

# Southwest Saskatchewan Irrigation Districts

Results of 2008 Crop Survey  
Field Project Results



*Irrigation Crop Diversification Corporation*

Gary Kruger PAg  
Irrigation Agrologist



Saskatchewan  
Ministry of  
Agriculture

# Overview

- A few irrigation schemes in Cypress Hills region prior to Irrigation Act of 1894
- Area populated by dryland farmers and cattle ranchers - heart of Palliser Triangle
- Insufficient financial resources to construct diversion works that would survive high spring water flows



# Drought brought change

- Federal and provincial governments attempted to prevent depopulation in the region by promoting economic stability
- PFRA established to rehabilitate soil drifted and drought-affected regions (1935)
  - Reduce risk through conservation minded farm practice, tree culture, water supply, land utilization and land settlement



# Drought brought change

- PFRA developed 26 storage reservoirs and 6 irrigation projects
- Provincial govt developed 9 irrigation projects depending on the existing reservoirs for water supply
- Projects primarily flood irrigation of hay and fodder crops
- Fields mostly 40 ac or smaller



# Irrigation Districts

- Chesterfield
- Consul-Nashlyn
- Eastend
- Herbert
- Lodge Creek
- Maple Creek
- Middle Creek
- Miry Creek
- North Waldeck
- Ponteix
- Rush Lake
- Val Marie
- Vidora



# 2009 Southwest Field Program

- Annual Cereal Forage Demonstration
- Ponteix Forage Demonstration
- Waldeck Alfalfa Forage Demonstration
- Miry Creek Alfalfa Phosphorus Demonstration



# Annual Cereal Forage Demonstration

- Objective: To demonstrate the latest varieties of cereals for greenfeed on a field scale to irrigation farmers in the Val Marie area of Saskatchewan
- Location: Val Marie Irrigation District
  - Cooperator – Lynn Grant



# Annual Cereal Forage Demonstration

- Cereals sown:
  - Three oat varieties
  - One triticale variety
  - Three 6R feed barley, three 2R feed barley
  - One 6R malt barley, one 2R malt barley



# Annual Cereal Forage Demonstration

- Seed suppliers
  - Wagon Wheel Seed Corp., Churchbridge, SK
  - Ardell Seeds, Vanscoy, SK
  - Mastin Seeds, Sundre, AB
  - Silverthorn Seeds, Outlook, SK
  - Spruce Grove Seeds, Rosthern, SK
  - Reisner Seeds, Limerick, SK
  - Chin Ridge Seeds, Taber, AB
  - Viterra Grain, Regina, SK



# Annual Forages at Val Marie



Legacy

CDC Cowboy

# Annual Cereal Forage Demonstration

- Grass alfalfa stubble – fall applied 2 l/ac glyphosate
- Seeding date: May 20, 2009
- Seeding rate: 2.3 bu/ac - Haybuster
- Fertilizer applied: 110 lb/ac 29-14-0-7
- Irrigation: None
  - Grower chose to not irrigate
- Pesticides: None

