Oregon State University
Western Oregon
Strawberry Irrigation Guide

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Total Seasonal Evapotranspiration [in]	33.8
Peak Evapotranspiration Rate [in/day]	0.23
Maximum Allowable Depletion [percent]	50
Critical Moisture Deficit Period	Fruit development

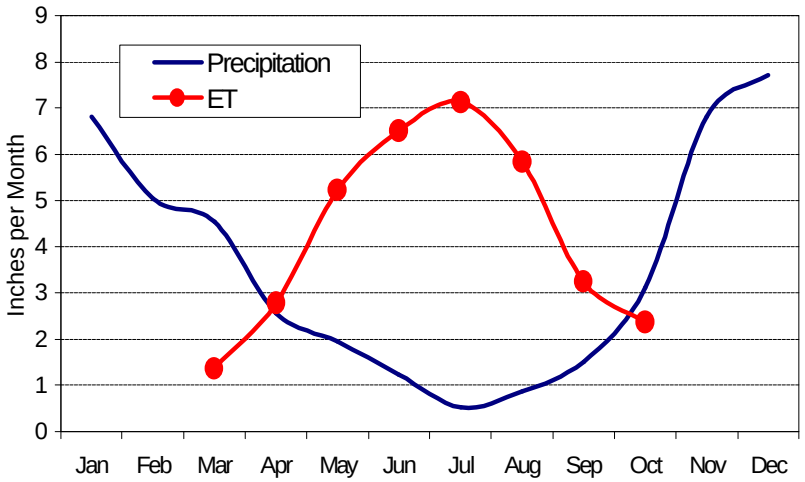

Figure 1: Typical precipitation and strawberry evapotranspiration (ET) in the Willamette Valley. Tabulated values of ET are provided on the back of this sheet.

Strawberries have most of their effective rooting system in the upper 6 to 12 inches of soil. Since they are shallow-rooted, strawberries are subject to drought injury. A uniform and adequate supply of moisture is essential for optimum growth. A critical time for maintaining sufficient levels of moisture is during fruit development (strawberry fruit is about 90% water). Water stress at this time results in small fruit size and decreased yields. Growers need to strike a balance, however, between maintaining adequate levels of moisture while minimizing wetness in the canopy during bloom and fruiting, which may increase the incidence of fruit rot. On medium- and heavy-textured soils, a good rain or irrigation just before the first picking often carries the plants through harvest. However, irrigation during harvest is required during hot, dry harvest seasons. Adequate moisture is also needed after fruit harvest and renovation to promote development of good plant growth and floral buds for the following year's crop. Excessive soil moisture, however, hinders root growth, leaches nutrients and can promote fungal root pathogens such as phytophthora.

The peak water use for strawberry is approximately 0.22 and 0.23 inches per day for June and July, respectively.

On the back side of this page is a worksheet to aid in calculating irrigation schedules for strawberries. These calculations are most straightforward for those using side-roll, hand-move, or solid set sprinkler irrigation. For those with linear move or center pivot systems, all information applies except for the set time, which must be gauged to the tower travel speed. For basic schedule information, sprinkler nozzle diameters, operating pressures, and spacing and soil type must be known. To more accurately describe individual systems, the uniformity coefficient of the system and available water capacity of your soil is also needed. This worksheet was designed to be progressed through sequentially starting with item *a*). Equations listed under item headings use item letters for reference. Although the rooting depth is already supplied in the worksheet, if you have reason to believe your site is an exception (e.g. shallow restrictive layer), this may be altered. Evapotranspiration rate estimates are listed in the worksheet.

Note: For additional background information and references, see "Western Oregon Irrigation Guides: Background and References."

Irrigation Schedule Worksheet: Strawberry

Use values for your specific soil and depth range from the Appendix, if available.

Otherwise use Table 1 below.

A. Determine Irrigation Interval

Available Water Capacity [in/in]	***a.***	
Maximum Allowable Depletion [percent]	***b.***	50
Effective Rooting Depth [in]	***c.***	12
Peak ET [in/day]	***d.***	0.23
Maximum Irrigation Interval [days]	***e.***	
e = (a * b * c) / (d * 100)		
Your Irrigation Interval [days]	***f.***	

Note: f should be equal to or shorter than e.

Table 1

Soil Texture	AWC [in/in]
Sandy	0.07 to 0.10
Sandy Loam	0.09 to 0.15
Loam	0.14 to 0.19
Clay Loam	0.17 to 0.22
Clay	0.20 to 0.25

B. Determine Combined Efficiency

Uniformity Coefficient	***g.***	
Combined Efficiency	***h.***	
h = (0.01583 * g) - 0.6327		

Table 2

Irrigation System	Uniformity Coefficient (*)	
Solid set	70	63
Hand move or Side-roll	82	74
Pivot or Linear Move	90	81
Offset Managed Handm.	90	81

C. Determine Depth of Irrigation

		April	May	June	July	August	September
Monthly Evapotranspiration Rate [in/day]	***i.***	0.09	0.17	0.22	0.23	0.19	0.11
Depth of Irrigation per Set [in]	***j.***						
j = (i * f) / h.							

D. Determine Set Time

Application Rate [in/hr]	***k.***	

Measure or see Tables 3 and 4 below to determine your application rate.

		April	May	June	July	August	September
Irrigation Set Time [hrs]	***l.***						
l = j / k							

Table 3

Pressure [psi]	Discharge [gpm] Standard Tapered Nozzle Diameter [in] 3/32	1/8	9/64	5/32	11/64	3/16	13/64	7/32
35	1.5	2.7	3.40	4.16	5.02	5.97	7.08	8.26
40	1.6	2.9	3.63	4.45	5.37	6.41	7.60	8.87
45	1.7	3.2	3.84	4.72	5.70	6.81	8.07	9.41
50	1.8	3.1	4.04	4.98	6.01	7.18	8.49	9.88
55	1.9	3.3	4.22	5.22	6.30	7.51	8.87	10.30

Table 4

Sprinkler Spacing [ft] -by- [ft]	Application Rate [in/hr] Discharge per Nozzle [gpm] 2	3	4	5	6	8	10
20 20	0.48	0.72	0.96	1.20	1.44	1.93	2.41
20 40	0.24	0.36	0.48	0.60	0.72	0.96	1.20
30 30	0.21	0.32	0.43	0.54	0.64	0.86	1.07
30 40	0.16	0.24	0.32	0.40	0.48	0.64	0.80
30 50	0.13	0.19	0.26	0.32	0.39	0.51	0.64
40 40	0.12	0.18	0.24	0.30	0.36	0.48	0.60
40 50	0.10	0.14	0.19	0.24	0.29	0.39	0.48
40 60	0.08	0.12	0.16	0.20	0.24	0.32	0.40

(*) If your sprinkler spacing/discharge combination falls into gray-shaded area, use uniformity coefficient from the right, also gray-shaded column. Otherwise use values from the left column.

How to use these tables: