2026 Agriculture Development Fund Projects

January, 2026

Sustainable Canadian Agricultural Partnership

Saskatchewan

Canada

Agriculture Development Fund (ADF) Crops Projects 2026

- **39** crops projects were approved by ADF for a total of **$7,177,374**.
- **13** industry partners co-funded projects for a total of **$3,243,398**.

Institution	Number of Approved Projects	Total Amount Funded
Agriculture and Agri-Food Canada	9	$1,412,730
Irrigation Saskatchewan	1	$214,800
National Research Council	1	$198,523
Saskatchewan Conservation and Development Association	1	$169,250
Saskatchewan Polytechnic	1	$250,000
University of Manitoba	1	$173,250
University of Regina	1	$210,500
University of Saskatchewan	24	$4,548,321
Total Government Support	**39**	**$7,177,374**

Commodity	Number of Approved Projects	Total Amount Funded
Cereals	13	$2,696,848
Oilseeds	2	$369,400
Pulses	6	$954,125
Vegetables and Fruit	2	$298,073
Other/Multiple Crops	7	$1,345,618
Bioproducts Processing	5	$993,000
Food Processing	4	$520,310
Total Government Support	**39**	**$7,177,374**

Crops Project Co-funders	Number of Approved Projects
Alberta Canola Producers Commission	1
Alberta Grains	5
Alberta Pulse Growers	2
Canary Seed Development Commission of Saskatchewan	1
Manitoba Canola Growers	1
Manitoba Crop Alliance	2
Results Driven Agriculture Research	3
Saskatchewan Barley Development Commission	2
Saskatchewan Oat Development Commission	1
Saskatchewan Oilseeds Development Commission	3
Saskatchewan Pulse Growers	8
Saskatchewan Wheat Development Commission	8
Western Grains Research Foundation	7
Total Industry Support	**25[1]**

[1]A total of 25 projects received co-funding support. Some projects were co-funded by more than one co-funder.

Agriculture and Agri-Food Canada

Sub-surface drip irrigation - understanding water requirements, best management practices, and irrigation management strategies (*20251111*)

Principal Investigator: Evan Derdall, Agriculture and Agri-Food Canada
Objectives:

- Assess the water requirements and resulting water use efficiency of sub-surface drip irrigation (SSDI) compared to conventional center pivot irrigation.
- Investigate potential advantages and limitations of SSDI, including germination challenges, root disease risks, reduced foliar disease, minimized evaporative losses, and reduced lodging.
- Conduct a cost-benefit analysis of SSDI compared to center pivot irrigation.
- Establish irrigation scheduling methods for SSDI to maximize water use efficiency.

Co-funded by: Results Driven Agriculture Research
ADF Funding: $24,000

Genetic barriers to FHB resistance: Exploring genes limiting *Fhb1*'s effectiveness in Canadian durum and bread wheat (*20251142*)

Principal Investigator: Firdissa Bokore, Agriculture and Agri-Food Canada
Objectives:

- To assess *Fhb1*, and its inhibitory genes *In1*, and *In2* in a diverse panel of Canadian durum and bread wheat varieties through DNA analysis.
- To screen the diverse panel of Canadian durum and bread wheat varieties for fusarium head blight (FHB) reaction in FHB nurseries in Indian Head, Brandon and Morden and perform genome wide association study.
- To develop DNA markers to facilitate the breeding process.

Co-funded by: Alberta Grains, Saskatchewan Wheat Development Commission
ADF Funding: $220,000

Identifying Resistance to the Biosafety Level 2 Pathogen *Fusarium solani* in Pulse Crops for Integrated Disease Management (*20251143*)

Principal Investigator: Ahmed Abdelmagid, Agriculture and Agri-Food Canada
Objectives:

- To develop large-scale resistance screening protocols for *F. solani* and assess virulence and host range of a broad collection of isolates on soybean, pea, lentil, faba bean, chickpea, and wheat, barley and canola as non-pulse crop species to select suitable isolates.
- To screen 30 lines of each soybean, pea, lentil, faba bean, chickpea for resistance to *F. solani*.
- To determine whether wheat, barley, and canola genotypes can act as asymptomatic hosts of *F. solani*.

