, it's a mini baby bottle and it's got a flip cap," says Doutre. "It sounds silly but the last thing you want to give a kid is a bottle or a tub of yogurt in car seat in the back of your car, especially in the summertime. It can get a little ripe if any of it gets spilled." This bottle can be turned upside down without spilling.

It has been a fairly remarkable rise for the iögo brand, which Ultima Foods developed after being outbid by General Mills for Yoplait. Just 10 weeks after its launch last August, the brand had captured 12 per cent of Canada's yogurt market and within three months it had a 74 per cent awareness rate among yogurt consumers.

"We got lucky I think in the sense that the market had not seen a lot of innovation because what drives growth in yogurt is something new, something different," says Doutre. "So iögo came along at just the right time."

7 QUESTIONS

AN INTERVIEW WITH **GERRY RITZ**

INTERVIEW BY
NICOLAS HEFFERNAN

WHAT'S YOUR VISION FOR AGRICULTURE IN CANADA GOING FORWARD?

WELL IT'S A GREAT TIME TO BE IN AGRICULTURE. The optimism of farmers and the entire value chain is quite high. I've had the great opportunity to attend a lot of the annual meetings of the different green commodities, the livestock sector and so on over the last month or six weeks and I'll continue to do that as they hold those coast to coast to coast. The optimism is extremely high. The world is demanding of a secure sustainable food supply and Canada is one of very few countries that has the opportunity and the ability to step up and continue to deliver more. There's a growing preference for nutritious food with a lighter environmental footprint and again Canada has an exceptional story to tell.

WHAT DO YOU THINK CANADA'S PLACE IS AS A FOOD PRODUCER IN A GLOBAL CONTEXT?

I THINK OUR PLACE IS ACTUALLY CHANGING. For decades really Canada has always been a huer of wood and a drawer of water and we exported a lot of raw materials. There's a growing recognition and realisation that we need to value add and maintain some of the by-products for our livestock sector to make sure that they have availability of cheaper foodstuffs for their animals. We continue to evolve and work with industry to make sure it has the ability. We've got one of the lowest corporate tax regimes in the world. We're looking at a complete overhaul of our regulatory package to make sure that we're not burdening industry, business with a lot of extra paperwork, a lot more than is required. We've passed legislation now that if I'm to bring in a new regulation I need to move an old one out of the way so that we're not wrapping the onion even tighter.

HOW IS THE GOVERNMENT GOING TO TRY AND SUPPORT FARMERS?

WELL THERE ARE ALWAYS CHALLENGES IN THE FARM SECTOR at the farm gate level, whether it's weather or market disruptions. Working with our partners, the provinces and territories, we're going into our second tranche of Growing Forward, that a five year program. This time around we've got a tremendous amount more, some $3 billion in investment monies for science and research, competitive innovative ideas and of course marketing to make sure that our guys have the ability to get out there on the market and sell their goods. For the first time ever we're also looking at maintaining our domestic consumption in good, top quality Canadian products. You know Canadians are very patriotic that way. They love to consume Canadian product because they know it's some of the best in the world. At the same time that we're investing in a proactive way we also have a full suite of programming there as a backstop – the crop insurances, agri-stability, agri-recovery and programs such as that to make sure that farmers have access to cash flow dollars from governments when and if there's a major disaster, whether it's weather related or in the market place.

ABOUT **GERRY RITZ**

Minister Gerry Ritz has been serving food processors, farmers and all Canadians as Minister of Agriculture since 2007, and as Member of Parliament for Battlefords-Lloydminster since 1997. He previously served as Secretary of State for Small Business and Tourism and continues to represent his native Saskatchewan as Regional Minister.

WHAT CAN BE DONE TO MAKE THE SUPPLY CHAIN RUN MORE SMOOTHLY?

I think the (relationship between farmers and packagers/supply chain) is much better than it was some time ago and we're seeing some of that in the grain sector. Out west we were withheld value added because of some of the antiquated rules and regulations that the old single desk called the Canadian Wheat Board. The livestock industry has embraced the vertical integration and horizontal integration, they look at the value chain and there's a much better working relationship throughout the chain when it comes to the cow/calf through to the background through to the feedlot and on it not the processing sector and moving forward, a much better working relationship than there's been for quite some time.

HOW DO WE ALLOW THE PROCESSING SECTOR RUN MORE SMOOTHLY?

Make sure that they have the ability to innovate. We have one of the lowest corporate tax regimes in the world, of course that draws investment. We saw Tim Horton's move back from the US, back into Canada because of that tax change and that's very impressive and important but we continue to work with industry, the processing sector to make sure they have the tools. We've had expedited capital cost allowances where they can write off new innovative ways to handle products cheaper. They can do that in a more effective way than they could before and for the first time ever the Growing Forward suite of programming we're actually addressing some of the needs of the processing sector. The first Growing Forward suite, the last five years really backstopped the farm gate much more than it had up to that point without adhoc payments , we're now looking forward to the next stop of the value chain and the processing sector and do quite a bit of work there, which again benefits the farm gate.

GENERALLY SPEAKING, WHAT DOES CANADA DO WELL?

Well we're exceptionally good at innovation. When it comes to equipment there's a tremendous amount of product that comes out of farm shops that are better ways of managing seeding, spraying, harvesting, tillage, all those types of things. We've seen some sea changes in the last decade. We're also very innovative. Canada has to move along with the rest of the world on biotechnology. If you're going to produce a nutritious product at a price that people can afford we have to move to a lot more science research and biotechnology and of course Canada is very adept at doing that. Part of our strength is the diversity of our agriculture portfolio in the number of products that we produce and also the size and scope of the landmass that if we have a flood in one area generally it's isolated and we'll pick up the crop volume in other areas. So it's a great spot to be in, in Canada. We're one of the very few countries that have the ability to adapt to the new reality – the security and sustainability of food stuffs throughout the world.

WHAT DOES CANADA NEED TO IMPROVE ON?

I think we need to do a lot better work with our trading partners. We want to make sure that all of our trade is governed by science not by phytosanitary concerns that pop up from time to time. And there are international bodies that adjudicate that. As you well know, we took advantage of our status with the WTO to take the United States to task on country of origin labelling and when we see those types of issues that come up that are harmful to our industry as a government we're proud, we have the right and responsibility to hold these other countries to account and make sure the playing field is level.

> "FOR DECADES REALLY CANADA HAS ALWAYS BEEN A HUER OF WOOD AND A DRAWER OF WATER AND WE EXPORTED A LOT OF RAW MATERIALS."

> "THERE'S A GROWING PREFERENCE FOR NUTRITIOUS FOOD WITH A LIGHTER ENVIRONMENTAL FOOTPRINT AND AGAIN CANADA HAS AN EXCEPTIONAL STORY TO TELL."

WHERE'S THE LOVE?

CANADA'S PULSES TRY TO GAIN SOME AFFECTION AT HOME, THROUGH VALUE-ADDED PROCESSING

Text by Nicolas Heffernan
Pictures by Pulses Canada

THE NORMAL RATE OF PULSE PRODUCTION IS

4.5 - 5 MILLION

TONNES PER YEAR

Ignored at home, adored abroad – that's the reality for Canadian pulses. Even the people who grow them don't eat them.

Chuck Penner, founder of LeftField Commodity Research in Winnipeg, has seen this firsthand at some of the meetings he has attended. "I've seen a speaker get up and ask the farmers in the crowd, not just the general population, but the farmers who are growing them, 'How many times a week do you eat pulses?' And the numbers are actually pretty small for the most part, aside from the can of pork and beans that you might have."

It's an interesting dichotomy considering Canada's role as the leading pulse exporter in the world. Every year, more than 2.3 million hectares are seeded to pulse crops like peas, beans, lentils and chickpeas. Canadian pulse production peaked in 2010 at more than 5.7 million tonnes, with pulse production normally in the range of 4.5 to 5 million tonnes per year.

Canada exports 90 to 95 per cent of its pulse crops, valued at $2.7 billion in 2011, to more than 150 markets around the world, especially to India and the sub Indian continent, followed by the Middle East, North Africa and Asia. "It's true these foods have not figured largely in the Canadian diet or the North American diet," says Peter Watts, Director of Market Innovation at Pulse Canada. "And that's one of the roles at Pulse Canada, to develop the market in North America for pulses in the mainstream diet through the food processing and food service industries."

