

# 2019 Crop Opportunity



## Alternative Crop Options for Saskatchewan Producers

**Garry Hnatowich, ICDC Research Director**

## **Climate Limitations for Special Crop Production in Saskatchewan**

- **Limited moisture**
- **Limited heat units**
- **Limited growing season (frost-free days)**



# Emerging Crops of Interest

## Crops for Consideration

- Soybean
- Hemp
- Quinoa
- Faba bean
- Dry Bean
- Corn
  - Silage
  - Grain
- Borage



# Emerging Crops of Interest

## Crops for Consideration

- Camelina
- Coriander
- Caraway
- Buckwheat
- Fenugreek
- Potato
- Vegetables
  - Tomatoes, Peppers, Sweet corn, Lettuce, Pumpkins, Melons, Runner beans, Cucumbers, Sweet potato
- Fruits – Strawberry, Raspberry, Saskatoon, Sour Cherry, Hascap, Apple, Pear



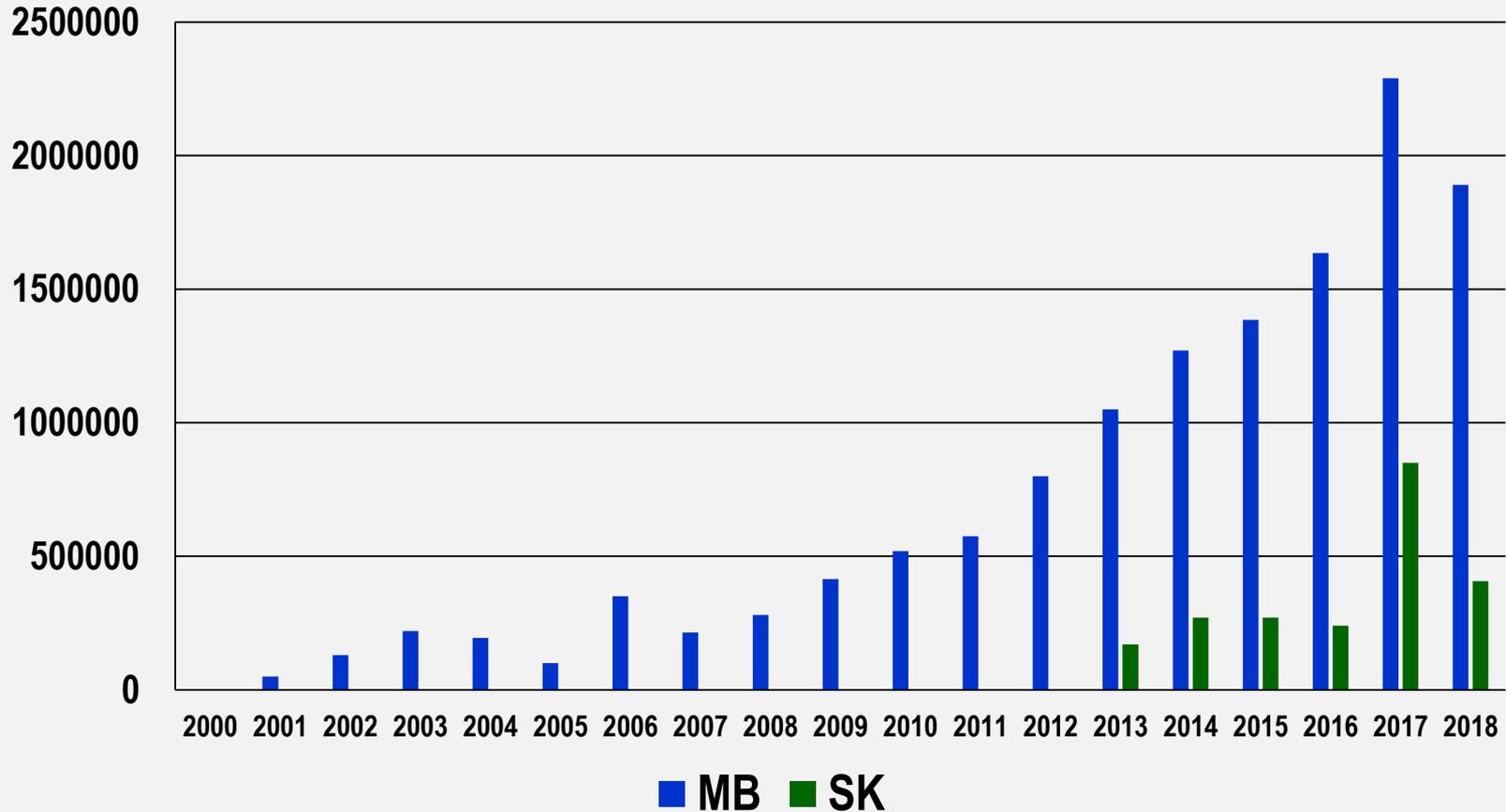
# Soybean

- Nitrogen fixing oilseed crop
- Evaluation trials done with ICDC and CSIDC since 2006
- Strong and increasing market demand
- Value is in both the oil and meal
- Acres are variable