Co-funded by: Alberta Pulse Growers, Saskatchewan Pulse Growers
ADF Funding: $30,000

Living mulch for regenerative cereal production in the western Prairies (*20251151*)

Principal Investigator: Myriam Fernandez, Agriculture and Agri-Food Canada
Objectives:

- To determine if living mulches can reduce weed biomass and prevent the development of herbicide-resistant weeds.
- To determine if a living mulch cropping system can increase growth, grain yield, and quality of cereals compared to monocultures.
- To determine the soil and yield benefits from a living mulch to the following cropping year compared to a monoculture system.

Co-funded by: Saskatchewan Oat Development Commission, Saskatchewan Wheat Development Commission
ADF Funding: $150,655

Exploration and exploitation of genetic variation associated with FHB resistance and low DON accumulation in two-row barley (*20251186*)

Principal Investigator: James Tucker, Agriculture and Agri-Food Canada
Objectives:

- To develop a mutagenized population.
- To utilize genomics and phenomics data and perform genome-wide association study (GWAS) and identify genomic regions linked to FHB resistance.
- To evaluate wild barley accessions for FHB resistance.
- To assess the impact of the heat on FHB resistance and deoxynivalenol (DON) accumulation in barley.

Co-funded by: Alberta Grains, Manitoba Crop Alliance, Results Driven Agriculture Research, Saskatchewan Barley Development Commission
ADF Funding: $137,500

Toward the identification of the chlorosis inducing effector, ToxC, in tan spot (*20251209*)

Principal Investigator: Reem Aboukhaddour, Agriculture and Agri-Food Canada
Objectives:

- To generate full genome sequences of ToxC producing and nonproducing fungal isolates.
- To conduct genome wide association study and find markers linked to the ability of producing ToxC symptoms.
- To perform transcriptome analysis to explore gene expression patterns and examine how these relate to associated single nucleotide polymorphisms (SNPs). This will help narrow down candidate genes involved in ToxC biosynthesis or reveal possible underlying mechanisms.
- To use genome structural analysis to identify shifts around identified SNPs.
- To conduct QTL mapping for susceptibility in durum wheat to race 3 isolates of tan spot.

Co-funded by: Alberta Grains, Results Driven Agriculture Research
ADF Funding: $280,600

Impact of crop diversity on grain production and soil quality in a long-term rotation at Indian Head (*20251286*)

Principal Investigator: William May, Agriculture and Agri-Food Canada
Objectives:

- Study and compare the long-term effects of short, diverse and wheat-based rotations on agronomics and soil health.
- Examine the medium-term differences between rotations on crop production.
- Measure the impact of carbon and nitrogen inputs from residues of diverse crop sequences on soil characteristics in southeast Saskatchewan.
- Investigate why growing soybeans before wheat in a three- or four-year rotation is increasing wheat yield.

Co-funded by: Western Grains Research Foundation
ADF Funding: $71,535

RNA Shield: protecting canola against Blackleg, Clubroot and Verticillium stripe (*20251367*)

Principal Investigator: Hossein Borhan, Agriculture and Agri-Food Canada
Objectives:

- Design double-stranded RNA (dsRNA) to target specific genes in the pathogens causing Blackleg, Clubroot, and Verticillium stripe.
- Compare different lengths and sequences of dsRNA to determine the optimal configuration for gene silencing.
- Test the efficacy of naked dsRNA spray versus dsRNA-coated carbon dot nanoparticles in controlling the pathogens.
- Conduct field trials to test the optimized dsRNA applications.

Co-funded by: Alberta Canola Producers Commission, Manitoba Canola Growers, Saskatchewan Oilseeds Development Commission, Western Grains Research Foundation
ADF Funding: $196,150

Management of Septoria Leaf Mottle and Desiccation in Canary Seed (*20251420*)

Principal Investigator: William May, Agriculture and Agri-Food Canada
Objectives:

- Assess the effectiveness and timing of various fungicides on controlling Septoria leaf mottle in canary seed.
- Test the effectiveness of different desiccants and their application timings on canary seed grain yield and biomass dry down.