The way to crack the North American market may be through value-added processing – extracting the starch, protein and fibre and using them as ingredients. China emerged as a big market for peas because it processes the vegetable to its component parts, taking the starch and make vermicelli noodles and then selling the protein and fibre for other applications. "In North America there are many opportunities to do that sort of thing as well too," says Penner. "In places where over-nutrition is a bigger issue… there are some real health benefits."

Starches also have additional value because they're non-gluten, which when coupled with the trend of healthy eating, means there could be a big role for pulses to play. "You've seen a lot of stuff about the wheat belly and whether you agree with it or not, that message is out there where people are starting to move away from wheat products. I don't know if that's a fad or whether that's going to just blow over but these types of products – pulses as replacements for some of those gluten products – I think have a definite application there," says Penner.

HUGE GROWTH

Over the last 20 years, the pulse industry in Canada has grown steadily. Canadian production of the eight major pulse and special crops (pea, lentil, bean, chickpea, mustard, sunflower, canary seed and buckwheat) increased from about 1 million tonnes in the early 1990s to 5.7 million tonnes in 2010, more than a fivefold increase. In 2010, Canada accounted for 32 per cent of the world's pea production and 38.5 per cent of lentil production. With exports expanding rapidly along with production over the last two decades, Canada now accounts for approximately 35 per cent of global pulse trade each year. Canada is a dominant player in world trade in peas and lentils, accounting for 55 per cent and 50 per cent, respectively in 2008 (the most recent year of complete Food and Agriculture Organization statistics), and a top five exporter of both dry beans and chickpeas.

"Canada kind of dominates the trade for most pulses," says Penner. "There are some smaller ones – things like dry beans, things like chickpeas – where we're a smaller player but especially with things like peas and lentils what happens in Canada has a ripple effect around the globe."

AGRONOMY

Canada has been able to dominate the market because of market innovation, but perhaps more importantly, because of science. "We stay ahead by investing in research and breeding and agronomy and making sure we have the best genetics, the best agronomic practices," says Watts.

At the Crop Development Centre in Saskatoon, the focus has been on variety development with the varieties produced released publicly. In other words, they're not available to companies for marketing and distribution rights but are offered to farmers and seed growers. Canterra Seeds counts green and yellow peas and navy, black and pinto beans among its portfolio alongside cereals and oil seeds. The Winnipeg-based company also acquires varieties from other public breeding sources like Agriculture and Agri-food Canada and other international players.

When Canterra acquires a new variety it's often a limited quantity of seeds so the company relies on its 167-strong seed grower network in western Canada, who are also shareholders of the organization and its primary production avenue.

In 2010, Canada accounted for 32 per cent of the world's pea production and 38.5 per cent of lentil production.

"They specialize in seed increase multiplication so from the time we acquire a new variety it usually takes about three growing cycles to generate enough seed to sell to producers," says Brent Derkatch, Director, Operations and Business Development. "We work together closely with our seed growers to facilitate and manage the higher generation seed inventory." Ultimately, it's certified pedigree seed that's sold to farmers. Once the seeds are produced, Canterra does a lot of facilitation to manage the distribution of the seed for those first few generations of multiplication. "We don't do any plant breeding but we do evaluate and screen varieties from outside of the Canadian public variety development sector," says Derkatch.

Every variety within a particular crop type has its own key attributes or characteristics that make it unique, whether it is yield or disease resistance or standability, which is how well the plants stand upright in the field. Derkatch says, "For us, when we acquire a pulse variety, we make sure that it has characteristics that are only an improvement over existing varieties that are in the marketplace."

And while the plant varieties Canada produces is what allowed the country to lead the industry, a lack of funding could be what knocks it off its perch. "The big underlying challenge is in order for public or private plant breeders to invest in variety development, there has to be a sustainable funding model for that," says Derkatch. "It's a lot of science and a lot of effort and testing that's required to advance any crop type and so having the means to properly fund innovation is one of the main cornerstones."

Today, the primary means of collecting revenue to support breeding and market development efforts is with the sale of certified seed, with the private industry in particular. "Right now the percentage of the crop that's planted in western Canada using certified seed is not anywhere near the levels that would be required to properly sustain variety development," says Derkatch. Announcements by Agriculture and Agri-food Canada in the last year about a decrease in funding for the public sector for variety development have been disheartening. "There has to be a means of that effort being picked up by either producers or private entities to continue with variety development or we risk falling behind the rest of the world," says Derkatch.

One big change that Derkatch would like to see is the implementation of UPOV 91, a treaty devised by The International Union for the Protection of New Varieties of Plants (UPOV) in order to "provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society." Canada is one of the few developed nations in the world that has not fully implemented and ratified the legislation for plant breeders' rights, which would bring Canada up to the international standard and introduce new tools that would be available to industry to help with funding innovation.

Breeders are unlikely to release valuable varieties into a country without adequate protection, UPOV says. The bill would provide incentive to stimulate new breeders and new breeding work domestically, but also internationally by removing barriers to trade in varieties, increasing domestic and international market scope. With access to such valuable foreign-bred varieties, domestic growers and producers have more scope to improve their production and also have more scope to export their products. Domestic breeders also gain

IN 2011, PULSE CROPS WERE VALUED AT

2.7 BILLION

access to valuable varieties for use in their breeding programs. This international aspect is an important means of technology transfer and effective utilization of genetic resources.

But UPOV 91 is strongly opposed by farmers in Canada and the bill was defeated in 2005. The National Farmers Union argues it would extinguish farmers' automatic right to save and re-use seed, empower seed companies to collect royalties, allow patenting of seeds protected under Plant Breeders' Rights and expand the scope and the duration of seed companies' power to demand payment from farmers – making seed much more expensive.

DOMESTICALLY GROWN

For now, Pulse Canada and other grower groups are still trying to develop markets abroad and domestically. For example, one selling point for more conscious consumers in North America is the sustainability of pulses. The crops don't need nitrogen fertilizer because they are able to extract it on their own from the air and from the ground. "They demand less of the earth, essentially, to produce. That's a message being promoted to consumers although it's just at the very, early stages. Not many people know that kind of stuff yet," says Penner. Pulses are already growing in popularity with farmers, however, because they play an important role in healthy crop rotation.

Exports will likely always be the highest driver of revenue for the industry in Canada but with the sector maturing in terms of its capacity to deliver high quality products to the global marketplace, the ability to process pulses into value-added products will likely be what brings the food into the North American consciousness.

"We are still fairly heavily reliant on a select few markets for the vast majority of our exports which are being sold in bulk form or containerized form with little or no processing," says Watts. "So as an industry to have value-added processing at home creates more value for your product, creates business and jobs and diversifies your market base so you're not wholly dependent on [other] markets."

CANADA EXPORTS
90-95
PER CENT
OF ITS PULSE CROPS

RELATED NEWS

USING PULSES TO NOURISH THE HUNGRY

Trying to fit a full, nutritious meal into a 14-ounce can is no easy feat.

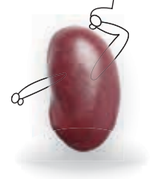
The inspiration for Campbell's Nourish brand came out of its R&D department's desire to make a difference and create a meal that would be of use to food banks, especially in places that were in need of humanitarian assistance.

In order to create a meal that would provide the nutrition these people needed, the company turned to pulses. "I think it's about selecting the most nutrient-dense ingredients you can so it's an efficient vehicle to deliver all the nutrients you are trying to get in there," says Arlene Karan, Senior Director, R&D. "That's why we used pulses and naked oats to develop that complete protein and these individual ingredients are also really high in minerals, proteins and different vitamins. Each ingredient has more than one job to do."

Though the Nourish brand is not currently available in retail stores, Campbell Company of Canada has donated 350,000 cans of Nourish meals to various sources, including Food Banks Canada, Canadian North, and for the humanitarian work in Haiti. "I think we can all play a role in helping to alleviate hunger," says Melanie Rockliff, Senior Manager, Corporate and Brand Communications. "To be honest, it was just a real sense of doing what we could as a food company to help alleviate hunger. It's a cause obviously that's really close to us."

And while pulses have a large role to play in humanitarian efforts, they're also gaining wider acceptance amongst Canadian shoppers. "We have seen a growing interest in healthier products like pulses," says Karan. "The key is balancing nutrition with taste. Like any ingredient, finding the right recipe and the right flavour profile to enhance pulses will drive consumer preference."

