Trickle Irrigation Worksheet

1) What is your soil type?_____

   What is the water holding capacity of this soil at field capacity?_____ Acre inch

   _____ Gallons

Table 1. Total available water of various soils at field capacity.

Soil Class	Available water storage capacity in acre-inches per foot depth of soil (gallons stored in one foot of soil)
Gravelly sandy loams	1.0 (27,000 gallons)
Sandy loams	1.35 (36,450 gal)
Gravelly loams	1.75 (47,250 gal)
Loams/silt loams/silty clay loams	2.0 (54,000 gal)
Organic (muck) soils	2.5 (67,500 gal)

2) How many linear feet of plastic mulch/trickle do you have per acre? Take square feet per acre (43,560) and divide by between row spacing.

   _____43,560_____ ÷ _____between row spacing in feet_____ = _____ linear feet
   (given)

3) What is the width of your wetted area under plastic? Best method is to check wetted area under plastic the first time you irrigate. A fair assumption is a width of 1.5 feet for light soils and 2 feet for heavier soils.

   Width = _____ ft

4) Calculate the square feet per acre that are wetted. Take value from step 2 and multiply by the value in step 3.

   _____ ft x _____ ft = _____ square feet
   (Value from step 2)   *(Value from step 3)*

5) Calculate % of acre that is wetted by trickle irrigation. Take value in step 4 and divide by 43,560 and multiply by 100.

   (_____ ÷ _____ 43,560) x 100 = _____ %
   (value in step 4)   *(given- acre square feet)*

6) Estimate crop rooting depth. For transplanted crops assume 1 foot. _____ Feet

7) Calculate the total gallons of water per acre at field capacity for your soil and rooting depth. Get value from Table 1 for your soil type.

_____ gallons   x   _____ feet = _____ gallons
(from Table 1)   *(rooting depth, step 6)*

Since we only care about the available water in the wetted area, multiply by % from step 5

_____ Gallons x _____ % = _____ available gallons
(Value from step 7)   *(% from step 5)*

8) Calculate amount of water lost when 25% depleted.

_____ Available gallons X _____ 0.25 _____ = _____ gallons
(value from step 7)   *(given)*

9) Calculate Gallons per minute (GPM) needed for one acre. Check your trickle tape to see what the flow rate is. Let's assume it's 0.25 gallons per minute (GPM) per 100 feet of row.

(_____ linear feet ÷ 100)   x   0.25 GPM = _____ GPM for one acre
(value from step 2)   *(GPM for trickle)*

10) Calculate run time to replace the water at 25% depletion. Check your trickle tape to see what the flow rate is. Let's assume it's 0.25 gallons per minute (GPM) per 100 feet of row.

_____ (gallons) ÷ _____ GPM/acre = _____ Minutes
(value from step 8)   *(value from step 9)*