

## **Feed Research and Development**

**SRP Chair:** Dr. Peiqiang Yu

### **Introduction:**

The Feed Research and Development Program aims to secure greater benefits from animal source-food production for producers and consumers by increasing the availability of improved feeds and forages, optimizing feeding strategies and reducing the cost of feed.

The overall objective of the Strategic Research Program (SRP) Chair for Feed Research and Development is to identify unique characteristics in Saskatchewan feedstocks and to develop associated feeding technologies and processes that increase feeding efficiencies and create new commercializable products. These outputs will be designed to meet the needs of Saskatchewan's livestock and value added sectors and thereby contribute to the overall profitability of the sector and the economic growth of Saskatchewan.

In Saskatchewan, the largest single cost of production facing livestock (dairy, beef, swine and poultry) operations is feed (60-75%). Research to enhance feed efficiency and develop low-cost feeding strategies is most important for feed and livestock industries.

The present feeding of normal cereal grains (mainly barley) to livestock is faced with increasing challenges in terms of ever increasing animal production costs. The cost of feed grains has more than doubled in the last two years, seriously threatening the economic competitiveness of both pork and beef production in western Canada. There is need to find alternatives of feed resources and improve feeding efficiency of the various feed sources.

The desired outcome is to increase the utilization of high quality feeds and technologies to improve our competitive advantage in crop production and to increase the sales of targeted Saskatchewan feedstock, technologies and value-added products in domestic and export markets.

### **Goal:**

To enable development and commercialization of research technologies developed in Saskatchewan and worldwide to improve the competitive position of our livestock industry, extract increased value from our feedstuffs and to increase economic returns to Saskatchewan.

The Feed Research and Development is devoted to feed sciences with a focus on feed resource development and utilization, feed and animal product safety, ecological environment safety, and animal product quality. Researchers will investigate all facets of the feed industry focusing on feed biotechnology, biochemical engineering and extraction, animal nutrition and feed science, feed processing technology, feed testing and safety evaluation, and feed economy and information

## **Research and Program Activities:**

The Chair's research program will be conducted within the context of the broader area of feed research activity which includes the work of the Canadian Feed Research Centre, Western Beef Development Centre, Prairie Swine Centre and the Chair in Feed Processing Technology. The work of the SRP Chair is unique in that it will focus on feed research in conventional and non-conventional feeds, nutrient supply modeling and improved feed value through physical and chemical processing methods.

## **Key activities for the program**

- Conduct research to improve quality, safety and market value of existing feeds;
- Conduct research that will assist in the development of cost competitive feeds, feed formulations or nutritional models;
- Conduct research that will contribute to feed-crop breeding programs developing superior varieties that have improved quality and animal nutrition attributes;
- Conduct research to focus on quantitative nutrition, including nutritional values, diet formulation and feeding program design with an emphasis on dynamic simulation models that help to understand and predict input-output relations in the production of meat and products;
- Assess the nutritional attributes, functional content and bioactivity characteristics of newly-identified feed ingredients from Saskatchewan-based crops; and
- Play a leadership role in efforts to develop branded feed products and nutritional models that have potential for commercialization.

## **Program Outputs**

- Creation of a systems-based research strategy that is aligned with Ministry of Agriculture and industry priorities and that enhances the economic viability of the integrated crops-livestock production system;
- A greater understanding of the value of Saskatchewan crop-based feedstocks in feed formulations and an enhanced awareness of the specific nutritional attributes provided by each of the broad variety of Saskatchewan-based feedstocks;
- Optimized feeding systems that link key feed constituents to specified meat, dairy and egg products for consumers (including high value designer products);

- Increased livestock feed efficiencies with reduced input costs and reduced environmental nutrient and greenhouse gas loading;
- Access to global technologies and practices that industry can commercialize into differentiated, higher-value Saskatchewan products;
- New feedstock or feed formulations that have commercialization potential as a result of having characteristics that enhance animal health and productivity or deliver specific attributes desired by consumers in meat, dairy or egg products;
- Research results that Ministry of Agriculture staff can access and integrate into technology transfer strategies and sector development efforts;
- A greater level of understanding around feed performance including proactive nutritional solutions that contributes to sustainable animal production and greater resistance to infectious diseases.

### **Desired Outcomes**

- Improved livestock production efficiency and product quality and safety attributes resulting in increased profitability and competitiveness.
- Improved functionality and nutritional value and lower cost of production for feeds derived from Saskatchewan commodities and ingredients.
- Efficient environmentally sustainable and profitable livestock industry.
- Increased livestock and feed production efficiencies tied to improved livestock product quality and reduced environmental impact.
- Highly qualified people trained in animal nutrition and feed science.