



Water Requirements for Drip Irrigated Strawberries in South Central Florida¹

Gary A. Clark²

Water management in drip irrigated strawberry production requires information about the water needs of the crop as well as the water-holding characteristics of the soil. Excessive irrigation can leach crop nutrients from the root zone while soil moisture deficit can result in crop stress. This publication will briefly present estimates of strawberry plant water requirements under drip irrigated conditions for crops produced in the south central Florida region.

Reference evapotranspiration (ET_o) refers to the expected water use from a uniform green cover crop surface such as a grass. Actual crop use is generally less and is determined by using a crop coefficient relating crop ET (ET_c) to ET_o. Reported values of ET_o are generally expressed as inches of water use over the surface. This choice of units is appropriate for use with sprinkler irrigation systems. However, volumetric units are more appropriate for drip systems. Actual crop ET depends on reference ET as well as crop development. Table 1 presents typical daily ET_o values for the Tampa Bay area during the normal Florida strawberry production period as well as estimates of crop ET for two transplanting periods.

Irrigation amounts should then be scheduled to meet the crop ET requirements within the constraints of the irrigation system.

Drip irrigation in Florida strawberry production uses roughly 11,000 feet of tube per acre (4 ft bed spacing). Drip tubing water discharge is generally rated as flow per unit length, such as 0.5 gallons per minute (gpm) per 100 feet. Therefore, tubing water discharge per acre would be about 55 gpm. This information is necessary for properly scheduling irrigations. Table 2 converts tubing flow in gpm per 100 feet to gallons per hour (gph) per 100 feet, gallons per minute per acre, and run time in minutes needed to apply 1000 gallons per acre at 100% efficiency. Actual irrigation time will be longer due to system inefficiencies, soil conditions, and crop cultural characteristics. However, Table 2 may be used with Table 1 to establish initial management guidelines.

Soil properties should also be known and monitored for an effective irrigation management program. The volume of readily available water to

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 2. Gary A. Clark, Associate Professor, Extension Irrigation Specialist, Agricultural Engineering Department, Gulf Coast Research and Education Center, Bradenton, FL, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL 32611.

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the crop depends on the soil water holding properties and the crop root zone. Water should be applied when no more than half of the available water has been depleted. For a well developed, drip irrigated strawberry crop, the root zone may extend within a 9 inch radius of the drip tube. The amount of water that would be available to the crop between field capacity and 50% depletion may range from 1000 gallons per acre for a very coarse sand, to 1800 gallons per acre on a medium textured sand, to nearly 3000 gallons per acre on some of the heavier, finer textured sands. Therefore, some sandy soils with low water holding capacities may require frequent irrigations (such as daily) with relatively short durations during low crop ET periods or even multiple cycles per day during high crop ET periods. However, soils with greater water holding capacities can be managed with less frequent irrigations and longer irrigation durations. The irrigation run time should be sufficient to re-wet the active root zone, apply needed chemicals (fertilizers), and meet the constraints of the irrigation system and scheduling program. Proper water management in drip irrigated production systems requires knowledge of crop water requirements, soil water holding and water distribution properties, and close monitoring of the irrigation system, the crop, and atmospheric conditions. The information in this Fact Sheet is provided for use as initial guidelines for developing an effective and conservative water management program. Because actual field conditions and requirements vary, this information is intended for management purposes only.

Table 1.

Table 1. Historical average daily reference and estimated crop ET values for drip irrigated strawberry plants in the Tampa Bay area for transplants set in September and October ¹ .						
MONTH	REFERENCE ET		CROP ET - Sep. Planting		CROP ET - Oct. Planting	
	(inches)	(gal/ac)	(inches)	(gal/ac)	(inches)	(gal/ac)
SEP	0.16	4300				
OCT	0.14	3800	0.030	800		
NOV	0.11	3000	0.035	950	0.025	700
DEC	0.08	2200	0.035	950	0.025	700
JAN	0.09	2400	0.035	950	0.040	1100
FEB	0.12	3300	0.065	1700	0.050	1400
MAR	0.14	3800	0.080	2200	0.075	2000
APR	0.19	5200	0.110	3000	0.110	3000
MAY	0.20	5400			0.120	3300

¹Data sources include University of Florida, Cooperative Extension Service Bulletin 205 "Potential Evapotranspiration Probabilities and Distributions in Florida"; and the Final Report to the Southwest Florida Water Management District on Project B-32 "Water Requirements and Crop Coefficients for Strawberry Production in Southwest Florida".

Table 2.

Table 2. Comparison of tubing flow rates to irrigation discharge per acre and run time needed to apply 1000 gallons per acre at 100 % efficiency. (This table assumes 4 foot bed centers).			
TUBING FLOW RATE		IRRIGATION	TIME TO APPLY 1000
(gpm per 100 feet)	(gph per 100 feet)	(gpm per acre)	(minutes @ 100% eff.)
0.2	12	22	45
0.3	18	33	30
0.4	24	44	23

Table 2.

0.5	30	55	18
0.6	36	66	15