# MB & SK Soybean Acres 2000-18

## Soybean Seeded Acres



# Soybean Issues!

- Seed cost has a “sticker price” shock
- Double inoculation required for first 2-cycles of rotation
- Yield highly dependent on August-Sept rainfall?
- 000 maturity class for SK
- **Caution is advised if seeding for first time**



# Faba Bean

- We have a good handle on agronomy and know they can be successfully grown
- Decline in production in UK and France (pest issues)
- Marketing always an issue
- Recent interest in developing dehull and fractionation facilities



# Hemp

- Ancient crop grown for fiber and seed
- Grown in SK for edible seed and oil market
- Legal to grow in Canada since 1998
- Hemp regulations are administered by Health Canada



# Hemp Production in SK

- High potential to grow in Saskatchewan, 18,100 acres in 2018
- Does not tolerate extremes: wet or dry, limited salt tolerance
- Market improving but not well established
- 660 – 1100 lbs/ac yield in SK
- Price ranges from \$0.45 to \$0.60/bu
- Choose short varieties



# ICDC Hemp Variety Evaluation

2018

Variety	Yield lbs/ac
X59	925
Katani	810
CRS-1	790
Grandi	776
Joey	710
Piccolo	655
Canda	650
Silesia	611
Anka	600



# Quinoa

- Spinach-like ancient crop from South America (also related to Pigweed)
- High nutritional value (gluten free)
- Growing consumer demand
- Seed mid-May harvest mid-Sept.



# Quinoa Production Issues

- Weed control (burn-off extremely important)
- Slow to establish
- Insect concerns
  - Flea beetles
  - Bertha armyworm
  - Stem boring maggots



# Quinoa Production in SK

- Production contracted, acres have varied.
- Northern Quinoa is only supplier of seed (~\$40/ac)
- \$0.60 - \$0.65/lbs contracted with Northern Quinoa (price based on clean seed?)
- Yields = 300 to 2,000 lbs/ac



# Corn Potential

- Second largest crop worldwide
- Increasing acres in prairies
- Lower Corn Heat Units (CHU) varieties available
- Steady market price
- **High water requirements**
- Intensive breeding efforts (and \$) to lower CHU and increase water use efficiency



