As Department Chair I look back over the last year and find myself filled with a sense of pride. What is the source of this pride? It’s simple: the recognition of the achievements of so many in our department. Call it shameless self-promotion; call it shining a light on excellence; call it bragging. Call it whatever you like, but recognize that we’ve had an outstanding year!

Students and faculty from FARE have won a variety of awards and achieved some outstanding success. This includes Guelph’s undergraduate Canadian Agri-Marketing Association team, which placed 4th (out of 28 teams from North America) at the National Agri-Marketing Association student competition.

Recognition of graduate student research excellence includes Nisha Balasubramaniyam (M.Sc. alumna) winning the outstanding poster competition at the Canadian Agri-Food Policy Conference in Ottawa (for her poster entitled "Hedonic Analysis on Retail Egg Prices in Canada"); Liam Kelly (M.Sc. alumni) winning the University of Guelph’s O.P. Dwivedi Prize for International Development (Liam’s thesis was entitled "An Assessment of Land Tenure Security on Haiti’s Central Plateau: Implications for Farm-Level Investments"); and Jessica Kelly (M.Sc. alumna) winning the Canadian Agricultural Economics Society Outstanding M.Sc. Thesis Award (for her thesis "The Farm Share in Canada from 1997 to 2010: Identifying Trends in Value Distribution Along the Agri-Food Supply Chain"); and Professor Brady Deaton advisor).

Our faculty excellence has also been recognized. Professor Richard Vyn (Ridgetown College) and Ryan McCullough (M.Sc. alumni) received the Canadian Agricultural Economics Society Outstanding Journal Article Award for their paper "The Effects of Wind Turbines on Property Values in Ontario: Does Public Perception Match Empirical Evidence?" In September, the OAC Alumni Foundation awarded Professor Andreas Boecker the G.P. McRostie Faculty Award in recognition of his outstanding contributions to undergraduate student mentoring and advising.

Another significant event was the appointment of Professor Brady Deaton as the McCain Family Chair in Food Security. Established by Michael McCain, President and CEO of Maple Leaf Foods, this gift is intended to support Professor Deaton’s leadership in developing new knowledge and understanding of the economics of food security, particularly with respect to the use and ownership of land.

Continued on page 4
Agricultural biotechnology is increasingly the object of public controversy in Canada. Despite strong evidence of benefits to the farming community, concerns have been raised about environmental and health risks as well as the domination of agriculture by few multinational agribusiness firms. Consumer advocacy and other stakeholder groups have been demanding more transparency in food production, processing and distribution. Therefore, it is increasingly important that stakeholders on the supply side better understand the complexity and dynamics of communication about agricultural production issues.

In this and an upcoming issue of FARE Share we report the key findings of two independent studies completed by undergraduate students to address the broad research question: “How do Canadian newspapers report about agricultural biotechnology?”

In both studies, the sampling frame was limited to recent articles that appeared in the top ten Canadian newspapers (by circulation) and could be retrieved online. (As a result, we cannot claim the sample to be representative of Canadian newspaper articles as many smaller newspapers may have published about the chosen topics.) Also, consumers obtain a large share of the information about agricultural biotechnology from online sources other than newspaper websites. These online information sources were also not included in order to keep the study sizes manageable.

The first study looked specifically into articles about two products of biotechnology – Arctic Apple and Golden Rice. It followed the common practice in media analysis to investigate the balance in presentation of risks and benefits. The content analysis revealed that four risks and three benefits were commonly stated for Golden Rice, and ten risks and seven benefits for Arctic Apple. Table 1 shows how often risks and benefits were reported.

<table>
<thead>
<tr>
<th></th>
<th>Golden Rice</th>
<th>Arctic Apple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articles</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Newspapers</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Times risk was stated</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>Times benefit was stated</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Times risk was refuted</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Share of refuted risks</td>
<td>62%</td>
<td>29%</td>
</tr>
<tr>
<td>Articles with refuted risk</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Share of articles with refuted risk</td>
<td>67%</td>
<td>56%</td>
</tr>
</tbody>
</table>

Overall, Golden Rice and Artic Apples were presented fairly similar – and balanced – in regards to the average number of risks and benefits per article. However, the analysis revealed a facet of risk and benefit reporting that has received little attention in media analysis so far and further tipped the balance in favour of the two products. In the majority of articles – four out of six about Golden Rice, and five out of nine about Arctic Apple – at least one risk was presented and refuted afterwards. Interestingly, no similar rhetoric has been applied to the products’ benefits. Furthermore, Golden Rice article authors primarily referred to scientific organizations to refute risks, while it was primarily the CEO of the company that bred the new apple who was quoted as refuting risks associated with Arctic Apple.

In conclusion, the analysis shows that communication about agricultural biotechnology is not simply controversial but that the newspapers included in the study made main lines of arguments and counter arguments available to the Canadian public. It has also become apparent that the classic media research question of balanced reporting of risks and benefits may miss important aspects of that communication.

The next step in this research is to determine how consumers interpret and remember the content of such media reports.

FARE Talk

Enlightening discussions about contemporary topics relevant to food, agricultural, and resource economics

GM Crops and 21st-Century Agriculture

In this podcast, Dr. Rene Van Acker, Professor and Associate Dean of the Ontario Agricultural College (OAC) and FARE Professor Brady Deaton discuss genetically modified (GM) crops. The podcast develops an understanding of contemporary and historic issues associated with the first “wave” of GM crops. They also discuss contemporary controversies and institutional issues associated with GM crops. The future of GM crops is discussed near the end of the podcast. In this portion of the podcast, Dr. Van Acker provides a number of insights that are useful for framing our understanding of potential benefits as well as ongoing concerns.

To listen to the complete conversation and other podcasts, visit the FARE website: http://www.uoguelph.ca/fare/FARE-talk/index.html#gmcrops
News that India was the world’s largest exporter of beef in 2014, raises questions among beef producers and market analysts in Canada and around the world. The U.S. Department of Agriculture (USDA) reported that India has now surpassed the more established producers and exporters of beef such as Brazil, Australia, the United States (U.S.), Canada and Argentina. This news is both interesting and intriguing because India nurtures a culture and cherishes a tradition in which cows are considered sacred and vegetarianism is widespread. So how did India become the largest exporter of beef? How would India’s rise to the top affect the markets for Canadian beef? Is Canadian beef competitive? Will Canada remain competitive in the future? What needs to be done to enhance global competitiveness of the Canadian beef sector? This article explores some of these issues and hopes to provoke additional thoughts aimed at enhancing future competitiveness of the Canadian beef sector.

What caused this huge surge in India’s beef exports? The vast majority of beef exports from India consist of meat from water buffalo – not from cattle. The number of water buffalo herds has increased in recent years to meet the growing domestic demand for dairy products in India. The buffalo meat from India is cheap due to less attention to meat quality relative to milk output, and a small domestic market for bovine meat. Top export destinations of Indian beef include Vietnam, Malaysia, Egypt and Saudi Arabia. Canada, on the other hand, is one of the leading producers of high-quality beef in the world. The U.S., Japan, South Korea, Hong Kong, France and Mexico – all mature and high-value markets for quality beef – have been the top export destinations for beef produced in Canada. Given the differences in sources, quality and destinations of bovine meat exports from India and Canada, there is little threat to the Canadian export beef market. However, the availability of cheaper bovine meat from India and the geographical proximity may make it more challenging for Canadian beef exporters to access these markets even with a successful Trans-Pacific Partnership (TPP) agreement.

Professor Sarker measured the international competitiveness of the Canadian beef sector in the high-value markets using the Normalized Revealed Comparative Advantage (NRCA) and compared with those of the U.S. and Australia. Professor Sarker’s findings show that the beef sector in Australia enjoyed international competitiveness during the entire period of the study (1961-2012) as the NRCA index was above the threshold value (zero). However, the Canadian beef sector enjoyed international competitiveness only for a brief period during the 1990s. The NRCA values for the Australian and the U.S. beef sectors fluctuated more frequently than those for the Canadian beef sector (Figure 1). While the international competitiveness of the Australian beef sector has been higher than those of the Canadian and the U.S. beef sectors, the competitiveness of the Australian beef sector remained unchanged over time as indicated by the slope of the trend line (Figure 1). However, the Uruguay Round Agreement on Agriculture and the NAFTA both seem to have stimulated the international competitiveness of the Canadian and the U.S. beef sectors. As a result, the international competitiveness of both the Canadian and the U.S. beef sectors have been improving over time.

**Heeding Food Safety Announcements**

Research by: Ying (Jessica) Cao, University of Guelph, Assistant Professor, FARE

Food safety issues are a major concern for both public health and the food industry. The literature suggests that food safety announcements are relatively ineffective in changing consumers’ consumption behavior. FARE Professor Cao conducted a study of 120 grocery shoppers using Becker-DeGroot-Marschak (BDM) auction mechanisms to evaluate consumer risk attitudes and responses to food information. Her results provide some explanations for why typical consumers are less responsive to food safety scares. Consumers were willing to pay (WTP) much higher prices in the auction when they chose a food item on their own (treatment) than when they were randomly assigned (control). The WTP gaps were even bigger when food safety information was revealed to shoppers. Shoppers in the treatment group were more reluctant to decrease their WTPs despite increased risk perceptions.

