

## 2019 ICDC Research and Development

Garry Hnatowich, PAg, ICDC

The following Table highlights the titles of projects conducted by ICDC during this year's growing season. The field program was both diverse in term of cropping options (cereals, pulses, vegetables, etc.) and in focus (variety evaluation vs agronomy). The program's size has outgrown the land allocation we have at CSIDC and the 12 acres of town land adjacent to CSIDC we rent long-term from the Town of Outlook. We are indebted to Walker Ag Ventures for allowing us to rent 40 acres of land in order to achieve our objectives.

From the project titles an idea of the project's purpose or intent can be formulated. However the importance of each lies in the details. The results of the entire program will be made available in the upcoming *2019 Annual Research and Demonstration* report and many of the projects will be individually reviewed at the 24th Annual Saskatchewan Irrigation Conference, Dec. 3-4

2019 in Moose Jaw. Research results will also be shared at other ICDC sponsored meetings or at events such as the Annual AgriARM Research Update (during the Crop Production Show) or through fact sheets.

Not seeing a project title you'd like to see? If you have ideas of projects you'd like ICDC to investigate, or faced cropping challenges you'd like an answer for, feel free to let us know. This is your program. Your guidance and suggestions are always welcomed. Contact me at [garry.icdc@sasktel.net](mailto:garry.icdc@sasktel.net) or at 306-361-6231.

Pulses	
Pea Regional Variety Trial	Dry Bean Regional Trial
Dry Bean Inoculation and Fertilizer Strategies for Solid Seeded Production	Enhanced fertilizer management for optimizing yield and protein in field pea
N Fertilizer Rate Response in Irrigated Dry Bean	Conventional Soybean Variety Trial
Registration of Oxidate for Chemigation Appl to Irrigated Dry Beans	Herbicide management strategies for weed control in lentil
Soybean Regional Variety Trial	Lentil Input Study
Expanding the Label Recommendations of Edge (ethalfuralin)	Production management strategies to improve field pea root health in Aphanomyces contaminated soils

Soil	
Use of yellow clover and tillage radish on heavy textured high sodium irrigated soils	Revisiting nitrogen fertilizer recommendations for Saskatchewan: Are we measuring the right soil nitrogen pool?
Effectiveness of Action 5% in Saline Irrigated Soils	

Oilseeds	
Canola Performance Trial	Sunflower Coop Trial
Straight Cut Canola Performance Trial	Demonstrating 4R N Management Principles for Canola
ICDC Irrigated Canola Variety Trial	4R Fall Nitrogen Application for Irrigated Canola (18-19)
Comparative efficacy of insecticidal seed treatments for flea beetle control in canola	Saskatchewan Variety Performance Group Regional Flax Trials
Sunflower Plant Population Trial	2019 Irrigated Canola Survey

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Box 1460, 901 McKenzie Street South  
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### Irrigation Conference and AGM

December 3 & 4, 2019  
in Moose Jaw, SK  
To register call:  
(306) 796-4727

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Cereals	
ICDC Irrigated Wheat Variety Trial	Demonstration of Fall Rye as an Irrigated Crop
Development of Field-Ready Cultivars of Canada Western Soft White Spring Wheat	Saskatchewan Variety Performance Group Regional Wheat Trials
Saskatchewan Variety Performance Group Regional Durum Trial	Saskatchewan Variety Performance Group Regional Barley Trials
Saskatchewan Variety Performance Group Regional Oat Trial	Can Farmer Saved Seed Perform As Well As Certified Seed?
Increasing Wheat Protein with a Post Emergent Applications of UAN	Demonstrating 4R Nitrogen management Principles in Spring Wheat (18-19)
Winter Wheat Variety Evaluation for Irrigation vs Dry Land Production (18-19) (19-20)	Effect of increased seeding density on weed competition and late season regrowth in spring wheat and durum.
4R Winter Wheat N Fertilization Rate and Timing Demonstration 2019	Demonstrating 4R Nitrogen Management Principles in Spring Wheat - Year 2
Winter Wheat Response to Contrasting Placement/Timing Options for N Fertilizer(18-19)	Demo of Nitrogen Rate Responses or Irrigated Conventional and Hybrid Fall Rye (18-19)
Winter Wheat Variety Evaluation for Irrigation vs. Dry Land Production (18-19)	

