The BCRC’s research priorities focus on
• Improving competitiveness in the production of Canadian beef cattle
• Supporting science-based policy, regulation and trade

2018 Highlights and Deliverables
The year 2018 has been one of transition for the Beef Cattle Research Council (BCRC) in terms of funding and program administration. An increase in the Canadian Beef Cattle Check-Off to $2.50 per head from $1 in most provinces and revised allocations to research has grown the BCRC’s research budget to approximately 75 cents per head from approximately 15 cents.

In addition, the Beef Science Cluster II, under Agriculture and Agri-Food Canada’s (AAFC) AgrInnovation Program, wrapped up March 31, 2018 and the Beef Science Cluster III program, under the Canadian Agricultural Partnership (CAP), has begun.

Canada’s Beef Cattle Industry Science Clusters
The Science Clusters are a partnership with AAFC that combines their strengths (including funding levels) and the BCRC’s strengths (including understanding of industry’s priorities) to make wise joint-investments in a variety of research programs with the greatest potential to advance the industry.

The first Cluster directed $10.5 million to 32 research projects between 2009 and 2013. Joint industry and government commitments to the second Cluster (2013–2018) totaled $20 million, directed to 26 research projects.

**Beef Science Cluster II Outcomes**
Research supported through the Cluster is developing solutions to issues of concern to Canada’s beef industry, governments, regulators, consumers and the public.

Results include:
• A factual understanding of the Canadian beef industry’s environmental footprint. In 2011, producing each kg of Canadian beef required 29 per cent less breeding stock, 27 per cent fewer slaughter cattle and 24 per cent less land, used 17 per cent less water, and produced 15 per cent less greenhouse gases than in 1981.
• Optimal combinations of annual forage crops, agronomic management and grazing practices that improve forage productivity while providing economical and nutritionally appropriate winter feed for the cow herd.
• Cost-effective, practical ways to manage the pain associated with castration in beef calves.
• An understanding of the occurrence and severity of beef carcass defects to inform prevention strategies. Total losses due to carcass quality defects are approximately $200 million/year. Some defects, like bruises and horns, are becoming less common while others, like excess weight, fat, tag, liver health and injection site lesions require further investigation of nutritional and health management strategies to reduce losses.
• New feed grain and forage varieties with superior yield and quality, including 10 barley varieties approved for registration, and several lines of native plant materials, legumes, grasses and triticale with potential for commercialization.
• Dry chilling methods to cost-effectively control microbiological growth on carcasses in small abattoirs.
• The establishment of a veterinary and producer surveillance network to gather information on the prevalence of production limiting diseases and evaluate the adoption of and producer attitudes towards various management practices such as antimicrobial use, animal welfare practices and biosecurity practices.
• Detailed metagenomic analysis of microbiological samples collected throughout cattle environments, soils, wetlands, rivers, municipal water, retail beef, human patients and sewage samples found no link between the use of antimicrobials in beef cattle and antimicrobial resistance in humans.

**Beef Science Cluster III in Progress**
Funding for the third Cluster was announced by AAFC in July 2018. Covering the period to March 31, 2023, $21 million will be directed to 26 research projects. The funding includes $14 million from AAFC, $5 million in funding from the research allocation of the Canadian Beef Cattle Check-Off and $1.5 million in-kind contributions from industry in the form of cattle, equipment, and materials.

This Cluster will work to grow beef exports and supply growing global beef demand by supporting research and technology transfer that advances Canadian beef and forage production while enhancing industry competitiveness and the public’s trust in responsible production.
Examples of Cluster III project objectives include:

- Determine how camera-based computerized carcass grading systems can optimize fabrication and direct beef products to the most suitable market to support market growth and trade;
- Expand production-limiting disease surveillance across Canada to anticipate, mitigate and respond to emerging disease threats;
- Enhance environmental sustainability and address climate change by evaluating carbon sequestration and biodiversity in Canada’s grasslands and identify strategies to increase the beef industry’s contribution;
- Reinforce public trust and support transport regulation development by determining optimal rest intervals and durations for cattle in transit;
- Support consumer confidence and demand by improving understanding of bacteria and cattle interactions to improve food safety, reduce the risk of E. coli O157:H7, and reduce the need for antimicrobials to treat bovine respiratory disease and digestive upsets; and
- Strengthen awareness and adoption of research results via the BCRC’s innovative knowledge translation and transfer team.

Details on all 26 Cluster III projects are available on BeefResearch.ca.

Leveraging the Increased Canadian Beef Cattle Check-Off

The increased Canadian Beef Cattle Check-Off enables the BCRC to continue to play an integral role in achieving several of the industry goals identified in the National Beef Strategy by maintaining existing programming and expanding in the following ways:

Priority Research Projects: Increased funding will be allocated to research aimed at achieving specific outcomes related to beef quality, food safety, feed grain production, forage production and utilization, improved feed efficiency at cow-calf and feedlot levels, and production-related priorities in the areas of animal health and welfare and antimicrobial resistance and use. The council launched a call for letters of intent in June 2018. Funding decisions on proposed projects were made in February 2019. Summaries will be available on BeefResearch.ca.

Research Capacity

Increased funding is enabling the reinvigoration of research programming in areas where research expertise has declined in Canada, such as beef production, and forage breeding, agronomy, and utilization.

The council launched a call for proposals for Research Chairs in August 2018. An announcement will be made in 2019.

Knowledge and Technology Transfer

The BCRC is working to develop collaborative extension projects that bring together the expertise and resources of various groups in order to develop excellent extension resources together. Investments are also being made in economic-based decision-making tools and resources to help producers evaluate the relevance of adopting particular innovations on their operations.

Advancement of the Verified Beef Production Plus program: In addition to funding research, the BCRC is responsible for the delivery of the Verified Beef Production Plus (VBP+) program, which verifies on-farm practices related to food safety, animal care, biosecurity, and environment. Ongoing national industry investment will ensure the consistent delivery of the VBP+ program as it becomes a core pillar in verifying sustainable beef production in partnership with end-users.

For more information, please visit the BCRC website at BeefResearch.ca.
The Canadian cattle market had been through some extreme market volatility (both positive and negative) through 2014-2017, but in 2018 market prices traded in a relatively stable range.

North American beef production is near record large in 2018 and is projected to have record large production in 2019. Despite seeing cattle supplies increase over the last three years, Alberta steer calf prices in 2018 averaged slightly higher than 2017 and 2016 and are the third highest on record.

Alberta fed prices started the year at $167.44/cwt, which also turned out to be the highest price of the year. Prices traded mostly sideways through the first quarter and had a disappointing second quarter with no real spring rally. Prices were mostly above the five-year average through the first quarter, but were below the five year average in the second quarter.

Despite prices being well below a year ago in the second quarter, fed prices held up quite well through the summer, with the summer low being $142/cwt, more than $10/cwt higher than the annual low set in 2017. By the end of the year, fed prices were again in line with last year and the five-year average.

Alberta fed prices are projected to average very close to 2017 near $154/cwt, and just slightly higher than the five-year average.

Ontario fed prices were weaker this year, as prices in the first quarter were mostly steady with 2017, and prices through the second quarter were well below a year ago. Similar to Alberta, the summer lows were not as low as 2017, and prices through the fourth quarter were mostly steady, but with a weaker tone.
Similar to the last few years, Ontario fed prices were at a discount to Alberta for most of the year. Ontario prices were seasonally stronger than Alberta in late May and June, but it was for a shorter time period compared to the past couple of years.

Western Canadian basis levels were again a positive story for the Canadian cattle market in 2018. Alberta fed cattle prices were at a premium to the U.S. for most of the year, until mid-October.

In most of the fourth quarter fed prices moved to a discount to the U.S. market, but just back to a more historical relationship. In 2018, Alberta fed prices will average at a premium to the Nebraska market for the first time in recent history.

Alberta fed prices will average almost $2/cwt higher than the Nebraska fed price (converted to Canadian dollars). Compared to the five year average, these strong basis levels added almost $150/head to the Western Canadian cattle market.

**Inventories and Production**

Canadian cattle inventories had stabilized between 2015 and 2017 around 12.5 million head, with beef cow inventories near 3.7 million. It was generally expected 2018 would be another year of consolidation, but dry weather challenges in Western Canada resulted in feed shortages in some areas, and much higher feed costs. Spring storms in Western Canada also led to higher cow slaughter earlier in the year. These two factors resulted in beef cow culling rates jumping almost two per cent higher than the year earlier at 13.7 per cent. Given the fact July 1 breeding heifer inventories were down 2.6 per cent from 2017, the 2019 calf crop is expected to decline, after the 2018 calf crop was estimated over one per cent below 2017.

