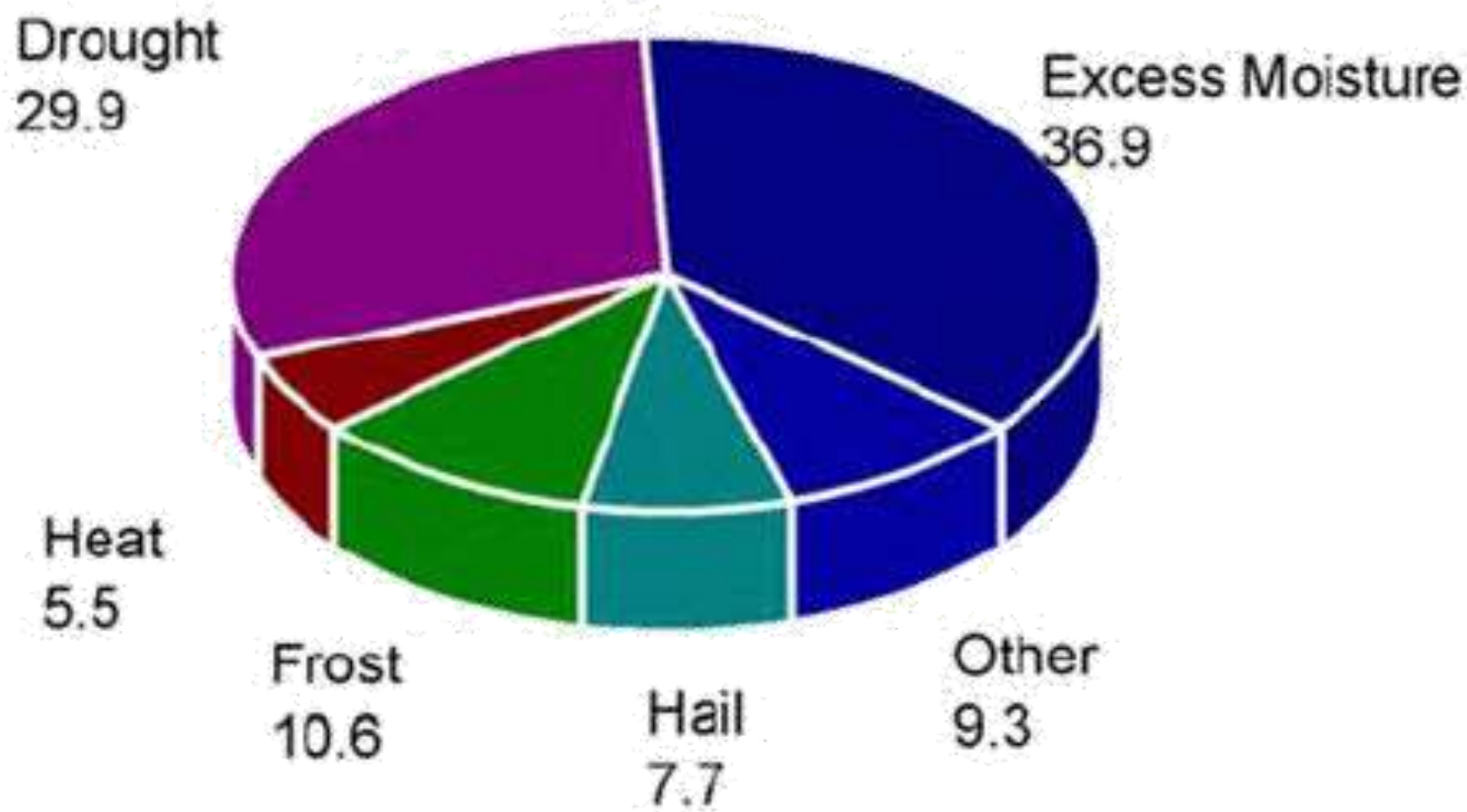


# Monitoring Agricultural Drought in Manitoba

Andrew Nadler  
Agricultural Meteorologist  
Manitoba Agriculture, Food and Rural Initiatives



