

## 2016 Research Projects

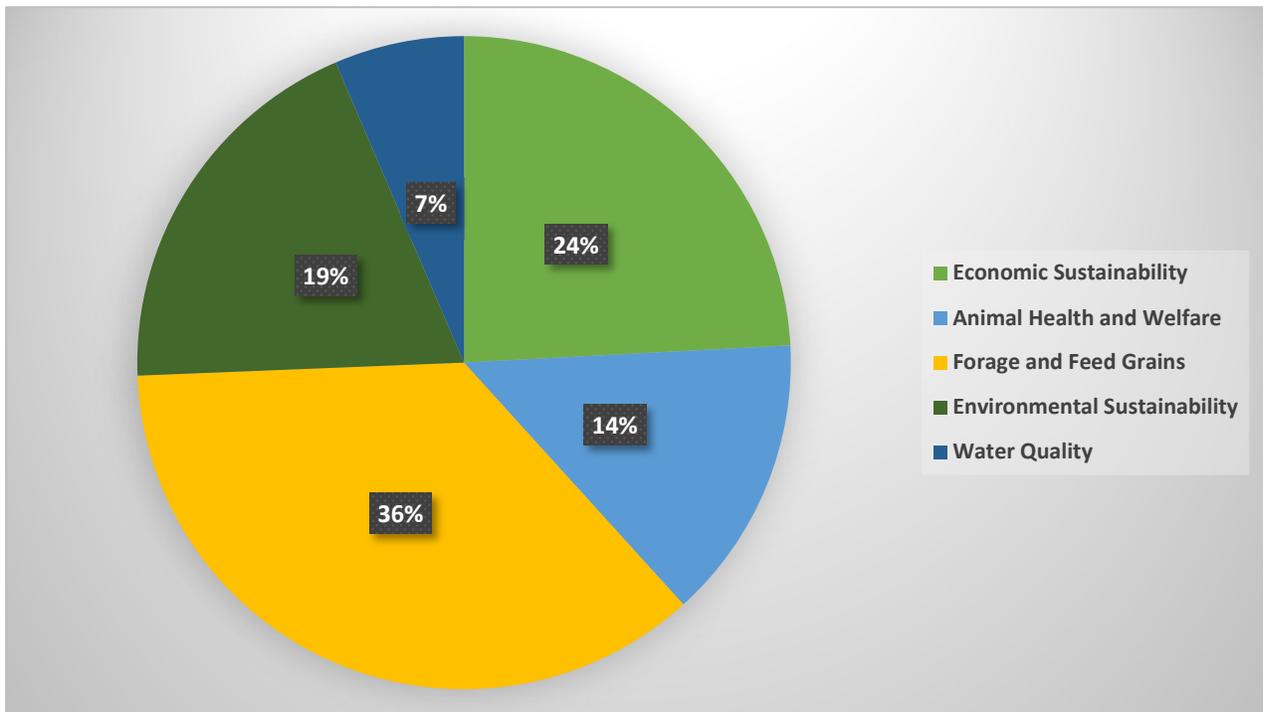
Roughly one third of the SCA's budget is dedicated to industry development. Of that budget, more than \$300,000.00 was allocated to ongoing research projects this year.

The SCA's Research Committee has approved research projects that align with those priorities in our industry which need the greatest attention. These priorities can be found on our website ([saskbeef.com](http://saskbeef.com)). If you believe an important area has been missed, please contact the office, as your voice is necessary and appreciated.

### Funding Research Projects

Last year, the Research Committee had 43 excellent research proposals to choose from, which we hope will improve our cattle production. The Research Committee recommended that nine of these research proposals receive funding. The total amount for each category of research strategy objectives are below. In addition to funds for Forage and Feed Grains research, the SCA has also provided funds to the Saskatchewan Forage Council to test and showcase new forage varieties in Saskatchewan.

To decide which research projects the SCA should fund, the committee sought opinions and recommendations from our staff as well as staff from the Beef Cattle Research Council, the Alberta Beef Producers, the Saskatchewan Forage Network, the Saskatchewan Forage Council, and the Manitoba Beef and Forage Initiative.



Experts in these groups, in addition to other peer reviewers, helped the committee evaluate each research proposal based on the need for the research, the methodology of each proposal, the size of the potential outcome, and the ability to provide additional information to beef producers. Our

organization also had input on the research projects funded by the Saskatchewan Government's Agricultural Development fund, which funded several beef and forage projects that will also help our industry.

