Oregon State University
Western Oregon
Caneberry Irrigation Guide

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Total Seasonal Evapotranspiration [in]	37.8
Peak Evapotranspiration Rate [in/day]	0.25
Maximum Allowable Depletion [percent]	50
Critical Moisture Deficit Period	Primocane growth, and Fruiting

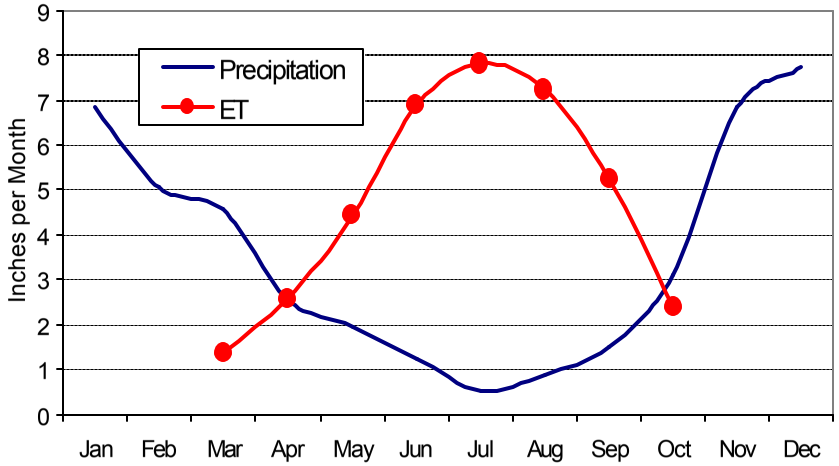

Figure 1: Typical precipitation and caneberry evapotranspiration (ET) in the Willamette Valley. Tabulated values of ET are provided on the back of this sheet.

Caneberries (raspberries and blackberries) have an effective rooting depth of about three feet. Moisture management in these crops is especially critical during primocane growth and fruiting. Stressed plants will produce shorter and less vigorous primocanes. Floral bud development for the following year's crop will also be adversely impacted under conditions of water stress. Demand for water is high during the fruiting period. Water stress at this time will lead to reduced fruit size and yields, portions of fruit with dried drupelets thus reducing quality, and poor fruit detachment (a problem in machine harvested fields). Overhead irrigation during bloom and fruiting, however, may increase the incidence of fruit rots. Excessive moisture in the rooting zone may also promote fungal root pathogens, particularly in raspberry.

The peak water use for caneberries is approximately 0.23 inches per day in June and August, and 0.25 inches per day in July.

On the back side of this page is a worksheet to aid in calculating irrigation schedules for caneberries. 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: Caneberry

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

Otherwise use Table 1 below.

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

A. Determine Irrigation Interval

Available Water Capacity [in/in]	*a.*	
Maximum Allowable Depletion [percent]	*b.*	50
Effective Rooting Depth [in]	*c.*	36
Peak ET [in/day]	*d.*	0.25
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 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

B. Determine Combined Efficiency

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

C. Determine Depth of Irrigation

		April	May	June	July	August	September
Monthly Evapotranspiration Rate [in/day]	*i.*	0.09	0.14	0.23	0.25	0.23	0.18
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: