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Beginner School 2008 - Cranberry Irrigation

Peter Jeranyama

UMass Cranberry Station, peterj@umext.umass.edu

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Cranberry Irrigation

Peter Jeranyama

Carolyn DeMoranville

UMass Cranberry Station

Cranberry Station



Why manage water?

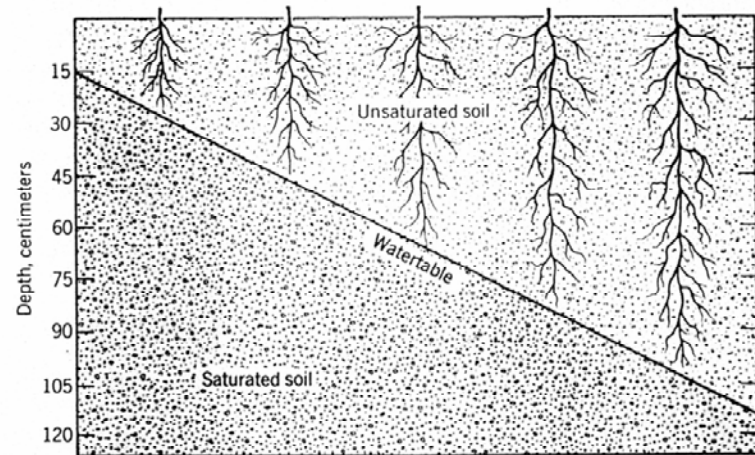
Under-watering leads to water stress

- decreased fruit size and quality
- plant death
- decreased cranberry plant cover and increased weed competition
- decreased production in current and following year
- decreased net returns



Over-watering

- Oxygen deprivation in root zone
 - Shallow rooting depth- increased susceptibility to water stress damage later
 - Loss of fruit quality
 - increased fruit rot
 - *Phytophthora* root rot
 - Decreased production in current and following year if buds are damaged
 - Poor fruit set



Excessively wet root zones
are far more common than
excessively dry on
Massachusetts cranberry
beds



Early season water management is important

- During frost season
 - keep beds well drained to promote root growth
- High water early in season leads to decreased rooting depth and increased susceptibility to stress



Irrigation scheduling

- When should I irrigate?
- How much should I irrigate?
- Maximize irrigation efficiency
- Saves water and energy
- Consists of monitoring indicators



When?- not so soon that root zone stays saturated



But before water becomes
limiting in the root zone



How can you determine when to irrigate?