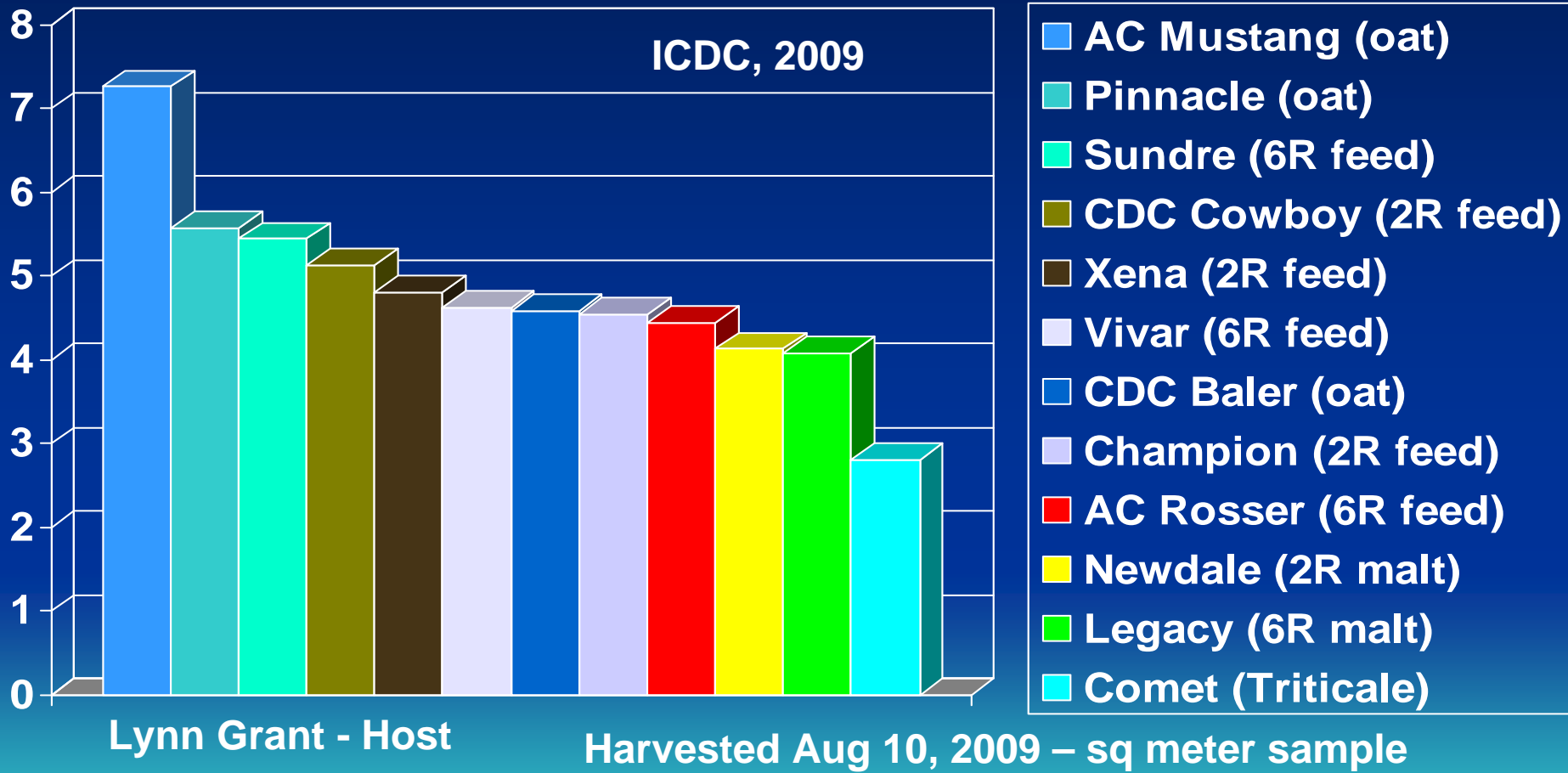


# Annual Cereal Forage Demonstration

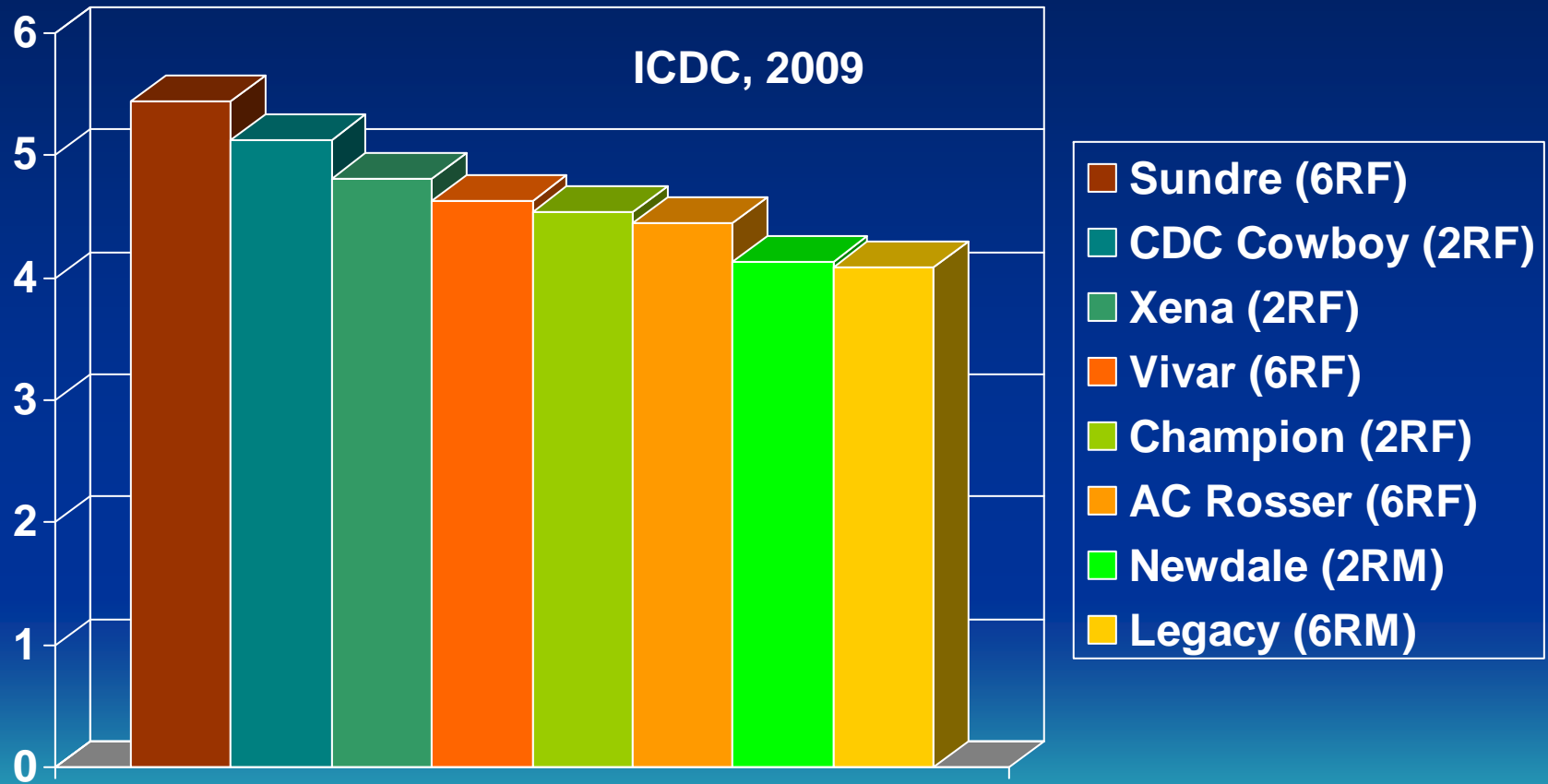
- Harvest: August 10, 2009
  - Yield estimate derived from square meter sample of forage harvested from field strip
- Quality analysis
  - core samples collected from bales



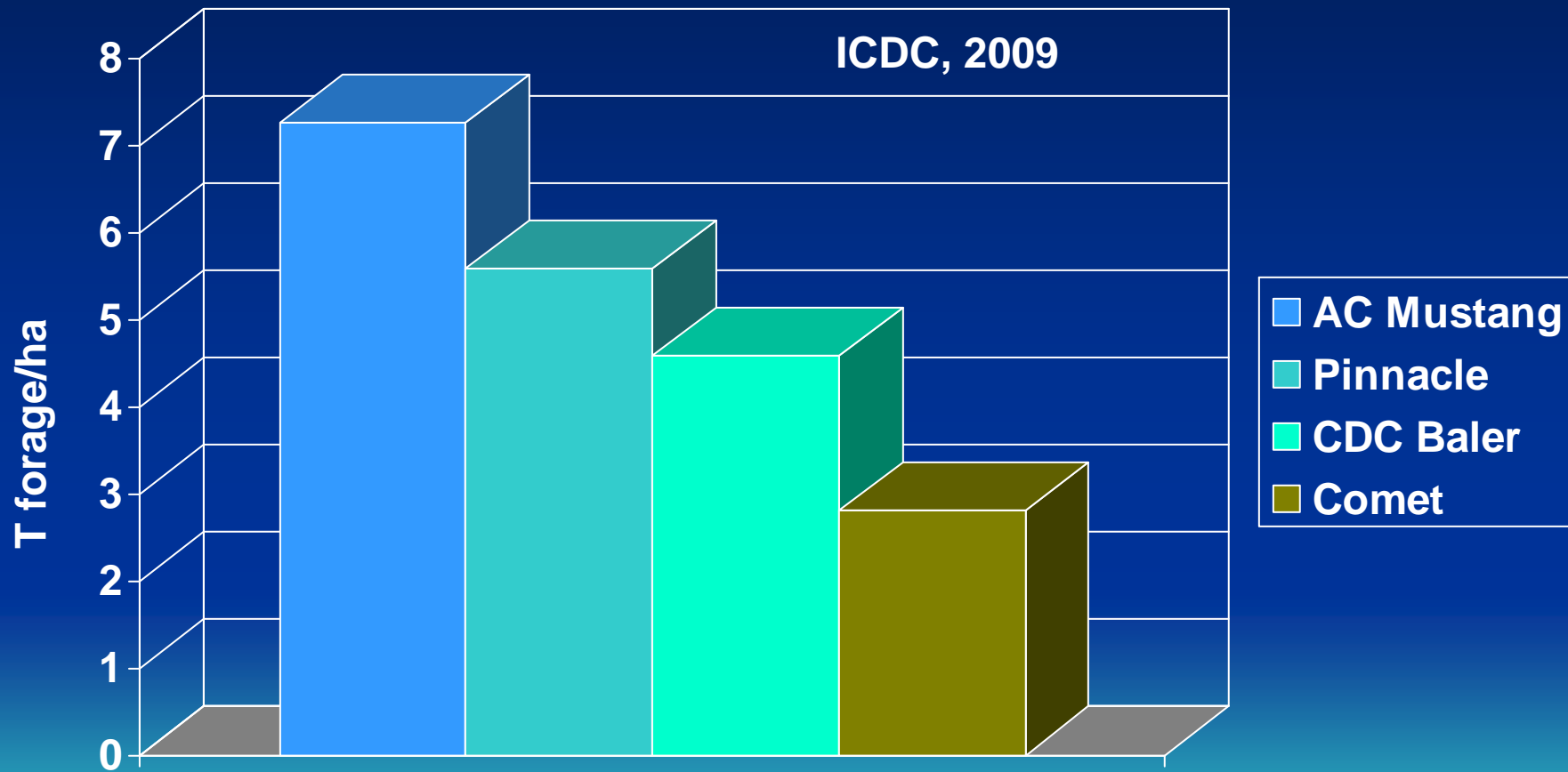
# Val Marie Cereal Forage Demonstration (T forage/ha)



