Irrigation Water Management Plan for Traveling Gun Sprinkler Irrigation System

IRRIGATION WATER MANAGEMENT PLAN

DATE:	4/04
COOPERATOR:	T.O. Dry, Jr.
LOCATION:	T1N,R12E,S14, S.W. Jasper & S. of SR 6
FIELD NUMBER:	1
CROP:	Watermelons
GROWING SEASON:	March 15 – June 15
ROOTING DEPTH:	36 in
PEAK CONSUMPTIVE USE RATE:	0.19 in/day
IRRIGATION SYSTEM:	Cable tow traveling gun with a 418 ft. wetted diameter and 260' lane spacing using a Nelson 200 gun, 1.5-inch nozzle, 24 degree, at 85-psi nozzle pressure. Capacity = 460 GPM
WATER SUPPLY:	10” diameter well
PREDOMINATE SOIL SERIES:	Alpin sand

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

Crop	Rooting Depth (inches)	1/ AWC (inches)	2/ MAD (in)	3/ Gross application per irrigation (inches)	Critical Irrigation Period	4/ Travel Speed (ft/min)	4/ Time per 660' (hr.)
Watermelons	12”	0.67	0.34	0.52	Bloom to harvest	5.46	2.01
	24”	1.27	0.64	0.98		2.90	3.79
	36”	1.87	0.94	1.45		1.96	5.61

1/ *Available Water Capacity within the root zone (AWC).*
2/ *Management Allowed Depletion (MAD) of 50%.*
3/ *Application depth necessary to replace water used by crop assuming an application efficiency of 65%.*
4/ *Some travelers will not reach the higher travel speeds. In this case, use the fastest speed available to keep water waste to a minimum.*

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. The feel and appearance method will be used for determining soil moisture and when irrigation is needed. See attached feel and appearance worksheets.

The system is designed to provide irrigation water to meet peak consumptive use for watermelons in field 1 provided the acreage grown is not increased beyond 40 acres.

Moisture should always be available above the MAD for the planned crops. The critical periods for adequate available water are from blossom to harvest. 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, risers and traveling gun. A visual inspection should be performed during operation to determine if significant puddling, runoff or other irrigation induced erosion is occurring. If so, increase the speed of the traveling gun and the frequency of the irrigation until no erosion occurs.

Check the condition of the crop to ensure that growth is occurring and that the crop looks consistent in color and height to determine adequacy and uniformity of irrigation. If the application is not uniform, a system evaluation should be performed.

If there is change in the soil moisture monitoring method or irrigation method, the NRCS office in Jasper, Florida should be contacted.

Cooperator:_____ Field No.:_____ Location:_____

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 Alpin**	**Available Water Capacity**	**Soil Water Content Before Irrigation**		**Soil Water deficiency**
feet	**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.