

# Sprinkler Methodology

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August 15, 2002

Sprinkler work has begun in Hinton. The WFORC has set-up an area to test both how much water a sprinkler can deliver over an area as well as measuring the changes in temperature and humidity created by the sprinkler system (this is to prove or disprove the *Humidity Dome* theory). The application of water to reduce the probability of ignition is to be studied to understand how long sprinklers must be run to be effective and the resulting 'footprint' of coverage that occurs. The following photos illustrate the methodology we have developed to test the system. Our objectives for this research are as follows:

1. Quantify the application time and water volume needed to reduce the BUI to less than 40 for various sprinkler systems.
2. Describe the microclimate created by a sprinkler system and its influence on ignition potential and fire spread (does a humidity bubble exist and how does this relate to fire spread).
- 3.
- 4.



## Pump System

We use a 250-gallon tank and a Mark 3 pump. The water runs through both a volume gauge and PSI metre to provide precise data.



### Sprinkler Set-up

The sprinkler head is exactly one metre above ground level. A radial dial of rope is laid out on the ground where cups are placed to collect the water. The pole in the background contains two or three RH and temperature sensors. We also have a PSI metre right at the sprinkler head to compare with the metre at the pump.



### Plot area

The poles in the background are used to measure temperature and humidity at different levels and are slightly offset so as to not interfere with the sensors behind them on the next pole.



### Influence of Wind on output

Wind has a strong influence on sprinkler output. In this photo winds were 20 km/h with gusts to 32. The water only moved 6 metres into the wind.

To measure sprinkler output, we are using a circle with the 8 main directions (N, NE, E, SE,...etc) marked by rope and with cups to collect the 'rainfall equivalent' precipitation at locations based on equal area from the centre of the circle. There are 10 collection sites on each directional line. We will build a 'footprint' showing the distribution of water from the sprinkler showing the various quantities collected around the plot.

Work will commence on the first non-windy day where humidity values are reasonably low.

Interim results will be put on the web as soon as they are collected.

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