

# 2011 CMDC Technologies for Water Conservation Kranz

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2011 University of Nebraska-Lincoln Extension CMDC

## Technologies for Water Conservation

Bill Kranz  
Associate Professor  
Biological Systems Engineering  
Haskell Agricultural Laboratory  
Concord, NE  
402-584-3857

2011CMDK-Kranz (1)

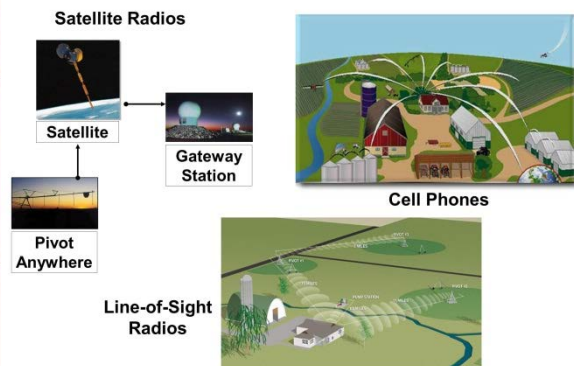
## Determine Accurate Field Position

Wide-Area Augmentation System (WAAS) Enabled GPS  
w/  $\pm 10$  feet accuracy



2011CMDK-Kranz (2)

## Communication Systems



2011CMDK-Kranz (3)

## What do we need to implement site-specific irrigations?

**Field based information – soils, slopes, fertility, soil water holding capacities, yield functions**

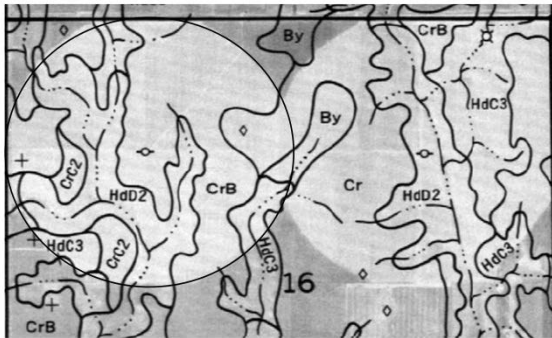
**Basis for making decisions about irrigation water applications – Water quality, crop yields, soil texture, no irrigation areas**

**System components – hardware/software**

**Means of verifying the results**

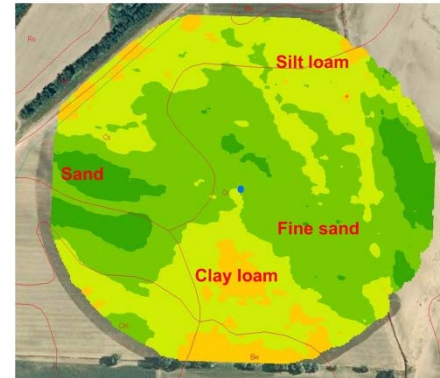
2011CMDK-Kranz (4)

## Soils Map Provides Base for Site-Specific Irrigation



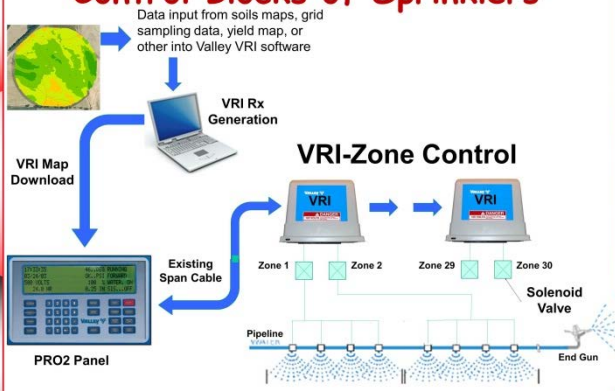
2011CMDK-Kranz (5)

## Define Management Zones



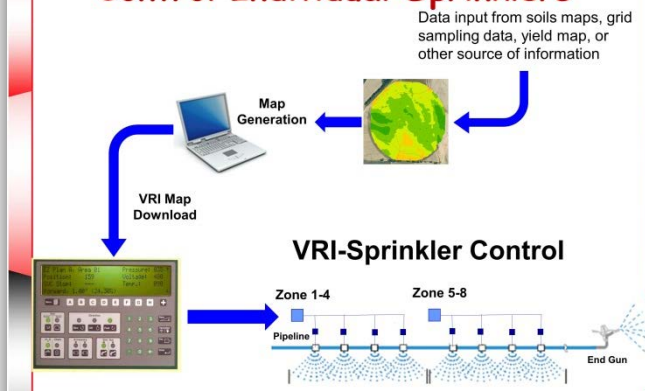
2011CMDK-Kranz (6)

