Summary of ADF Approved Projects 2009

(Approved December 8, 2008)

Total ADF funding awarded for 48 projects in 2009 .....$12,644,288

University of Saskatchewan $8,488,756

College of Agriculture and Bioresources		$7,890,956
Animal and Poultry Science	$142,240	
Food and Bioproduct Sciences	$1,189,300	
Plant Sciences	$895,090	
Crop Development Centre	$5,117,843	
Soil Science	$546,483	
College of Engineering		$109,800
Chemical Engineering	$59,800	
Civil and Geological Engineering	$50,000	
Vaccine and Infectious Disease Organization (VIDO)		$488,000

University of Regina.....$637,000

Faculty of Engineering		$502,000
Industrial Systems Engineering	$502,000	
Faculty of Science		$135,000
Biology	$135,000	

Federal Government Institutions.....$2,384,647

Agriculture and Agri-Food Canada	$1,884,597
National Research Council	$500,050

Other Research Organizations $1,133,885

Prairie Swine Centre	$329,370
Prairie Agricultural Machinery Institute (PAMI)	$444,150
Saskatchewan Research Council	$178,000
EcoTech Research Ltd.	$122,365
Saskatchewan Seed Potato Growers' Association	$60,000

Summary of ADF Approved Projects 2009

(Approved December 8, 2008)

University of Saskatchewan

College of Agriculture and Bioresources

Department of Animal and Poultry Science

51 Campus Drive, Saskatoon, SK S7N 5A8

Strategies to increase highly-unsaturated omega-3 fatty acids in rainbow trout fed canola, flax and camelina oils

Objectives: **Funding:** $79,240

- To develop methods to improve the fatty acid composition of aquaculture fish fed vegetable oils instead of fish oils.
- To investigate the use of high levels of antioxidants to increase the production of EPA and DHA in rainbow trout fed canola, flax and camelina oils.
- To investigate the use of coriander oil to reduce the production of arachidonic acid rainbow trout fed canola, flax and camelina oils.

Contact: Murray Drew (306) 966-2367

Production and evaluation of distiller's dried grains and solubles protein concentrate in broiler chickens, swine and rainbow trout

Objectives: **Funding:** $63,000

- Determine optimum conditions for fractionating wheat DDGS into a protein concentrate using seiving and air classification.
- Determine the nutrient digestibility of DDGS protein concentrate in broiler chickens, growing pigs and rainbow trout.
- Determine the effect of adding DDGS protein concentrate to diets fed to rainbow trout and broiler chickens on growth performance and production economics.

Contact: Murray Drew (306) 966-2367

Department of Food and Bioproduct Sciences

51 Campus Drive, Saskatoon, SK S7N 5A8

Development of protein-based functional powders for delivering bioactive ingredients to food and feed

Objectives: **Funding:** $323,800

- To advance the development of plant protein based micro-encapsulation to deliver bioactive ingredients into food and feed products.
- To investigate the functional behaviour of encapsulated bioactive ingredients in food and feed products.

Contact: Michael Nickerson (306) 966-5030

Commercial strategy for separating high-value fractions from thin stillage
Objectives: **Funding:** $354,000

- Analytical characterization of compounds present in thin stillage from three wheat ethanol plants.
- Development of methods for separating small organic molecules and salts dissolved in thin stillage.
- Determine the costs and benefits of the separation technology and recovered protein isolates and valuable molecules from thin stillage.
- Study the method for preparing protein isolates from mustard and canola meal using stillage as an aqueous medium.
- To extract ceramides from refining and processing streams derived from Saskatchewan industry.
- To fractionate ceramides based on side chain length.
- To use ceramides as replacers for trans and saturated fats.

Contact: Martin Reaney (306) 966-5027

Cyclic peptides from flax and Prairie Carnation
Objectives: **Funding:** $330,000

- To optimize methods for extraction, isolation, and modification of peptides derived from plant seeds.
- To evaluate the potential for utilization of plant peptides in numerous high-value markets.

Contact: Martin Reaney (306) 966-5027

Developing flaxseed (Linum usitatissimum L.) protein ingredients for the functional food market
Objectives: **Funding:** $181,500

- To obtain flax meal protein hydrolysate/s (without isolating proteins) containing bioactive peptides and desirable functional properties from commercial meals.
- To develop a model beverage-type product by incorporating flax protein hydrolysates with suitable functional properties and bioactive peptides.
- To investigate the bioactivites of peptides generated from flaxseed products (including commercial products) upon gastro-intestinal digestion using a simulated gastro-intestinal digestion model.

Contact: Phyllis Shand (306) 966-8842

Department of Plant Sciences

51 Campus Drive, Saskatoon, SK S7N 5A8

Assessing nitrogen fixation of faba bean for the prairies
Objectives: **Funding:** $90,000

- To improve the nitrogen contribution of pulses in the cropping rotation by assessing the nitrogen budget of faba bean, a crop likely to have greater nitrogen fixation and growth than pea and lentil.
- To measure the biomass and nitrogen content of a range of faba bean genotypes and cultivars.
- To assess the nitrogen fixation ability of faba bean genotypes by shoot N metabolism under typical dryland prairie conditions and controlled stress conditions, and develop a ureide- and specific amino-acid screening technique to economically screen for high N fixation.

Contact: Rosalind Bueckert (306) 966-8826

New options for control of root maggot in vegetable crops
Objectives: **Funding:** $75,000

Root maggots are an economically damaging and production limiting pest of vegetable crops in Saskatchewan. The objective of this project is to use integrated pest management techniques to achieve a commercially accepted degree of root maggot control.

Contact: Doug Waterer (306) 966-5860

Enhancing weed control for Saskatchewan crop producers
Objectives: **Funding:** $356,790
The objective of this project is to assist in the maintenance of a weed control research program in the Plant Sciences Department at the University of Saskatchewan that supports the diversification and profitability of crop production in the province and is actively involved in the provision of unbiased information on herbicides and weed control to extension staff within the Ministry of Agriculture, private and industry agronomists and farmers.
Contact: Rick Holm (306) 966-5009

Haskap berry breeding and production
Objectives: **Funding:** $145,800
- To advance the commercialization of Haskap berry in Saskatchewan through the assessment and utilization of a range of plant breeding strategies and techniques.
- To investigate and optimize production recommendations for Haskap berry.

Contact: Bob Bors (306) 966-8583

Dissecting beta-glucan biosynthesis in barley to develop perfect DNA markers for marker-assisted selection for beta-glucan concentration
Objectives: **Funding:** $227,500
- The objective of this project is to identify, isolate and characterize the gene(s) involved in beta-glucan biosynthesis in barley.

Contact: Ravindra Chibbar (306) 966-4969

Crop Development Centre
51 Campus Drive, Saskatoon, SK S7N 5A8

Developing field screening techniques for stemphylium blight in lentil
Objectives: **Funding:** $14,720
- To conduct a field survey to assess the severity of stemphylium blight in commercial lentil fields in Saskatchewan.
- To develop a protocol for screening of lentil breeding lines under field conditions for resistance to stemphylium blight.

Contact: Sabine Banniza (306) 966-2619

Enhanced rust resistance for western Canadian wheat
Objectives: **Funding:** $235,000
- Map resistance to stem rust race TTKS (Ug99) in spring wheat.
- Identify and study the inheritance of new leaf and stem rust resistance sources.
- Combine effective leaf and stem rust resistance genes in elite CDC germplasm.

Contact: Curt McCartney (306) 966-4951

Identification of genetic loci controlling fermentability in western Canadian two-row malting barley
Objectives: **Funding:** $88,000
- Evaluate fermentation variability in 92 elite Canadian two-row malting barley (former and current entries in the Western Co-op Two-Row Barley trials).
- Map genetic loci affecting fermentability.
- Develop molecular markers at these loci for use in molecular marker-assisted selection.
- Evaluate the feasibility of using the Speers' fermentability assay as a direct selection tool for fermentability in breeding.
- Provide more accurate information to brewers regarding western Canadian malt variety fermentability.

Contact: Brian Rossnagel (306) 966-4976

Selecting spring wheat for improved competitive ability - proof of concept
Objectives: **Funding:** $128,340
Spring wheat breeding populations have been subjected to mass and near-homozygous line selection under controlled conditions in the field using a model weed system over the course of four years. The objective of this two-year project is to determine whether our selection scheme under weedy versus weed-free conditions was effective.
Contact: Pierre Hucl (306) 966-8667

Operating grant for Crop Development Centre
Objectives: **Funding:** $4,000,000
This project will provide critical operational and administrative support for plant breeding and related research conducted by the Crop Development Centre, comprised of seven Ministry of Agriculture-supported plant breeders and pathologists and two plant breeders currently supported by the Agri-Food Innovation Fund and ADF. The specific programs supported by this operating grant include research, breeding and pathology in wheat, durum, canary seed, oat, barley, flax, pea, lentil, chickpea, faba bean and dry bean.
Contact: Dorothy Murrell (306) 966-8195

Phenotyping of recombinant inbred lines (RILs) derived from CDC Bethune crosses and describing and sampling of M2 mutated lines
Objectives: **Funding:** $125,000
The phenotyping of 3000 F7 Recombinant Inbred Lines (RILs) of five crosses involving five lines with different seed colour genes and CDC Bethune, and raising, describing and sampling of 15,000 M2 lines of EMS (ethyl methanesulphonate) treated seed of CDC Bethune.
Contact: Gordon Rowland (306) 966-4977

Field pea genetic improvement through haploidy
Objectives: **Funding:** $321,000
- To develop an efficient anther culture protocol for the production of doubled-haploid field pea.
- To apply the knowledge gained in step one to improve the microspore culture protocol developed to date.
- To use this technology on selected material from the field pea breeding program.

Contact: Tom Warkentin (306) 966-2371

Improving human health by elevating levels resistant starch in spring and durum wheat
Objectives: **Funding:** $205,783
- Develop durum and wheat "Targeted Induced Local Lesions in Genomes" (TILLING) populations to identify breeding prototypes high in amylose content. Evaluate the effect of high amylose starch on wheat and pasta processing quality.

Contact: Curtis Pozniak (306) 966-2361

Department of Soil Science
51 Campus Drive, Saskatoon, SK S7N 5A8

Improving soil-water infiltration on irrigated soils by subsoiling
Objectives: **Funding:** $100,000
The objective of this project is to determine if periodic paratilling is a cost-effective treatment for improving irrigability of Saskatchewan soils. Specifically, the project will determine if peridodic paratilling improves the on-farm water application efficiency, and reduces the amount of surface run-off and increases yield. Furthermore, the project will determine if the added costs of paratilling are cost-effective.
Contact: Mike Grevers (306) 966-6858

Inherent P supplying ability of organically managed soils

Objectives: **Funding:** $100,739

- Estimate P (and N) mineralization in a range of organically managed soils and compare to select conventionally managed soils.
- Examine patterns of P and N uptake by different crops grown in the same soils in objective one.
- Quantify arbuscular mycorrhizal fungi associations in the crops measured under objective two.
- Assess the relationship between pre-seeding available P status, P-mineralization potential, plant P uptake and arbuscular mycorrhizal fungi colonization in a range of organically managed soils and compare to select conventionally managed soils.
- Assess the relationship between per-seeding available N status, N- mineralization potential and plant N uptake in a range of organically managed soils and compare to select conventionally managed soils.

Contact: Diane Knight (306) 966-2703

Evaluation of novel crops as green manures in organic agriculture

Objectives: **Funding:** $99,270

This proposal is to examine in depth soil nutrients associated with the various crop/termination types/ and termination date combinations. Specific objectives are:

- Quantify N2 fixation and N and P uptake in Faba bean and field pea (variety 40-10) at three termination dates (early flowering, late flowering and budding)
- Quantify N and P uptake in non-legume green manures (oilseed radish, buckwheat, and spring rye) at three termination dates (early flowering, late flowering and budding)
- Quantify arbuscular mycorrhizal fungi associations and their contribution to P uptake in faba bean, field pea (variety 40-10), oilseed radish, buckwheat, and spring rye.
- Quantify the effect of the different green manures/termination dates and termination methods on subsequent wheat production, N and P uptake and AMF associations.

Contact: Diane Knight (306) 966-2703

Nitrous oxide (N2O) emissions from soils receiving long-term applications of liquid and solid manure: a study at the Dixon long-term manure plots

Objectives: **Funding:** $124,474

- The overall objective of this study is to quantify and compare N2O emissions from agricultural plots receiving long-term applications of liquid (swine) and solid (cattle) manure to plots receiving equivalent rates of urea fertilizer.

Contact: Richard Farrell (306) 966-2772

Importance of P nutrition on N2-fixation, nutrient uptake and productivity of pea

Objectives: **Funding:** $122,000

- Quantify the effect of different rates and placements of P fertilizer on nitrogenase activity, biological N2 fixation and nodule development.
- Measure the influence of the P fertilizer applications on pea productivity, and N and P acquisition.
- Quantify the influence of the P fertilizer applications on seedling emergence and root development.
- Quantify the influence of P fertilizer application on mycorrhyzal associations with pea roots.

Contact: Diane Knight (306) 966-2703

College of Engineering

Department of Chemical Engineering
57 Campus Drive, Saskatoon, SK S7N 5A9

Ethanol dehydration with canola meal
Objectives: **Funding:** $59,800
The overall objective of this proposed research is to develop an efficient ethanol dehydration process using canola meal to produce anhydrous or fuel grade ethanol from dilute ethanol-water mixtures. To that end, the Pressure Swing Adsorption (PSA) process will be utilized. A series of adsorption columns will be constructed in order to dehydrate ethanol from five - 95wt per cent ethanol-water vapor mixtures to achieve 99.9 per cent fuel grade or anhydrous ethanol.
Contact: Catherine Niu (306) 966-2174

Department of Civil and Geological Engineering
57 Campus Drive, Saskatoon, SK S7N 5A9

Use of flax fibre as a reinforcement for concrete
Objectives: **Funding:** $50,000
The long-term goal of this research program is to develop a technically feasible fibre-reinforced concrete (FRC) that incorporates fibre derived from flax straw. This project specifically targets the following objectives.

- To quantify the deterioration of flax fibre within a concrete environment.
- To quantify the effect that flax fibre degradation has on the long-term durability and mechanical properties of flax FRC.
- To identify effective methods for improving the durability of flax fibre in concrete.

Contact: Leon Wegner (306) 966-5349

Vaccine and Infectious Disease Organization (VIDO)

Vaccine and Infectious Disease Organization (VIDO)
120 Veterinary Road, Saskatoon, SK S7N 5E3

Development of live vaccines for swine influenza
Objectives: **Funding:** $153,000
The long term objectives of this project are to develop and evaluate modified live virus vaccines for swine influenza. In the short term, we propose to pursue the following three specific objectives.

- Establish swine influenza models in pigs and determine the pathogenesis of the modified viruses.
- Determine the immunogenicity of the modified virus vaccines.
- Determine whether the modified live virus vaccines will protect swine from homosubtypic and heterosubtypic swine influenza virus (SIV) infections.

Contact: Yan Zhou (306) 966-7716

Novel ways to enhance immunity significantly and to confer protection against infectious diseases using nanotechnology

Objectives: **Funding:** $215,000

The main aim of the project is to develop an effective and safe delivery vehicle that significantly reduces the required concentration of a variety of immunotherapeutic molecules. Our objectives are:

- To optimize and select the best candidates based on in vitro results using select host defense peptides (HDPs) and mixture of select herb extracts (HEs) of established medicinal value.
- To compare the efficiency of MWCNT conjugated, CpG ODN, HDPs and HEs and their combinations in vitro with cattle immune cells.
- Innate immune gene expression studies to evaluate the protective efficacy of the select MWCNT-conjugates (selected from objectives 1 and 2) in vitro with cattle immune cells.
- To determine the immunogenecity and protective efficacy of the select conjugates in vivo in cattle using bovine respiratory disease models.