1) Calendar method

Regular schedule- every 2 or 3 days

2) Traditional 1" per week rule

3) Soil moisture monitoring

Tensiometers

Water level float

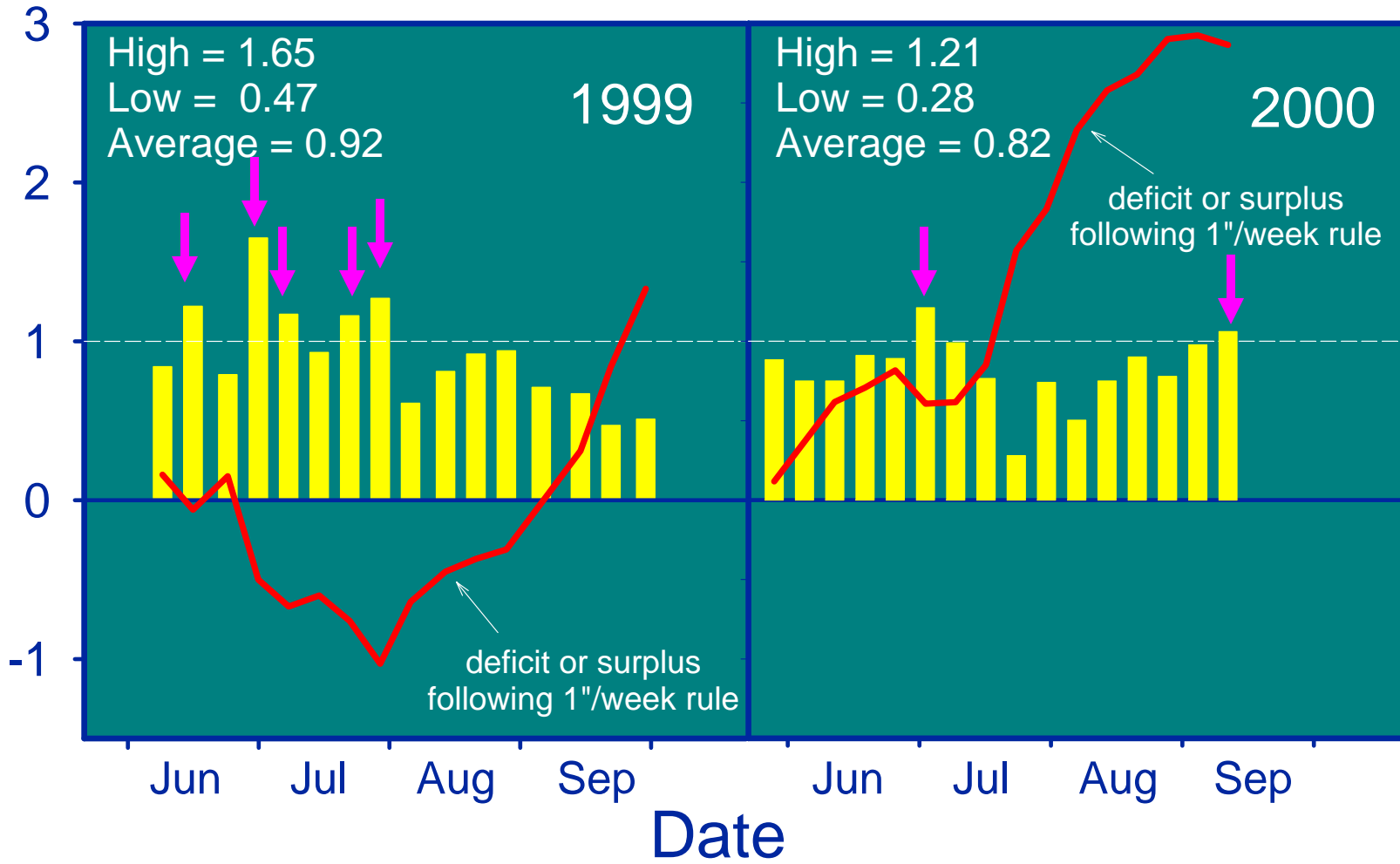
4) Crop evapotranspiration



Both the calendar and
1"/week rule can lead to
excess or deficiency



Average evaporation ("/week)