MISSION imPULSEible



Mission: ImPULSEible might not be grabbing the attention of Tom Cruise, but post secondary students across Canada enrolled in a food science or related discipline or culinary arts program are taking notice.

The competition was created by Pulse Canada in 2009 as a way to get students interested in using pulses and pulse ingredients in the development of new food products. The students' mission is to develop tasty, innovative and marketable food products containing pulse ingredients or whole pulses. They are evaluated by judges based on innovative use of pulses, sensory and health attributes, marketability and feasibility. Winning teams in provincial competitions have the chance to compete at the national Mission: ImPULSEible event – held each summer in conjunction with the Canadian Special Crops Association annual convention – for a grand prize of $2,500.

"The idea is to basically foster greater understanding among students of what pulses are and what possibilities they offer for new food product development and innovation," says Peter Watts, Director of Market Innovation of Pulse Canada.

Successful Mission: ImPULSEible competitions have been held each year since 2009 and have resulted in the development of innovative pulse products.

"This is the next generation of food product developers with food companies and the next generation of chefs so exposing them to pulses at this stage of their development is a great way to ensure that in the future pulses will be included in the food formulations of new food products coming down the pipe in the future," says Watts.

TODAY'S MENU

STARTING *from* SCRATCH

CONSUMER INTEREST IS FORCING FOOD COMPANIES TO EVALUATE WHAT'S IN THEIR FOOD AND ON THEIR LABELS

Text by Nicolas Heffernan

Baking a cake from scratch isn't easy.

McCain Foods Canada found this out the hard way when the company's It's all good campaign tried to tackle its Deep'n Delicious Cakes. The campaign was launched three years ago with the goal of reformulating its recipes to include products made with only real ingredients that people would use at home.

Heather Crees, McCain's VP of Marketing, had thought the company's Smiles potato products were a headache, taking 70 tries to get the recipe right. But the desserts, took the cake. "Our desserts have been over 100 tries," she says. "It's taken us a few years to actually get it right."

About four years ago, the company found in focus groups and in a survey that consumers wanted their food to be made solely from natural, non-chemical ingredients, with clear, easy-to-understand labels. "Consumers are more aware of what goes in their food and there is more of a desire to understand what's in the food we're eating and feeding our children," says Crees. "So that's everything from what goes into the products to how it's actually portrayed on a pack."

It's taken three years, but the desserts business has finally been conquered with the reformulated recipes finalized in February and March, and the products on shelves now. "Our biggest challenge was removing some of the unpronounceable ingredients," says Crees. "For example, in order to remove propylene glycol mono fatty acid esters, we had to find a whole new way of making our cakes. It was technically very challenging but we stuck with it and found a way."

The cakes are one of the last of McCain's product line to be reformulated, with more than 70 different products already on the shelf using only real ingredients. "Canada is looking for prepared foods that are made with real ingredients that they recognize," says Crees. "And so that got us on this journey that we call It's all good, which is... How can we help them? How can we deliver what Canadians are looking for?"

ASK AND YOU SHALL RECEIVE

It all started with a simple question: What's in dinner?

The question the McCain group had been used to answering – What's for dinner? – had been replaced. With that in mind, the 55-year-old Florenceville, N.B.-based company commissioned TNS Canadian Facts to poll

IN CANADA, COMPANIES ARE REQUIRED TO LIST THE **CALORIES** AND THE AMOUNT OF **13 NUTRIENTS** IN A CHART ON THE BACK OF PACKAGING

Canadians to find out what consumers were looking for.

The results forced them into action. The survey found 80 per cent of the 1,294 polled were "avoiding foods that have excessive ingredients that look more like chemical names than real food." Nevertheless, 71 per cent of respondents "regularly purchase frozen convenience foods with 20 per cent claiming to purchase at least once a week or more." Also, the survey found 85 per cent "look for prepared foods that are made with 'real' ingredients that they recognize."

Because of this, the It's all good campaign was born. "The idea that we had was that our food should be made from food and what that meant was no really overly complex processes; simple, wholesome ingredients that consumers would use if they were making it themselves in their own kitchen," says Crees. "And that also meant the ingredients would be recognizable, real, few in number and pronounceable."

The company looked at every recipe and asked, "What would we want to change? What would we be wanting to be feeding our kids? And how do you literally start to make the changes that will make the products more what consumers are asking for?" says Crees.

The company developed a three-part model for its reformulated products: the taste had to be as good or better than the current product; it needed to be made with real ingredients, as if it were made from scratch; and wherever possible, deliver an improved nutritional profile. "It was a lot of effort to change but I think at the end of the day we all knew it was the right thing to do because it was what consumers were asking for and when you can do something that gives consumers what they want and then get feedback from them that they really like it, then that's great," says Crees.

"CONSUMERS ARE MORE AWARE OF WHAT GOES IN THEIR FOOD AND THERE IS MORE OF A DESIRE TO UNDERSTAND WHAT'S IN THE FOOD WE'RE EATING AND FEEDING OUR CHILDREN."

–HEATHER CREES, MCCAIN'S VP OF MARKETING

SIMPLY DIFFICULT

In the beginning it was not an easy sell, even within the company. There were worries about cost. One of McCain's flagship products, Superfries, were a prime example, with one of the goals being to reduce the sodium in the product. "The initial reaction was, 'Well, we're not sure it can be done,'" says Crees. But McCain's research and development went away, thought about it and came up with a possible solution: sea salt. The first reaction that it was going to cost the company more money to manufacture but because sea salt has a more concentrated taste they didn't have to use as much of it. "What ended up happening was that we were able to move to a better ingredient, it delivered the same great taste, but we were able to use less of it. In the end you deliver a better product for consumers and it costs about the same amount," Crees says.

The company ran into similar issues with its Pizza Pockets. "We used to have a few unpronounceable ingredients," says Crees. The solution was the addition of flax seed. "It still delivered the same great-tasting results but now consumers also got a fibre benefit in the product as well." Sodium was reduced 15 to 20 per cent.

Crees says the results have been "phenomenal." "We don't actually share business results but it's really made a huge difference both in terms of our business results and also the way consumers perceive McCain." Net dollar sales for McCain Superfries increased 11 per cent in 2010 and 15 per cent in 2011, while McCain Frozen Pizza Meals were up 4.1 per cent in 2010 and 9.4 per cent in 2011, each significantly outgrowing their categories every year. Millward Brown tracking showed a significant increase in awareness of the McCain It's all good brand promise: up 31 per cent among pizza consumers and 39 per cent

80%of 1,294 people polled avoid foods that have excessive ingredients that look more like chemical names than real food

among potato consumers. The campaign is also proving to have an impact on what consumers base their purchasing decisions on, according to a 2011 Vision Critical: McCain "It's all good post-campaign study. When exposed to the campaign message, 87 per cent of consumers feel that the It's all good initiative is relevant. Also, the company's ad campaign makes consumers more likely to purchase McCain products (77 per cent for frozen pizza and 75 per cent for frozen potato), due to the change to new ingredients.

Aside from the push for natural ingredients, McCain also focussed on making the ingredients label easy to understand. "As we were talking to consumers what they kept telling us was that if I look at long ingredient list on the back of the package it's meaningless to me," says Crees. "I scan it quickly to see what's in there but it would be much more helpful if it was organized in a way that was much more understandable." To remedy this, McCain, using pizza as an example, decided to split the ingredients and organize them in the crust, in the sauce, in the toppings. "That really helped the understanding of consumers as to what was exactly in the product," says Crees. "We're making it easier for consumers to understand what's in their products and to shop the category."

For Bill Jeffrey, National Coordinator for the Centre for Science in the Public Interest (CSPI), a lot of the public are taking the importance of labels for granted. "I think people underestimate the extent to which they can be extremely effective vehicles for educating consumers," he says. "Canadians buy probably 20 billion foods a year that have a label on it. That's really an enormous amount of real estate."

In Canada, companies are required to list the calories and the amount of 13 nutrients in a chart on the back of packaging. There are two key acts governing the labelling of food and beverages in Canada: The Food and Drugs Act and Consumer Packaging and Labelling Act. These acts enforce a number of key items, including providing for mandatory label information with which consumers can make informed choices. It also requires the use of metric units of measurement and bilingual labelling.

"Food companies guard [labels] jealously and I think they realize more than consumers do that effective food labels can really influence product choice," says Jeffery.