The SCA does not pay for research on its own. We depend on other organizations like the Saskatchewan Agricultural Development Fund, the Manitoba Beef and Forages Initiative, the Beef Cattle Research Council, and the Canadian Government's Beef Cluster to also support research. Those organizations also look to us to financially support projects that meet our objectives. **As a result, for every dollar that was spent by the SCA, \$3.95 was spent by a partnering organization. We hope to continue this involvement by engaging with researchers and likeminded organizations.**

## **SCAIDF FUNDING REPORT: CURRENT RESEARCH PROJECTS**

### **Effect of Ergot on Beef Bull Fertility**

**\$28,980 over 2 years**

**Head Researcher: Jaswant Singh**

The effect of ergot on cattle has been studied in the past. Beef nutritionists feel comfortable providing their cattle with a low level of ergot in feed, while higher levels of ergot can lead to large wrecks. However, Dr. Singh and his team are investigating whether even these low levels of ergot can lead to poor fertility for bulls in the year that they eat ergot and beyond. They hope to provide better recommendations to bovine nutritionists with this information, which could lead to higher fertility rates in years after ergot contaminated crops.

### **Effect of Stock Density and Time of Grazing on Control of Leafy Spurge**

**\$10,000 over 2 years**

**Head Researcher: Bart Lardner**

Leafy spurge has become common in Saskatchewan and the rest of the prairies. Efforts to eradicate these plants in a forage stand can be expensive and difficult to mechanically access. Leafy Spurge beetles have been used to some degree of success, while goat grazing could be effective if it did not affect beef producer's time. Research from animal behaviorist Kathy Voth has noted that cattle can be acclimatized to eating this high-protein weed, this study will investigate if cattle can eat leafy spurge through high intensity grazing without the long-term effects of scours or skin and digestion tract irritation. As previous research has indicated that high cattle stock grazing can increase total forage production, increase the total pounds/acre weaned, and decrease invasive species, these researchers plan on sharing information about soil health, animal performance, and economic benefits about leafy spurge control after their 3-year trial.

### **Addressing Livestock Water Security Through Sulphate Removal Using Bioadsorbent Materials and Modified Forms**

**\$20,000 over 2 years**

**Head Researcher: Lee Wilson**

While the Canadian Water Quality Guidelines recommend a maximum sulphate concentration of 1,000 mg/L, many livestock producers in Saskatchewan have reported high levels of sulphates in their water. This has led to a deficiency of copper, zinc, iron, and manganese that in turn causes lower growth rates, infertility, a depressed immune response, and even death in very high concentrations. Some sulphate management practices, like adding copper to feed, can be a cost

effective. However, these solutions are more adequate for feedlot cattle. Dr. Wilson's team will create a prototype of a sulphate removal system that could also ultimately also remove phosphate as well.

### **Optimizing ruminal fermentation using silage and cereal grain inclusion strategies for backgrounding and finishing steers**

**\$81,714 over 2 years**

**Head Researcher: Greg Penner**

New varieties of corn to Saskatchewan have brought more options for beef producers. At the same time, preventing acute rumen acidosis due to the provision of excess amount of rapidly digestible carbohydrates, usually associated with barley. The nutrient content and the rate of nutrient digestions in the rumen are quite different between barley and corn, whether cereal grain or silage. This research hopes to optimize digestion in the rumen by selecting cereal silage sources in combination with cereal grains. Therefore, trails with blends of barley and corn cereal grain and silage diets will be conducted to determine the health of cattle and their rumen as well as the cost of production.

### **Selection of clonal propagated alfalfa and sainfoin plants under grass or legume competition**

**\$20,700 over 3 years**

**Head Researcher: Bill Biligetu**

Sainfoin and alfalfa provide better health to agricultural soils. Sainfoin, in particular, is a non-bloating type of legume that can increase protein absorption. However, growth of sainfoin decreased in the '60s and '70's due to its inability to grow in mixed forage stands. Dr. Biligetu and his research team have proposed a research plan that will help both alfalfa and sainfoin strains thrive. This team will breed alfalfa and sainfoin plants then transplant them in a meadow brome stand. Those plants that show superior genotypes will be intercrossed and evaluated for yield and quality. As a result, there will be an advanced breeding line for alfalfa and sainfoin that can contribute to a healthier forage soil as well as healthier and more efficient cattle herds.