Horticulture	
Expansion of the Pickling Cucumber Industry in Saskatchewan	Top-growth removal and burning of Raspberry, Saskatoon Berry, and dwarf sour cherry as an orchard management technique
Growing Methods to Assist in the Expansion of the Garlic Industry in Saskatchewan	Effect of Apogee (Prohexadione calcium) on Raspberry, Strawberry, Saskatoon berry, and Sour Cherry
Demonstration of Beet Cultivars suitable for Saskatchewan Markets	Budding Apple Scionwood to dwarfing apple rootstock in Saskatchewan
Demonstration of Crops with Opportunities	

Forage	
Oat - Pea Intercrop Evaluation	Malt vs Feed Barley Management
Corn Variety Demonstration for Grain Production	Corn Variety for Silage Demonstration
AC Saltlander Green Wheatgrass Saline Tolerance Study	Irrigated and Dryland Fababean / Corn Intercrop for Silage
Double Cropping Irrigated Winter Cereals for Silage (18-19) (19-20)	Effect of Nitrogen Fertilizer Applications on Double Cropped Fall Rye and Spring Barley (19-20)

Specialty	
Seeding Date of Irrigated Hemp	

## SaskCanola Director presents Morris Sebulsky endowment to ICDC



SaskCanola Director, Katelyn Duncan was present at the ICDC/CSIDC Field Day in July to present ICDC Chairman Anthony Eliason with a cheque for \$14,625.00. The endowment dually sponsored by SaskCanola and the late Morris Sebulsky is in support of continued canola research.

Morris Sebulsky, a producer from the Sheho, SK region, taught at the University of Saskatchewan in College of Engineering. He realized the importance of agricultural research to the people of Saskatchewan. Morris Sebulsky's generous bequest to ICDC and other research institutions will leave a lasting legacy on agricultural research.

# Disease Management of Dry Beans

Gary Kruger, PAg, CCA, Ministry of Agriculture

Edible dry beans are an important profitable crop in irrigated regions. Three diseases are currently threats to this crop: root rots, bacterial blight, and white mold. An integrated disease management strategy uses three primary tools to limit losses to these risks: an extended four-year rotation with non-susceptible crops, planting certified disease free seed, and gentle handling of bean seed. A four-year crop rotation is a strong step toward effective disease management for an irrigated rotation. It is not a fool-proof strategy as extreme weather events cannot be reliably predicted, but lays a strong foundation to limit exposure to the disease risks faced by an irrigation producer. Having a firm crop rotation plan helps to build stability into the farm operation and limits the environmental risks.

Quality disease free seed is essential to prevent disease spread by seed. Dry bean seed is an annual input for most bean growers because of the minimal handling requirements for dry bean seed. Disease testing is a strong tool to assess this risk but logistics can make this step more daunting than it appears. Beans require timely field operations to take advantage of warm weather periods in the short season prairie environment. Their production technology (wide row with inter-row cultivation) also increases the risk of injury to plants and disease spread when plant foliage is moist. A greater adoption of narrow row produc-

tion is one practice change that will help reduce disease risk. Although bean plants are resilient, the wide row cultivation practice increases their vulnerability to injury.

Another change in practice that offers improved disease management for dry beans is registration of chemigation for application of control agents. This technique reduces traffic across the field, and once registered, further reduces risk of injury to dry bean plants from traffic. With chemigation as the delivery agent, the plant coverage is much improved compared with ground or aerial application. This additional coverage on the plants allows for better contact with the foliage of the dry beans and improved control of the infective agent. An ICDC project was completed during the growing season of 2019 with the assistance of BioSafe Systems using Oxidate 2.0 applied through a commercial irrigation pivot for control of white mold in AC Island pinto beans. Oxidate is a contact disinfectant but has no residual activity. Its virtue is its ability to provide disease control immediately on contact by killing the disease organism. Its weakness, on the other hand, is the absence of any residual activity. The product can be applied whenever the disease is observed within a production field to provide immediate control of the disease organism. One hope for this product is an improvement in protection from bacterial infections.

## Learn about ICDC's Research on their new YouTube Channel

Joel Peru, PAg, CCA, Ministry of Agriculture

Agriculture's presence on social media continues to grow and is becoming a great resource to learn, communicate and ask questions. In order to expand the way ICDC provides information to clients, a YouTube page was created with new videos being created and uploaded on a regular basis. This will give another option for those who want to learn about ICDC's research and demonstration program.

