

Irrigation Water Management Plan for Microirrigation

IRRIGATION WATER MANAGEMENT PLAN

DATE: 10/04
COOPERATOR: Orange Tree Groves, Inc.
LOCATION: 1 mile south of Sebring
FIELD NUMBER: 8
CROP: Citrus
ROOTING DEPTH: 42 in
PEAK CONSUMPTIVE USE RATE: 0.19 in/day
IRRIGATION SYSTEM: 4000 green emitters on a 15' x 25' spacing (1 emitter/tree)
WATER SUPPLY: 1200 gpm well
PREDOMINATE SOIL SERIES: Astatula

Management Allowed Depletion (%)

The micro-sprinkler irrigation system will be operated to maintain the soil moisture in a range of field capacity to 30 percent depletion from fruit set (February – March) until such time when young fruit has reached more than 1-inch in diameter (June – July) and in a range of field capacity to 50 percent depletion during the remainder of the year.

Method Used to Determine When to Irrigate

Observations of the leaf wilt, soil, tensiometer readings and weather conditions will indicate when irrigation is needed to maintain the desired moisture level. The Irrigation Scheduling Guide, Table 2, was developed with the Florida NRCS computer workbook IWM and indicates the approximate irrigation frequency. The estimated irrigation frequency is from 2 to 10 days. The estimated delay days for 1/4 inch of rainfall is 1 to 6 days. The Irrigation Scheduling Guide is based on general climatic and crop data providing a beginning schedule until adjustments are made. The actual need for irrigation will be determined by observing the soil and estimating the remaining moisture (tensiometers), observing leaf wilt, and weather conditions.

Generally, during the bloom and fruit set period, irrigation will be applied when the six-inch tensiometers reach 15 cb. During the remainder of the year, irrigation will be applied at 20 cb. These guidelines may be adjusted due to variations in the soil. The tensiometer readings will be confirmed and the irrigation schedule in Table 2 adjusted by close observations described above.

Method Used to Determine Quantity of Water Needed

The approximate number of hours to operate the system for water to reach the depth of the root system is shown on the Irrigation Scheduling Guide. The schedule will be modified based on observations of the soil. A tensiometer will be used to determine the depth the water reaches in the soil.

The operating time that is shown in the Irrigation Scheduling Guide will be modified by using a tensiometer that reaches the bottom of the root system. An 18-inch tensiometer will be used. Operating time will be decreased if the 18-inch tensiometer drops below 10 cb and increased if readings rise above 15 cb during the bloom and fruit set period. During the remainder of the year, operating time will be

decreased if the 18-inch tensiometer drops below 10 cb and increased if it rises above 20 cb. These guidelines may be adjusted for the soil type based on observations.

Based on the current uniformity and discharge rate, to replace 30% of the soil moisture to a depth of 42 inches, 5 hours, 30 minutes of irrigation are required. To replace 50% of the soil moisture to a depth of 42 inches, 9 hours of irrigation are required. These estimates are to be confirmed or modified, based on observations of the soil.

Application Rate

To maintain the current application rate, the system pressure will be maintained between 17 psi and 23 psi at the emitter. The emitter wetted pattern will be maintained at 18 feet diameter.

Table 1 - Irrigation Scheduling Guide

	---Irrigation---			---Rainfall---	
	MAD	Operating Time ^{1/}	Irrigation Interval	Delay Days per 1/4 inch of rainfall	Maximum Delay
Month	(%)	Hrs: Min	Days		Days
January	30	05:30	8	4	8
February	30	05:30	8	4	8
March	30	05:30	5	3	5
April	30	05:30	4	2	4
<i>May</i>	30	05:30	3	2	3
June	30	05:30	3	2	3
July	50	09:00	5	2	5
August	50	09:00	5	2	5
September	50	09:00	6	2	6
October	50	09:00	7	2	7
November	50	09:00	10	3	10
December	50	09:00	12	4	13

^{1/} Operating time rounded to nearest 15 minutes.

Operation

The irrigation system should be checked periodically to ensure proper operation of the pump, pipeline, and emitters.

Check the condition of the leaves to determine adequacy and uniformity of irrigation. If 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 Sebring, Florida, should be contacted.