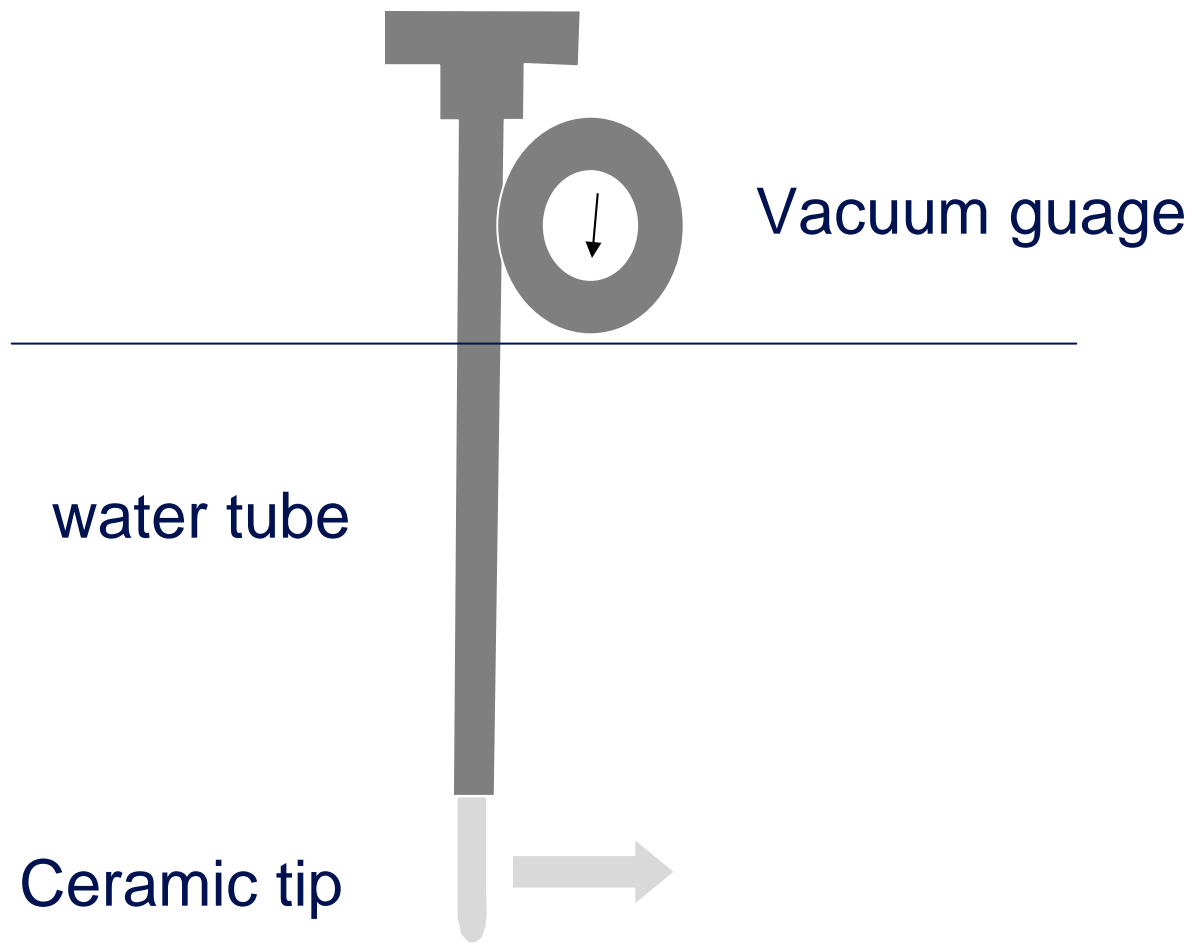


When & How Much Should I Irrigate?

- When- irrigate in the morning to minimize loss from evaporation, run-off & drift
- How much- enough to bring water table up to an adequate level without flooding root zone



