

## Research Director's Corner

Garry Hnatowich, PAg, Co-Research Director, ICDC

Let me begin by welcoming Dr. Gursahib Singh who joined ICDC in April and will succeed me as Research Director next June. I will let Gursahib introduce himself in his article. As some might know, Dr. Erin Karppinen left ICDC to assume a Coordinating Biologist position with AAFC. Fortunately, the position is based at CSIDC so we continue having the benefit of her expertise and assistance.

As is indicated by the list of projects undertaken in 2021 it was a busy growing season for staff. At time of writing, we still have grain corn, soybean and late seeded hemp to harvest, meanwhile staff is busy cleaning, processing and tabulating harvest grain samples. We have limited data presently summarized but do have some speculative results based on in-season observations. Given the summer heat it's no surprise that warm season crops appeared to thrive, cool season crops, or those prone to flower abortion, less so. The dryness had irrigation running overtime, but excess heat had an effect on all crops. We observed corn leaves curling, and drooping soybean & dry bean

leaves –indicators of stress responses to excess heat. Barley did not emerge from the sheath until fully flowered and pollinated. Fortunately, we did not lose any irrigated sites due to weather. Such was not the case for a couple dryland sites we established with corn, as indicated in the picture of corn behind me on July 27! This site was from a study, initiated this year, to develop nitrogen (N) fertilizer recommendations for silage and

grain corn. The objective is to develop target yield N fertilizer recommendations for both irrigated and dryland corn production. This 3-year study is funded by ADF and the SK Cattlemen's Association. The lack of seasonal precipitation resulted in the loss of 2 of 3 dryland sites we established. In-part the hope is to generate response curves such as the trial established at CSIDC, as shown in the graph (page 2). At this site dry matter yield increased with N fertilizer applied up to 150 kg N/ha without additional yield gains with further N additions. We will correlate these types of responses to soil test results and to total plant N uptake.



Another N study underway is evaluating the N fertilizer response to wide-row CDC WM-3 pinto dry beans. This study was paused due to the pandemic in 2020 but reinitiated in 2021. In 2019 we observed responses to N fertilizer

**CDC WM-3 nodulation at CSIDC, 2021.**

additions. These responses were visually apparent during the growing season in 2019 but far less so in the 3 sites established in 2021. One of these sites was established on potato stubble with a relatively high amount of soil available N so not unsurprising. However, the CSIDC site exhibited no visual response to N fertilizer additions apparently due to natural N fixation. Dry bean is notorious in its lack of inoculation response, so much so that N fertilizer additions are commonplace. In these trials, no commercial inoculant was applied. Much to our surprise root and nodule



**Dryland Corn succumbed to drought.**

*continued on page 2*

### November 2021

Published by the Irrigation Crop Diversification Corporation (ICDC) and the Saskatchewan Ministry of Agriculture.  
Available online:  
<http://irrigationsaskatchewan.com/>



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### Irrigation Conference and AGM

**December 6, 7 & 8 2021**

Watch for upcoming details on registration

#### In this Issue:

Research Director's Corner	1
Irrigated Canola Production Survey	2
2021 ICDC program	5
Irrigation Saskatchewan Virtual Field Day	5
Crop Insurance for Vegetable Crops	6

## Research Director's Corner

*continued from page 1*

assessment revealed impressive nodulation as indicated in the photograph. The photo was taken on the 22nd of July and the nodules were actively fixing N. In my 40+ years of research rarely have I witnessed this degree of nodulation in dry bean – and never with uninoculated dry bean! The bacteria that can caused this nodulation must be indigenous (native or from previous commercial inoculant application) apparently exhibit amazing longevity since dry beans have not grown on this of ground in the last decade. Just when I've convinced myself I'd seen it all something like this occurs!

We plan on sharing the results of many of 2021's trials at the Annual SIPA/ICDC AGM scheduled for early December.