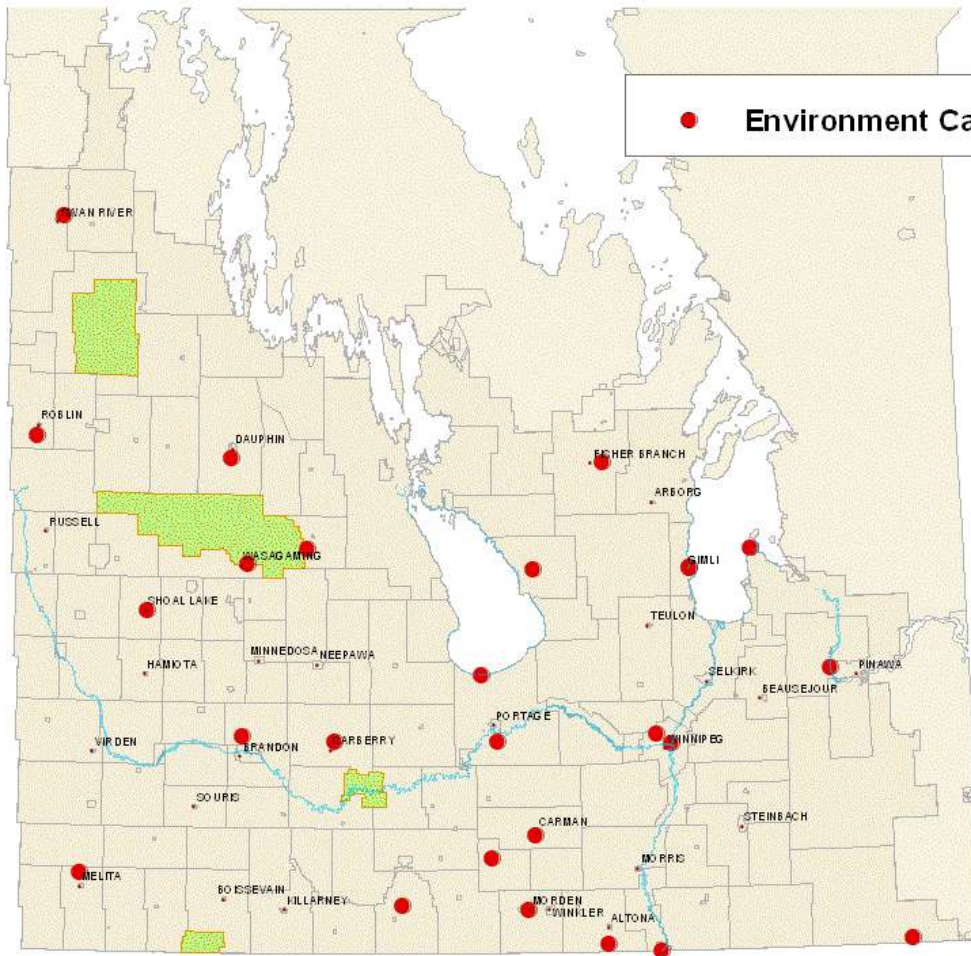
Major Post Seeding Causes Of Loss  
*MASC Average 1966-2005*





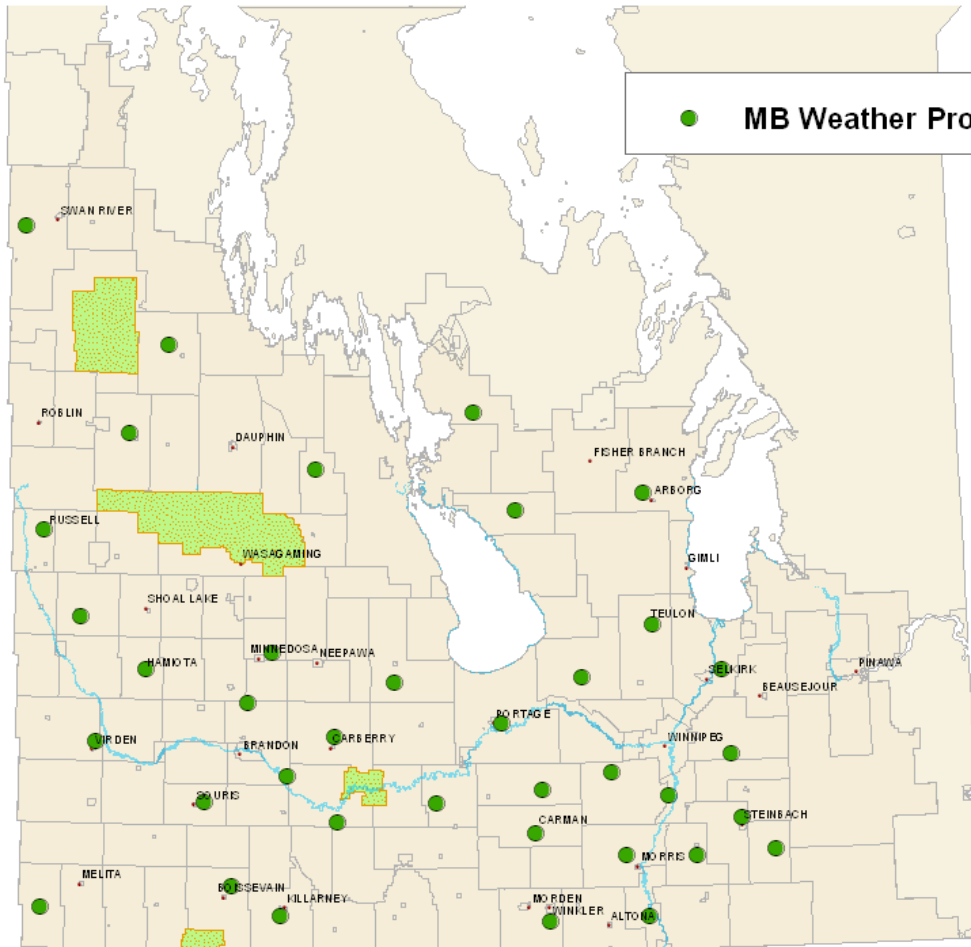


# Environment Canada's Synoptic network



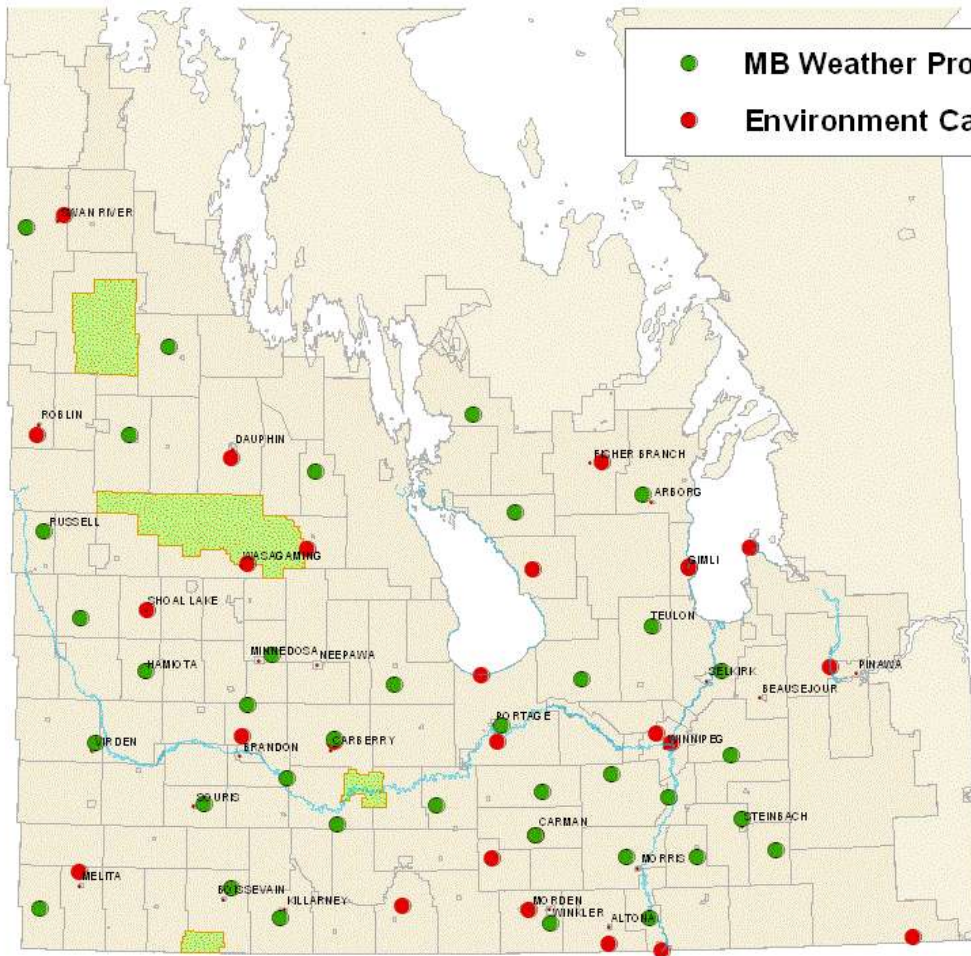
- ~25 auto-stations in Agricultural Manitoba:
- Too many gaps in coverage
- Inadequate for most purposes
- For agricultural applications, additional monitoring sites are required

# Manitoba Ag-Weather Network



- Mesoscale network (mesonet) established in 2005
- 35 new stations to compliment current EC network

# Manitoba Weather Networks



- Combined networks provide ~60 high quality weather stations
- Still a few gaps to fill through modest expansion