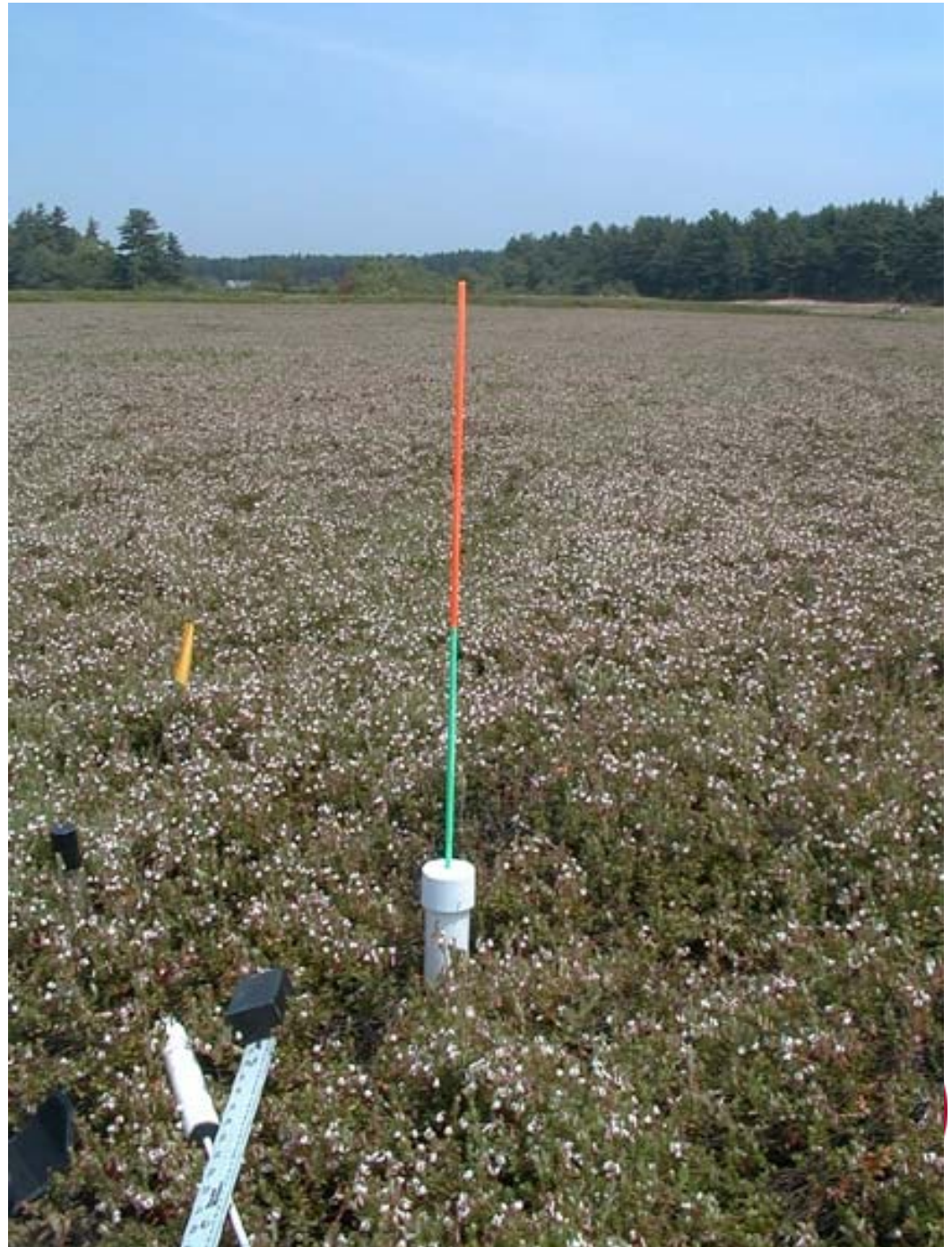
Tensiometer



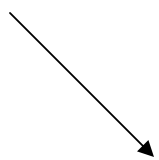
	Morning	Midday	Water table level
	tension in cbars		inches below
Too wet	0 to 2	0 to 2	0 to 6
Adequate	2 to 5	2 to 10	6 to 18
Too dry	5 to 80	10 to 80	>18