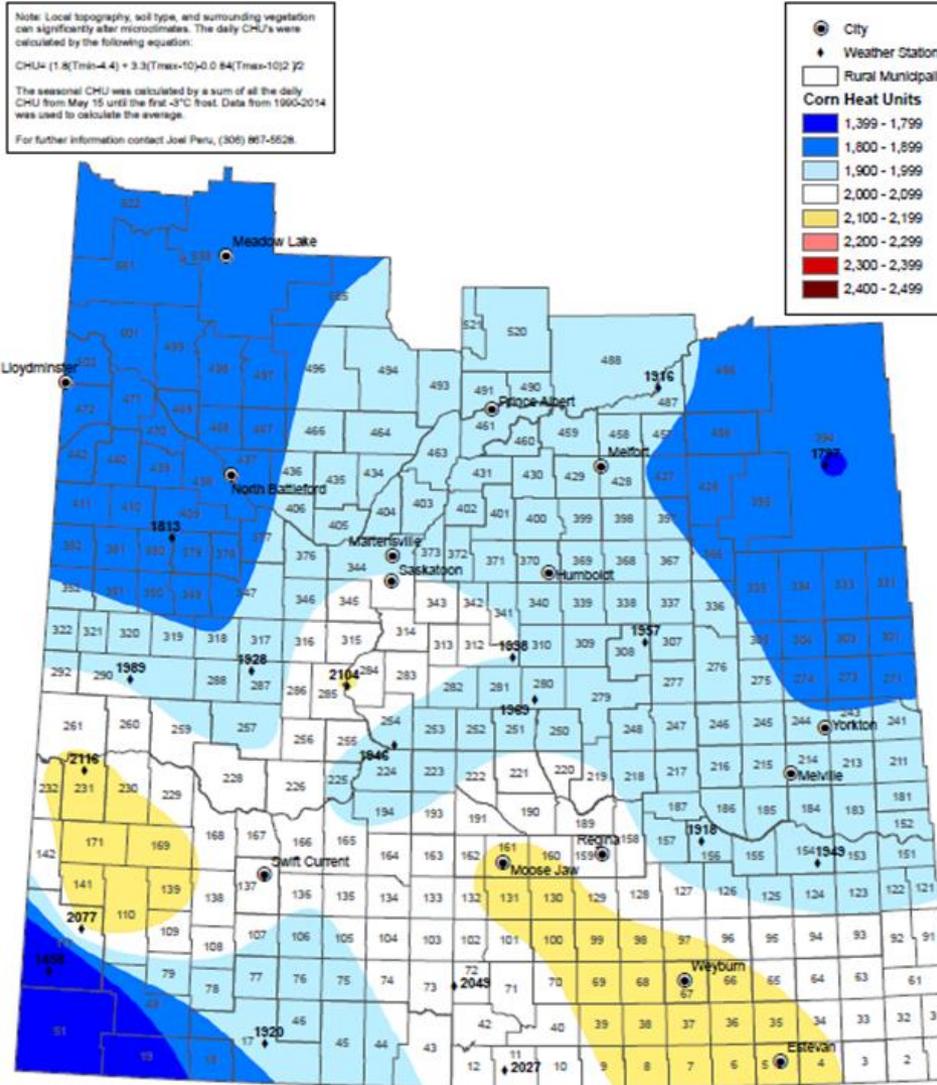
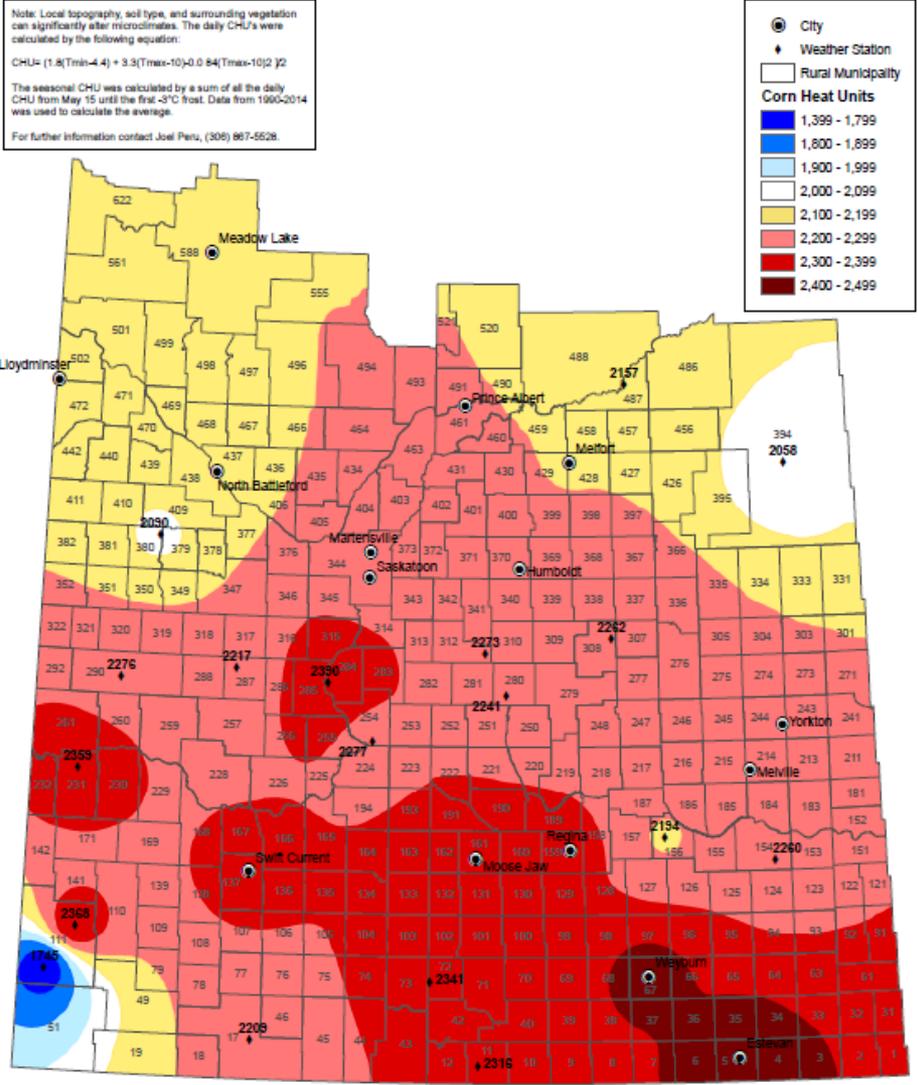
# Corn Heat Units

Saskatchewan Accumulated Corn Heat Units  
Average for Silage Production

Saskatchewan Accumulated Corn Heat Units  
90% Confidence for Grain Production

Note: Local topography, soil type, and surrounding vegetation can significantly alter microclimates. The daily CHU's were calculated by the following equation:  
 $CHU = (1.8(T_{min} - 4) + 3.3(T_{max} - 10) + 0.84(T_{max} - 10)^2)$   
The seasonal CHU was calculated by a sum of all the daily CHU from May 15 until the first -3°C frost. Data from 1960-2014 was used to calculate the average.  
For further information contact Joel Peru, (306) 867-5528.