## Control Blocks of Sprinklers



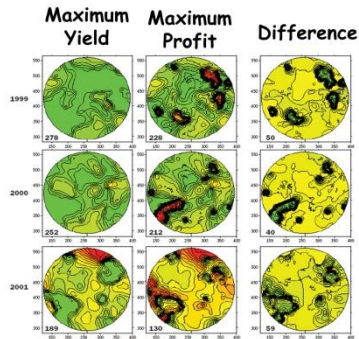
2011CMDK-Kranz (7)

## Control Individual Sprinklers



2011CMDK-Kranz (8)

## Irrigation Strategy is Important



Sadler, et al., 2005. Journal Soil & Water Conservation 60(6):371-379  
South Carolina

2011CMDC-Kranz (9)

## Monitor the Pressure, Flow Rate and Rain



- One of cheapest ways to monitor your machine
- Know what the pressure should be
- If pressure is wrong, system can't be right.



Many areas require flow meters, use them for management



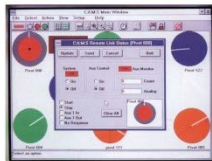
2011CMDC-Kranz (10)

## Can't Manage What We Don't Measure

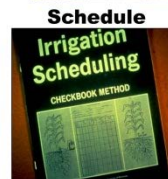


Monitor Pivot Pressure

Measure Soil Water



Control



Schedule

2011CMDC-Kranz (11)

## Automated Monitoring Systems

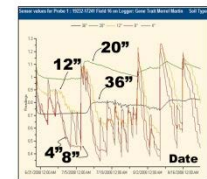


**Moisture Monitor**  
Sensors continuously gather soil moisture data at multiple depths.

**Satellite Telemetry**  
Easy to set-up, go anywhere solution that is not limited to line-of-site radios or cellular service.

**Soil Moisture Probes**  
Probes measure soil moisture data in varying field locations.

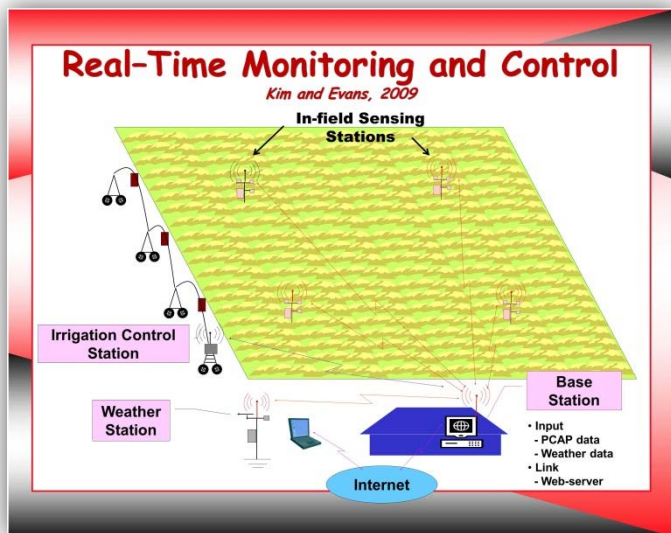
Profile Water Content



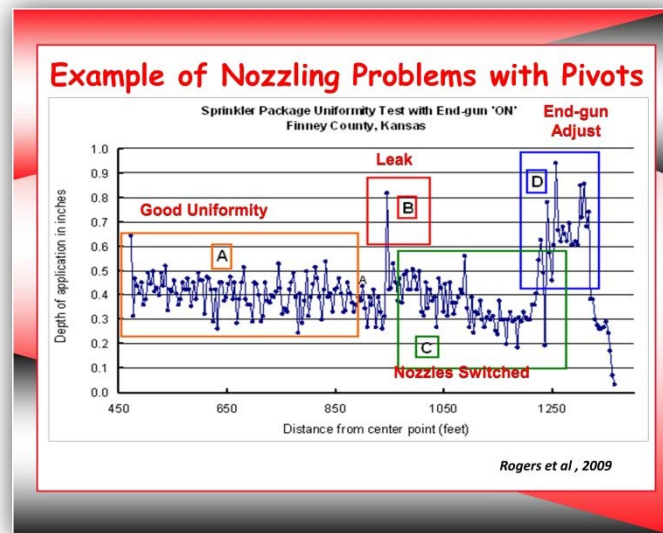
Total Profile Water



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2011CMDC-Kranz (13)



2011CMDC-Kranz (14)