Although Canadian cattle inventories have been mostly flat the last few years, Canadian cattle slaughter and beef production have been on the rise. Canadian cattle slaughter is expected to hit three million head in 2018, the highest level since 2010.

Fed slaughter is projected to be near 2.5 million head, six per cent higher than 2017, while non fed slaughter is projected at just over 500,000 head, about 14 per cent higher than 2017.

Carcass weights in 2018 were generally flat with a year ago, therefore domestic beef production is projected to be up just over six per cent from last year. Live fed cattle exports were down about 30 per cent and Canadian cow exports were up slightly this year, therefore overall beef production including live cattle exports was up only three per cent.

Despite a flat cattle herd, Canadian beef production has been supported by keeping a larger proportion of cattle in Canada. Total live cattle exports in 2018 may be under 600,000 head and be at the smallest level since the border re-opened in 2005. The recent peak Canadian cattle slaughter is expected to hit three million head in 2018, the highest level since 2010.
Canadian Beef Export Volume

Beef exports have been supported by larger beef production and are projected to be 4.5 per cent higher than 2017, and more than 10 per cent larger than 2016.

Canadian Beef Production

in live exports was 2014, when total cattle exports were over 1.2 million head. The interesting development in live cattle trade in 2018 is that both Canadian feeder cattle exports and imports increased. Feeder exports through October were a modest 172,000 head, up 41 per cent from 2017, while imports were up 130 per cent to 142,000 head.

Beef exports have been supported by larger beef production and are projected to be 4.5 per cent higher than 2017, and more than 10 per cent larger than 2016. Total exports are expected to be more than 396,000 tonnes, the largest export volume since 2010.

The U.S. remains the largest export market accounting for about 75 per cent of exports.

For the second year in a row, Japan was Canada’s second largest export market accounting for about eight per cent of exports. Hong Kong and Macau were the third largest export market, Mexico was the fourth largest, and China rounds out the top five.

Although exports on a volume basis have been larger in the past, the value of exports were record high in 2018 at more than $2.6 billion. This was the third consecutive year of record export values.

Canadian beef imports in 2018 saw the first year over year increase since 2012. Imports are projected to be about five per cent higher at around 181,000 tonnes. The U.S. remains the main source of imports accounting for 64 per cent of imports. The second major supplier was Australia at around 13 per cent of imports followed by New Zealand at just over 10 per cent of imports.

Key Factors

The basis was a highlight for the Canadian market in 2018, and it will be important to follow if Canada can maintain relatively stronger prices, or if the price relationship will move back to more historical levels. The basis levels will likely also impact cattle flows regarding both cattle exports and imports.

As North American meat supplies continue to grow in 2019, domestic and international demand will be critical. Market risk is elevated if trade disputes limit trade and/or policies/market factors impact the North American or global economy, and ultimately beef demand.

Weather will continue to be a key factor as pasture conditions suffered in 2018, and hay supplies are limited. Alberta also has a feed grain cost disadvantage at the feedlot sector. It will be important to monitor weather conditions and relative feed costs, especially if basis levels are at more historical levels.

The Canadian dollar has had a weaker tone most of this year, and this has certainly supported Canadian cattle prices. The dollar has spent most of the year under 78 cents US, but a dollar over this level or 80 cents would have a negative impact on prices.
Canfax Research Services (CRS) continues to focus on the delivery of accurate data, market information, and economic analysis of issues that are of importance to the Canadian beef industry. In the last year CRS has been focused on the launch of several new initiatives, as well as the enhancement of existing activities. These include:

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<td>1</td>
<td>Beef Cattle Research Council (BCRC): The Economics of Water (TEC) Systems calculator and fact sheet were published in Spring 2018. Blog articles continue to be produced to support adoption and TEC communications. The Beef Production Economics reports were completed in April 2018, and fact sheets and communications were developed. A report on adoption rates of various recommended management practices is being developed. This will include a summary of the regional 2017 cow-calf surveys as well as research surveys, census data and provincial environmental surveys.</td>
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<td>2</td>
<td>Canada Beef: CRS provides market outlooks, environment scans and ongoing data sets to assist Canada Beef in communication to industry and the public.</td>
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<td>3</td>
<td>Canadian Roundtable for Sustainable Beef: CRS is providing staff support for the science advisory committee mandated to address data and research gaps for the next National Beef Sustainability Assessment (NBSA). A survey of sustainability projects was completed from June to August 2018; providing a foundation for the development of the projects pillar.</td>
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<td>4</td>
<td>CRS has been contracted to complete a Global Metrics report from existing literature for the Global Roundtable for Sustainable Beef (GRSB).</td>
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<td>5</td>
<td>Dr. James Rude, University of Alberta, completed the “Evaluation of the Import Levy” for the Canadian Beef Cattle Check-Off Agency.</td>
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<td>6</td>
<td>CRS provided secretariat services to the Beef Advisors, compiling a status update of the 2015-June 2018 National Strategy results in October 2018. An update of the National Strategy for 2020-2024 is underway.</td>
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<td>7</td>
<td>The Canadian Beef Cost of Production Network application was submitted to Agri-Risk Initiatives, with industry matching funding approved by BCRC. This five-year funding application is to develop a pan-Canadian network with consistent methodology leveraging existing resources within the provinces currently working in this area.</td>
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The Verified Beef Production Plus (VBP+) program grew from its roots in the Quality Starts Here (QSH) program. QSH and its successors are an educational initiative to help the beef industry move toward the highest beef quality in the world through training and on-farm verification of practices relating to food safety and beef quality. The VBP+ program builds on the success of the QSH program by adding the ability to train producers and certify on-farm practices related to animal care, environmental stewardship and biosecurity, as well as food safety.

In August 2018 VBP+ was officially recognized by the Canadian Roundtable for Sustainable Beef (CRSB) as a Certification Body for the CRSB’s Certified Sustainable Beef Framework. VBP+ had been working diligently with CRSB to achieve this recognition for a number of years. The milestone means that all VBP+ Certified Operations are also considered Certified Operations under the Certified Sustainable Beef Framework. We see this as a major positive step towards simplification of the sustainability initiative in the eyes of Canadian beef producers and accessibility for beef producers to the benefits of sustainable beef production.

VBP+ is also involved with the Canadian Beef Sustainability Acceleration (CBSA) pilot. The CBSA pilot is led by Cargill, BIXS, and VBP+ and hopes to: (i) build the supply of beef intended to be able to meet the Certified Sustainable Beef Framework; and (ii) figure out the infrastructure necessary for sourcing beef tracked through a fully certified value chain.

The CBSA pilot launched for an initial one-year period in October 2017. It has since been extended indefinitely while Cargill develops a program for certified sustainable beef, meaning that the pilot was successful and there is sufficient end-user demand. The current bottleneck remains having adequate numbers of calves qualifying, therefore, VBP+ is continuing its push to get more producers audited and fully certified.

The CBSA pilot has been successful at identifying potential areas of improvement throughout the certified sustainable beef value chain. In 2019 work will continue, involving CRSB and the CBSA pilot partners (including VBP+), to make these improvements and ensure that all parts of the value chain are well positioned to make it as easy as possible for Canadian beef producers to access the benefits of beef sustainability initiatives.

VBP+ has chosen to move forward with the implementation of a two-stream approach to delivering the VBP+ program, auditing and training. The auditing program will result in certified operations which qualify for the Certified Sustainable Beef Framework. VBP+ plans to build on its existing training program with support from Agriculture and Agri-Food Canada through the Canadian Agricultural Partnership. The training will be improved by adding an assessment element, renewal criteria and further learning modules, and development of materials to improve the ease of delivery to producers.

Work is starting right away to develop the training stream. Training will be delivered to individuals (as opposed to beef cattle operations) and will not be geared for value chain programs but rather for broad adoption by producers to improve production metrics industry-wide.

The VBP+ program is a core pillar in championing and verifying sustainable beef production. VBP+ will continually increase its ability to deliver knowledge and practices related to sustainable production to producers while concurrently, in concert with entities like the CRSB, Public and Stakeholder Engagement, and Canada Beef, help communicate the great job Canadian beef producers are doing on their farms and ranches to consumers and the public through various forms of verification and reporting.