# Val Marie 2R and 6R Barley Forage Demonstration (T forage/ha)



# Val Marie Cereal Forage Demonstration – Oat & Triticale



# Annual Cereal Forage Demonstration

- Oats > Feed barley > Malt barley > Triticale
- Non irrigated yields about 1/3 of intensive irrigated yields at Outlook CSIDC



# Annual Cereal Forage Demonstration

- Effective means of supplying feed while achieving rotation in perennial forage
- More expensive approach for forage production than perennials
- Future – seek cooperator for 2010 demonstration



# Ponteix Forage Demonstration

- Objective: To compare AC Saltlander green wheatgrass with Rocket smooth brome grass and AC Knowles hybrid brome grass for salt tolerance when the grass is grown in an alfalfa grass mixture.
- Location: Ponteix Irrigation District
  - Cooperator: Andre Perrault



# Ponteix Forage Demonstration

- Seeding date: April 21-23
- Seeding depth: ½ inch with Case IH 620 disk drill with 6” row spacing
- Field irrigated by flood twice after seeding
- Seeding rate: 6 lb/ac grass and 9 lb/ac alfalfa mixed together



# AC Saltlander

Cross between Eurasian bluebunch wheatgrass and quackgrass

Saline tolerant – able to suppress and control foxtail barley in trial at Swift Current

- AC Knowles

Hybrid of smooth and meadow brome grass



# Ponteix Forage Demonstration

- Establishment of grasses questionable
- Assess stand in spring 2010
- Reseed project if interest still significant



# Waldeck Forage Demonstration

- Objective: To demonstrate ten of the recently recommended alfalfa varieties to the growers surrounding the North Waldeck Irrigation District
- Cooperator – Lane Willms
  - Brown soil zone with clay texture



# Waldeck Forage Demonstration

- Farmpure variety
  - AC Longview
- Pickseed variety
  - Starbuck
- Brett Young varieties
  - Hybriforce 400 and Magnum 3801+Z
- Viterra Seed varieties
  - Convoy, Equinox, Geneva, Gala, Ameristand 201+Z and Spredor 4



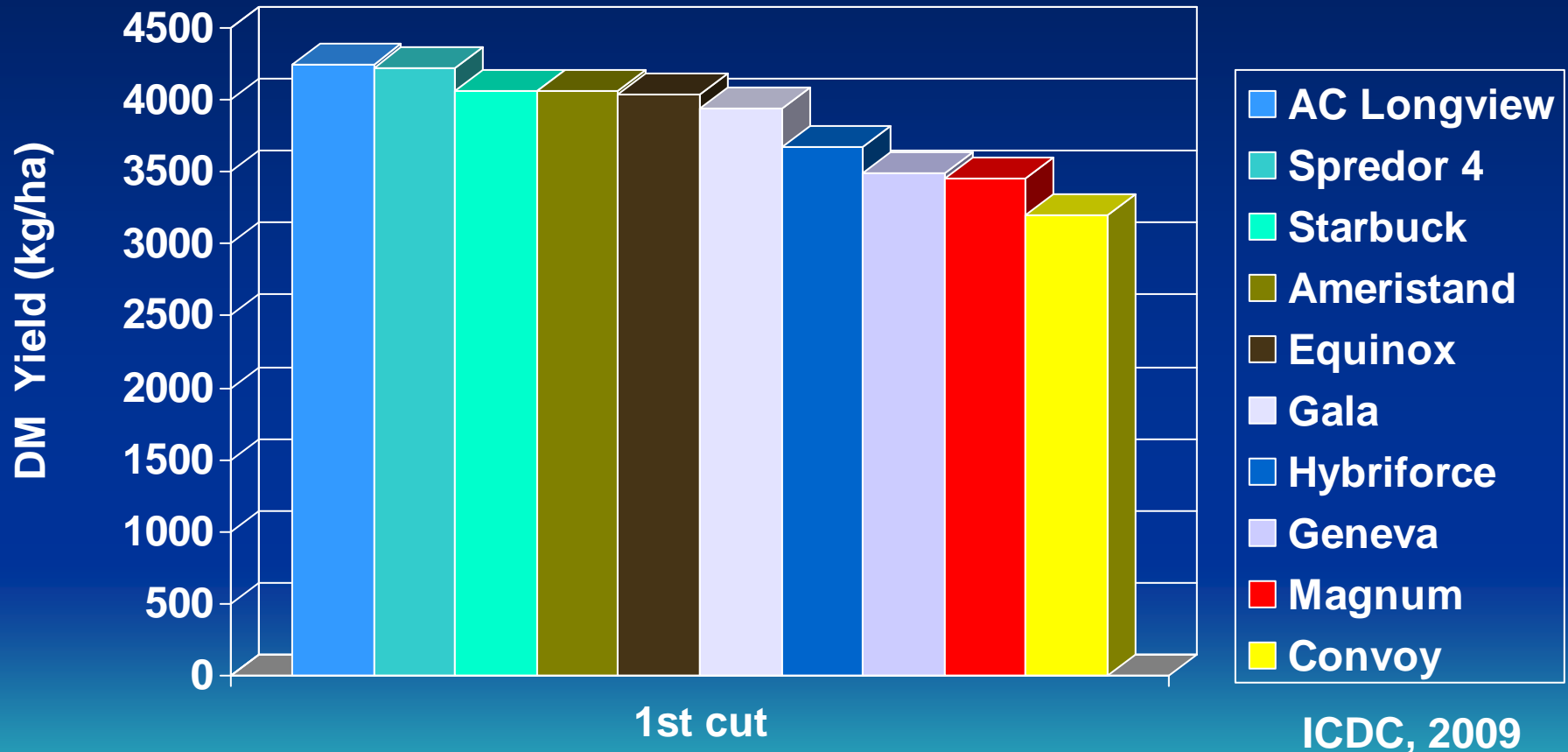
# Waldeck Forage Demonstration

- Plots sown in spring 2006 @ 12 lb/ac
- No fertilizer applied
- Two irrigations
- First forage cut on July 8, 2009
- Second forage cut on September 5, 2009
- Yield of first cut determined by weighing bales and calculating distance travelled
- Yield of second cut not determined because only 7 bales taken from 10 strips



# Waldeck Forage Demonstration

Single Replication



# Irrigated Alfalfa Variety Ranking

<u>Variety</u>	<u>1<sup>st</sup> cut Yield (kg/ha)</u>	<u>SK Ag (% of Rambler) (3628 kg/ha)</u>	<u>Year Released</u>
AC Longview	4240	110	1999
Spredor 4	4220	103	2002
Starbuck	4060	109	2001
Ameristand	4060	105	2002
Equinox	4040	N/A	
Gala	3940	N/A	1996
Hybriforce-400	3670	103	2003
Geneva	3490	107	1999
Magnum 3801 Wet	3450	132	2004
Convoy	3200	N/A	

# Miry Creek Alfalfa Phosphorus Demonstration

- Objective: To demonstrate phosphorus products and rates to Cabri area growers:

Cooperator: Greg Oldhaver, Cabri

Product suppliers:

Viterra, Morse

Alpine Plant Food, Aaron Fahselt, Shaunavon



# Miry Creek Alfalfa Phosphorus Demonstration




# Miry Creek Alfalfa Phosphorus Demonstration

- P products applied to stand on May 21 and July 21.
  - Regular 11-52-0 and Avail 11-52-0 applied broadcast
  - Avail impregnated to first application of fertilizer only
  - Second Avail treatment used regular 11-52-0
  - Alpine P (6-22-2) sprayed on stand

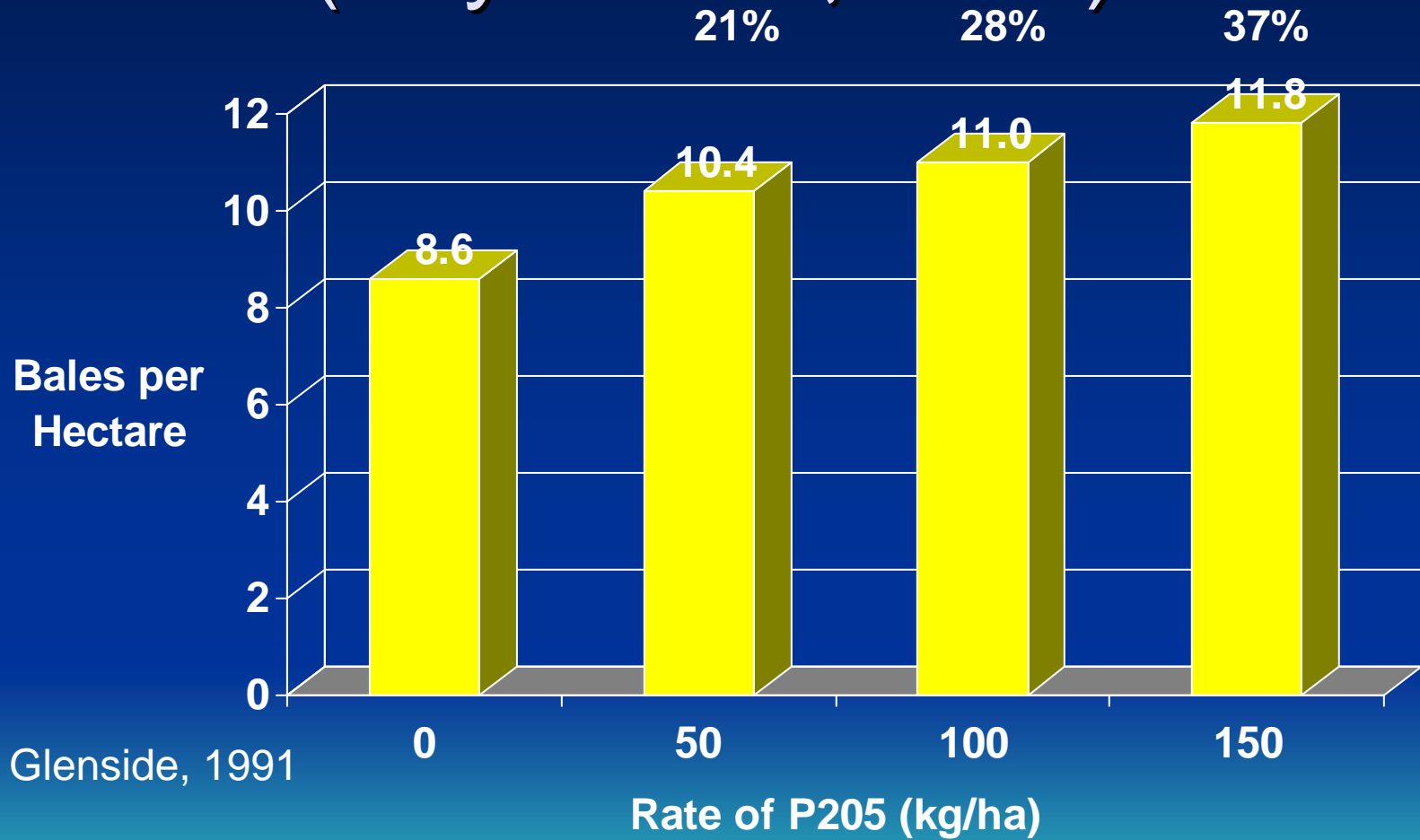


# Miry Creek Alfalfa Phosphorus Demonstration

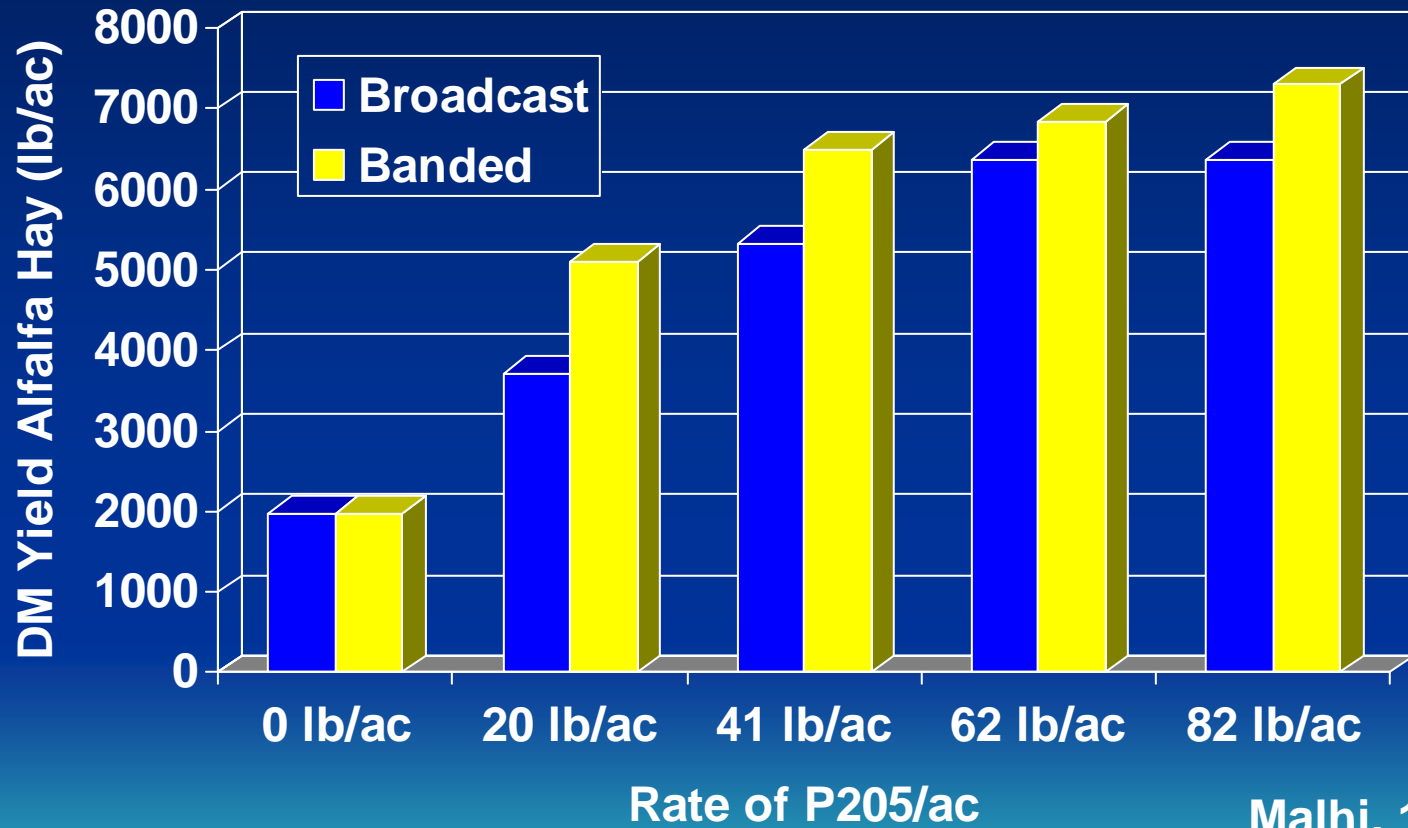
## Treatments applied

- 1) Check
  - 2) 25 lb P205 broadcast (11-52-0)
  - 3) 25 lb P205 broadcast (11-52-0) Avail
  - 4) 50 lb P205 broadcast (11-52-0)
  - 5) 50 lb P205 broadcast (11-52-0) Avail
  - 6) One pass foliar 6-22-2 (9 lb P205) 3 gal/ac
  - 7) Two pass foliar 6-22-2 (17 lb P205) 6 gal/ac
  - 8) Three pass foliar 6-22-2 (25 lb P205) 9 gal/ac
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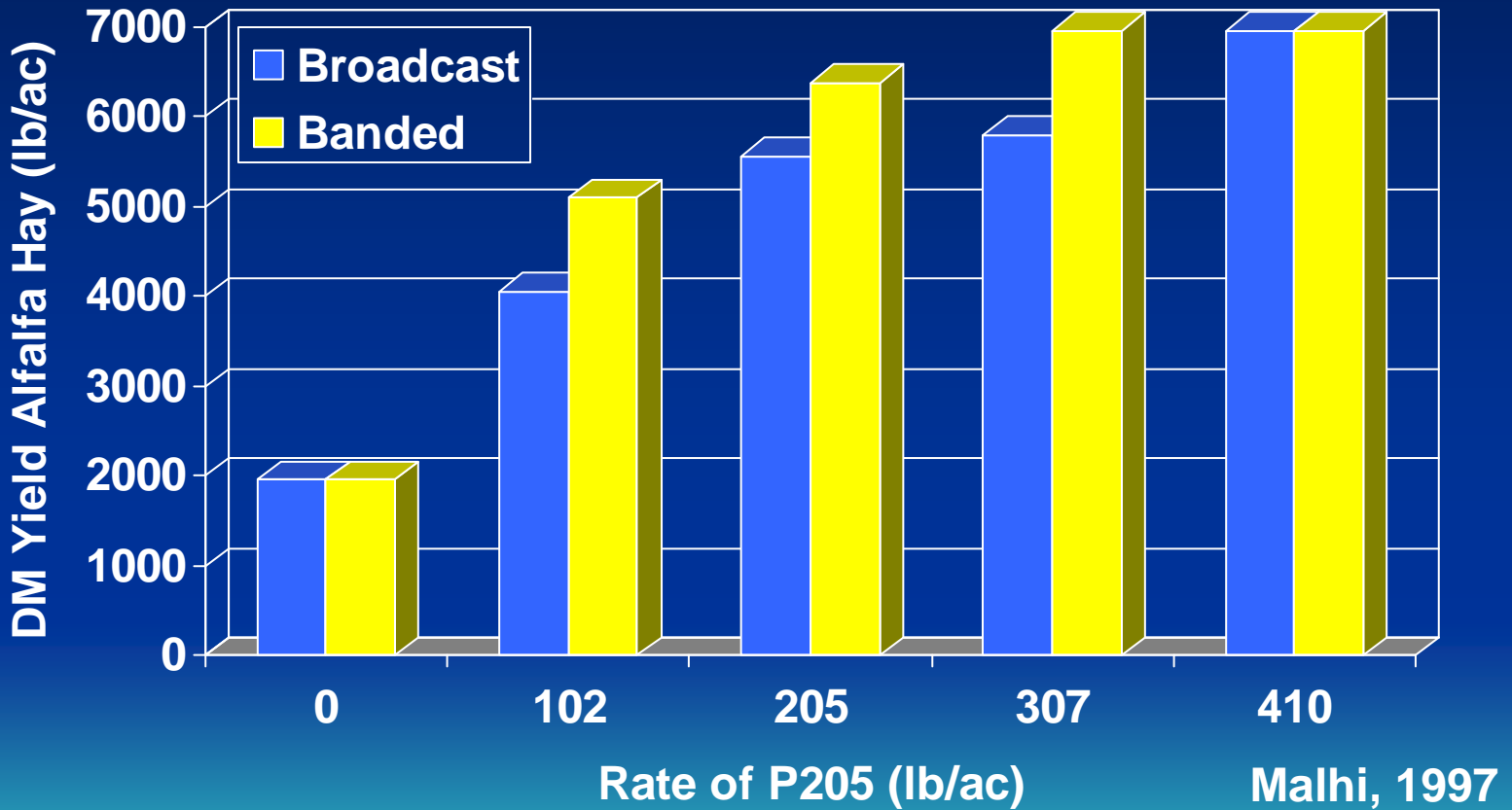
# P response of Irrigated Alfalfa (Doyle et al., 1992)



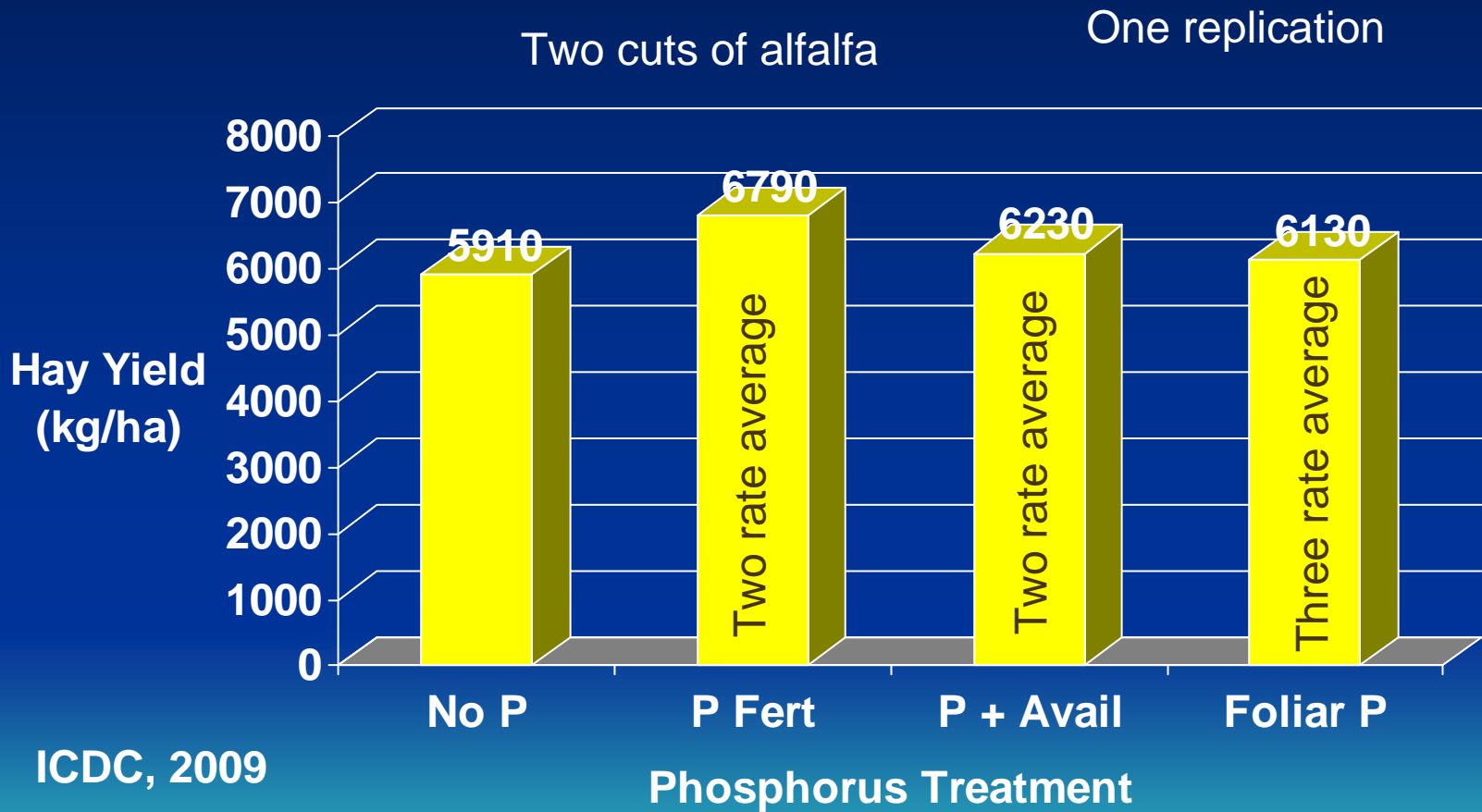
# Annual P Application to Alfalfa



# Initial Single P Application to Alfalfa



# Effect of Phosphorus on Irrigated Alfalfa Yield –Miry Creek



# Miry Creek Alfalfa Phosphorus Demonstration

- Potential for yield increase
  - 25 – 200% increase in alfalfa yield with P205
  - need to balance nutrient uptake
  - Plant Root Simulator ?
    - K ?
    - S?                      Impact on quality?
    - Zn?
- Need to follow up with further work in 2010



# Chesterfield Irrigation District

- Flood irrigation
  - 686 ac (about 20 plots)
  - Two pump sites from South SK River
  - NE of Estuary, SK just east of AB border
- Crop Mix
  - 100% Grass/Alfalfa hay

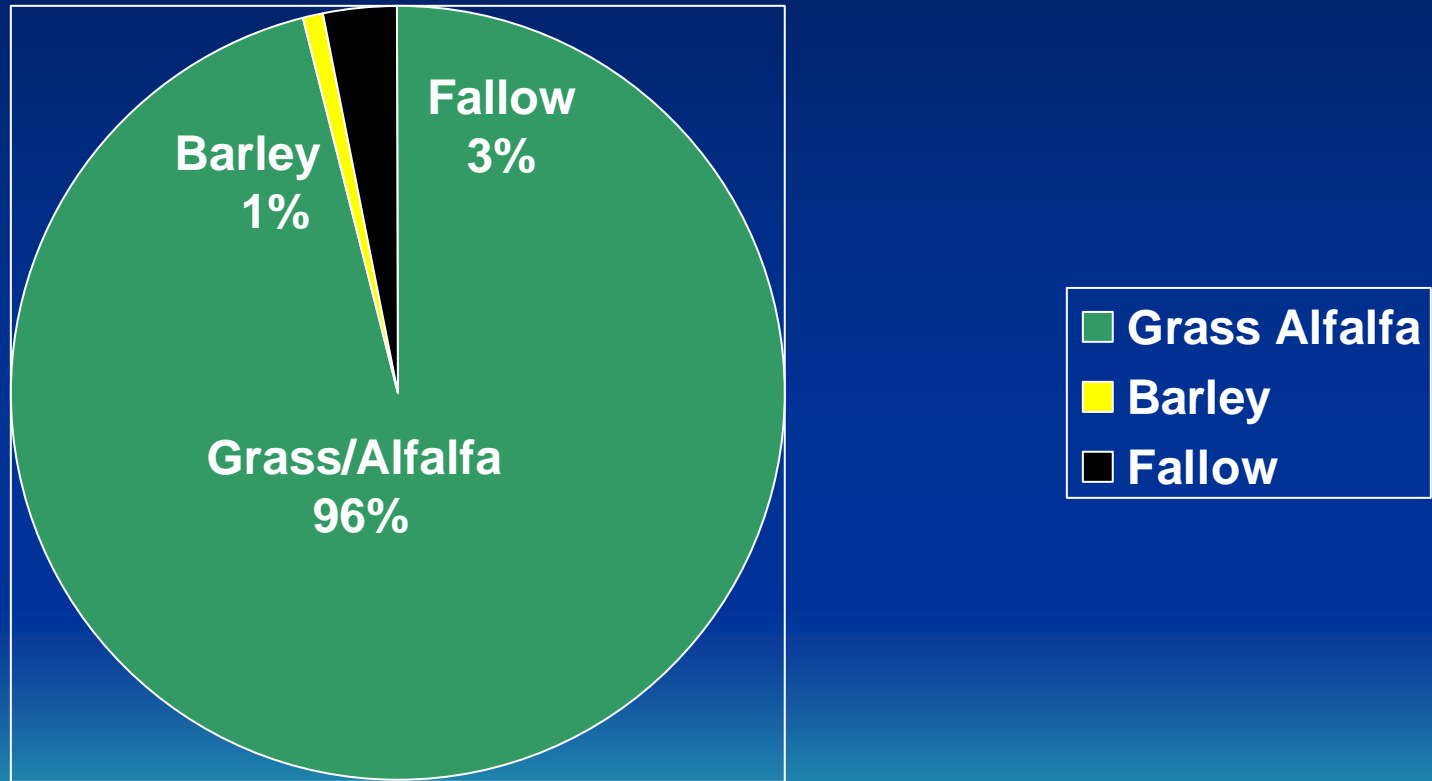


# Consul-Nashlyn Irrigation District

- Flood irrigation
  - 3485 ac – main development from 1946-1950
  - Two separate areas
    - Consul – North and east of Consul
      - water source Battle Creek (Cypress Lake)
    - Naslyn – water source Nashlyn Reservoir



