Irrigation Water Management Plan for Center Pivot Sprinkler Irrigation System

IRRIGATION WATER MANAGEMENT PLAN

DATE:	4/04
COOPERATOR:	Hurry I. Dry
LOCATION:	Bellville
FIELD NUMBERS:	1
CROP:	Corn
GROWING SEASON:	February 15 – June 20
ROOTING DEPTH:	36 in
PEAK CONSUMPTIVE USE RATE:	0.23 in/day
IRRIGATION SYSTEM:	Center pivot - 1314' span length, Pivot pressure = 38 psi, Capacity = 1100 GPM
WATER SUPPLY:	Well
PREDOMINANT SOIL SERIES:	Alpin sand

Table 1: Operating Times for Various Rooting Depths and 50%MAD

Crop	Rooting Depth (inches)	1/ AWC (in)	2/ MAD (in)	3/ Gross Application Irrigation (in)	Critical Irrigation Period	4/ Dial Setting	4/ Time per Revolution (hours)
Corn	12"	0.67	0.34	0.40	Tasseling through silk stage until kernels become firm	88	20.60
	24"	1.27	0.64	0.75		47	38.57
	36"	1.87	0.94	1.11		32	56.66

1/ *Available Water Capacity within the root zone (AWC).*
2/ *Management Allowable Depletion (MAD)*
3/ *Application depth necessary to replace water used by crop assuming an application efficiency of 85%*
4/ *Calculated from manufacturer's data. This should be re-calculated after checkout or evaluation.*

CURRENT MANAGEMENT PRACTICE: None

RECOMMENDATIONS:

The most important aspect of irrigation water management is properly evaluating and monitoring the available soil moisture for the particular crop. By observing moisture levels in the soil, the operator can determine how long and how much water to apply. The landowner will be using the feel and appearance method. See attached feel and appearance worksheets.

The system is designed to meet peak consumptive use for corn on 125 acres.

Moisture should always be available above the MAD for the planned crops. The critical period is from tasseling through silk stage until the kernels become firm. The soil moisture should be checked to determine how much irrigation water should be applied for each irrigation. Prior to planting, or soon thereafter, the 12 inch root zone should be brought up to field capacity. If operated properly, irrigation can result in high crop production. The system should be managed to maintain a high moisture level in the root zone.

For planned crop yield, irrigation should commence when the available soil moisture drops below the MAD and should continue until the soil reaches field capacity. See Table 1 for how long to operate the system for various rooting depths and a MAD of 50%.

The irrigation system should be checked periodically to ensure proper operation of the pump, pipeline and sprinklers. No puddling should occur in the system. A visual inspection should be performed during operation to determine if any puddling or other irrigation-induced erosion is occurring. If so, increase the speed of the center pivot and the frequency of irrigation until no erosion occurs.

Check the condition of the crop to see if there is growth and if the crop looks consistent in color and height to determine adequacy and uniformity of the irrigation system.

Table 2 can be used to determine the time required per revolution, gross application and net application for various dial settings.

If there is change in the soil moisture monitoring method or irrigation method, contact the NRCS field office in Jasper, Florida.

TABLE 2: Time Required per Revolution, Gross Application, and Net Application

Dial Setting	Time Required per Revolution-Hours	Gross Application inches	Net Application inches
100	18.13	0.35	0.30
90	20.14	0.39	0.33
80	22.66	0.44	0.37
70	25.90	0.50	0.43
60	30.21	0.59	0.50
50	36.25	0.70	0.60
40	45.32	0.88	0.75
30	60.42	1.17	1.00
20	90.64	1.76	1.50
10	181.27	3.52	2.99

Cooperator: Hurry I. Dry Field No. 1 Location: Bellville

Format for figuring the net amount of water needed for an irrigation using the feel and appearance method of soil moisture measurements.

1	2	3	4	5	6
Depth	**Soil Series**	**Available Water Capacity**	**Soil Water Content Before Irrigation**		**Soil Water deficiency**
feet	**Alpin texture**	**inches**	**percent**	**inches**	**inches**
0-1	coarse	0.67			
1-2	coarse	0.60			
2-3	coarse	0.60			
Total		1.87			

Column 1, the depth increment sampled.

Column 2, the soil texture of the sample.

Column 3, the available water capacity based on the texture of the sample.

Column 4, the percent of soil water content (remaining)

0-25% - AWC - Dry, loose, will hold together if not disturbed, loose sand grains on fingers with applied pressure.

25-50% - AWC – Slightly moist, forms a very weak ball with well-defined finger marks, light coating of loose and aggregated sand grains remains on fingers.

50-75% - AWC Moist, forms a weak ball with loose and aggregated sand grains, darkened color, moderate water staining on fingers, will not ribbon.

75-100% - AWC – Wet, forms a weak ball, loose and aggregated sand grains remain on fingers, darkened color, heavy water staining on fingers, will not ribbon.

100% - AWC – Wet, forms a weak ball, moderate to heavy soil/water coatings on fingers, wet outline of soft ball remains on hand.

Column 5, Column 3 x Column 4, the soil-moisture balance, inches.

Column 6, Column 3 - Column 5, soil-moisture deficiency or net irrigation requirement.