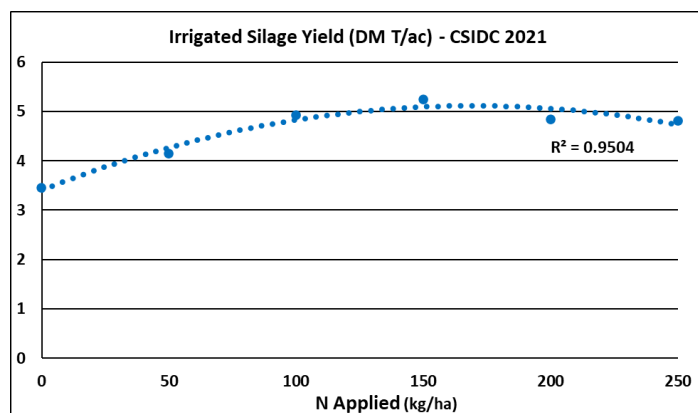
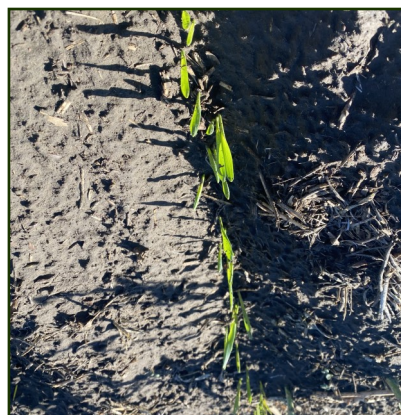


Figure: Silage Dry Yield (T/ac) from the CSIDC Trial, 2021.



**ADOPT fall project Can winter barley be grown in central Saskatchewan?**  
SaskBarley, Saskatchewan Cattleman's Association

*continued on page 3*

## Irrigated Canola Production Survey

Mark O'Connor, AAg, Irrigation Agrologist, Ministry of Saskatchewan

For the past 3 years ICDC and Ministry of Agriculture have carried out a Canola Production Survey of the canola grown under irrigation in the Lake Diefenbaker area. The survey's aim is to establish real world best management practice's or BMP's for the production of canola under irrigation. Each year, 15 producers were surveyed to monitor their agronomic practices and water management. Some of the key findings from the survey will be outlined in this article.

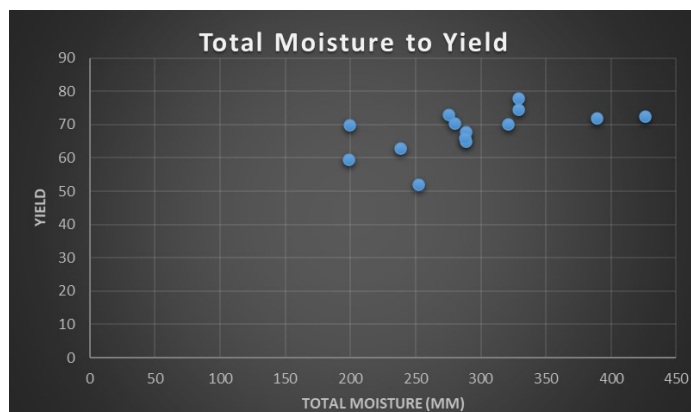
Data collected in the survey consisted of the following parameters.

- Water usage
- Variety
- Total Nitrogen applied
- Total Phosphorus applied
- Establishment
- Pesticide applications
- Harvest methods
- Soil types

### Irrigation Management

Over the three years the average yield was 69bu/ac and the average moisture (both precipitation and irrigation) was 325mm. The highest yield was 81bu/ac and that had a total of

400mm of moisture, 250mm of that was actual irrigation. Irrigation management varied considerably from producer to producer. Generally, the highest yields were obtained by producers who kept soil moisture in the optimal range of 50 to 100% available moisture. It is important to have completed an irrigation schedule to ensure that water is applied according to crop requirements and is consistently available to the plant thus improving water use efficiency



Picture 1: illustrating total moisture related to yields

*continued on page 4*

## Research Director's Corner

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Gursahib Singh, P.Ag. Co-Research Director, ICDC

Greetings, Saskatchewan Irrigators; I hope you're all having a great day!