Despite McCain's efforts, not all labels are as easy to understand and that needs to change according to Jeffery. "The challenge with labels the way they are now is that they're pretty complicated and many consumers don't understand them and probably lots of them think they understand them but they don't really."

In a bid to help consumer understanding of labels, Food & Consumer Products of Canada (FCPC) has engaged the federal government to promote the %Daily Value column on the Nutrition Facts table. "The government-regulated Nutrition Facts table is a powerful tool to help Canadians become more informed about what they choose to eat and better empowered to make healthier choices," says Adam Grachnik of the FCPC.

And thanks to McCain's It's all good campaign, Crees is starting to see the trend of simplified ingredients and labels continuing.

"I absolutely think we were [trailblazers]," says Crees. "I'm happy to see it. When we started this journey, our hope was that other companies would follow. We went into it saying if we do our job really well there'll be a bunch more people that are making changes like that and we've seen that in the marketplace now."

WHAT'S IN A LABEL....

NEW LABELS ARE CONSUMER FRIENDLY & EASY TO UNDERSTAND.

Traceability:

REGULATORY REQUIREMENTS AND CONSUMER ACCEPTANCE

Andreas Boecker[1] | Jill E. Hobbs[2*] | William A. Kerr[2] | May T. Yeung[3]

INTRODUCTION

Traceability is a means to many ends. Most visible to the public, a primary motive for traceability has been to more quickly contain animal disease outbreaks, such as BSE (mad cow disease) and foot and mouth disease. Similarly, traceability is aimed at making food recalls more effective in order to minimize the damage from food safety incidents. More recently, food fraud or economically motivated adulteration, which can also threaten consumer health, has amplified calls for more stringent traceability practices in the supply chain [1]. Less visible than these defensive purposes of traceability is its strategic use for gaining competitive advantage through market access, product differentiation and supply chain efficiency gains. Although public sector action, i.e. regulation and programs for adoption of traceability practices, are primarily aimed at defensive purposes, they also play an important role for market access. The first focus of this review is thus on regulatory approaches to traceability and their implications for Canadian competitiveness, using livestock and meat systems for illustration. We will then turn to a consideration of consumer perspectives to show that it is the demand for certain product attributes, and not for traceability per se, that drives the implementation of traceability practices in the food system. We conclude with a short discussion on the link between demand for traceability and investment in innovations.

REGULATORY APPROACHES TO TRACEABILITY

A Canadian National Agriculture and Food Traceability System (NAFTS) has been under discussion for some time and is a stated policy goal of the federal government [2]. In this context traceability has been defined as "the ability to follow an item or group of items –animals, plants, food products or ingredients – from one point in the supply chain to another" [2] and is seen primarily as an emergency management tool to address food safety or animal health problems. Ensuring market access for Canadian livestock and food products, facilitating industry competitiveness, and maintaining consumer confidence are identified as secondary goals [3]. Animal identification, animal movement, and premises identification are the three basic components of livestock traceability systems in Canada. Currently, animal identification is mandatory for cattle, bison and sheep and is in the process of becoming mandatory for pigs. Whether Canadian regulatory requirements will eventually extend beyond animal lifecycle traceability in the livestock sector to a more comprehensive farm-to-fork approach to meat (food) traceability is unclear.

Internationally, livestock and meat traceability requirements are diverse in terms of their scope, scale, and level of development. Food safety and animal disease risk management dominate as motivations for the establishment of these requirements. A livestock traceability system is likely to become a pre-requisite for sustained access to international markets for the Canadian meat and livestock sector, particularly if diversification beyond the US market is a priority. The lack of a cohesive comprehensive national animal traceability system in the US creates a potential competitive advantage for Canada in third markets in which the US and Canada compete. Competitive pressure from Australia, particularly in emerging beef markets, is likely to be strong given the relatively advanced nature of livestock traceability systems in Australia. The European Union (EU) (primarily Denmark and The Netherlands) remains an important competitor in international pork markets, and the EU is probably furthest along the traceability regulatory

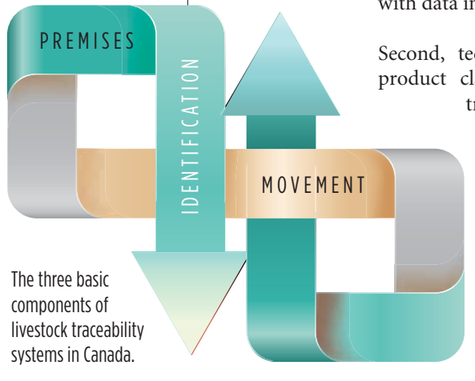
path, with national individual animal identification systems and mandatory traceability requirements for all food and feed businesses. The EU has a so-called 'one-up, one-down' traceability requirement whereby food businesses should be able to identify all of their suppliers and all of the business to whom they have supplied products [4].

Emerging markets such as China and Russia are moving toward the establishment of livestock traceability systems, but implementation appears slow and piecemeal, creating potential short-run opportunities for Canada. The existence of a cattle traceability system provides the Canadian industry with a potential competitive edge over the US given the re-opening of the South Korean market to Canadian beef and the traceability requirements in place in that market. However, the recent US-South Korea free trade agreement provides the US beef industry with preferential tariff access to that market; an advantage not available to Canadian beef exporters. Traceability remains important for continued access to the Japanese market, particularly for beef.

CONSUMER PREFERENCES FOR TRACEABILITY

Traceability regulations typically focus on origin – or better – location, as the key information to be recorded and made accessible. In the market place, however, supply chain stakeholders and final consumers may require access to a lot more information [5]. A growing body of literature has examined consumer attitudes toward traceability assurances in food products across a number of countries [see for example, 6, 7, 8, 9, 10, 11, 12]. While it is difficult to draw generalities across a diverse set of studies, some broad themes emerge. Consumers have differing levels of familiarity with the concept of traceability, however, the concept tends to be associated most closely with food safety and risk reduction, particularly in North America and in Asia. While this is also true in Europe, an added dimension of importance in some European markets is the use of traceability to provide assurances of the origin and authenticity of food products. Where they exist, estimates of willingness-to-pay for traceability-related assurances tend to be higher in Europe and Asia than in Canada or the US.

Studies suggest that traceability as a vehicle to deliver credible quality assurances about on-farm production methods, food safety, origin, or authenticity tends to elicit a positive willingness-to-pay from consumers. But even if consumers' willingness-to-pay for traceability itself were zero, their demand for product features that require traceability for assurance provides an incentive for product differentiation and thus to invest in traceability. Given the immense challenges in data management resulting from the complexities and dynamics of the modern food system, efficient and effective traceability systems have become an integral part of management tools for competitive advantage [13].



The three basic components of livestock traceability systems in Canada.

INNOVATION AND ACCEPTANCE OF TRACEABILITY-RELATED TECHNOLOGIES

The demands by customers and final consumers are key drivers of traceability-related innovation. Traceability requires recorded identification but is separate from verification of that information [5]. In this vein, two distinct areas of innovation emerge. First, innovation related to recorded identification relies heavily on advances in information and communication technology (ICT) and spans from robust sensor and reading technology, to efficient data management, to secure data sharing between stakeholders. The latter two are inherently linked and may go beyond mere technological advances as data sharing requires adequate contractual agreements, an area of innovation in governance. For example, the central database of Agri-Traçabilité Québec is jointly managed by industry and senior government representatives [14], while in other cases specialised service providers have emerged that link data from individual supply chain stakeholders for analysis on demand. Key issues for effective interoperability are standardisation for identifying, capturing, and sharing data and balancing the versatility of internet-based approaches (cloud computing) with data integrity [15, 16].

Second, technologies for verification of product claims/information recorded in traceability systems are directed at measuring product attributes to curb food fraud. They include, amongst others, DNA technologies for species identification [17, 18] and isotope analysis for inferring origin and feeding regimes [19, 20]. The not yet commercialized molecular tagging technology [21] adds unique identifiers in minute quantities to the food, which can then be monitored for presence and concentration throughout the supply chain. Because these tags do not naturally occur in food, consumer acceptance is critical to the technology's commercial success. Recent consumer research suggests that, although Canadian consumers may initially be wary of new technologies to deliver traceability and authenticity assurances, information makes all the difference [22, 23]. When information links the technology with curbing food fraud, consumers become more accepting. Other proxy signals (such as brand and country of origin), however, remain important to consumers.