Co-funded by: Canary Seed Development Commission of Saskatchewan
ADF Funding: $302,290

Irrigation Saskatchewan

Assessment of Irrigated Tile Drainage Impacts on Downstream Water Quality in Saskatchewan (*20251470*)

Principal Investigator: Volodymyr Ternovsky, Irrigation Saskatchewan
Objectives:

- Analyze the flow of nutrient and salt transport from tile drainage under pivot irrigation.
- Assess and quantify the effects of tile drainage effluent on downstream water quality and quantity.
- Characterize the challenges, benefits, and solutions of tile drainage management in a Saskatchewan irrigation district.

ADF Funding: $214,800

National Research Council

An integrative approach for double haploid induction to accelerate field pea breeding (*20251371*)

Principal Investigator: Hai Ying Yuan, National Research Council
Objectives:

- To understand genotype responses towards double haploid induction in elite pea cultivars.
- To establish an efficient double haploid induction platform in elite field peas.
- To identify beneficial genes and underlying mechanisms for double haploid induction responses in field peas.

Co-funded by: Saskatchewan Pulse Growers, Western Grains Research Foundation
ADF Funding: $198,523

Saskatchewan Conservation and Development Association

Phosphorus release from soil to snowmelt runoff under flooded conditions: Improving P fertility recommendations (*20251467*)

Principal Investigator: Julia Lustosa Albuquerque Norberto, Saskatchewan Conservation and Development Association
Objectives:

- Compare phosphorus (P) availability under aerobic (dry) and anaerobic (flooded) conditions during spring snowmelt.
- Measure phosphorus, nitrogen and sulfur runoff from heavy clay soils during snowmelt. Understand implications for downstream water quality.
- Investigate how different crop stubble heights affect snow accumulation and phosphorus, nitrogen and sulfur load in runoff.

ADF Funding: $169,250

Saskatchewan Polytechnic

Transitioning to Bioplastic Bottles: Sustainable Packaging for Cleaning Products (*20251383*)

Principal Investigator: Satyanarayan Panigrahi, Saskatchewan Polytechnic
Objectives:

- Identify and source bioplastics and natural fibres.
- Formulate bioplastic pellets incorporating flax and hemp fibres.
- Create prototype bottles and evaluate their performance.

ADF Funding: $250,000

University of Manitoba

Investigating susceptible genes (S-genes) in canola to improve resistance against Verticillium disease (*20251323*)

Principal Investigator: Dilantha Fernando, University of Manitoba
Objectives:

- To assess the mutagenized population for resistance to verticillium stripe.
- To identify candidate susceptibility genes and associated proteins.
- To validate the function of the candidate susceptibility genes and develop molecular markers.

Co-funded by: Saskatchewan Oilseeds Development Commission
ADF Funding: $173,250

University of Regina

Developing an AI Platform for Selecting Abiotic Stress Resilient Traits in Wheat (*20251139*)

Principal Investigator: Abdul Bais, University of Regina
Objectives:

- To develop and validate machine learning (ML) models for accurately identifying and quantifying wheat stomatal traits.
- To develop a smart portable microscope with ML models and microenvironment sensors.
- To establish high-throughput imaging and ML tools for vascular trait phenotyping in wheat stems.
- To develop ML models using UAV-acquired thermal and multispectral imagery to estimate wheat genotype-specific stomatal conductance across different environments and growth periods.
- To integrate smart microscope, vascular phenotyping, and UAV imaging into a system for mapping wheat stress resilience.

Co-funded by: Saskatchewan Wheat Development Commission
ADF Funding: $210,500

University of Saskatchewan

Evaluating the soil carbon storage and economic outcomes of agricultural wetland management (*20251131*)

Principal Investigator: Chantel Chizen, University of Saskatchewan
Objectives:

- Calculate soil organic carbon (SOC) stocks across various wetland management practices and environmental factors.
- Evaluate field-scale soil carbon stocks following agricultural drainage.
- Model wetland SOC stocks across agricultural cropland in Saskatchewan.
- Evaluate the economic benefits and costs of SOC storage in prairie pothole wetlands.