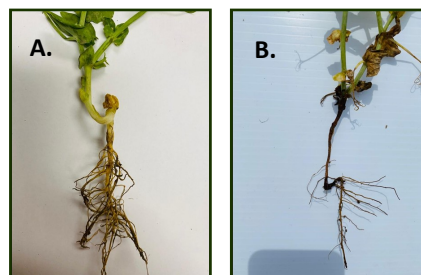
My name is Gursahib Singh, and I will be taking over as your new point of contact at ICDC. I know I have some big shoes to fill!! But I'm looking forward to getting up to speed in this new position. I grew up on a mixed farm in Punjab, India. I obtained my B.Sc. in Agriculture (Honours in Crop Protection) and M. Sc. degree in plant pathology from Punjab

Agricultural University Punjab, India, and completed my Ph.D. in Plant Sciences at the University of Saskatchewan. During the four years of my Ph.D., I've had multiple trials at the ICDC research station, providing me with a head start for this position.

For this fall addition, I would like to update you on the incidence of crop diseases in general and field projects focused on diseases we completed this summer. Like most growers, we had a fair share of challenges during the 2021 growing season. Similar to crops, the extreme temperatures we had this summer were unfavourable not only for crop production but also for crop diseases. Even with continuous irrigation to keep up with the crop demand, high temperatures and wind throughout

the summer kept the crop canopy dry and disease incidence minimal. We had three projects focused on field crop diseases this summer 1) fungicide application timing to manage Fusarium head blight in cereals (funded by SaskWheat, Alberta Wheat and WGRF) 2) Production management strategies to improve field pea root health in Aphanomyces contaminated soils (funded by ADOPT, Sask. Ministry of Agriculture and Sask. Pulse Growers) and 3) Agronomic practices to enhance yield, hasten maturity, and reduce chocolate spot incidence in Faba beans (funded by ADOPT, Sask. Ministry of Agriculture and Sask. Pulse Growers).

A three-year FHB project was started this summer, collaborating with researchers from U of S and AAFC Melfort. We tested four fungicide application timing (Fig.1); however, due to very low disease pressure, we didn't see any benefits of fungicide treatment on yield or disease control.



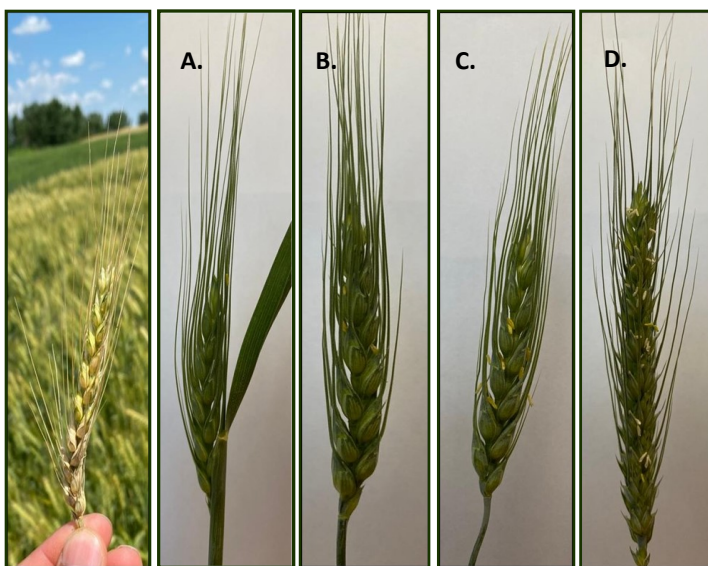
**Fig 2. Aphanomyces disease symptoms in peas at five weeks (A.) and eight weeks (B.) after seeding.**

The objective of pea root health study was to determine if different rates and sources of fertilizers, combination of herbicides applied PRE and POST with foliar applications, and seed treatments

would reduce the effect of Aphanomyces. We dug out five plants

per plot for disease assessments at five weeks and eight weeks post-seeding. Incidence of Aphanomyces was low at five-week whereas it caused some severe damages at eight weeks (Fig. 2). None of our treatments (Table 1) proved to be effective in disease control. This project was a three-year study ending this year and had trials at ICDC, WARC and NARF. The final results from this study will be highlighted in ICDC 2021 annual report.

The concept behind our third disease study was to evaluate the effect of seeding time (seeded April 30 vs. May 15), seeding rates (45 vs. 65 viable seeds/m<sup>2</sup>) and foliar fungicide application (Priaxor @ ~7-10 days after first flowers are observed) on yield, disease and harvest time. At this point, our staff is still cleaning the harvested samples, and we don't have any yield data to present. We did not see any incidence of chocolate spot during flowering stages. Although the disease did appear late in the growth stage (pods were already developed and started ripening), it had no potential to reduce yield.



**Fig 1. FHB symptoms in winter wheat and crop growth stages on which fungicide was applied. A. End of heading: inflorescence fully emerged. B. beginning of flowering: first anthers visible C. Full flowering: 50% of anthers mature D. End of flowering: all spikelets have completed flowering, but some dehydrated anthers may remain.**

*continued on page 4*

## Research Director Corner

*continued from page 3*

TRT <sup>x</sup>	Pre-Seed Herbicide	Fertilizer (lb/ac)	Seed Treatment	Foliar
1	Glyphosate	20 P only MAP <sup>y</sup> “Low”	No ST	N/A
2	Glyphosate	20 P only MAP	Vibrance Maxx + Intego	N/A
3	Glyphosate + Trifluralin	20 P only MAP	Vibrance Maxx	N/A
4	Glyphosate + Trifluralin	20 P only MAP	Vibrance Maxx + Intego	N/A
5	Glyphosate + Trifluralin	20 P only MAP	Vibrance Maxx + Intego	Rogue II (Fn)
6	Glyphosate	50 P, 20 K, 10 S <sup>z</sup> “High”	No ST	N/A
7	Glyphosate	50 P, 20 K, 10 S	Vibrance Maxx + Intego	N/A
8	Glyphosate + Trifluralin	50 P, 20 K, 10 S	Vibrance Maxx	N/A
9	Glyphosate + Trifluralin	50 P, 20 K, 10 S	Vibrance Maxx + Intego	N/A
10	Glyphosate + Trifluralin	50 P, 20 K, 10 S	Vibrance Maxx + Intego	Rogue II

<sup>x</sup>Gly= Glyphosate, Tri= Trifluralin, Fertilizer “Low”; “High”, ST= Seed Treatment, VM= Vibrance Maxx, I= Intego, Fn= Foliar Nutrient

<sup>y</sup> Low (20P) – application of 20 lb/ac of actual phosphorus (total of 4 lb/ac of nitrogen)

<sup>z</sup>High (50P, 20K, 10S)- application of 50 lb/ac of actual phosphorus, 20 lb/ac of actual potassium, 10 lb/ac of actual sulphur (total of 20lb/ac of nitrogen)

## Irrigated Canola Production Survey

*cont'd from page 2***Nitrogen Fertility**

Rates of 130-160lbs/ac actual N showed the best return on investment (ROI) over the three years. The survey showed a plateau effect once rates reached 200lbs/ac of actual N applied. Crops also responded well to split application instead of all N up front Split N applications is a 4R practice under irrigation as it has been shown to lead to less losses through leaching and denitrification.