CONCLUSIONS

Traceability encompasses both public and private sector initiatives, and will continue to do so. While public sector initiatives primarily address the risk reduction and emergency management functions of traceability, private sector traceability initiatives are driven by product differentiation and supply chain efficiency motivations. These two motivations are also the strongest drivers for investment in research and development for traceability. The ongoing consolidation of the food industry globally strengthens these drivers. Plus, unlike traceability for emergency management, the benefits of enhanced traceability for product differentiation and supply chain efficiency are more easily quantifiable for the individual business and materialize relatively more quickly.

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[1]Department of Food, Agricultural and Resource Economics, University of Guelph, Guelph, ON, Canada
[2]Department of Bioresource Policy, Business & Economics, University of Saskatchewan, Saskatoon, SK, Canada
[3]Estey Centre for Law and Economics in International Trade, Saskatoon, SK, Canada

*(*Corresponding author: E-mail: Jill.Hobbs@usask.ca)*

Unlocking the potential of Canadian proteins

Michael T. Nickerson*[1*] | James D. House[2] | Eunice C.Y. Li-Chan[3]

OVERVIEW

Canada's agriculture sector is well known for supplying world markets with their exports of raw materials from pulses (e.g, peas, lentils, chickpeas and faba beans), oilseed (e.g., canola and flax seed) and wheat. However once beyond our borders little thought is given to the role Canadian products play in food security and nutrition on a global scale. Nor is secondary processing of these commodities and ensuing byproducts into higher value fractions, such as proteins, starches, lipids, soluble/insoluble fibre or for minor bioactive compounds given much consideration from a Canadian processing industry perspective. As research and innovation advances within Canada and partnering countries, the potential for further processing of raw materials into higher valued fractions will open up new markets for Canadian producers, processors and, food and biotech companies. The overall aim of this article is to highlight the potential and significance of proteins for Canada.

Protein ingredients represent a multi-billion dollar industry, presently dominated by proteins, such as gelatin, egg white, casein and whey (from dairy), soy and wheat gluten. In 2015, the global protein market is expected to reach $24.5 billion with the greatest annual growth occurring in the plant protein ingredient sector [1]. Market trends are shifting towards lower cost and abundant plant-based alternatives due to rising costs of dairy-based ingredients; growing dietary preferences (e.g., gluten-free and vegan) and consumer demand for healthier ingredients. Despite experiencing greater market growth, the widespread use of plant proteins has been hindered by their lower solubility (and functionality) relative to animal-based products, and the allergenicity associated with proteins, such as soy and wheat. Strong flavor characteristics of legumes that also negatively impacts consumer perception. Despite this, plant-based proteins are making significant market gains from a nutritional perspective and as ingredients (e.g., flours, concentrates and isolates) in food and bio-based material applications (e.g., edible films, controlled delivery platforms and adhesives). Emerging proteins from the Canadian agriculture sector with potential from both a nutrition and functional standpoint include those from lentils, faba beans, beans (e.g, Great Northern beans, etc), hemp, potato and canola. Protein products from fish and algal sources are also gaining significance. Canada is already a stakeholder in the production of pea, soy and canola protein products, with a huge potential to expand.

NUTRITIONAL POWER HOUSES

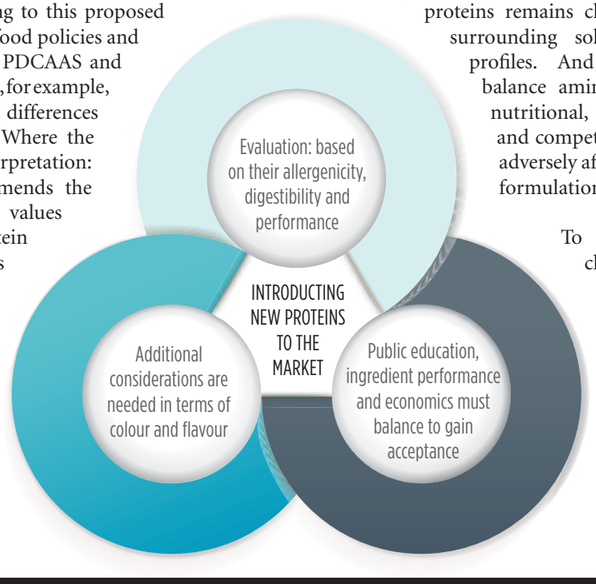
Proteins represent an important dietary source of essential amino acids (isoleucine, leucine, lysine, threonine, tryptophan, methionine, histidine, valine and phenylalanine) for human nutrition, as they are critical for our musculature, synthesis of enzymes and cells and metabolic functions. From a dietary standpoint, the quality of a protein is influenced by two major factors: 1) the relative proportions of the essential amino acids in the food in relation to human amino acid/protein requirements; and 2) the extent to which the dietary protein is digested, absorbed and made available to synthesize proteins within the body. In general, animal-based proteins tend to have higher amino acid scores (amino acid content relative to human needs). Plant-based proteins, on the other hand, tend to have a deficiency of one or more amino acids. For instance, pulse proteins (e.g., pea) are limiting in the sulfur-containing amino acids (cysteine and methionine), but tend to have higher levels of lysine. In contrast, cereals tend to be limiting in lysine. As such, blending of pulse and cereal protein sources is commonplace, on a global scale, for the provision of protein to the human diet.

The amino acid profile of the food protein is just one factor. A completely balanced protein is of no use in the human diet if it can't be digested and absorbed. The digestibility of proteins can be influenced by the presence of anti-nutritive factors in the food that depress digestibility, and by processing steps (i.e, heat, in the presence of reducing sugars) that can reduce metabolic availability. While numerous methods have been developed and implemented for the assessment of protein quality, one internationally accepted method to estimate protein quality is the Protein Digestibility-Corrected Amino Acid Score (PDCAAS) method [2]. With this method, the amino acid composition of the food is determined and related to a reference protein pattern, based on human amino acid requirement estimates. This number is called the amino acid score. Multiplication of the score value by a measure of the total protein digestibility gives the PDCAAS value. Most food proteins, particularly plant-based food proteins, are not completely digestible, so the PDCAAS reflects the best attempt to measure the overall quality of a protein as the product of the digestibility of the protein and the amino acid score. Values approaching 1.0 or greater are considered the highest quality proteins.

The PDCAAS measure is used in the US to establish protein content claims on foods and is the standard international method for measuring protein quality, both for regulatory and food security policies. Recently, a new method called the Digestible Indispensable Amino Acid Score (DIAAS) has been proposed as an improvement to PDCAAS [2], however governments and international agencies will need to assess the impact of moving to this proposed methodology on their overall food policies and regulations. A comparison of PDCAAS and DIAAS values for cooked pulses, for example, did not lead to any significant differences in the final values obtained. Where the differences will lie is in the interpretation: The DIAAS proposal recommends the use of much higher cut-off values for the establishment of protein quality claims on foods. As such, animal-based proteins will be positioned in a much more favourable light relative to plant-based proteins. This could lead to confusing messages for consumers. Pulses, for example, are considered in the "Meat and Alternatives" category under Canada's Food Guide, but they would not be permitted to carry a "Source of Protein" claim under the proposed DIAAS method, despite the fact that many carry this claim under the current Canadian and US regulatory framework. However, further consultation and guidance on this issue by all stakeholders is recommended [2] prior to adoption of the DIAAS methodology.

FUNCTIONAL ROLE AS INGREDIENTS

The functionality of protein ingredients refers to any property other than their nutritional composition that influences their utilization. For instance, their solubility or abilities to hold water or lipid, foam, gel, thicken and emulsify within a product. Predicting the functional behaviour in foods can be complex because of the lack of standardized testing methodologies (with few exceptions), interactions with other ingredients, and due to wide differences in proteins themselves. In a simple system, the functional behaviour of proteins is strongly related to the environment (e.g., presence of salts or sugars, and temperature) and properties of the protein themselves, such as size, shape, surface characteristics, folding and level of denaturation. Processing or extraction of the protein can further complicate their performance. For instance, different processes may select for different types of proteins within the end product (e.g., isolate), cause heat-induced damage to the protein, or influence the level of non-protein constituents; all which can have a positive or negative impact on their functionality. Milk and egg proteins are widely used in foods because of their overall excellent functional properties stemming from their high solubility. In contrast, the incorporation of plant proteins remains challenging due to difficulties surrounding solubility and strong flavour profiles. And further, as industry tries to balance amino acid profiles for optimal nutritional, protein-protein interactions and competing protein functionality may adversely affect product quality and create formulation challenges.