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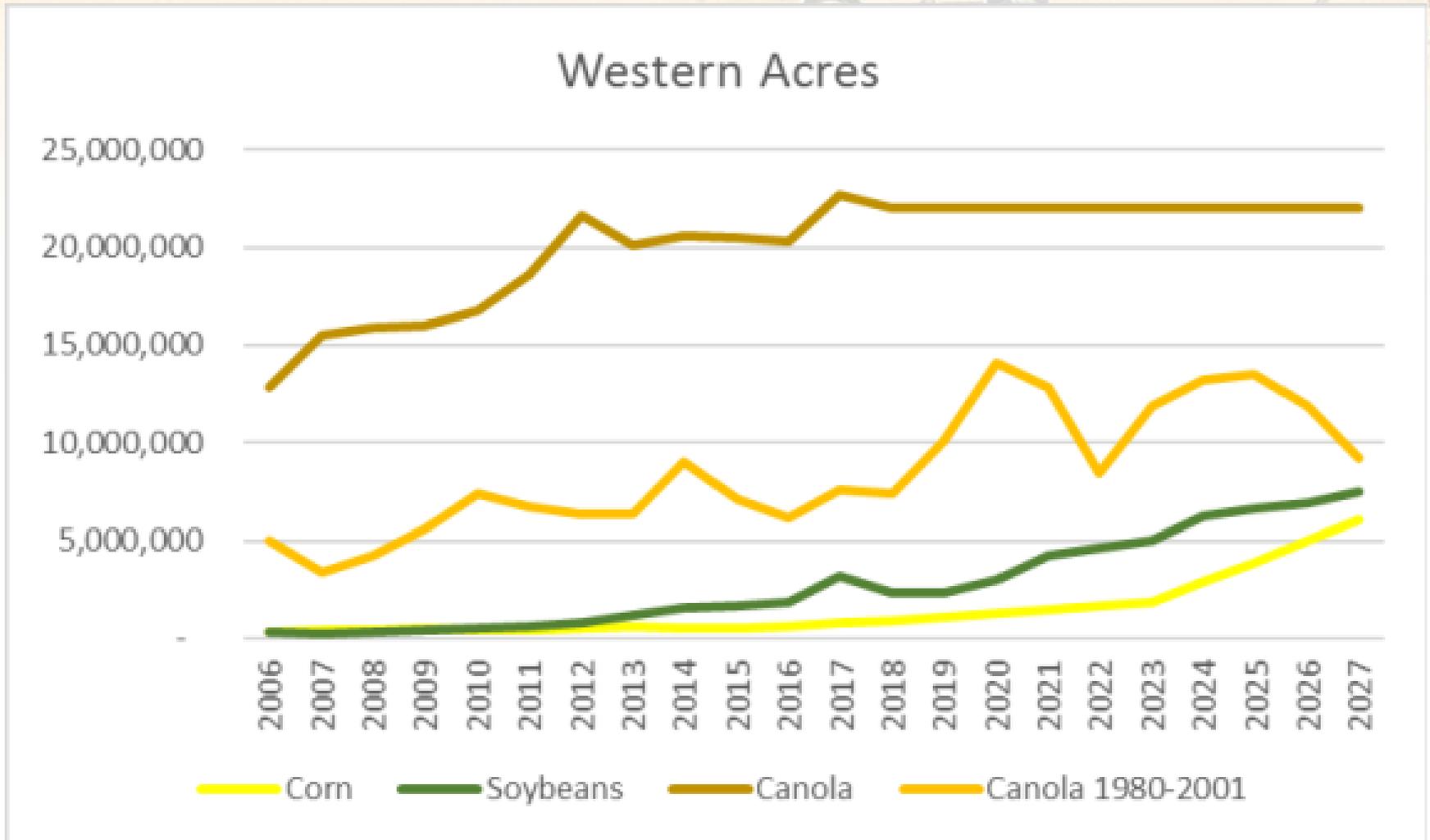


# Corn Adoption Limitations

- Irrigation required
- Corn heat units (CHU)
- Specialized Equipment
- Grain Dryer
- Regional Agronomics
  - High fertility