Professor Cao’s findings are supported by psychology literature on cognitive dissonance and confirmation bias, which states a consumer’s judgment and information processing depends much on their initial beliefs or consumption status. Her findings suggest that consumers were less responsive to public information due to their existing habits, preferences, or even temporary consumption choices.
Achievements

Through the Chair, Brady will further develop his exciting program of research, teaching, and outreach that will advance the frontier of knowledge in this area. On behalf of the department I want to recognize and thank Mr. McCain for his generous gift. I also want to recognize and thank Professor Deaton for his hard work and dedication in advancing this work – he pours his heart and soul into these activities and I feel very fortunate to have him as a department colleague.

Members of the department have also made important contributions to advancing knowledge and understanding of the agricultural and food sectors. Through Professor Alan Ker’s leadership, the Institute for the Advanced Study of Food and Agricultural Policy organized a farm finance mini-conference held at OMAFRA in May. Professor Ker is also stepping into the three-year presidential cycle of the Canadian Agricultural Economics Society.

Professor Deaton participated on the opening panel of the 10th Annual Summit of “Universities Fighting World Hunger,” held on the Guelph campus in February. He also began his second year as an editor of the Canadian Journal of Agricultural Economics.

I am incredibly proud of the accomplishments of everyone in FARE. The hard work and dedication of our faculty, staff and students helps to build on our past success, positions us to excel further in research and teaching, and has a lasting impact amongst stakeholder communities. I am excited about what the future holds!

Measuring Cold Stress

Research by: Tor Tolhurst, former Graduate Student, and Alan Ker, Professor, FARE and Director, Institute for the Advanced Study of Food and Agricultural Policy

The relationship between crop yield and climate is the subject of extensive and ongoing study. This research addresses a gap in Ontario agriculture: to understand how past weather fluctuations affected important field crops – corn, soybean, and winter wheat – in the north.

We focused on adapting the agronomic weather metrics used in crop yield models for the unique growing conditions of more northern climates. To this end, we use Ontario county crop data to estimate how past weather fluctuations affect yields. Exposure to cold temperatures (especially killing frosts) can reduce field crop yields – sometimes catastrophically. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) reports killing frost during the grain filling stage may cause yield losses of 25-40% in corn, while spring frost can have devastating consequences for soybean crops.

Thus, we extend the concept of growing degree days (GDD) to two metrics of relevance to Ontario producers: cooling degree days (CDD) and freezing degree days (FDD). Additionally, Ontario has a great deal of variation in growing conditions across counties, particularly south (i.e., Essex) to north (i.e., Ottawa). We attempt to introduce flexibility into the crop yield models for this variation by allowing the start and end dates of the season to vary across counties and years following agronomically based decision rules.

Arguably, the most interesting result common to all of these crop yield models is the introduction of the CDD and FDD metrics to account for cold temperatures. CDD had a large negative and statistically significant effect on corn and soybean yields. Further, despite the cold hardiness of winter wheat, CDD and FDD were correlated with winter wheat losses in the fall and spring seasons.

Not surprisingly, GDD has the strongest effect for all crops: a 1% increase in daily GDD would increase corn yields by 1.061%, soybean by 0.239%, and winter wheat by 0.032%, 0.027%, 0.066% depending on if it occurred in the fall, winter, or spring, respectively. Somewhat surprisingly, the effect of CDD can be nearly as large or even larger than heating degree days (HDD). For corn, the effect of CDD at -0.086% is nearly as large as the -0.111% effect of HDD. However, for soybean and winter wheat, CDD is an even stronger effect than HDD. For every 1% increase in HDD, soybean yields drop 0.020% compared to a more than double decrease of 0.048% for a 1% increase in CDD. In the spring, a 1% increase in HDD reduces winter yields by 0.033%, whereas a 1% increase in CDD decreases yields by nearly double 0.063%.

Our research introduced two new agronomic metrics to capture the nonlinear effects of cold temperature exposures and used agronomically based decision rules to determine the start and end dates of the growing season. By doing so, we not only account for the potentially harmful effects of cold temperatures, but also introduced flexibility into the models to accommodate inherent differences in growing conditions across counties. In general, our estimation results were broadly comparable to similar studies conducted in other regions: temperature exposure is beneficial to plant growth within a range but harmful when temperatures exceed an upper threshold, while the relationship between moisture and yields is quite complex and dependent on timing.