Co-funded by: Saskatchewan Wheat Development Commission
ADF Funding: $331,920

Apoboost: Enabling crossbreeding for elevated Saskatoon berry production (*20251138*)

Principal Investigator: Anze Svara, University of Saskatchewan

Objectives:

- To identify cross-fertile saskatoon berry plants in the University of Saskatchewan germplasm collection.
- To develop novel crossbred saskatoon berry cultivars with enhanced fruit quality and agronomic traits.
- To assemble a reference genome for saskatoon berry for genetic marker development and functional validation of apomixis genes.

ADF Funding: $262,775

Harnessing Genetic Resistance and Cold Plasma for Sustainable Management of Bacterial Leaf Streak in Wheat and Barley (*20251206*)

Principal Investigator: Randy Kutcher, University of Saskatchewan

Objectives:

- To perform genome-wide association study on germplasm evaluated in previous ADF project 20220242 (industry-funded) to identify genomic regions associated with bacterial leaf streak (BLS) resistance.
- To screen additional 4,000 barley and wheat germplasm for BLS resistance.
- To identify the optimal cold plasma seed treatment method for producing BLS-free seed.

Co-funded by: Alberta Grains, Saskatchewan Barley Development Commission, Saskatchewan Wheat Development Commission

ADF Funding: $243,058

Expanding Chickpea Growing Areas in Saskatchewan (*20251217*)

Principal Investigator: Bunyamin Tar'an, University of Saskatchewan

Objectives:

- The objective of the project is to evaluate early flowering lines for various traits, including flowering duration, ripening phase, maturity, plant height, disease resistance, pod and seed count, seed weight, and grain yield over two years in Moose Jaw, Saskatoon, Rosthern, and Melfort.

Co-funded by: Saskatchewan Pulse Growers, Western Grains Research Foundation

ADF Funding: $97,135

Multi-traits Mapping in Chickpea using Nested Associated Mapping (NAM) Population (*20251218*)

Principal Investigator: Bunyamin Tar'an, University of Saskatchewan

Objectives:

- To phenotype 400 lines in the field at Elrose (or Lucky Lake) and Moose Jaw and in a disease nursery under irrigation in Saskatoon over two years.
- To genotype and perform genome wide association study to identify novel genes related to major target traits in chickpea.

Co-funded by: Saskatchewan Pulse Growers, Western Grains Research Foundation

ADF Funding: $195,848

Preserving Tradition: Innovative Approaches to Curb Riceworm Infestation in Northern Saskatchewan Wild Rice (*20251231*)

Principal Investigator: Tim Sharbel, University of Saskatchewan
Objectives:

- Identify suitable insect pheromones to attract and capture male riceworms.
- Rapidly assess pheromone dosage in riceworm lures using electronic nose technology.
- Identify areas to focus chemical feeding attractants by understanding the genetic diversity and migration patterns of riceworms.

ADF Funding: $336,210

Development of high protein extruded snacks from pea/faba bean protein concentrates with low glycemic index (*20251242*)

Principal Investigator: Michael Nickerson, University of Saskatchewan
Objectives:

- Produce high protein extruded snacks at Lovingly Made's commercial extruder.
- Determine the glycemic index of the snacks through human subject testing.

ADF Funding: $113,860

Effect of saskatoon berries on fecal microbiota profile following a 12-week, placebo-controlled human study (ADF#2016008) (*20251271*)

Principal Investigator: Jim Fang, University of Saskatchewan
Objective:

- Analyze microbiota profiles from fecal samples collected during ADF project 20160008.

ADF Funding: $35,298

Development of a novel dry separation method for protein enrichment via electrostatic traveling waves (*20251275*)

Principal Investigator: Lifeng Zhang, University of Saskatchewan
Objectives:

- Design and develop a lab-scale electrostatic traveling wave apparatus for protein enrichment.
- Investigate the effects of operating parameters on the functional properties of enriched flours.

ADF Funding: $88,000

Tan spot of bread and durum wheat: identifying new sources of resistance and dissection of resistance by GWAS (*20251379*)

Principal Investigator: Randy Kutcher, University of Saskatchewan
Objectives:

- To develop evaluation protocols for indoor and field screening of durum and bread wheat for resistance to tan spot and screen Crop Development Centre (CDC) breeding materials and 3,200 diverse germplasm.
- To perform a genome wide association study and identify genomic regions associated with resistance.