### **The Economics of Forage-Based Backgrounding Programs in Conventional and Non-Conventional Beef Production Systems**

**\$55,200 over 2 years**

**Head Researcher: John McKinnon**

Changes in consumer demands as well as labour availability on beef farms have led to producers pondering alternate farming practices. However, these changes are often filled with risk which could cause more strain on the farm. In order to provide a clearer outlook, steers in this trial will be separated into three different feeding trials, and further separated into conventionally treated cattle and "naturally" treated cattle without antibiotics, hormones, or ionophores. Dr. John McKinnon and his team will

compare direct finishing, short-backgrounding, and long-background (which rely more heavily on hay and pasture diets) and each groups' status as "natural" or "conventional" to its death loss, cost of feed, equipment, health treatments, and labour, as well as the revenue from each of the six production systems. The re-searchers hope to provide beef producers with more information to choose from alternative production and feeding systems.

### **A field comparison of intranasal versus injectable BRD vaccination on beef calf titres, ADG, morbidity and mortality**

**\$15,000 over 3 years**

**Head Researcher: Nathan Erickson**

Bovine Respiratory Disease (BRD), according to the Beef Cattle Research Council, accounts for 65-80% of the morbidity and 45-75% of the mortality in some feedlots. There are several causes, including age, weather, immune status, comingling, crowding, and exposure to several types of infectious agents. Pre-conditioning, or weaning and vaccinating at least 3-week s prior to shipping has been noted as beneficial to decrease the prevalence of BRD. Dr. Erickson and his team will study the effectiveness of an intra-nasal vaccine, as opposed to an injection, which could reduce time for cow-calf producers and make preconditioning less labour intensive.

### **Factors affecting the adoption and exploitation of data management systems in the Canadian beef industry**

**\$10,000 for one year**

**Head Researcher: Eric Micheels**

Prior studies of data management tools have shown there to be significant economic returns to farm record keeping in Western Canada. However, the adoption of these tools have not become widespread. Understanding barriers to technology or policy adoption can help the beef industry change its approach in communicating with beef producers. Dr. Micheels and his team will conduct in-depth interviews to examine the factors affecting adoption of electronic farm record keeping systems among beef producers, while also identifying key success factors common among firms able to exploit these tools for gain.

### **Enhancing the Efficiency of Computer Vision Carcass Data Capture and Reporting for Feedlots and Packing Plants**

**\$10,000 for one year**

**Head Researcher: Mark Klassen**

At the moment, carcasses at the top and bottom of Canada's yield class 1 differ by more than 50 pounds of lean mean. Researcher Mark Klassen will develop procedure for plan computer vision system grading with support from a web based Carcass Information System (CIS). CIS will be used at a pilot evaluation at Harmony Beef, which will pay on a lean yield % basis, as opposed to yield classes. In addition, CIS can be further developed to provide analytical reporting to feedlots and processors, so that they can adjust their beef production and procurement practices. This research has the potential to reduce the number of graders necessary, and therefore reduce grading costs.

### **Environmental Data**

#### **Collection at the Livestock and Forage Centre of Excellence**

The installation of the Beef Cattle Research and Teaching Unit as part of the Livestock and Forage Centre of Excellence has provided an excellent opportunity to collect baseline environmental data before and after cattle are present at the site. This information gathered here will be shared with the beef industry as well as the provincial government in order to provide accurate data to inform regulations and mitigation strategies.

### **Pen surface soil performance of various soils during the first two cycles of cattle at a feedlot in Saskatchewan**

**\$22,998 over three years.**

**Head Researcher: Terry Fonstad**

Different types of soil not only lead to increased leaching, but also increased costs as pens containing water have shown to need 50% higher cattle maintenance. Three different types of onsite soils will be used in six pens throughout different seasons.

### **Improved manure utilization methods for feedlots in Saskatchewan**

**\$24,531 over three years**

**Head Researcher: Terry Fonstad**

There are several different methods to dispose of manure from a feedlot. Stockpiling manure allows yards to be cleaned as needed without spreading it, and is less likely to pollute the local environment. However, the usefulness of stockpiled manure diminishes as much as 40% of total manure nitrogen can be lost. In addition, years with heavy precipitation can also lead to losses of potassium and sodium can be lost. Also, the time and management of these piles might offset costs saved by not using mechanical spreading equipment.

### **Solute and moisture fluxes below small watershed amended with feedlot manure**

**\$12,265 over three years**

**Head Researcher: Terry Fonstad**

This research intends to provide insights into the dynamics of soil moisture below fields that have had manure applications. It intends to measure the seepage rates and chemistry changes in the near surface and subsurface to understand the mitigation of nitrate and phosphorus from manure.