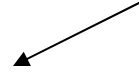
Water level float



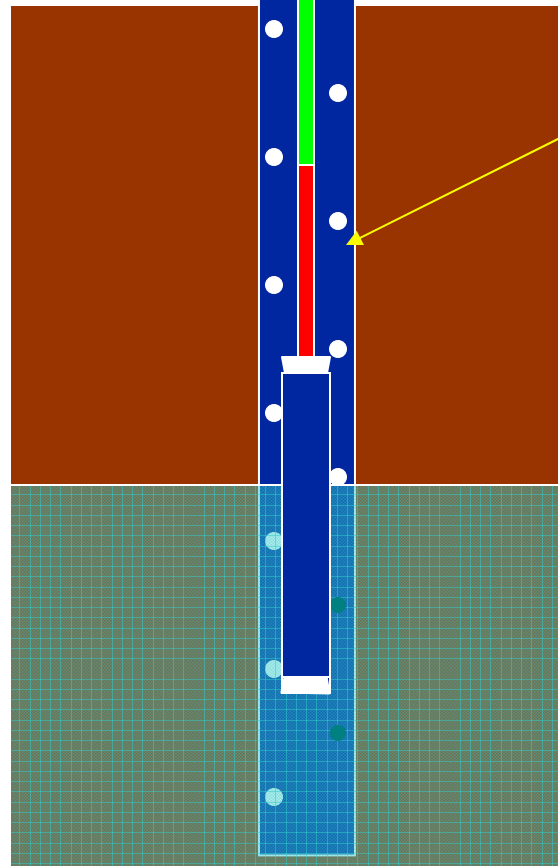
Float assembly



PVC cap with hole



Perforated PVC pipe wrapped in fabric



Water table

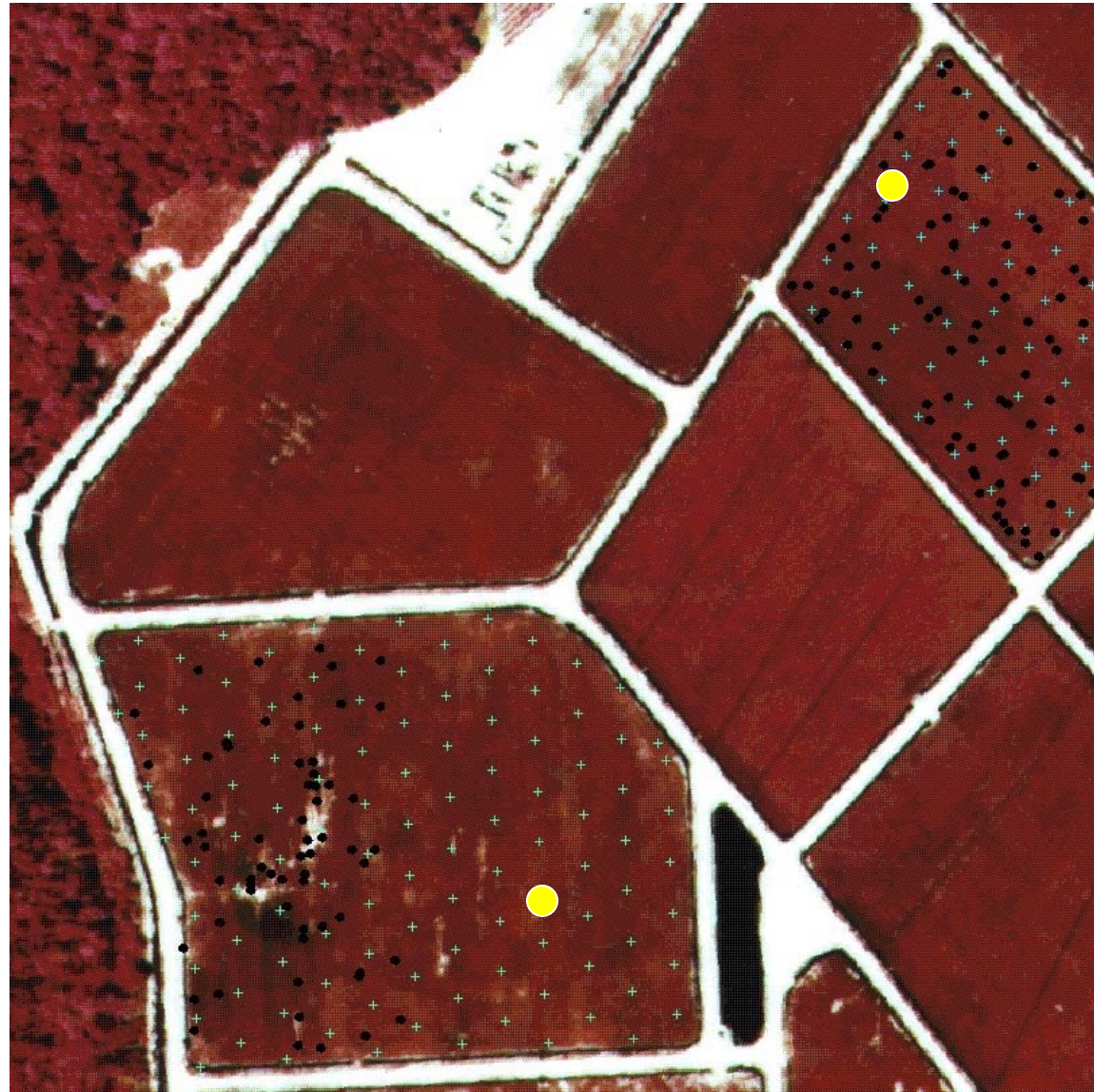


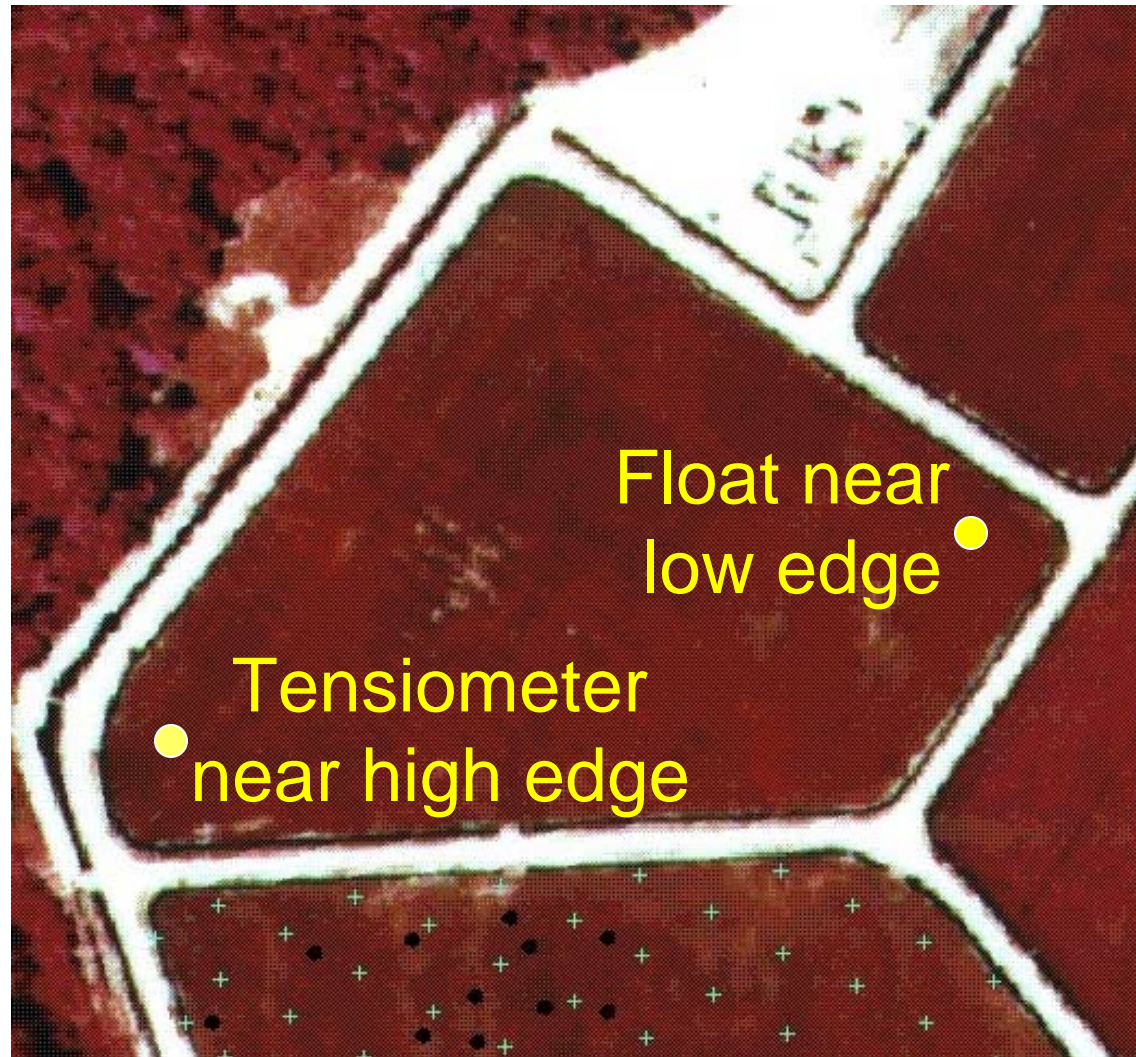
Water level float

- Advantages
 - inexpensive to build (fact sheet available)
 - low maintenance, not susceptible to freezing damage
 - do not require walking on bed to read
 - more sensitive to changes in water table than tensiometer
- Disadvantages
 - doesn't register midday depression in root zone
 - only useful on beds with water table present