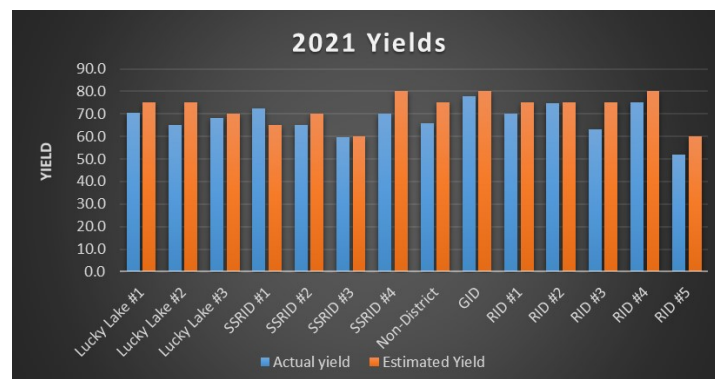
**Disease Management**

A disease assessment was conducted in each field prior to harvest. In general, higher levels of disease were found in fields that did not apply fungicides. Although there wasn't a strong correlation between disease prevalence and yield in this survey, numerous research trials carried out by ICDC in previous years have shown a strong link between fungicide application and yield response. It is becoming common practice under irrigation to have at least one application of fungicide on crops as disease pressures are higher with irrigation.

A full report will be prepared for the survey once all remaining data is collected. The report will be posted on ICDC's website,

[www.irrigationsaskatchewan.com/icdc/](http://www.irrigationsaskatchewan.com/icdc/). The survey does create a picture of current trends and practices of irrigated canola production, thus showing what best practices work.

Canola is one of the most profitable crops grown under irrigation and generally constitutes one third of the acres under irrigation in the Lake Diefenbaker area, 'crowdsourcing' BMP's will help all irrigators push yields to the next level.



**Picture 2: chart illustrating the comparison of the 2021 actual to estimated yields**

## 2021 ICDC program

Cereals	
Fungicide Timing to Mitigate Fusarium Head Blight in Cereal Crops	Demonstration of Fall Rye as an Irrigated Crop -Irrigation vs Dryland
Crop Rotation Benefits of Annual Forages preceding Spring Cereals	Saskatchewan Variety Performance Group Regional Barley Trials
Saskatchewan Variety Performance Group Regional Oat Trial	Saskatchewan Variety Performance Group Regional Durum Trials
Demonstrating Spring Wheat Phosphorus Fertilizer Response on a Severely Phosphorus Deficient Irrigated Field.	Can Farmer Saved Seed Perform As Well As Certified Seed?
Saskatchewan Variety Performance Group Regional Wheat Trials - Hex 1	Saskatchewan Variety Performance Group Regional Wheat Trials - Hex 2
Winter Wheat Variety Evaluation for Irrigation vs Dry Land Production	Development of Field-Ready Cultivars of Canada Western Soft White Spring Wheat .
Central Bread Wheat Registration Trial - irrigated vs dryland	Can winter barley be growing in central Saskatchewan?

Soil	
Influence of K Fertilizer on Yield and Seed Quality of Malt Barley and Spring Wheat	Canola seed safety and yield response to novel P sources in Saskatchewan soils
Top Dressing Nitrogen Fertilizer on Frozen or Snow Covered Soils in Saskatchewan	

Specialty	
Hemp Seeding Date Demonstration for Grain Production	Specialty Agriculture Crop Demonstration
Evaluating Cover Crop Options Following Row Crop Harvest on Irrigated Land	Demonstration of Irrigation Scheduling Using Remote Sensor Technology
Crop Diagnostic School	

Pulses	
Dry Bean Pod Height	Dry Bean Regional Trial
Effect of Tillage Management and Seeding Date on Dry Bean Establishment and Yield.	Demonstrating Effects of Insecticide Application Timing and Seeding Date on Pea Aphid Damage to Lentils and Field Peas
N Fertilizer Rate Response in Irrigated Dry Bean	Pea Regional Variety Trial
Faba bean agronomy to enhance yield, hasten maturity, and reduce disease	Production management strategies to improve field pea root health in Aphanomyces contaminated soils
Soybean Regional Variety Trial	Conventional Soybean Variety Trial

Oilseeds	
Canola Performance Trial	Straight Cut Canola Performance Trial
Saskatchewan Variety Performance Group Regional Flax Trials	