# Consul Naslyn Irrigation District



# Cypress Lake Reservoir



# Eastend

- Eastend Reservoir built in 1937 by PFRA
- Flood Irrigation
  - Along Frenchman River east of Eastend
  - 2878 ac along irrigation canal
- Crop Mix
  - Predominantly forages
- Water source – Reservoir built on Frenchman River with significant upgrade



# Eastend Reservoir October Water Level

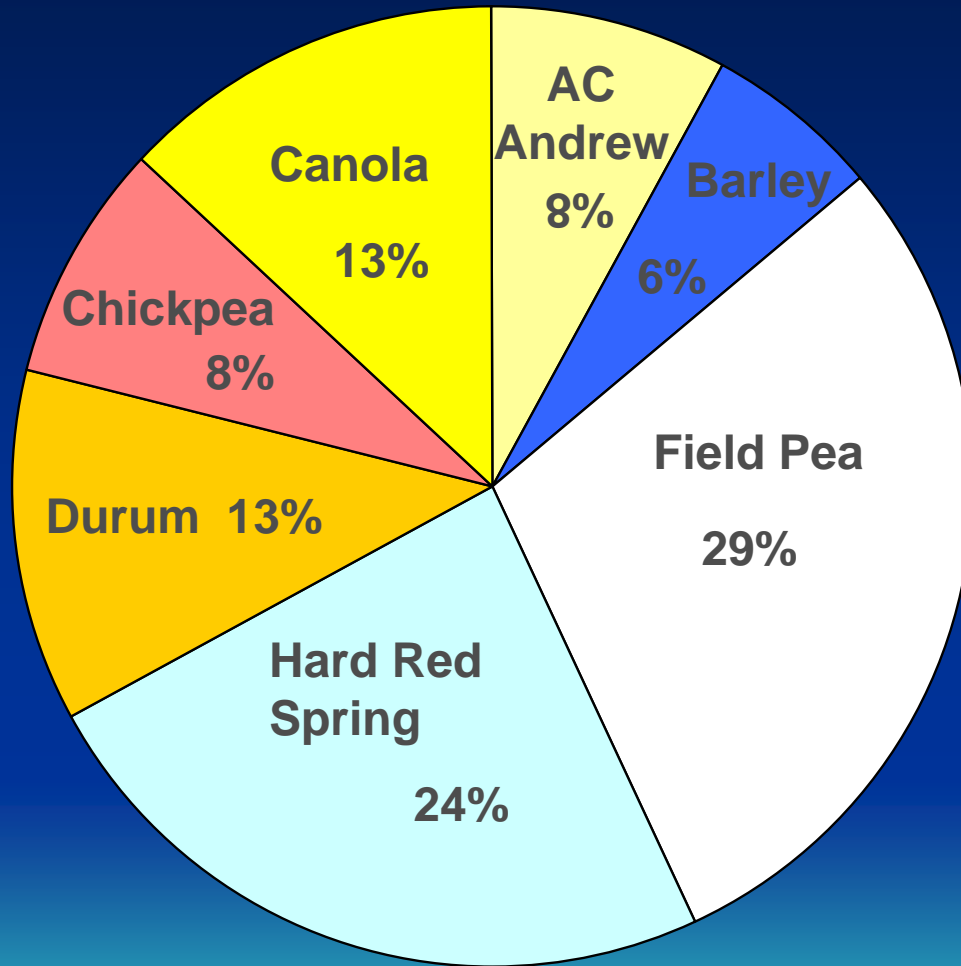


# Herbert Irrigation District

- Pivot and wheel line irrigation
  - 1,667 ac – water supplied from Highfield Reservoir through Rush Lake canal to Herbert Reservoir



# 2008 Crop Survey at Herbert ID



ICDC, 2008

# Lodge Creek Irrigation District

- Flood irrigation - 900 ac
- Water source – Altawan Reservoir on Lodge Creek
- Crop mix – 100% Grass Alfalfa Hay



# Maple Creek

- Water sources – Junction, McDougald, Harris and Downie Lake Reservoirs
- Flood irrigation of 4000 ac irrigable land in three parcels North and west of Maple Creek
- Predominantly forages

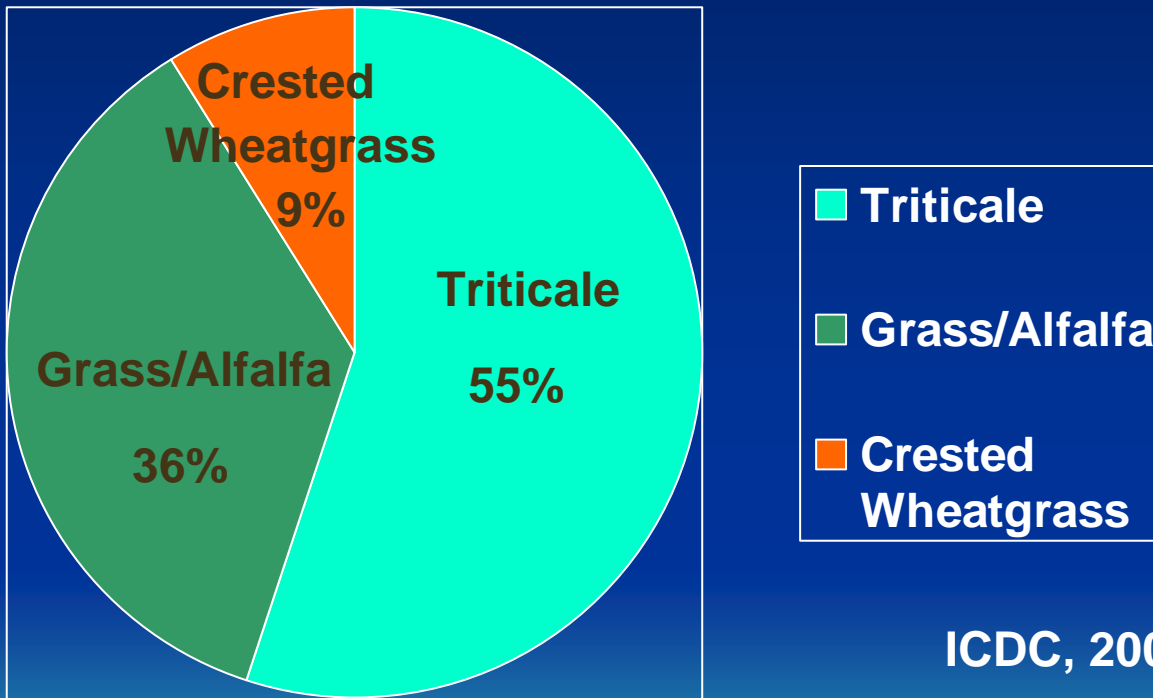


# Middle Creek Irrigation District

- Flood irrigation
  - 1,087 ac
  - West of Consul near hamlet of Govenlock
  - Water source – Middle Creek Reservoir