ADF Funding: $143,814

Integrated Processing of Pulses and Oil Crops for Sustainable Oil-Rich Protein Production (*20251397*)

Principal Investigator: Martin Reaney, University of Saskatchewan
Objectives:

- Optimize and standardize the extraction process.
- Assess the physicochemical properties of oil-protein matrices.
- Optimize vegan soft cheese formulation.
- Evaluate co-product fractions (whey, starch, and fibre) for various applications.
- Scale up the process and conduct technoeconomic analysis of oil-rich protein extraction.

Co-funded by: Saskatchewan Pulse Growers
ADF Funding: $207,000

Quantification and genetic basis of pyrethroid insecticide resistance in pea aphids (*20251409*)

Principal Investigator: Sean Prager, University of Saskatchewan
Objectives:

- Test pea aphids from across Saskatchewan to see how well they survive after being treated with pyrethroid insecticides, which helps check for resistance.
- Compare aphids from different plants (like peas, lentils, and alfalfa) to find out if their resistance to insecticides depends on the plant they live on.
- Look at the genes of resistant aphids to understand how they fight off insecticides and create quick tests to detect resistance.
- Study special enzymes in aphids that help them break down insecticides, to learn more about how resistance works.

Co-funded by: Saskatchewan Pulse Growers, Western Grains Research Foundation
ADF Funding: $211,550

Stability of solid-stemmed CWRS wheat and resistance to wheat stem sawfly (WSS) in high pressure environments (*20251428*)

Principal Investigator: Adam Carter, University of Saskatchewan
Objectives:

- To evaluate 50 solid-stemmed lines with Canada Western Red Spring (CWRS) backgrounds over two years at 3 locations (Pense, AAFC Swift Current, and AAFC Lethbridge) for stability of pith expression and resistance to stem sawfly.
- To evaluate 100 solid-stemmed lines with CWRS backgrounds for agronomic performance, disease resistance (fusarium head blight, leaf rust, stripe rust, and common bunt), and quality traits at two yield trial locations and disease nurseries.
- To identify genomic regions associated with resistance to stem sawfly.

Co-funded by: Saskatchewan Wheat Development Commission
ADF Funding: $232,597

Stable preharvest sprouting resistance in CWRS wheat via improved low temperature seed dormancy (*20251432*)

Principal Investigator: Adam Carter, University of Saskatchewan
Objectives:

- To assess seed dormancy stability and preharvest sprouting (PHS) resistance in lines derived from crosses with high dormancy parents.
- To introgress seed dormancy and PHS resistance alleles into elite CWRS wheat backgrounds.
- To evaluate developed lines in objective 2 in multiple locations and years and assess the stability of PHS resistance.
- To screen materials with the reported molecular markers and identify regions associated with PHS resistance in CDC germplasm and to quantify their effects.

Co-funded by: Alberta Grains, Manitoba Crop Alliance, Saskatchewan Wheat Development Commission
ADF Funding: $151,160

Optimizing wheat breeding trial design with remote sensing and spatial analysis (*20251434*)

Principal Investigator: Adam Carter, University of Saskatchewan
Objectives:

- To collect satellite imaging and other remote sensing data from primary wheat breeding trials and map spatial variation.
- To compare spatial models (yield spatial variation) with historical plot-level yield data from CDC durum and bread wheat breeding trials and assess predictive value.
- To assess the developed spatial models in new trial locations within existing fields.

ADF Funding: $186,117

The nature of soil carbon in SK soils: Bridging the gap between laboratory and spectroscopic methods (*20251436*)

Principal Investigator: Derek Peak, University of Saskatchewan
Objectives:

- Conduct a spectroscopic characterization of SOC stability in legacy soil samples using Fourier Transform Near-Infrared and Mid-Infrared.
- Develop and evaluate machine learning predictive models for carbon and integrate spectral information with existing libraries.
- Understand linkages between soil physicochemical properties and the quality and stability of SOC.
- Develop for collecting and processing soil spectra in the field from intact field moist core samples.
- Assess and compare high and low-cost near infrared device for SOC stock and bulk density estimation at the field-scale.
- Perform cost-benefit of the different spectroscopic strategies with traditional SOC stock estimates.