Horticulture	
Demonstration of Short Season Varieties of Sweet Potato	Determining Sizes Profiles of Saskatchewan Grown Cantaloupe for a retail market
Growing Methods to Assist in the Expansion of the Garlic Industry in	Identification of Onion Cultivars Suited to Saskatchewan Production
Potential to use Sequential Plantings to extend the Harvest Period of Pick-	Demonstration of Efficacy of Bumble Bee, honey bee and leafcutter bee on
Identification of Onion Cultivars Suited to Saskatchewan Production Conditions and Market Requirements	Apple Scoinwood and Dwarf Apple Rootstock Productivity and Disease Resistance
Methods to Improve Productivity of Sour Cherry Suffering from Blind Wood	

Forage	
Varietal Assessment of Forage Seed Production	Developing Target Yield Nitrogen Fertilizer Recommendations for Irrigated Silage and Grain Corn

**Irrigation Saskatchewan  
Virtual Field Day**  
Register on Eventbrite.ca

### November 2, 2021 \_9:00 am -11:00 am—Field Crops

- Sclerotinia stem rot in canola
- Fusarium head blight in cereals
- Aphanomyces management in pea
- Nitrogen recommendations for corn
- Canola water use efficiency
- Soil moisture sensing
- Online irrigation scheduling tool

### November 3, 2021\_9:00 am -11:00 am—Horticultural Crops

- Wireworm in carrot, potato, and rutabaga
- Sequential cucumber planting
- Cucumber pollinators
- Cantaloupe size profiles
- Leafy greens and sweet potato

# Crop Insurance for Vegetable Crops

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

Growing any crop, any year has its risks; but growing a vegetable crop without crop insurance takes that risk to an even higher level. Luckily, Saskatchewan Crop Insurance Corporation (SCIC) has recently reviewed its insurance packages for vegetable growers and expanded their coverage in order to help meet the needs of the growing industry. As of 2021, there are now two different options available for vegetable growers when it comes to crop insurance. The Vegetable Basket Program is available for smaller acres of mixed vegetable production. The Commercial Vegetable Pilot Program provides coverage for larger acres of single crop, commercial vegetable production.

## Vegetable Basket Program

The Vegetable Basket Program targets market garden producers with a minimum of one acre of total vegetable production and requires the crop to be irrigated. This program is an acreage loss program and does not offer a production guarantee. The insurance is available at the base value per acre (for each basket) less a 10 per cent acreage deductible in the event of a claim. Growers pick a “basket” option containing a mix of vegetables:

Basket 1: Brussel sprouts, cauliflower, carrots

Basket 2: onions, rutabagas, beets, parsnip, radish, sweet corn, and potatoes (less than five acres)

Basket 3: cucumbers, pumpkins, summer squash, winter squash, zucchini, asparagus

Basket 4: peas, beans

Basket 5: broccoli, cabbage

Basket 6: garlic – fall seeded

In the event of a claim in the basket program, growers are paid on acres or percentage of acres lost. Damaged acres or partial acres must be destroyed for the claim to be paid.

## Commercial Vegetable Pilot Program

The Commercial Vegetable Pilot Program was introduced in 2021. The pilot program focuses on two crops: cabbage and pumpkins. What stays the same as the basket program, is the requirement for irrigation and that coverage does not include a production guarantee. What stands out as the main differences

from the basket program is that the commercial pilot requires a minimum of eight acres of a single irrigated crop and all acres grown must be insured. Insurance value is determined on a per plant basis. Insurance coverage will be based per plant less the deductible of 30 per cent in the event of a claim.

In short, the basket program will insure for the value of crop inputs on small acres of mixed vegetable production and the commercial pilot will insure for a value higher than crop inputs on larger acres of single cabbage or pumpkin crop production. As with all SCIC insured crops, growers are advised to follow recommended agronomic practices, including seed treatment, crop rotations, recommended seeding and harvest dates, field management (including spray schedule), and other considerations.

## Ask SCIC Today

SCIC is here to help you understand your vegetable production coverage. **Please visit [www.scic.ca](http://www.scic.ca) to learn more about SCIC programs or call 1-888-935-0000 today.**



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