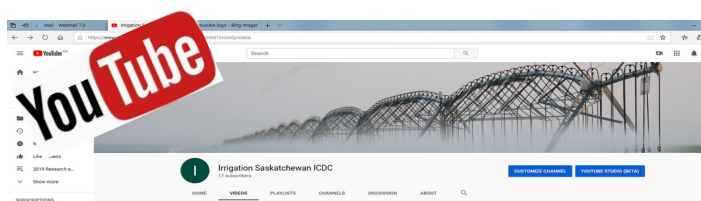
ICDC's videos will give focus on extending information about current projects and allow more people to benefit from their findings. Producers that are unable to attend field days or workshops will have the option to have a similar experience by viewing this channel. This year, videos were recorded at research plots and gave an overview of various projects, much like what you would see at a field day. In the winter, follow up videos will be released that will feature the results and key

findings of these projects. Having videos on YouTube gives irrigators access anytime and allows them to ask questions in the comment sections. You are also able to "subscribe" to a YouTube channel which will notify you when new videos are released.

If you look through ICDC's YouTube channel you will notice other content besides the Research and Demonstration videos. Videos of past workshops, panel discussions and content recorded from others are available as well. The playlist tab helps organize videos by events or series and helps viewers find what they are looking for.

So far the channel has over 50 videos uploaded, but stay tuned and subscribe, as there will be much more content added in the near future.

You can find ICDC's channel at [irrigationsaskatchewan.com/icdc/videos](http://irrigationsaskatchewan.com/icdc/videos) or by searching Irrigation Saskatchewan ICDC on YouTube. If you have any questions or would like to provide feedback contact Joel Peru at (306) 860-7201 or [joel.peru@gov.sk.ca](mailto:joel.peru@gov.sk.ca).





## Fababean: Diversification Crop for Lake Diefenbaker Irrigation area in 2020?

Gary Kruger, PAg, CCA, Ministry of Agriculture

There have been a couple waves of interest in fababean as a diversifying pulse crop for irrigators. Since the construction of the Gardiner Dam near Outlook and the filling of Diefenbaker Lake, area entrepreneurs have been seeking opportunity for higher value crops and associated value added processing in the region. One of fababean's attractive qualities is its seed's high concentration of protein. If the protein could be extracted and included in human food products, the extraction of protein is a highly desirable end use that would improve the value of fababean for agricultural production.

The initial fababean varieties grown in the 1970's grew tall and matured late making harvest trying for growers. Producers have less than favourable memories from these initial experiences. In the meantime, breeding efforts have overcome some of these shortcomings and short stature varieties have become available. Lower tannin varieties have improved the potential for inclusion of fababean in feed rations. The vicine convicine content has been reduced to near nil in recent varieties which may allow inclusion of fababean protein in human food products. This may allow fababean protein to be included in new products as an ingredient in new markets. Some argue that these new varieties eliminate the risk of favism for humans vulnerable to this allergen.

Fababean production offers significant advantages to the irrigation producer. Because fababean tolerates moist soil conditions without injury, they are an ideal crop for irrigation production. A heavy rainfall shortly following irrigation does not predispose the crop to injury from waterlogging as it might for other crops. Among annual pulse crops in N. America, fababean fixes the highest amount of nitrogen from the atmosphere. These legumes provide following crops with low cost nitrogen. Fababean stubble stands taller than the stems of other pulse crops without risk of lodging and can be cut tall to trap more snow without predisposing soil to wind and water erosion as some more common higher value irrigated crops do. Because fababean stands up so well, it has better harvestability and requires less time per acre to thresh than other pulse crops. Another

advantage for fababeans is their partial resistance to Aphanomyces root rots. Field peas have gained popularity as an irrigated crop with the advent of drier growing seasons in recent years, but fababean is able to provide a higher seed yield without the risk of yield reduction due to root rots and lodging.