# Middle Creek Irrigation District



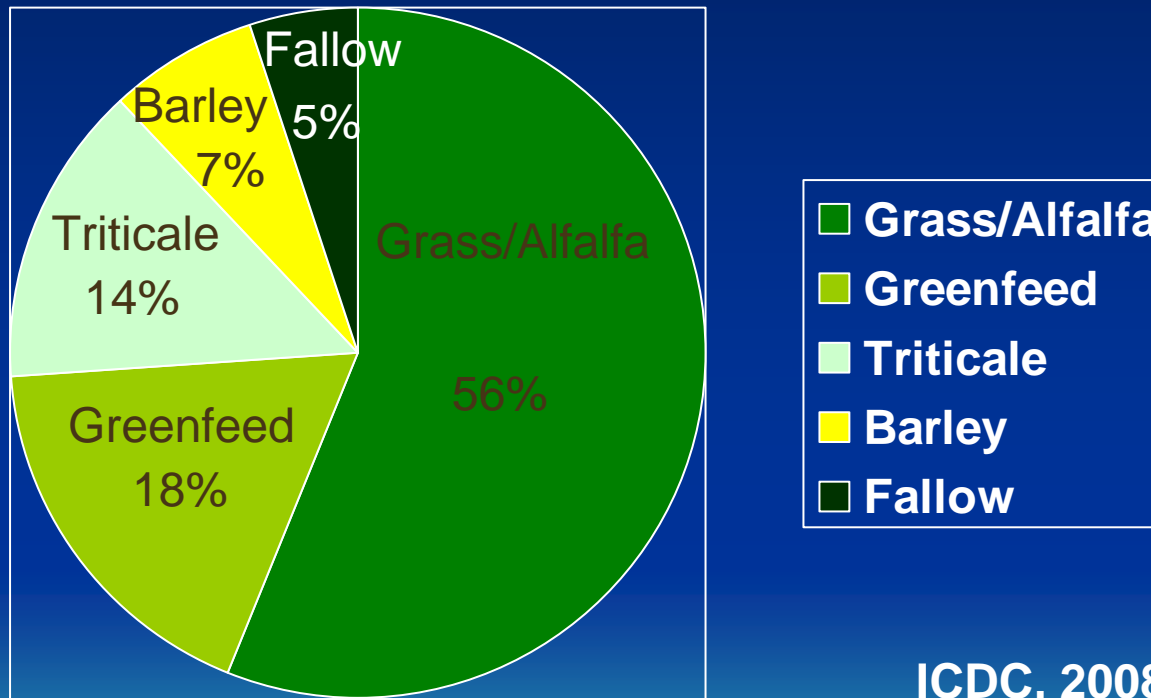
ICDC, 2008

# Miry Creek Irrigation District

- Wheel move sprinkler irrigation
  - 1,551 ac
- Water source – Lake Diefenbaker
- North of Cabri



# Miry Creek Irrigation District



ICDC, 2008

# North Waldeck Irrigation District

- Flood irrigation
  - 1,639 ac
- Water source – Swift Current Creek
  - North of Waldeck
- Predominantly forages



# Ponteix Irrigation District

- Flood and pivot irrigation
  - 1,495 ac
- East and west of Ponteix along Notukeu Creek
- Water source – Gouverneur Reservoir on Notukeu Creek north of Ponteix
  - Supplemented by Cadillac Reservoir located on a tributary upstream
- Crop mix – predominantly forages



# Rush Lake Irrigation District

- Duncairn Dam built in 1943 on Swift Current Creek
- Water diverted to a canal to Highfield Reservoir to another canal to Waldeck, Rush Lake and Herbert areas
- Flood irrigation
  - 3,394 ac
  - Crop mix – predominantly forages



# Val Marie

- Two projects – Val Marie (1936) and West Val Marie (1939)
  - Val Marie project about double size of West Val Marie project
- Flood irrigation
  - 6,600 ac
- Water source – water reservoir on Frenchman River
- Crop mix – predominantly forages

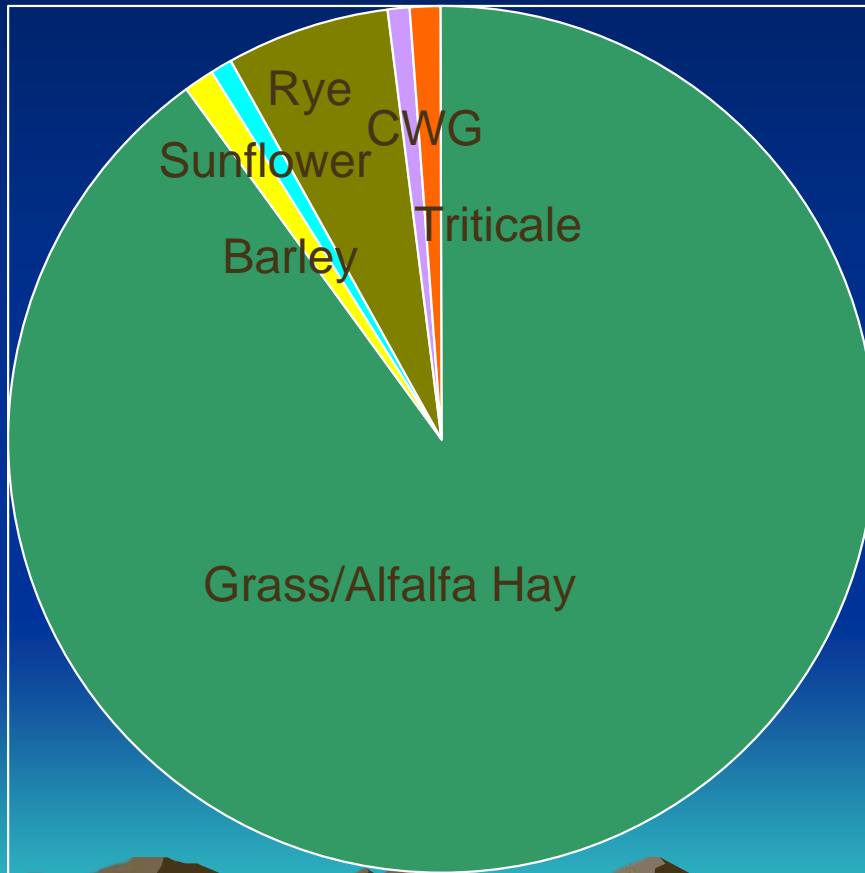


# Vidora Irrigation District

- Flood irrigation – 2436 ac
- Water source – Cypress Lake Reservoir using canals for water delivery



# Vidora Irrigation District



ICDC, 2008

# Vidora Irrigation District



# Projects Not Surveyed

- Eastend
- North Waldeck
- Ponteix
- Rush Lake
- Val Marie and West Val Marie



# Irrigation Districts not Surveyed

- Land sown to forages predominates
- Land not in forages is in process of forage re-establishment
- Irrigation in some districts limited by water availability due to limited snowfall or runoff



# Rotation Strategy

- Reluctance to take forage stands out for rejuvenation due to risk of not being able to re-establish the forage.
- Spring flood and seed land to oats or triticale once the soil dries up in mid to late June
- Re-seed to alfalfa after 1-2 years sown to annual forage crop



# ICDC Activity Focus

- Rising production costs
- Productivity needs to increase to maintain economic viability of irrigation projects
- Water quality and salt tolerance of crops limit diversified cropping
- Greater emphasis on balanced fertility
  - Fields are land leveled – prone to K and Zn stress
  - Banding of immobile nutrients
  - Use Plant Root Simulator soil analysis



Have a safe trip home!