To address some of these challenges, research has focused on improving processing practices to improve the overall quality of the end product, for instance investigating milling technology for refining flours, air classification to produce protein concentrates, or the use micellular-based extraction [3], alkaline extraction-isoelectric precipitation [4], membrane filtration [5] or enzyme-assisted aqueous extraction [6] to produce new isolate products for the food industry. Enhancement of protein functionality through cross linking [7], partial hydrolysis [8], controlled protein-polysaccharide interactions [9] or temperature-induced conformational changes are also been explored. Secondary processing of the raw materials, has also paved the way for expanded capacity in terms of extrusion technology to produce texturized ingredients and products, such as snack foods, cereals and artificial meat products. Protein ingredients are used in a wide range of applications including bread and bakery, meat-based products, dairy and dairy-free products, beverages, snack foods, ready-to-each meals, pasta, confectionary products, soups and sauces, and health food items based on their functional attributes. Protein concentrate and isolate products are also available as nutritional supplements, and are being used in infant formulas, meal replacement and enteral formulas.

ADVANCES IN PROTEIN-BASED INNOVATIONS

Advances in protein science and technology have also led to the increased utilization of proteins in higher valued applications. For instance, enzymatic hydrolysis of proteins is being used as a means of improving protein solubility and transparency for greater incorporation into beverages, and for the production of bioactive peptides. The latter are being researched for their potential to enhance health and reduce disease risk through diverse functions including antimicrobial, antioxidative, antihypertensive, antidiabetic, cholesterol-lowering, satiety-inducing and immunomodulatory properties [10]. Proteins are also being explored in the development of controlled delivery platforms (e.g., microcapsules and nanoparticles) for carrying sensitive health promoting ingredients, such as omega-3 fatty acid rich oils [11] or probiotics [12], or in the development of biodegradable and/or edible packaging [13] and, adhesives [14]. Furthermore, increasingly plant proteins are being used in speciality feed markets, such as in the development of aquaculture pellets [15]).

BARRIER/CHALLENGES IN INTRODUCING NEW PROTEINS INTO THE MARKETPLACE

Despite Canada's global role in the agricultural export markets, the lack of secondary processing investment in our raw materials to generate high value fractions restricts the economic potential of the agriculture and agri-food sector within Canada. In order for a new protein ingredient to become accepted by the market, several barriers or hurdles need to be overcome first. For instance, proteins need to be evaluated on based on their allergenicity, digestibility, performance in food products, associated health claims and labelling. And in the case of some proteins, additional considerations are needed in terms of colour and flavour. And finally, public education, ingredient performance and economics must balance to gain acceptance by industry and consumers. Research and innovation in these areas have, or are advancing to support market growth, and market expansion for protein ingredients already in the marketplace.

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[1]Department of Food and Bioproduct Sciences, University of Saskatchewan, Saskatoon, SK., Canada
[2]Department of Human Nutritional Sciences, University of Manitoba, Winnipeg, MB, Canada
[3]Food Nutrition & Health Program, University of British Columbia, Vancouver, BC, Canada

*(*Corresponding author: E-mail: Michael.Nickerson@usask.ca)*

It's time to start playing nice in the sandbox:

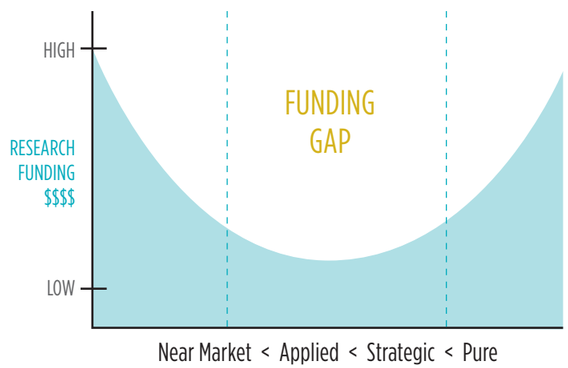
COLLABORATIVE RESEARCH IN CANADA: GAPS AND STRATEGIC SOLUTIONS

Allan Paulson[1*] | Rickey Yada[2] | John Webb[3]

The process of innovation in research is a continuum from fundamental/discovery research through strategic and applied research to product development and launch. This process is critical to global competitiveness and economic viability and may be facilitated through collaborative research among the three potential partners: academia, industry and government. Such research, however, regardless of the sector and/or geographic domain, remains a challenge, the food industry in Canada being no exception. This article discusses some of the issues and challenges of collaborative research in the agri-food industry in Canada

THE FUNDING GAP

Typically in the past, fundamental/discovery research has been addressed through government funding, and near-market research by industry. Recently government incentives and programs have emphasized near-market opportunities, but this still leaves a risk that lack of funds will make it difficult for new ideas to cross the gap between fundamental/discovery research and market opportunity, i.e., a gap often referred to as the "valley of death" where a lack of funding to undertake proof of concept research (or utility of the discovery) often prevents a good idea from being developed (e.g., food processing companies) and marketed. This leaves applied research stranded with uncertain funding and a serious risk of good ideas being lost.



CO-ORDINATION OF RESEARCH

To avoid the gap, the solution is for the three entities, academia, industry and government to work more closely together to identify priorities and ensure that they are well funded from fundamental/discovery right through to product development. However, collaboration and coordination among the parties is not an easy task, with many challenges.

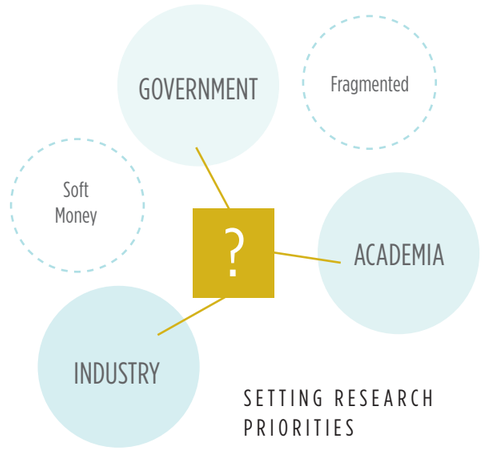
For the food industry, research needs are usually "applied", pragmatic and relatively short-term. Many food companies, notably SMEs, usually have little money for research, whereas many (if not most) large companies have downsized and outsourced their R&D. In addition, the ownership of IP needs to be clearly defined, and much of the IP exists as trade secrets rather than patents. Confidentiality of the research and its outcomes is essential because those who are "first off the mark" are usually the big winners, rather than "me-too" products.

For university researchers, there are numerous conflicting demands which include such factors as: 1) Time demand: A typical academic must meet the demands of teaching, research and administration, so the amount of time spent on research is much lower than a researcher in government or industry. 2) "Discovery" versus "applied" research: "Discovery" or "fundamental" research is typically more highly valued for career

advancement than "applied" research. Similarly, collaborative research is not as highly valued as research where the professor is seen as the sole driver. 3) Longer time-line: Most research funds are obtained by highly competitive proposals to government granting agencies. Most are not designed to rapidly address the research needs of industry. Moreover, university researchers are expected to have long-term research programs rather than short-term projects. Since funding is typically relatively small, a professor's time for research is limited, and there is a training requirement attached to the grant; most of the research is done by graduate students whose programs consist of coursework and a thesis. The average time to complete a Masters degree is 2 years and 3 years for a Ph.D., which is typically much longer than is needed by industry for a research outcome. 4) Publish or perish: For academics, the focus is usually on publications rather than IP (e.g., patents) for career advancement. In general, most academics have little interest in IP or confidential, applied research, whereas it is crucial for industry. In addition, IP policy varies with the university; with some universities the researcher owns the IP whereas at others, the university owns the IP. This can make it difficult for multi-university collaborative research with industry where clear IP ownership is important. 5) In Canada, we have the additional challenge of geography where we are a vast country with a small population. Our research expertise and resources are scattered, and the research culture is not geared to multi-sectoral collaborative research.

For both provincial and federal governments, the primary challenge is to develop an effective mechanism to identify and prioritize research directions that will benefit the health and economic wellbeing of Canadians. This must be done while taking into account the wealth and breadth of Canadian research expertise, and the pressures of rapid knowledge transfer and uptake up research, all in times of budget constraints (see discussion below).