# Projected Corn Acreage



Courtesy of Bayer

# Production Issues – Weeds

- Not competitive
- Weed control vital
- Glyphosate resistance
- Early Post emergence (1-4 leaf)



# Production Issues – Disease

- Low disease pressure in SK
  - Leaf Blight
  - FHB
  - Bacterial Blight
  - Ear rot
- Fusarium is greatest concern in SK, serious thought needed for rotations



# Silage Corn Variety Trials

Variety	Corn Heat Units	Dry Yield (T/ac)
SilEx Bt RR	2200	8.02
HL R219RR	2350	8.00
P7433R RR	2100	7.83
39M26 RR	2100	7.62
HL 3085 RR	2400	7.27
Fusion	2200	7.26
<b>BAXXOS RR</b>	<b>2250</b>	<b>7.02</b>
DKC30-07RIB	2325	6.96
39V05	2350	6.86
DHC27-55RIB	2200	6.82
X13002S2	2300	6.68
DKC33-78RIB	2500	6.59
39D95	2150	6.33
39F45	2000	6.33

# 2016 Grain Corn Field Trial

Treatment	Yield (bu/acre)
7673 No Alpine	133.3
7673 With Alpine	147.6



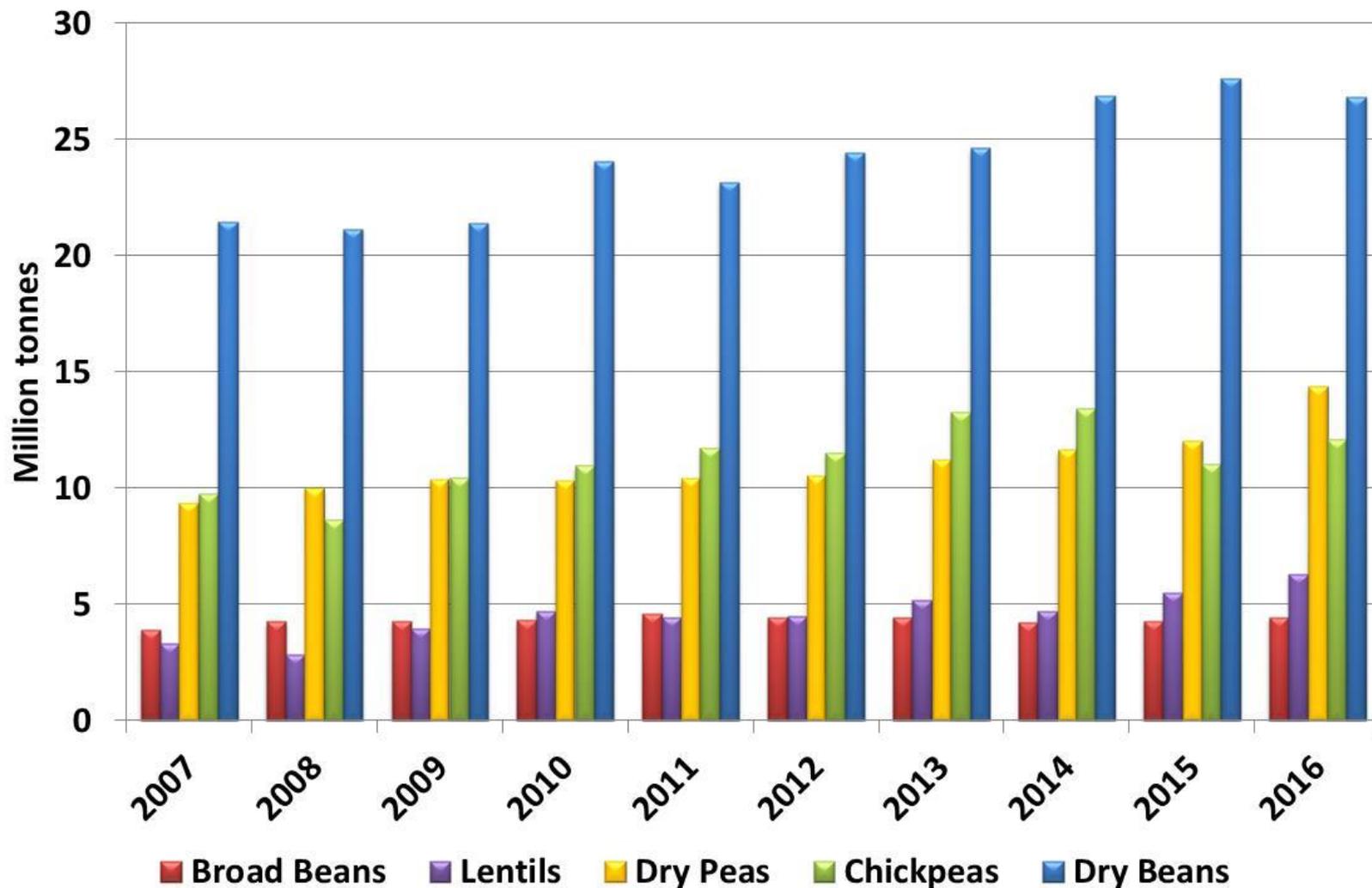
# Dry Bean

- Why Dry Bean?
  - By far the most important and traded of the pulse crops.
  - High value.
  - Diversifies marketing options.
  - As a legume a portion of it's nitrogen is supplied through biological N-fixation.
  - Ideal for breaking disease cycles
  - Provides yield boost to following crop.
  - Three types of bean growth habit:
    1. Type I – determinant bush-type
    2. Type II – indeterminate upright, short vine
    3. Type III- indeterminate sprawling vine



# Dry Bean Production

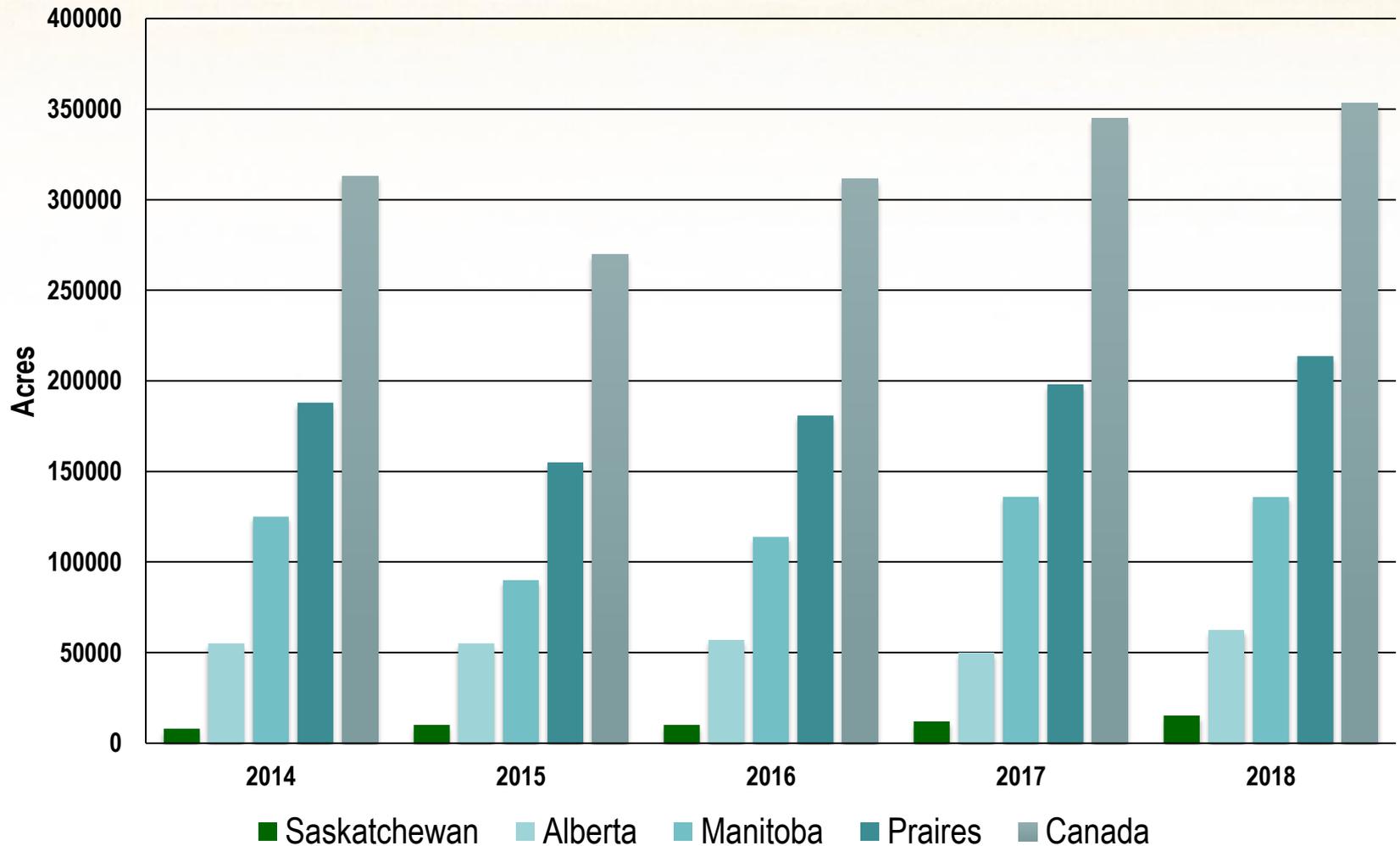
## Global Pulse Production



# Canadian Dry Bean Production - Acres



## Canadian Dry Bean Acres

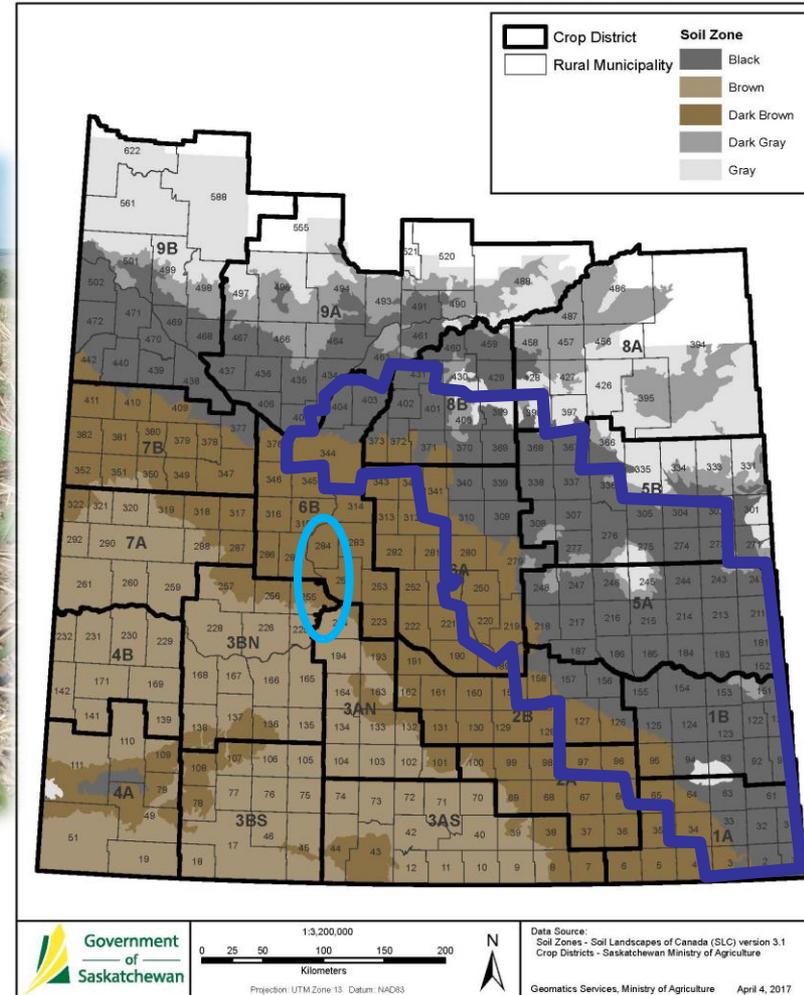


# Growing Region

SCIC Dryland Coverage Area  
Irrigated Production Area



### Soil Zones in Southern Saskatchewan



# Present Saskatchewan Situation

- Present production primarily limited to irrigation within the Lake Diefenbaker Development Area (LDDA).
- Virtually 100% wide row production (22”).
- Approximately 90% of production custom row crop planted, undercut and combined.
- For an expansion of acreage the crop must be expanded to dryland production and be able to utilize existing on-farm equipment. (i.e. solid seeded production)