High tannin fababean is a preferred food for nearly one billion people. Egypt represents the largest market comprising 50-80% of the world's fababean exports. Many Egyptians eat them twice a day. The problem for us to supply this export market is that the whole bean market requires visually attractive beans. We can grow good yields of this type of fababean south of highway 16 in Saskatchewan, but short season areas seldom produce nice looking fababeans. The seeds have the protein content, but need to be fractionated into starch and protein and remove the seed coat to be marketable. Interest in fractionation of fababean is growing in the province. Under irrigation, yields can reach 70-100 bu/ac and attract prices up to \$7/bu. As a precaution, if the fababean does not find its way into the food market, the only option left is the feed market which will have substantially lower prices. Even though per bushel returns with the feed market are not the primary goal for a producer, the grower should remember that the residual N supply of the fababean toward the succeeding crop is 50-60 lb N/ac which substantially improves the economics of this crop.

Acknowledgement: Brad Goudy of Proactive Producers based in Melfort provided much of the content for this article. [proactive-producers@sasktel.net](mailto:proactive-producers@sasktel.net)



Fababean grown as an intercrop on left and sole crop on right  
Crop Diagnostic School at Scott July 2019



ICDC welcomed Theodore (Ted) Nodge as ICDC's Research Associate in April 2019. Ted grew up on the family farm by Craik, Sk. He pursued his interests achieving a journeyman status as a machinist then furthering his education at the University of Saskatchewan with a Bachelor of Science in Agriculture through the Environmental Science Program.

With his past work experience and background in Agriculture Research, Ted has been a great addition to our team. Welcome Ted.

## 2019 Irrigated Canola Production Survey

Joel Peru, PAg, CCA Ministry of Agriculture

Canola, Canada's most valuable crop, is an essential component in Saskatchewan's irrigated crop mix. Conventional crops continue to dominate the irrigated crop mix around Lake Diefenbaker with canola being one of the higher net returners. Out of the 74,000 irrigated acres surveyed in the Lake Diefenbaker Development Area (LDDA) in 2019, canola accounted for 22%. Canola is also consistently one of the most profitable crops in ICDC's annually updated Economics and Agronomics Guide. The 2019 version of this guide suggested a net return of \$95/acre with a 55 bu/acre crop. Irrigators generally target yields ranging from 65-80 bu/acre in order to reach even higher returns. Since the last version of this guide was updated, bearish influences on the canola market have driven prices down. Irrigators with strong yields (65 to 80 bu/ ac) can still expect to make reasonable profits growing canola in 2019.



In 2018, an irrigated wheat production survey was undertaken to attempt to identify any common trends among the top yielders. After the results were presented (available on ICDC's website), irrigators expressed interest in shifting the focus of the survey to canola. In response to this feedback, the Ministry of Agriculture, in conjunction with ICDC, have begun a 3-year survey focusing on irrigated canola production. This survey will run from 2019-2021 and will evaluate the most profitable canola production methods currently being used by irrigators in the LDDA.

The survey began in 2019 and followed a similar protocol to its predecessors. The survey included 15 irrigated fields with 15 different cooperators. Four fields were selected in SSRID, five from Riverhurst, four from Luck Lake, one from Grainland, and one independent project off of the SSEWS canal. The survey tracked and compared the production methods of a diverse group of irrigators. Like the 2018 wheat survey, results will be recorded by tracking each irrigator's methods and completing a

net profit comparison. Cooperators are asked to fill out a survey outlining their agronomic practices such as fertility, pesticide, crop rotation, variety selection and other agronomic parameters that could effect their yield. Rain gauges were set up under all pivots involved in this survey along with the dryland corners to evaluate watering practices. Computer based models from the Alberta Irrigation Management Model (AIMM) were updated and sent out weekly to help cooperators schedule irrigation and keep track of soil moisture levels for the final report.

The Saskatchewan Ministry of Agriculture conducts an annual disease survey across the province. The agronomy unit in Outlook carried out this survey on the 15 irrigated canola fields to both add data to the provincial survey as well as results for the irrigated production survey. The survey looked for incidence of all major diseases such as sclerotinia, blackleg, alternaria black spot and clubroot. Thankfully, no signs of clubroot were seen in the LDDA. Sclerotinia and blackleg were the two major diseases found across fields with levels ranging from very low to severe. The most severely effected fields experienced hail damage which provided a perfect opportunity for blackleg to thrive. The majority of the fields had low levels of disease despite the thicker, moist crop canopies associated with irrigated production. The disease survey, along with all other recorded information will be used when comparing the 15 irrigated fields.