Regardless of the above challenges, research coordination among the various parties is not easy when funding is short term from grant to grant, so-called "soft money", and research is fragmented across many different institutions, provinces, and



SETTING RESEARCH PRIORITIES

vested interests, and provides no core funding for infrastructure. Although short term funding may allow one to respond to emerging issues, long term funding allows for the possibility of developing, testing and refining an innovative concept while respecting the iterative nature of research.

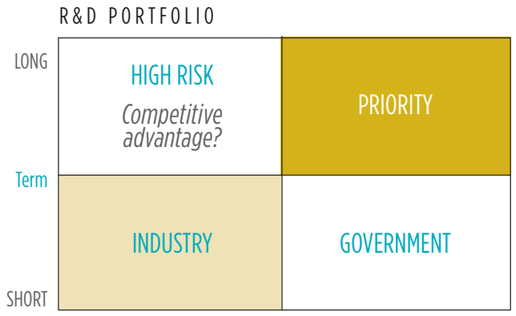
An excellent example of collaborative research was the Advanced Foods and Materials Network (AFMNet, 2003-2010) which was funded through the Networks of Centres of Excellence Program and was Canada's only national food and bio-materials research network. At its conclusion, AFMNet consisted of over 180 researchers and approximately 639 Highly Qualified Personnel (i.e., undergraduate, graduate, postdoctoral fellows, research associates, visiting scientists) and had partnered with approximately 60 corporations, 40 universities, 20 government agencies and 15 non-governmental organizations resulting in 7 startup companies, 9 patents granted, and 32 patents pending. Unfortunately with the termination of NCE funding, no national research network with direct funding capacity exists to support agri-food research although Advanced Foods and Materials (AFM) Canada Inc. (http://www.afmcanada.ca/) now serves as a linkage hub among the sectors. Evolving from AFMNet (founded in 2003), the organization advances technologies from a range of disciplines to develop innovative solutions to sector-driven problems. As a non-profit organization, AFM Canada enhances the value chain by bridging the investment and communication gap between private organizations, research institutions, and government organizations, and by providing a specialized range of services and expertise for industry-led projects

Therefore, a good start might be to increase the core funding for centres of excellence, recognizing their strategic importance to the industry. A single body linking academia, industry and government could coordinate funding and manage priority-setting on behalf of all interests. Above all it could review priorities at all stages of the "pipeline" and ensure that promising ideas do get to market and not die for lack of funds. That body would need to be independent in terms of equitably weighing the interests of all parties.

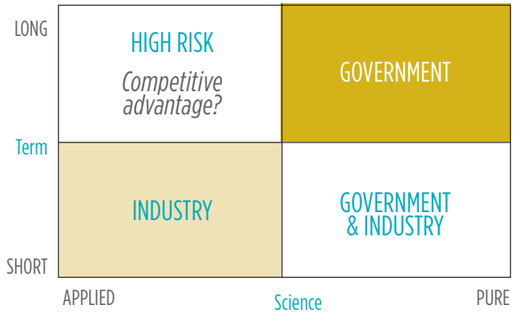
SETTING RESEARCH PRIORITIES

How then does one identify research priorities? This process, in the face of scarce funding, is never easy. A useful approach

R&D PORTFOLIO



BALANCED PORTFOLIO



is to consider a balanced portfolio of long and short term, fundamental/discovery and applied research against a list of industry drivers of success. The drivers will include traits such as yield, quality, health and sustainability.

A simple 2 x 2 table of long versus short term and fundamental/discovery versus applied (or near-market) can be very instructive. It is quickly clear that a pipeline will not exist without a critical mass of fundamental and long term new research. This is a priority for government core funding. Near-market opportunity will easily attract industry funding. For shorter term fundamental/discovery research, intellectual property rights provide an incentive for industry participation or even outright ownership.

The greatest challenge for funding is the long term but applied combination, where a technology requires a lot of developments to bring into practice and is by definition high-risk. Here a judgment can be taken on strategic value, and where this is high there may be a case for government-industry partnerships. A good way of sharing technology risk in areas of high strategic importance to industry, for example in disease control, is the pre-competitive consortium of companies – an approach successfully used in the livestock industry. The most common failing is that industry does not have an agreed list of research priorities that can be used to inform academia and government.

CONCLUSIONS

Complementary and multidisciplinary collaborative research using a cluster or network approach involving academia, industry and government is a viable solution in identifying and addressing strategic research needs; resulting in commercially viable products and technologies to benefit the health and economic wellbeing of Canadians. Critical to the success of this approach, however, is the ability to coordinate and facilitate such a network or cluster among the various partners with a shared vision for research planning and execution, and the ability to secure long term, committed funding while meeting the various challenges identified above.

[1]Department of Process Engineering and Applied Sciences – Food Science Program, Dalhousie University, Halifax, NS, Canada; Canadian Institute of Fisheries Technology, Halifax, NS, Canada.
[2]Department of Food Science, University of Guelph, Guelph, ON, Canada
[3]Maple Leaf Foods, Toronto, ON, Canada

*(*Corresponding author: E-mail: Allan.Paulson@dal.ca)*

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FOOD CLUSTERS
In Canada

PROMOTING INDUSTRY DEVELOPMENT THROUGH COMMODITY-BASED CLUSTERS

Text by Lindsay Grummett

GLOBAL FOOD LEADER

With more than seven billion people on the planet including over 35 million Canadians, the global food industry has a lot of mouths to feed. Fortunately, Canada's diverse agricultural landscape and solid workforce is the ideal support system for its developing food industry.

Investment in food and food research is necessary for success in the national and international market. The country's agriculture and agri-food system involves a variety of food industry sectors including primary agriculture, food and beverage processing, food distribution, retail and wholesale, as well as foodservice and the service supplier industries.

A 2013 report released by Agriculture and Agri-Foods Canada (AAFC) highlights the fact that the competitiveness of this sector depends on its ability to remain profitable and viable over the long term with regards to its competitors in relevant markets.

FOOD CLUSTERS

The development of food clusters offers promising opportunities for accelerated success and industry growth. A food cluster is a network of interconnected organizations that have particular interests in a specific sector of the food industry.

"Universities, private organizations and federal organizations come together and submit a big proposal that is made up of several smaller research activities. It is normally submitted by a not-for-profit organization or for-profit organization," says Joyce Boye, a research scientist at Agriculture and Agri-Foods Canada (AAFC).

These clusters are headed by one organization external to the AAFC that is accountable for the project's execution and all associated reporting of spending and results. Many of these organizations have already developed networks of industry professionals that are fostering growth in their specific sector.

"We'd been working with our partners over the last 15 years at the start of Growing Forward. It was already something that was well set up and we'd been funding through a previous agreement. Growing Forward was the next step to continue expanding it," says Wayne Thompson, research program manager at the Western Grain Research Foundation (WGRF).

Governmental initiatives like the above mentioned Growing Forward are pushing the benefits of commodity-based clusters to industry professionals in hopes of coordinating a critical mass of scientific expertise throughout the industry, academia and the government.

COMMODITY-BASED

The ever-expanding global market has made the food industry even more competitive and

companies now must find new ways to stay on top in the food sector. The federal government is fostering growth throughout the country by not only promoting the value of commodity-based clusters but also by backing the industry with financial support and investment.

The AgriInnovation Program is just one of three new federal programs that came into effect this year under the Growing Forward 2 (GF2) policy framework. GF2 is a $3 billion dollar investment by federal, provincial and territorial governments looking to create a more profitable and innovative agriculture, agri-food and agri-based product industry.

The future of the Canadian food industry is strong; however innovation is important for continued success.

"Growing Forward 2 is building on Growing Forward 1," says Boye. "With GF2, the programs are AgriInnovation, AgriCompetitiveness and AgriMarketing. These are designed to help push things through the entire value chain, to get products out there, and to get companies to be more competitive and innovative."

Growing Forward 2's AgriInnovation Program provides non-repayable support to agri-science clusters and agri-science projects in hopes of accelerating the pace of innovation allowing for the commercialization of new products and technologies. This $698 million program will run over the next five years with $468 million in funds available for applicants from within the industry.

"There are some groups who were not ready to submit proposals under GF1 that are now submitting under GF2. We will see how all of that unfolds in the coming year as cluster proposals are being reviewed. I anticipate that this will provide the different sectors the critical mass needed to have an impact," says Boye.