Contact: Palok Aich (306) 966-1541

Development of a safe and effective vaccine against inclusion body hepatitis (IBH) virus infection in chickens

Objectives: **Funding:** $120,000

The long term objective of our research is to develop non-invasive type of avian viral vaccines that could circumvent the risks associated with live viral vaccines and induce long term protective immunity. Four specific aims are constituted to achieve our objectives.

- Evaluation of vaccine formulations containing IBH viral protective antigen, avian defensin and polyphosphazene (PCEP) as vaccine candidates.
- Evaluation of vaccines containing genetically linked IBH viral capsid protein and avian defensins.
- Evaluation of optimal formulations and delivery system for protection against IBHV infection model.
- Safety of new vaccine.

Contact: Mohammed Arshud Dar (306) 966-1532

University of Regina

Faculty of Engineering – Department of Industrial Systems Engineering

3737 Wascana Parkway, Regina, SK S4S 0A2

Innovative biofibre value-added products: filter media

Objectives: **Funding:** $204,000

This project examines the innovative development of a commercial, value-added product from Saskatchewan crop residue (hemp and flax) with the focus being on the creating an air filter media.

Contact: Denise Stilling (306) 337-2696

Biocomposites with reclaimed material for acoustic and vibration attenuation

Objectives: **Funding:** $298,000

This project seeks to develop a biocomposite from crop residue and reclaimed material for semi-structural commercial applications that require good acoustic and/or vibration damping capabilities.

- To review current technology and applications.
- Prototype development and assessment.
- Market and commercialization development.

Contact: Denise Stilling (306) 337-2696

Faculty of Science – Department of Biology
3737 Wascana Parkway, Regina, SK S4S 0A2

Increasing the effectiveness of rhizobial inoculants by using immobilized phage to enhance nodulation competitiveness
Objectives: **Funding:** $135,000
The main objective of this proposal is to develop a new technology that uses rhizobial phage as a tool to enhance the competitive success of highly effective commercial inoculant strains of rhizobia for pea, lentil, bean, and chick pea. Fulfilling this objective will benefit Saskatchewan legume producers by increasing crop yields while reducing production costs by reducing the input of chemical nitrogen fertilizer.
Contact: Chris Yost (306) 585-5223

Agriculture and Agri-Food Canada

Agriculture and Agri-Food Canada
107 Science Place, Saskatoon, SK S7N 0X2

Evalulation of new B. napus defense genes for sclerotinia resistance and development of markers for marker-assisted selection
Objectives: **Funding:** $493,000
- To provide canola breeders with molecular markers linked to sclerotinia resistance for developing stem rot resistant canola varieties.
- To identify genes associated with resistance to sclerotinia stem rot in new B. napus accessions recently identified as resistant in indoor and outdoor screening at the Saskatoon Research Centre.
- To identify genes providing protection from necrosis inducing proteins produced by S. sclerotiorum.

Contact: Dwayne Hegedus (306) 956-7667

Developing genetic resources for Camelina sativa, an alternative oilseed platform for the prairies
Objectives: **Funding: $**506,000
Short-Term Objectives:
- To generate a gene-based map of Camelina sativa and to generate SNP markers linked to loci controlling key traits for agronomic improvement: seed quality traits, 1000-seed weight and stem rot resistance.
- To align the genome of C. sativa with canola.
- To assess Camelina stem rot resistance markers in canola.
- To study the impact of aster yellows on Camelina productivity.

Long-Term Objectives:
- To develop Camelina sativa as a robust alternative platform crop for the prairie provinces.
- To leverage information from the Camelina model system for crop improvement in canola.

Contact: Isobel Parkin (306) 956-7283

Impact of soil temperature and pH, and plant growth stage on clubroot of canola
Objectives: **Funding:** $57,700
The objectives of this study are to quantify the impact of temperature on infection by P. brassicae and symptom development on canola, and to determine the extent to which this relationship is affected by characteristics of the pathogen (race), host (susceptibility/species), and environment (soil pH).
Contact: Bruce Gossen (306) 956-7259

Hybridization system development in Brassica rapa: interspecific transfer and introgression of the ogura restorer (Rf) gene

Objectives: **Funding:** $291,798

- Transfer the ogura restorer (Rf) gene from B. juncea to B. rapa using traditional sexual crossing (interspecific) and marker-assisted breeding techniques.
- Introgress ogura Rf gene into canola quality B. rapa germplasms.

Contact: Kevin Falk (306) 956-7614

Agriculture and Agri-Food Canada

52 Campus Drive, Saskatoon, SK S7N 5B4

Improvement of banking semen procedures in bison

Objectives: **Funding:** $176,500

The overall goal of this proposal study is to optimize the cryopreservervation procedure to successfully bank bison semen. The specific objectives are:

- Understanding the bison sperm biology at different season.
- Identification of the factor responsible of the poor freezing ability of the bison semen.
- Development of new cryopreservation procedures for bison semen.

Contact: Carl Lessard (306) 956-7221

Agriculture and Agri-Food Canada

Box 760, Indian Head, SK S0G 2K0

Crown rust in oats: when are fungicide applications to control crown rust of economic benefit to producers?

Objectives: **Funding:** $62,000

- To determine if and when fungicides should be applied to oats in eastern Saskatchewan as crown rust resistant genes in oats are overcome by crown rust.
- To determine if a common belief in Manitoba that a fungicide application is improving yield in the absence of crown rust, is true in Saskatchewan.

Contact: William May (306) 695-5225

Semiarid Prairie Agriculture Research Centre (SPARC)

Box 1030, Swift Current, SK S9H3X2

Effect of the midge resistance Sm1 gene on durum wheat end-use quality

Objectives: **Funding:** $297,599

- To study the effect of midge resistance Sm1 on end-use quality in durum (Triticum turgidum var. durum) wheat using related lines with and without the Sm1 resistance gene.
- To make a genetic map of the Sm1 region in durum wheat to identify better molecular markers that will reduce linkage drag and to identify direct interactions of Sm1 gene on associated quality traits.

Contact: Danny (Asheesh) Singh (306) 778-7256

National Research Council

Plant Biotechnology Institute
110 Gymnasium Place, Saskatoon, SK S7N 0W9

Development of high throughput SNP genotyping platforms for cost efficient marker-assisted selection in pulse crop breeding
Objectives: **Funding:** $500,050

- Develop a database and bioinformatics pipeline for the in silico identification of SNPs in the available sequence collections of the four pulse crops.
- Develop a high-throughput, cost-efficient SNP genotyping assay for global collections (up to 1,536 loci) of informative SNP markers in small germplasm development populations and association mapping experiments.
- Develop a low cost single-plex SNP genotyping assay for targeted subsets of informative SNP markers in large breeding populations.
- Initiate a SNP discovery program in dry bean.
- Develop dense SNP genetic maps of the four pulse crops using validated SNP genotyping assays and selected available RIL mapping populations.

Contact: Andrew Sharpe (306) 975-5967

Other Research Organizations

Prairie Swine Centre

Prairie Swine Centre
2105 – 8th Street East, Saskatoon, SK S7H 5N9

Improving energy efficiency in swine barns to reduce cost of production
Objectives: **Funding:** $149,720

- The overall goal of this research project is to reduce the cost of production in swine operations by optimizing energy efficiency and reducing energy use in swine barns.

Contact: Bernardo Predicala (306) 667-7444

Improved competitiveness in pork production with low-grade feed ingredients
Objectives: **Funding:** $179,650
The overall objective of this project is to improve the competitiveness of the pork industry of Saskatchewan, through the use of locally-produced, alternative feed ingredients, while limiting their negative impact on the environment. The specific objectives of the projects include: determine the nutritional value of low-grade feed ingredients in growing pigs; study the consequences of their high content of indigestible protein and dietary fibre on bacterial protein synthesis in the intestines and N excretion; develop balanced diets based on low-grade feed ingredients that minimize the emission of ammonia in the environment; and evaluate the economic advantage of their use in pork production.
Contact: Pascal Leterme (306) 667-7445

Prairie Agricultural Machinery Institute (PAMI)

Prairie Agricultural Machinery Institute (PAMI)

Box 1150, Humboldt, SK S0K 2A0

Solid state anaerobic digestion (SSD) pilot research

Objectives: **Funding:** $225,250

- The goal of the research associated with this proposal is to investigate the applicability of a farm-scale solid state digester (SSD) as an energy offset for the Canadian prairie producer with available waste material biomass feedstock.

Contact: Patricia Lung (306) 682-5033 Ext. 228

Western Beef Development Centre

Box 1900, Humboldt, SK S0K 2A0

Cost of production benchmarking study

Objectives: **Funding:** $50,000

The objective is to improve the profitability, sustainability and competitiveness of the Saskatchewan cow-calf industry. The key focus will be on determining current production costs for cow-calf operators in Saskatchewan and establishment of benchmark values for future producer use. Low cost production strategies will be identified and incorporated into training sessions for producers.

Contact: Paul Jefferson (306) 682-3139 Ext. 272

Extended grazing systems utilizating crop residues for improving economic returns from Saskatchewan cow/calf operations

Objectives: **Funding:** $168,900

Specific objectives include:

- The effect of field grazing crop residue on cow body weight change and condition.
- The effect of field grazing crop residue on cow reproductive performance.
- Characterization of the nutritive value of oat/pea chaff or oat/pea chaff/straw.
- To determine if oat/pea chaff or oat/pea chaff/straw can provide the majority of mature pregnant beef cows nutrient requirements with minimal supplementation.
- Evaluate each cow management feeding system economically for total costs and the potential effect on net returns per cow.

Contact: Bart Lardner (306) 682-3139

Saskatchewan Research Council

Agriculture, Biotechnology and Food

125 - 15 Innovation Blvd., Saskatoon, SK S7N 2X8

Pyrolysis of agriculture and livestock residue

Objectives: **Funding:** $178,000

The research objective of this project is to assess mobile pyrolysis technology as a novel solution for managing agricultural and livestock residues in a way that:

- The pyrolysis oils are characterized to identify their value as a fuel with characteristics that are suited to be utilized directly for energy or as an intermediate for subsequent conversion into bio-gasoline or bio-diesel.
- The pyrolysis char is characterized as a soil amendment, a bio-fertilizer, an intermediate for subsequent processing, or as an additive to increase the calorific value of the pyrolysis oil.

Contact: Darren Anweiler (306) 933-8178

EcoTech Research Ltd.

EcoTech Research Ltd.

1717 13th Avenue, Regina, SK S4P 0V4

Locate fresh water and determine soil properties using conductivity measurements

Objectives: **Funding:** $122,365

- Design and construct a mobile platform to simultaneously record information from four ground conductivity instruments to provide a faster, more accurate and less expensive method to map subsurface conductivity at the field level.
- Design and construct a penetrometer able to quickly measure changes in conductivity with depth.
- Develop interpretation methods to analyze four instrument conductivity data and penetrometer data.
- Conduct a proof-of-concept study to determine if the recently developed seismoelectric method can locate fresh water sources at depths up to 200 meters.
- Investigate the potential benefits of using conductivity meters other than the Geonics instruments currently used by the Ministry of Agriculture and PFRA.

Contact: Evan Morris (306) 352-2468

Saskatchewan Seed Potato Growers' Association

Saskatchewan Seed Potato Growers' Association

#25 1st Avenue North, PO Box 386, Outlook, SK S0L 2N0

Evaluation of biocides and disinfection procedures for the effective sanitation of potato storages and equipment

Objectives: **Funding:** $60,000

- Identify disinfectants effective at destroying Clavibacter michiganensis subsp. sepedonicus (Cms), the causal agent of bacterial ring rot.
- Determine the effectiveness of disinfectants, both registered products and newly identified products, on various potato storage and equipment surfaces, e.g. urethane, galvanized metal, painted sheet metal, steel, concrete, burlap, rubber, plastic and plywood.
- Determine if the efficacy of disinfection is enhanced by the addition of foaming agents, adjuvants, etc.

Contact: Linda Sinclair (306) 867-2078