Once harvest is completed and all the results are in, a preliminary report will be written for 2019. After completing the 3-year survey, the final report will provide irrigators in the LDDA with real, field scale information and allow them to adjust their production methods to make irrigated canola an even more profitable crop. If you have any questions on this year's survey or would like to participate in next year's contact Joel Peru at (306) 860-7201 or joel.peru@gov.sk.ca. The 2019 preliminary report will be available on ICDC's website and in the 2019 ICDC Research and Demonstration Annual Report.

Visit the ICDC website at [IrrigationSaskatchewan.com/icdc](http://IrrigationSaskatchewan.com/icdc) for publications, videos and upcoming events.



## ICDC's Horticulture Program

**Cara Drury, PAg, Provincial Irrigation Agrologist, Ministry of Saskatchewan**

It has been an exciting year of new projects for ICDC's horticulture program. The partnership from Saskatchewan Vegetable Growers' Association, Saskatchewan Fruit Growers' Association and the Ministry of Agriculture's Provincial Fruit Specialist (Forrest Scharf) and Provincial Vegetable Specialist (Connie Achtymichuk) has been instrumental in moving the horticulture program forward. In 2019 ICDC's horticulture program was able to participate in seven Agriculture Demonstration of Practices and Technologies (ADOPT) projects and two SFP (Strategic Field Program) projects. There were 15 different high value crops grown this year; ranging from the traditional beets, cucumbers and strawberries to the unusual pepita pumpkins, bitter melon and chicory.



The horticulture program has typically been funded through various ADOPT projects. These are single year trials that demonstrate proven practices or

technologies. This year we have had the opportunity to participate in two SFP projects. These projects can be multi-year and focus on addressing gaps in research, identified by specialists in the Saskatchewan Ministry of Agriculture. The two SFP projects are the Expansion of the Pickling Cucumber Industry in Saskatchewan and the Growing Methods to Assist in the Expansion of the Garlic Industry in Saskatchewan. With the inclusion of these projects to the horticulture program, we have been lucky to welcome Dr. Doug Waterer, as a consultant on to the team. Dr. Waterer has previously worked as the Vegetable Crops Specialist at the U of S for over 25 years; his guidance and knowledge has proven to be invaluable to the running of these new projects.

Harvest for the horticulture program is still wrapping up at CSIDC, and the SFP projects are only in their first out of two years. Therefore, the results of the horticulture projects will be published in the 2019 ICDC Research and Demonstration Report, which will be available from the Ministry of Agriculture or online at the ICDC website, under the publications tab, at [www.irrigationsaskatchewan.com/icdc/](http://www.irrigationsaskatchewan.com/icdc/). The projects will also be presented at the 2019 SIPA/ICDC conference in Moose Jaw, December 3<sup>rd</sup>. Existing producers or individuals interested in taking advantage of growing high value crops under irrigation can contact the Crops and Irrigation Branch, Saskatchewan Ministry of Agriculture for advice and assistance. For more information or suggestions for next year's program, contact Cara Drury at [cara.drury@mail.gov.sk](mailto:cara.drury@mail.gov.sk) or (306) 867-5517.



### ICDC Staff:

**Garry Hnatowich, PAg**, ICDC Research Director, (306) 867-5405, **Specialty Areas:** Variety testing and Agronomy

**Ted Nodge, AAg**, ICDC Research Associate, (306) 380-5652

**Damian Lee**, ICDC Field Crop Technician, (306) 867-2101

**Brenda Joyes**, ICDC Executive Administrator, (306) 867-5669

### Ministry of Agriculture Crops and Irrigation Branch Staff:

**Kelly Farden PAg**, Manager-Agronomy Services, Crops and Irrigation Branch, (306) 867 5528, **Specialty Area:** ICDC program and administration

**Gary Kruger, PAg, CCA**, Provincial Irrigation Agrologist, (306) 867-5524, **Specialty Areas:** SW Program, Forage Crops, Soil Fertility, Agronomy

**Cara Drury, PAg**, Provincial Irrigation Agrologist, (306) 867-5517, **Specialty Areas:** Horticulture Crops, Soils

**Joel Peru, PAg, CCA**, Provincial Irrigation Agrologist, (306) 860-7201, **Specialty Areas:** Specialty Crops, Field Crop Agronomy, Production Economics

**Travis Peardon, PAg**, Livestock and Feed Extension Specialist, (306) 867 5504, **Specialty Area:** Forage Crops