## All Stations Measure:

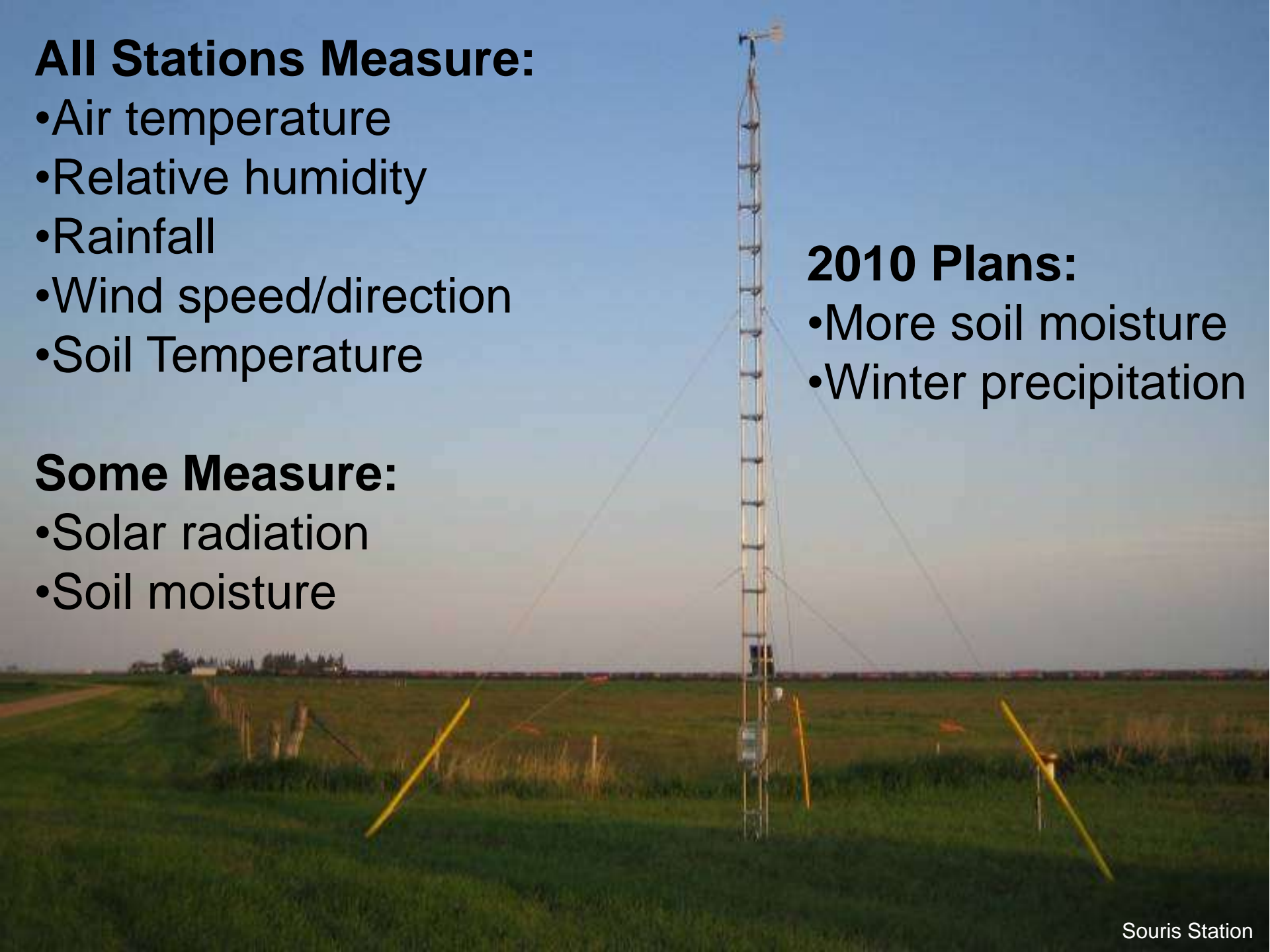
- Air temperature
- Relative humidity
- Rainfall
- Wind speed/direction
- Soil Temperature

## Some Measure:

- Solar radiation
- Soil moisture

## 2010 Plans:

- More soil moisture
- Winter precipitation





## Dual Rain Gauges

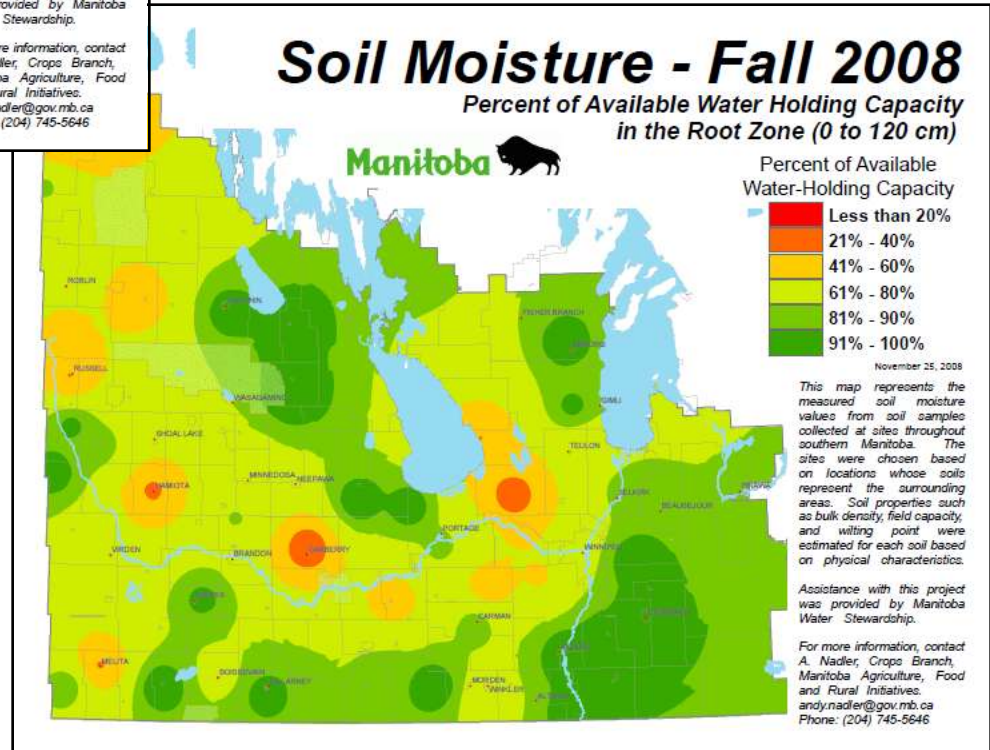
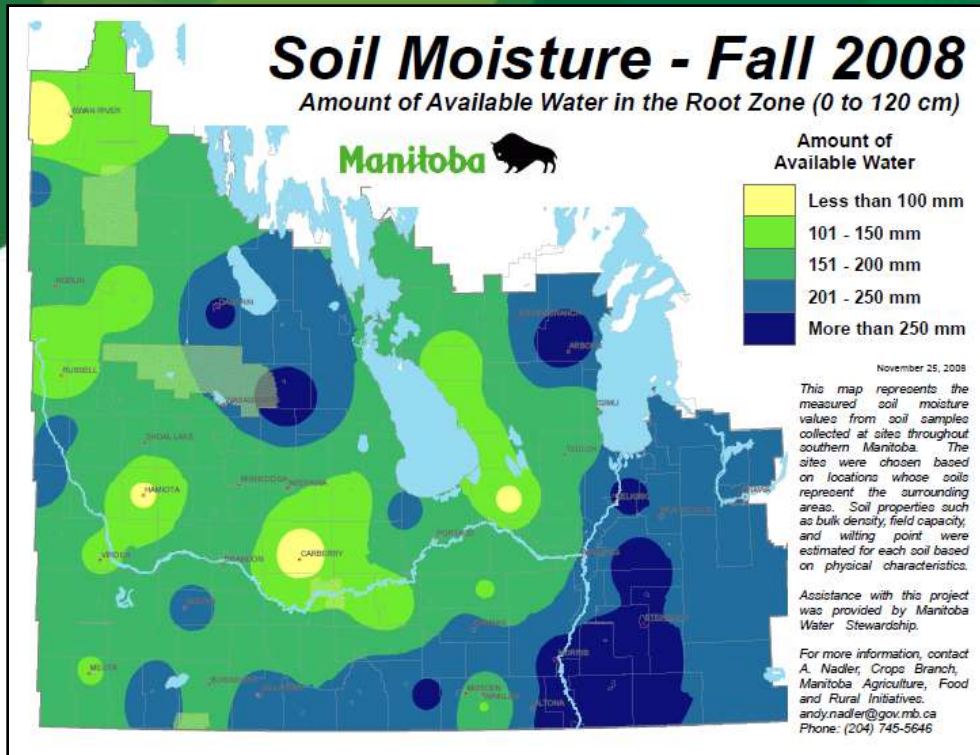
- The rain gauge is the sensor most likely to malfunction.
- It is also one of the hardest errors to detect.
  - Zero value could mean error or that it just isn't raining.
  - Rain is spatially variable
- Luckily, a malfunctioning rain gauge most often under-reports.
- Discrepancy between gauge 1 and gauge 2 indicates an error.
- Ensures 100% uptime.

**Gauge #1: Hydrological Services TB3/4**

**Gauge #2: Texas Electronics TE525M**



# Fall Soil Moisture Survey



(As resources permit)

# Reporting

## Weekly Manitoba Crop Report

- Based on reports from regional staff.
- Compiled centrally
- Some bias



Manitoba Crop Reports

[view map](#)

[Crop Report](#) [Crop Weather Report](#)

[Version française disponible](#)  
[Archive](#)

### Crop Report

**May 10, 2010 Issue Number: 4**

**Southwest:**

Rainfall over the past week kept producers out of the field till later in the week; rainfall amounts varied throughout the region. Cool temperatures over the weekend brought frost to most areas, but no frost damage was reported. The overall moisture situation is rated as good. The amount of crop seeded varies throughout the region. Progress of cereal seeding ranges from 30 to 70% complete. Early seeded cereal crop development ranges from emergence to the one to two leaf stage. Seeding progress of oilseed crops ranges from 10 to 15% complete. The majority of the pulse crops have been planted, with the exception of soybeans. Winter wheat and fall rye are progressing well and many producers will be spraying for weed control in the upcoming days. There are a large number of weeds growing in the fields and producers may have to be prepared for burnoff applications for weed control. Some producers started moving cattle to pasture over the weekend. Pastures are starting to green up but would benefit from warmer temperatures.

**Northwest:**

Intermittent rain fell throughout the week. Cool temperatures are drying fields slowly and spring operations have generally not resumed, except in the Swan River area. Overnight temperatures were near or below freezing throughout the week. Some producers report completion of seeding of planned wheat acres. Regional cereal seeding progress is variable, ranging from less than 5% complete at the Pas, 30% complete around Swan River, to approximately 70% complete in the rest of the region. Very little canola has been planted to date. Favorable weather is



# Manitoba Crop Weather Report

Prepared by: MAFRI Crops Knowledge Centre AgMet Program

Weather data is from the Manitoba Weather Program and Environment Canada

For more information, visit: [www.manitoba.ca/agriculture/climate](http://www.manitoba.ca/agriculture/climate) or E-mail [andy.nadler@gov.mb.ca](mailto:andy.nadler@gov.mb.ca)

05-10

**From Monday, May 3, 2010 to Sunday, May 9, 2010**

Region	Past 7 days				Seasonal summary since April 1, 2010					
LOCATION	Temperature			Rain	Degree Days (Base 5C)		Corn Heat Units		Rainfall (mm)	
	Max	Min	Average	(mm)	Actual	% of Normal*	Actual	% of Normal*	Actual	% of Normal*
<b>Central</b>										
CARMAN	14.9	-1.6	4.8	49.7	120	115	264	122	97	213
DEERWOOD	13.9	-0.2	4.9	51.0	140	130	261	123	97	208
ELM CREEK	15.5	-1.1	4.9	40.6	127	122	272	125	108	238
EMERSON	14.6	-1.4	5.0	23.5	125	109	234	104	66	160
GLADSTONE	15.4	-2.8	4.2	23.0	111	118	260	127	65	152
LETELLIER	15.6	-2.9	4.9	22.2	141	124	278	124	77	184
MORDEN	13.4	-0.4	4.3	41.0	117	104	225	104	103	217
MORRIS	16.3	-3.0	5.0	19.6	127	126	280	130	71	182
PORTAGE	15.0	-1.7	4.8	25.4	136	135	265	130	110	248
PORTAGE EAST	15.5	-2.2	4.4	22.5	116	115	236	116	77	174
STARBUCK	16.5	-1.2	5.2	30.8	123	128	283	134	91	202
TREHERNE	15.0	-2.0	4.4	45.4	129	124	268	126	101	219
WINKLER	15.6	-0.3	5.1	54.4	144	127	282	130	128	270
<b>Eastern</b>										
DUGALD	15.6	-2.3	5.3	15.4	111	117	261	130	65	164
PINAWA	14.8	-2.3	4.7	20.3	98	117	235	126	64	152
SPRAGUE	13.7	-3.2	4.7	16.7	88	106	200	103	56	126
ST. PIERRE	16.4	-2.4	5.5	14.6	135	139	293	138	70	197
STEINBACH	15.3	-1.9	5.4	9.0	126	125	268	125	64	163
WINNIPEG A	15.1	-4.3	4.6	25.5	116	118	273	132	67	160
<b>Interlake</b>										
ARBORG	15.3	-4.9	3.7	0.6	90	132	215	140	53	137
ERIKSDALE	15.8	-6.0	3.5	1.2	88	159	238	206	77	168
FISHER BRANCH	14.5	-4.2	3.6	0.4	87	106	218	121	52	131
MOOSEHORN	16.3	-4.1	3.6	2.6	94	117	238	135	57	141
SEAWAY	15.7	-2.2	4.0	12.0	107	100	271	100	70	160



# Current Conditions on the Internet

Manitoba Agriculture, Food and Rural Initiatives

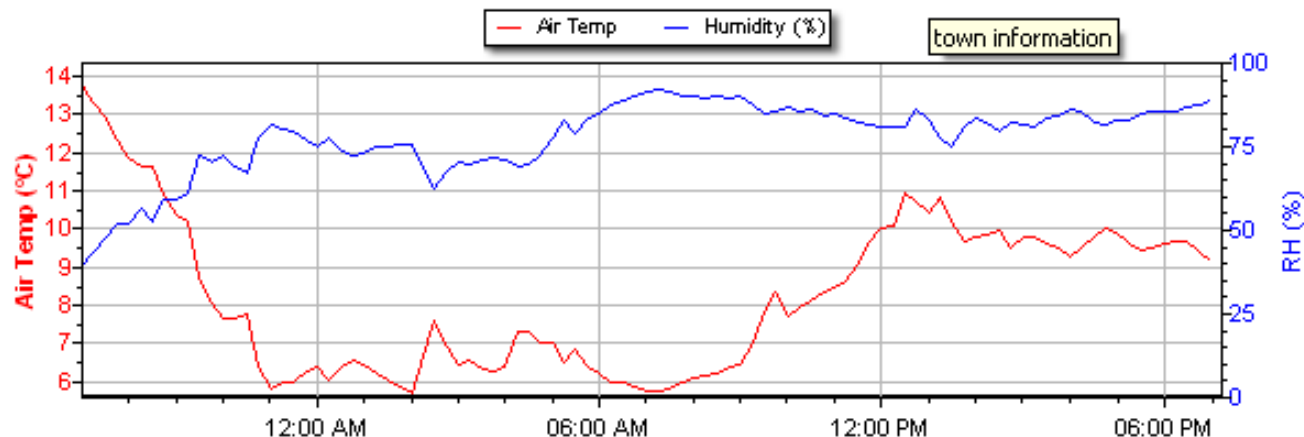
MAFRI Home > Manitoba Ag-Weather Program

## Starbuck - Current Conditions

Latest Update: 07:00 PM Monday May 10, 2010

Agricultural Region: Central

<b>Temperature:</b>	<b>9.2°C</b>	<b>Wind Direction:</b>	<b>136 °</b>	<b>Soil Temp (5cm):</b>	<b>9.0 °C</b>
<b>Dewpoint:</b>	<b>7.4°C</b>	<b>Wind Speed:</b>	<b>20 km/h</b>	<b>Rain Past Hr:</b>	<b>0.0 m.m.</b>
<b>Humidity:</b>	<b>89%</b>	<b>Max Speed:</b>	<b>32 km/h</b>	<b>Rain Since Midnight:</b>	<b>2.8 m.m.</b>



## Extremes of Moisture Weekly Update

May 4, 2010

### Summary:

- Rainfall was widespread. The northwest received the most rain (40-75 mm). Some parts of the extreme southwest received <10 mm.
- Rain to continue in all regions. Snow forecasted for the NW and SW. Precipitation expected to end by Thursday/Friday.
- Minimum temperatures to reach -6C in the west and -4C elsewhere Wednesday night.
- Link to <http://www.gov.mb.ca/agriculture/climate/wad00s00/cropwxrep.pdf>

Region	Seeding	Soil Moisture	Hay/Pasture	Water Supply	Other Issues
Southwest:	15-25% of cereal; 50% of pulses; few oilseeds	Less precipitation in the southwest	Pastures and hay lands are starting to green up	Most dugouts sufficient. Some areas reporting 50-75% full.	Extreme southwest (Melita/Plerson) received the least rain (<10mm). 18-45 mm in other areas.
Northwest:	30-70% of cereal; up to 50% peas; little canola	Some localized field flooding will delay operations.	Conditions have improved with the rain		Heavy rains in some areas (Ethelbert: 74mm). 40-60 mm in most of region. 140 mm reported at Dauphin is Environment Canada error.
Central:	80-90% of cereal; 20-60% of canola; 50-70% of corn; 20% of soybean;	Subsoil moisture adequate.	Greening up. Latest rain will increase growth and yield potential.	Dugouts in good shape	25-45 mm of rainfall in the region
Eastern:	Cereals nearly done; 50-75% of canola; up to 75% of corn; limited soybean	Good to ideal. Some standing water in low areas.	Very good		30-42 mm of rainfall in the region
Intertake:	Cereals almost complete in south. Just starting in north. 0-50% of canola.	Ideal	Excellent condition. Cattle being moved to pastures with supplemental feeding.		



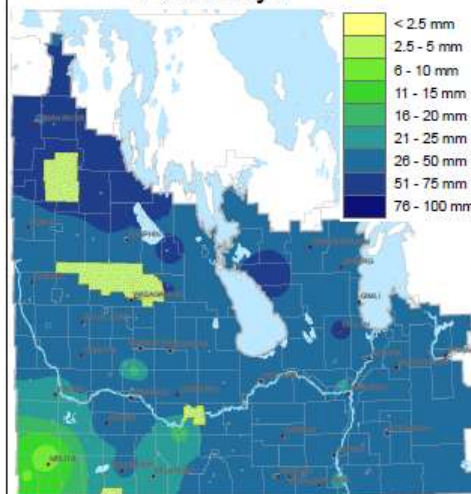
# Internal Reporting

## 7-Day & Seasonal Rainfall

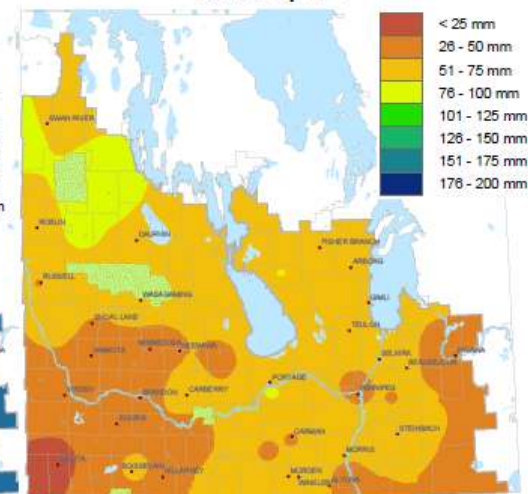
To May 3, 2010

Based on rainfall recordings from Manitoba Agriculture, Food and Rural Initiatives Weather Program and Environment Canada

### Past 7 Days



### Since April 1




# Areas Expected to have Significant Feed Shortages

**DRAFT**

Amended: September 23, 2003

Rural Municipalities Considered Seriously Drought Affected

 Drought Affected Pasture Lands




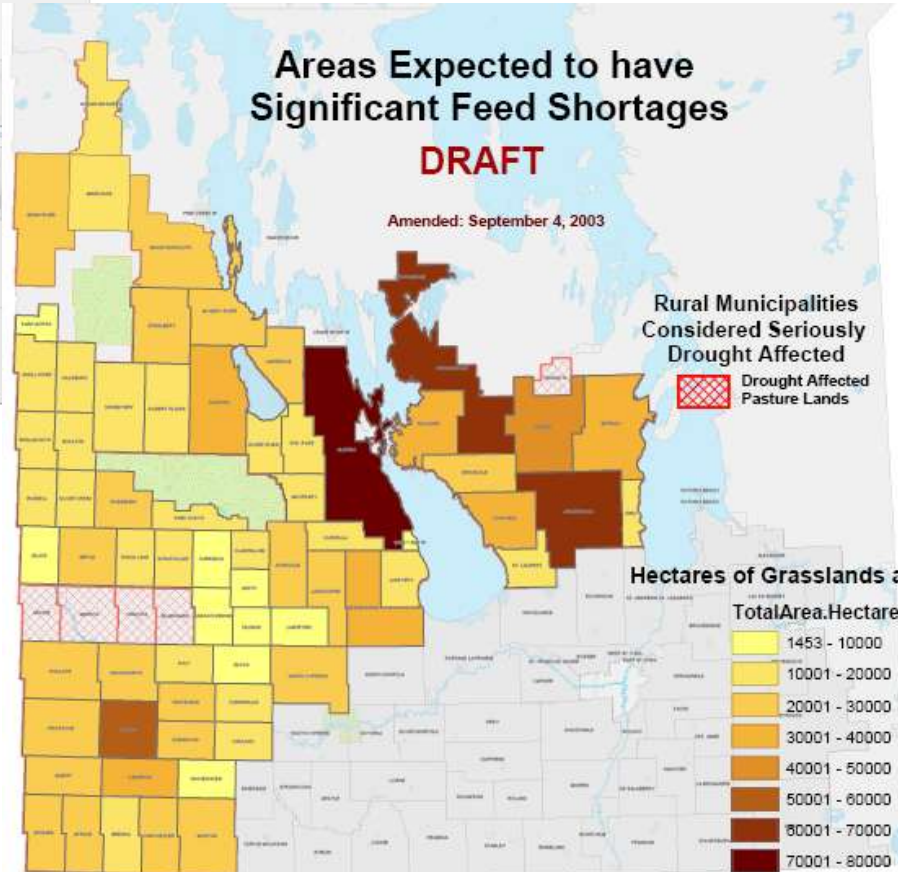
# Areas Expected to have Significant Feed Shortages

**DRAFT**

Amended: September 4, 2003

Rural Municipalities Considered Seriously Drought Affected

 Drought Affected Pasture Lands





# Next Steps

- Further collaborations
  - Data sharing
  - Data handling
  - Value added
- Enhanced monitoring

## Snow Monitoring

- Adding ~12 OTT Pluvio2 all-weather precipitation gauges
- Improves spring & fall precipitation monitoring
- Greatly improves snowfall monitoring
- Will be situated to fill current snow measurement gaps





## Soil Moisture Monitoring

- Stevens Hydra-Probe II
- Two stations so far
- A few more planned
- Partnering with
  - UofM (Bullock)
  - AAFC (Fitzmaurice/Jarvis)



# Thank you

**Andrew Nadler  
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Manitoba Agriculture, Food and Rural Initiatives**

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**[www.manitoba.ca/agriculture/climate](http://www.manitoba.ca/agriculture/climate)**