Co-funded by: Saskatchewan Oilseeds Development Commission
ADF Funding: $432,413

Saskatchewan Soil Data Hub and Interpretation Guide (*20251440*)

Principal Investigator: Chantel Chizen, University of Saskatchewan
Objectives:

- Establish standards for soil data ownership and permissions.
- Develop a secure, scalable database and process for long-term storage of Saskatchewan soil data.
- Create a soil analysis interpretation guide to support informed, data-driven decisions for sustainable land management.

Co-funded by: Saskatchewan Wheat Development Commission
ADF Funding: $101,700

From pulses to pints: Brewing beer with air-classified starch-rich flours from Canadian pulses (*20251442*)

Principal Investigator: Yongfeng Ai, University of Saskatchewan
Objectives:

- Extrude pulse flour with thermostable α-amylase and glucoamylase.
- Integrate extruded flours into the brewing process.
- Assess the quality, flavor and aroma profile of the resulting beer.

Co-funded by: Alberta Pulse Growers, Saskatchewan Pulse Growers
ADF Funding: $111,450

Building the grounds for developing climate-smart lentil cultivars (*20251487*)

Principal Investigator: Ana Vargas, University of Saskatchewan
Objectives:

- To phenotype three populations (920 lines) for drought tolerance under controlled conditions.
- To validate top performing lines in objective 1 for drought tolerance under field conditions.
- To screen 920 lines for phosphor deficiency tolerance under controlled conditions.
- To validate phosphor efficient lentil lines at flowering stage.
- Genotype 300 wild plant accessions and combine their data with existing genotyped and phenotyped data to perform a genome-wide association study and identify genomic regions linked to drought and phosphorus deficiency tolerance.

Co-funded by: Saskatchewan Pulse Growers
ADF Funding: $221,069

Advancing Green Chemistry: Bis Compounds as Building Blocks for Industrial Applications (*20251500*)

Principal Investigator: Martin Reaney, University of Saskatchewan
Objectives:

- Optimize oil refining and chemical modification for ozonolysis.
- Produce dicarboxylic acids (azelaic and malonic acid) from oil ozonolysis.
- Synthesize bis guanidyl, bis cholyl and alanine.
- Evaluate the efficacy of ozonolysis products across various applications.

ADF Funding: $258,000

Genetic mapping of the glabrous trait and seed colour in Canary seed (*20251506*)

Principal Investigator: Adam Carter, University of Saskatchewan

Objectives:

- To identify genetic loci controlling glabrousness and seed colour in canary seed.
- To develop molecular markers targeting loci associated with glabrousness and seed colour.
- To validate molecular markers.

Co-funded by: Western Grains Research Foundation

ADF Funding: $102,347

Valorization of biomass for wastewater biofiltration applications for Saskatchewan's agri-food industry and beyond (*20251521*)

Principal Investigator: Lee Wilson, University of Saskatchewan

Objectives:

- Modify the surface and adhesion properties of the fibre mat.
- Screen and evaluate fibre mats for adsorption and filtration performance.
- Conduct mini-pilot scale filtration tests in a laboratory setting.
- Perform a techno-economic analysis of treatment costs.

ADF Funding: $206,000

Piloting Innovative Formulation and Field Testing of Bioplastics (*20251484*)

Principal Investigator: Bishnu Acharya, University of Saskatchewan

Objectives:

- Validate pilot-scale bioplastic film production process.
- Conduct field testing of the bioplastics as a bale wrap.
- Study the biodegradability of the bioplastic under real-world conditions.

ADF Funding: $139,000

Sustainable absorbent material production using pelletized agricultural waste for application in cat litter (*20251485*)

Principal Investigator: Bishnu Acharya, University of Saskatchewan

Objectives:

- Analyze the properties of commercial cat litter pellets.
- Develop a formulation using biomass, biochar and lignin.
- Optimize pelletization conditions for durability and functionality.
- Produce pellets at pilot-scale and conduct techno-economic analysis.
- Evaluate product performance under real-use conditions with cats.

ADF Funding: $140,000