In 2009, the Beef Cattle Industry Science Cluster was created under the original Growing Forward framework. Formed through a partnership between Agriculture and Agri-Food Canada (AAFC) and the Beef Cattle Research Council (BCRC), this cluster focused on two core research areas: improved production efficiency as well as improved beef demand and quality. Over five years, 32 research programs received a total of $11.25 million with one third of the money going to beef quality and food safety research.

"The obvious point of funding there is to help the industry improve consumer confidence and beef demand through improved food safety and quality," explains Dr. Reynold Bergen, the science director at the Beef Cattle Research Council.

The BCRC used a portion of the funding to paid for a beef quality audit which included a consumer satisfaction survey. Bergen says he was please with the results which showed increase in consumer approval.

Although this type of research may seem trivial, its gives the industry a standard by which they can measure their successes. "It's really important that there's an industry benchmark so

THE DEVELOPMENT OF
FOOD CLUSTERS
OFFERS PROMISING OPPORTUNITIES FOR ACCELERATED SUCCESS AND INDUSTRY GROWTH

we can figure out where we need to improve and where we should back off with the emphasis," says Bergen.

Funding recipients are also required to financially contribute to the cost of research. Under the first Growing Forward program these contributions ranged from 15 to 30 percent depending on the cluster. When the Canadian Wheat Breeding Research Cluster received $6.2 million from the federal government, its lead organization, the Western Grains Research Foundation (WGRF), pitched in $2.1 million.

The Western Grains Research Foundation is a farmer funded, non-profit organization that invests and supports wheat variety development. The WGRF's money is collected from the wheat check-off program that gathers funds from agricultural producers and uses it to promote research. Canadian wheat farmers pay $.048 per tonne of wheat sold in B.C., Alberta, Saskatchewan and Manitoba whereas beef producers pay $1 for every cow sold across the nation.

"In Canada, there's a national check-off that's collected every time an animal is sold. That check-off gets used for two things: about 85 cents supports marketing and promotion activities and the other 15 cents is allocated to research and that comes to us," says Bergen.

The Beef Cattle Research Council is the lead organization for the beef cluster and their mandate is to fund research that will contribute to the sustainability and competitiveness of Canada's beef industry.

"What we've seen over the years is that funders swing from one priority to another which comes at the expense of maintaining core activities in areas like beef quality or food safety research," says Bergen.

The Beef Cattle Industry Science Cluster was created as a way to manage the funding and resources within the industry to promote more consistent industry research.

"Ag Canada has a lot more money than we do. They also have really good research stations and great scientists. Part of their job is to do applied research, but they're not directly connected to the industry," says Bergen. "We're exactly the opposite-directly connected to the industry, but with little funding, no scientists and no place to do research. Since we have complementary strengths, we're able to work together to focus our efforts in areas that are of mutual interest and benefit."

Research is an integral part of growth in any industry and the information obtained from the Beef Cattle Industry Science Cluster is helping to advance the Canadian beef industry and improve producers' bottom lines. With the success of this Cluster, planning for the next Beef Cattle Industry Science Cluster under Growing Forward 2 is now complete and awaiting approval.

The Wheat Grains Research Foundation also saw progress in its efforts with variety development and is expanding to a national scope for GF2.

"We've gone from a western Canadian cluster to a national cluster. It's going to make for a stronger program because there will be much more formal collaborations and relationships," says Thompson of the WGRF.

In addition to variety development, Thompson says the new wheat cluster will focus on advancing disease resistance and genomic work.

"We need to be developing new wheat varieties and looking to the future. If we don't maintain a breeding program that tries to continually develop new disease resistance, [the wheat] will eventually succumb to the diseases and lose the yield. It needs investment to continue to be successful and contribute to the farmer's bottom line," says Thompson.

FOOD FUTURE

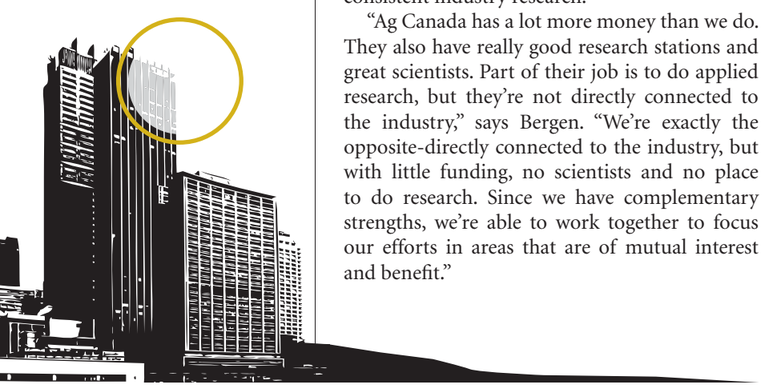
The future of the Canadian food industry is strong; however innovation is important for continued success.

"Food research is important for a variety of reasons whether it's in regards to quality, taste, flavour, food safety, or the health and nutritional properties of food. It is important to make sure we are doing research to have the best quality food at the best possible cost while ensuring the nutritional and health properties of the food," says Boye.

Food clusters offer fresh ways for individuals and businesses in the food industry to connect with support, improve their processes and increase productivity. In addition to that, they promote and foster forward-thinking ideas that will push the Canadian food industry into a leading role as a global food producer. From farms to production plants to grocery stores, all areas of the food industry can benefit from food clusters. Continued support from government, businesses, organizations and individuals for provincial and commodity-based food clusters will quicken the pace towards a strengthened and more productive industry.

"UNIVERSITIES, PRIVATE ORGANIZATIONS AND FEDERAL ORGANIZATIONS COME TOGETHER AND SUBMIT A BIG PROPOSAL THAT IS MADE UP OF SEVERAL SMALLER RESEARCH ACTIVITIES."

–JOYCE BOYE, RESEARCH SCIENTIST AT AGRICULTURE & AGRI-FOODS CANADA (AAFC).



CHEF MICHAEL SMITH

Text by Theresa Rogers

Chef Michael Smith, one of Canada's best-known chefs, is a passionate advocate for simple, sustainable home cooking and his list of accomplishments is lengthy. He's the host of four television shows seen on Food Network Canada and in more than 100 other countries. His sixth cookbook, *Fast Flavours,* is a smash hit across Canada. His food media production company is breaking new ground online and his Twitter feed is a top choice for foodie fun.

Smith is Prince Edward Island's food ambassador and an award-winning cookbook author and newspaper columnist. He led the team of chefs that cooked for the world's Olympians in the Whistler Athletes Village in 2010 and although Smith is a true chef-at-large, his favourite role is Dad, home on PEI with his partner Chastity and their three children. Smith is an avid map collector, windsurfer and kite sailor.

WHERE DO YOU FIND INSPIRATION?
In my own home kitchen, cooking for my family.

HOW DO YOU STAY MODERN/ FRESH?
I don't care one bit whether I'm modern or fresh. What I care about is being relevant to average Canadian cooks.

FAVOURITE CHEF'S TOOL?
My hands.

IF YOU WEREN'T A CHEF, WHAT WOULD YOU BE DOING?
Farming organically.

THE HARDEST THING I EVER DID WAS...
Lead the team of chefs that cooked 13,000 meals for the Olympians of the world in Whistler. We rocked it and scored the highest-ever food ratings in the history of the games.

YOU CAN'T BE IN THE FOOD BUSINESS...
If all you care about is a fat paycheck.

HOW CAN WE ATTRACT YOUNG PEOPLE INTO THE FOOD BUSINESS?
The question isn't how we attract them; it's how we keep them. With the onslaught of today's food media has come unprecedented growth of cooking schools and interest in becoming chef. We must ensure that the working conditions they encounter once they enter the industry are empowering and respectful. There's no shame in asking someone to work hard but we as managers and industry leaders must be sure that we are providing genuine opportunities for learning and advancement.

WHAT LETS YOU MIX IN INSTANT IRRESISTIBILITY?

ALMONDS, OF COURSE.

Because when you're creating snacks consumers clamor for, no ingredient gives you the ability to add more goodness than almonds. They're tasty and crunchy, and they provide 6 grams of energizing protein. What's more, almonds deliver heart-healthy nutrients, making them indispensable to snacks that'll love consumers back. Learn more about the essential almond at **AlmondBoard.com/snacking.**

california almonds®
AlmondBoard.com

Scientific evidence suggests, but does not prove, that eating 1.5 ounces per day of most nuts, such as almonds, as part of a diet low in saturated fat and cholesterol may reduce the risk of heart disease. One serving of almonds (28g) has 13g of unsaturated fat and only 1g of saturated fat.