



# **Irrigation Research and Demonstration Projects 2009**

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ICDC/SIPA Annual Conference  
November 9 & 10, 2009**



Saskatchewan  
Ministry of  
Agriculture

# Outline

- Canola Fungicide Demonstration
- Canola Seeding Rate Demonstration
- Organic Systems Evaluation Demo
- Evaluation of Commercial Pasture Blends
- Perennial Forage Biomass Measurement
- Alfalfa Management Trial



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# Canola Fungicide Demonstration

Co-operator – Kevin Plummer, Moon Lake ID

## Objective

- Assess the response to a fungicide application



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# Canola Fungicide Demonstration

## Project plan:

- Field scale check strip comparison
  - Compare sclerotinia disease severity and yield
  - 100 plant survey within each treatment
    - Main stem lesions
    - Branch or pod lesions
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# Canola Fungicide Demonstration

- RR variety 45H28
- Seeding date May 20
- Proline application July 10 at 20 % bloom
- Disease assessment September 8
  - Crop was still standing



# Canola Fungicide Demonstration

Treatment	Main stem lesions	Upper branch or pod lesions
Untreated	8	11
Fungicide applied	1	11

- # of main stem lesions reduced
- equal # of upper branch or pod lesions may be attributed to an infection occurring outside the protection window

# Canola Fungicide Demonstration

Treatment	Area (acres)	Weight (pounds)	Yield (bushels/acre)
Untreated	5.65	14 296	50.2
Fungicide applied	2.82	7 090	50.6

- No yield response
- Would require a yield increase of 3 bu/acre (at \$9/bu) to cover product and application cost

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# Canola Seeding Rate Demonstration

- Co-operators –
  - Kevin Plummer, Moon Lake ID
  - Grant Pederson, SSRID

## Objective

- Determine if a positive yield response is seen when seeding rate is increased to 250 seeds/m<sup>2</sup>
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# Canola Seeding Rate Demonstration

## Project plan:

- Calculate seeding rate for test area based on target plant density and TKW

Seeding rate formula:

$$\frac{9.6 \times \text{target plant density (plants/ft}^2\text{)} \times \text{TKW (g)}}{\text{Seedling survival (\%)}}$$

- Compare plant density in each treatment
- Yield measurement

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# Canola Seeding Rate Demonstration

## Plummer site

- RR variety 45H28
- Seeding date May 20
- Seeding rate
  - Field – 5.5 lb/acre
  - Test – 10.5 lb/acre

## Pederson site

- RR variety 45H28
  - Seeding date May 16
  - Seeding rate
    - Field – 5.5 lb/acre
    - Test – 7.5 lb/acre
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# Canola Seeding Rate Demonstration

Plummer site

Increased Seeding Rate	Check
19	14
18	13
22	12
18	10
19.25	12.25

Pederson site

Increased Seeding Rate	Check
24	13
19	10
28	11
15	14
21.5	12

# Canola Seeding Rate Demonstration

Plummer site

Treatment	Area (acres)	Weight (pounds)	Yield (bushels/acre)
Check	5.65	14 296	50.6
Increased SR	2.82	7 034	49.8

- No yield difference
- Harvest date – September 29
- No wind damage

# Canola Seeding Rate Demonstration

Pederson site

Treatment	Area (acres)	Weight (pounds)	Yield (bushels/acre)
Check	0.232	586	50.5
Increased SR	0.268	726	54.2

- Harvest date – September 30
- Strong wind damage

# Canola Seeding Rate Demonstration



# Canola Seeding Rate Demonstration

Site	Treatment	Increased Revenue (\$/acre)	Increased Cost (\$/acre)	Net (\$/acre)
Pederson	Increased SR	\$33.30	\$22.88	\$10.42
Plummer	Increased SR	\$0.00	\$41.18	-\$41.18

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# 2010 Possibilities

- Fungicide demonstrations
    - Partnering with Dr. Randy Kutcher, AAFC
  - Three or four different SR on canola
    - 3, 5, 7 lb/ac
  - Specialty fertilizer demonstrations
    - Industry partnership
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# Organic Systems Demonstration

Industry Co-operators –

- Jacob Vanderschaaf, Prairie Pride Organics
- Greg Sommerfeld, Elcan Forage Inc.



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# Organic Systems Demonstration

## Objectives:

- Identify agronomic practices to improve productivity
  - Nitrogen mineralization potential of alfalfa crop
  - Determine agronomic practices that increase nitrogen fixation and mineralization
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# Organic Systems Demonstration

## Issues Identified:

- Number of years in the rotation before returning to alfalfa
    - Amount of N available in year two after termination
  - What crops to grow following potato
    - Alfalfa-Potato-?
  - Need of earlier N supply from mineralization
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# Organic Systems Demonstration

Potential solutions:

- Healthy, well watered, adequately fertilized alfalfa crop
  - Earlier termination of alfalfa stand
  - More evaluation of this hypothesis is needed and will be further investigated
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# Organic Field Day

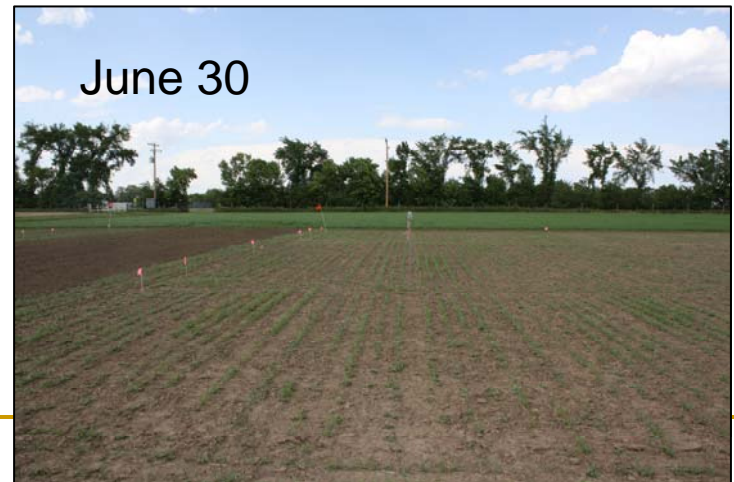
August 19



# Evaluation of Commercial Pasture Blends

Co-operators –

- Charlotte Ward PAg, Regional Forage Specialist
- CSIDC
- Dr. Bruce Coulman PAg, U of S



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# Evaluation of Commercial Pasture Blends

## Objectives:

- Evaluate for overall yield, persistence and composition
  - Monitor changes in yield, composition and individual species persistence
  - Determine if irrigation provides yield benefit to justify increased costs and management
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# Evaluation of Commercial Pasture Blends

Species	Variety	Proportion in blend by seed weight
<b>Custom Blend #1</b>		
Alfalfa	AC Grazeland BR	20%
Meadow brome	Fleet	80%
<b>Custom Blend #2</b>		
Cicer milkvetch	Oxley II	30%
Meadow brome	Fleet	70%
<b>Brett-Young Super Pasture Blend</b>		
Meadow brome	Fleet	50%
Crested wheatgrass	Fairway	25%
Tall fescue	Kokanee	15%
Alfalfa	Survivor	10%
<b>Pickseed HayGraze Blend</b>		
Alfalfa	AC Grazeland Br	60%
Meadow brome	Fleet	30%
Orchardgrass	OKAY	10%
<b>Northstar Custom Blend #1</b>		
Meadow brome	Fleet	40%
Smooth brome	Carlton	10%
Tall fescue	Courtenay	15%
Orchardgrass	Early Arctic	15%
Alfalfa	Stealth	20%
<b>Proven-Viterra Ranchmaster</b>		
Meadow brome	hps brand	50%
Intermediate wheatgrass		15%
Pubescent wheatgrass		15%
Tall fescue	hps brand	15%
Alfalfa	Spredor	5%

# Evaluation of Commercial Pasture Blends

June 2 Seeding

Irrigation and Dry land Treatments



Target plant population for each treatment:

25 PLS/ft<sup>2</sup> – Dry land

35 PLS/ft<sup>2</sup> – Irrigation

Seeding rate (lbs/acre) =  $\frac{\text{seeds/ft}^2 \times \text{ft}^2/\text{acre}}{\text{seeds/lb}} \text{ PLS}$



Reseed dry land treatment –  
August 11



# Evaluation of Commercial Pasture Blends

## Irrigation Treatment



# CSIDC Field Day 2009

Forages - Stop #2 on Tour



# Evaluation of Commercial Pasture Blends

% Species composition at harvest

Rep	Plot	Blend	Total Dry Wt (g)	Alfalfa	Meadow Brome	Smooth Brome	Cicer Milkvetch	Crested Wheatgrass	Tall Fescue	Orchard Grass	Intermediate Wheatgrass
1	1	Custom Blend #1	77.15	82.0%	18.0%						
	2	Northstar Custom Blend	145.3	86.1%	3.6%	3.5%			3.3%	3.4%	
	3	Custom Blend #2	30.95		56.8%		43.2%				
	4	Brett-Young Super I							%		
	5	Proven-Viterra Ran							%		13.5%
	6	Pickseed Haygraze									3.7%
2	7	Northstar Custom B							%	5.5%	
	8	Brett-Young Super I							%		
	9	Custom Blend #1									
	10	Pickseed Haygraze									6.4%
	11	Proven-Viterra Ran							%		2.7%
	12	Custom Blend #2									
3	13	Custom Blend #2	38.4		99.6%		0.4%				
	14	Brett-Young Super Pasture Blend	57.3	38.2%	17.8%			21.6%	22.4%		
	15	Custom Blend #1	99.7	60.2%	39.8%						
	16	Proven-Viterra Ranchmaster Blend	85.3	65.1%	9.5%				5.2%		20.2%
	17	Pickseed Haygraze Blend	171.15	93.5%	0.3%						6.2%
	18	Northstar Custom Blend	102.3	61.4%	10.7%	8.8%			4.5%	14.7%	
4	19	Northstar Custom Blend	86.75	95.7%	0.4%	0.2%			0.4%	3.4%	
	20	Pickseed Haygraze Blend	118.3	92.1%	5.1%					2.8%	
	21	Custom Blend #1	74.2	74.6%	25.4%						
	22	Custom Blend #2	45.15		97.6%		2.4%				
	23	Proven-Viterra Ranchmaster Blend	75.55	83.2%	7.3%				3.6%		5.9%
	24	Brett-Young Super Pasture Blend	22.55	35.0%	24.5%			11.5%	29.0%		

Alfalfa contributions in 5 blends were high

Cause for concern if grazed

Wait and see for grass production to increase in next years

# Evaluation of Commercial Pasture Blends

<b>Blend</b>	<b>Average DM Yield (ton/acre)</b>	<b>Average Yield (ton/acre) 15% moisture</b>
Custom Blend #1	1.78	2.05
Northstar Custom Blend	1.71	1.97
Custom Blend #2	0.58	0.67
Brett-Young Super Pasture Blend	0.78	0.90
Proven-Viterra Ranchmaster Blend	1.39	1.59
Pickseed Haygraze Blend	2.35	2.70

High yield often indicative of high % of alfalfa contributing to blend composition

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# Perennial Forage Biomass Measurement

Co-operators –

- Charlotte Ward PAg, Regional Forage Specialist
  - CSIDC
  - Dr. Bruce Coulman PAg, U of S
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# Perennial Forage Biomass Measurement

## Objectives:

- Measure the forage biomass production of 10 perennial grass species
  - Renewable fuel production



# Perennial Forage Biomass Measurement

## Project plan

- Small plot design
- Single cut harvest
- Measure DM yield

Species
Tall wheatgrass
Russian wildrye (diploid)
Switchgrass
Intermediate wheatgrass
Smooth brome
Crested wheatgrass (tetraploid)
Hybrid brome
Slender wheatgrass
Meadow brome
Western wheatgrass

# Perennial Forage Biomass Measurement

June 2 Seeding



Target plant population:  
35 PLS/ft<sup>2</sup>



Seeding rate (lbs/acre) =  $\frac{\text{seeds/ft}^2 \times \text{ft}^2/\text{acre}}{\text{seeds/lb}}$  PLS

# Perennial Forage Biomass Measurement



September 9



# Perennial Forage Biomass Measurement

- Harvest on September 17
- Highest yield species:
  - Hybrid brome grass
  - Smooth brome grass
  - Meadow brome grass

Species	Average Yield (t DM/acre)
Western Wheatgrass	0.46
Slender Wheatgrass	1.58
Crested Wheatgrass	1.20
Hybrid Brome grass	2.85
Tall Wheatgrass	0.46
Intermediate Wheatgrass	1.57
Smooth Brome grass	2.73
Switchgrass	0.85
Meadow Brome grass	1.92
Russian Wildrye	0.60

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# Alfalfa Management Trial

Co-operators –

- Charlotte Ward PAg, Regional Forage Specialist
- CSIDC



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# Alfalfa Management Trial

## Objectives

- Compare yield performance of seven alfalfa varieties under a 3 cut system



# Alfalfa Management Trial

June 25



August 11



October 14



# Alfalfa Management Trial

- 3 harvest dates:
  - June 25
  - August 11
  - October 14
- Data collection continues in 2010, 2011

Variety	Average Dry Matter (DM) Yield (t/a)
Equinox	4.42
AC Longview	4.83
54Q30	4.54
AC Blue J	4.59
Stealth	4.87
Hybriforce 400	4.68
2065MF	4.65

# Irrigated Forage Event

August 6 at CSIDC



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Questions,  
Thoughts or  
Comments?

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