# Dry Bean Narrow vs Wide Row Production 2016-18



# Dry Bean – Narrow vs Wide Row

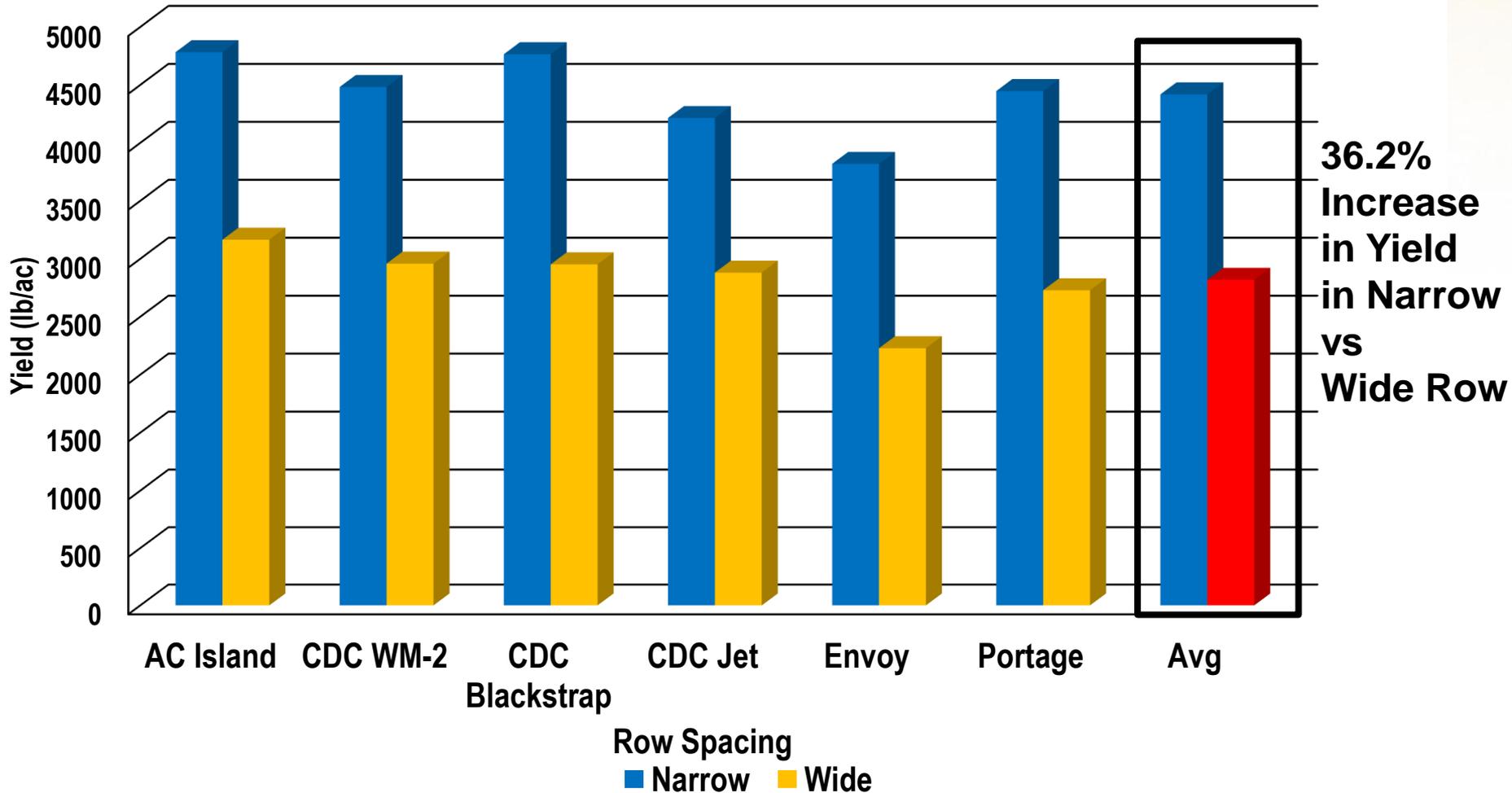
Trials conducted at Riverhurst (12 & 24")  
& Outlook (8 & 24") annually

<b>Class:</b>	<b>Variety #1</b>	<b>Variety #2</b>
<b>Pinto</b>	AC Island	CDC WM-2
<b>Black</b>	CDC Blackstrap	CDC Jet
<b>Navy</b>	Envoy	Portage

Beans at Riverhurst were swathed and combined,  
at Outlook they were undercut and combined

# Dry Bean – Narrow vs Wide Row

Yield (lb/ac) 6 Site-Year Summary 2016-18



# On-Farm Narrow Row Production - Dryland



**Sherrilyn Phelps – Aug.17/2018**

**North Battleford SK 2018 – Clean Yield 1500 lb/ac  
Desiccated & Direct Harvested**

# On-Farm Narrow Row Production -Dryland



**Sherrilyn Phelps – Aug.17/2018**

**Nipawin SK 2018 – Clean Yield 2000 lb/ac  
Desicated & Direct Harvested with a  
Macdon Flex Header**

# Dry Bean – Narrow vs Wide Row

## General Observations:

- **Narrow, solid-seeded dry bean production is feasible in SK.**
- **Agronomy works with narrow row production, difficulties are a matter of engineering not agronomy!**
- **Current air seeder delivery systems damage seed**
- **Tillage to facilitate undercutting only – no major outside benefits**
- **Plant population seems to have a strong effect on days to maturity???**
- **Swathing can reduce harvest losses, but a very delicate and challenging task**
- **Straight harvest challenging but can result in small losses at the header, > the material the < the losses**
- **Bean combine much gentler on seed and cleaner sample**
- **Straight harvest system has much better residue management and reduced soil erosion potential**
- **Both systems resulted in seed moisture of 12%**

# Thank You



## Questions?

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