Place the float in middle of narrowest and widest beds



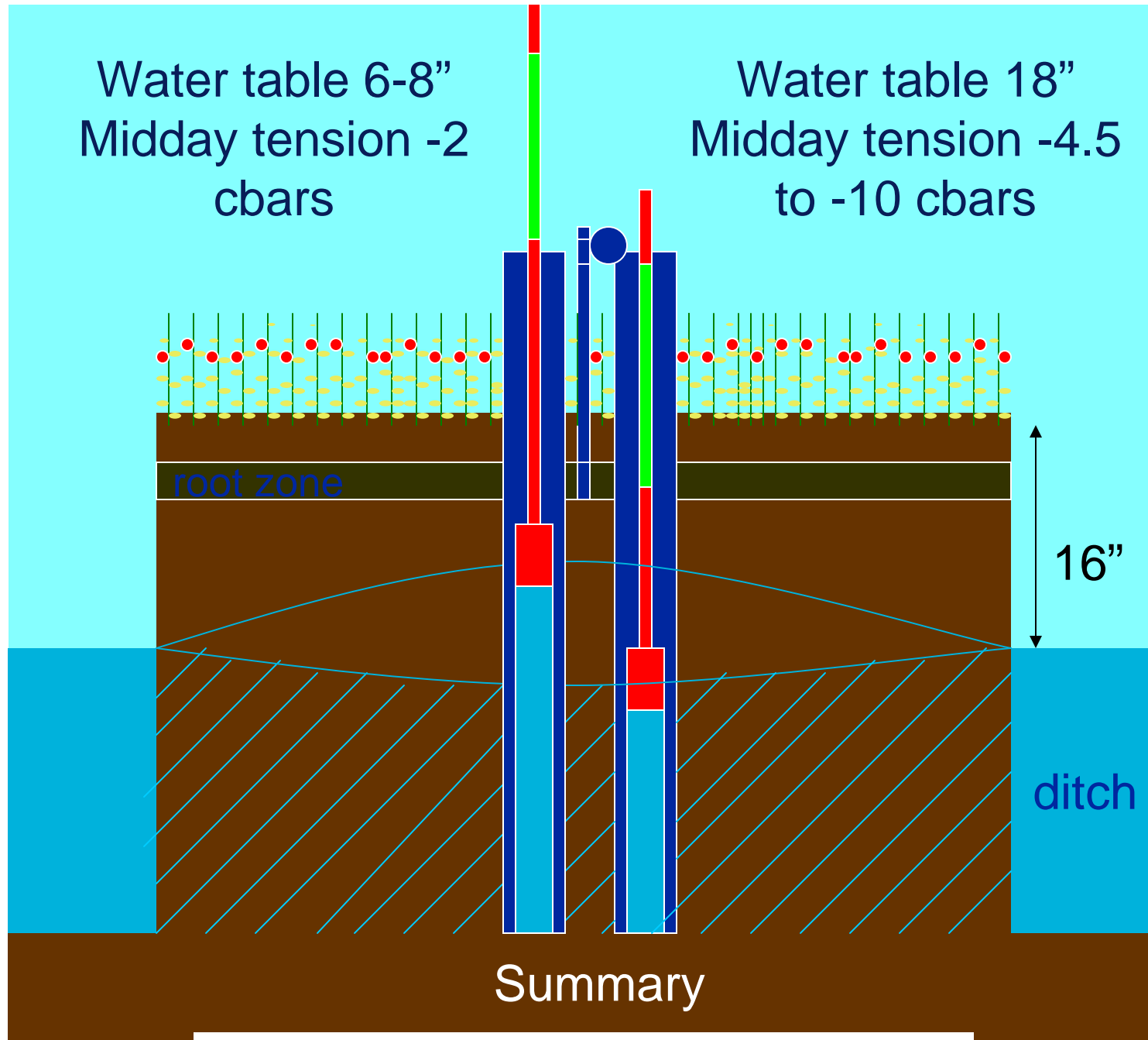


*the tensiometer cup is placed in the center of the root zone



Water table 6-8"
Midday tension -2
cbars

Water table 18"
Midday tension -4.5
to -10 cbars



Summary



Sub-irrigation

- Manipulation of water table
- Control depth of water in the ditches
- Meet water needs in root zone
- Maintain water level in ditch to allow adequate drainage from center of bed

