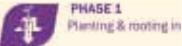
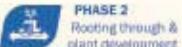


Table 1.0: A description of the 6-phase model, a tomato crop planted in Ontario is used as the example.

CULTIVATION PHASE	OBJECTIVE	TARGET CROP	TARGET ROOTZONE
Week 52-2  Phase One-B	Continue the uniform development of a strong generative plant with good formation of the first and second clusters. Fast and uniform rooting into the substrate.	Plants should continue to exhibit uniform growth after delivery from the propagator. Uniform growth should continue and the leaf area should increase to enable the plant to intercept as much radiation as possible. Truss development should remain strong and generative with good flower and pollen formation.	A successful start for the plant is determined by good root development, which should remain confined to the block. Attention should be given to developing as many pin roots as possible to enable fast rooting in as soon as slab contact is required. The pin roots should grow easily out of the block and uniformly into the substrate. It is important to supply enough water and nutrition to the blocks until the plant can rely on the available water in the slab.
Week 3-8 	Continuation of uniform controlled plant development and the realization of a root system that fills the entire substrate volume.	Work on plant development and increasing the leaf area to capture the available radiation and keep vegetative – generative balance in the plant.	Establish complete root penetration of the entire substrate volume. This will enable the plant to take up all the water and nutrition it will need for maximum summer production and quality.
Week 9-13 	Retain the right balance in the crop during first harvest (as the fruit load increases) and assimilate supply is variable and strongly depending on the weather.	Growth should remain constant and uniform while the fruit load is increasing. The 24-hr temperature should be adjusted to the light levels to ensure optimum partitioning of available assimilates for plant and fruit growth.	Root quality should be retained to ensure controlled and uniform re-growth of the crop as first harvest approaches.
Week 14-19 	Realize controlled and uniform re-growth of the crop following the first harvests.	Focus on keeping the crop in balance as the plant load and production continue to increase.	To control the balance in the crop, the rootzone environment should remain stable and uniform throughout the greenhouse. The recommended WC and EC levels for spring and summer should now be realized.
Week 20-35 	Maintain maximum production potential by keeping plant and root quality in excellent health.	Vegetative or generative steering will depend on the condition of the crop. The crop should remain strong to cope with large and extreme fluctuations in weather conditions. The set speed should match the harvest speed to maintain constant fruit load.	Water uptake should match the needs of the crop for maximum cooling potential to create good climate and plant conditions inside the greenhouse. Good root penetration throughout the entire substrate volume realized in Phase 2-4 will help the crop to cope with extreme weather conditions.
Week 36- crop removal 	Keep the crop in a healthy condition to ensure production and quality is maintained right through to the last planned harvest date.	Maintain strength and growing power of the plant and limit the ingress of disease in the crop as the light levels diminish towards final harvest.	Maintain a healthy and active root system and to keep the correct nutrient balance.

Phase One-A is only applicable if the grower prefers standing the propagation block on the side of the slab prior to contact with the substrate. Normally this strategy is only used for crops planted in low light conditions.

Table 2.0: Typical strategy for steering tomato plant development during Phase One-A.

	BRIGHT DAY VEGETATIVE STEERING	DARK DAY GENERATIVE STEERING
Start time	+2.0 hrs SR <300g 10x10cm <350g 10x15cm	+3.0 hrs SR <270g 10x10cm <300g 10x15cm
Stop time	-2.0 hrs SS	-3.0-4.0 hrs SS
Target day level WC	45-70%	30-70%
Target decrease WC overnight	Maximum 20%	Maximum 20%
Moment 1st drain	Not relevant	Not relevant
EC drip	3.5-4.0mS	3.5-4.5mS
EC block	5.0-7.0mS	5.0-8.0mS
Delta EC	1.5-3.0mS	1.5-3.5mS
24-hr Drain	10-40%	0-20%
Session length	2 to 4 sessions 75-100ml per 10x10cm 100-150 per 10x15cm	1 to 2 sessions 100-200ml per 10x10cm 150-250ml per 10x15cm
ml/joule	Not relevant	Not relevant
Night irrigation	If decrease >20%	If decrease >20%

Table 3.0: Typical strategy for steering tomato plant development in Phase One-B.

	BRIGHT DAY VEGETATIVE STEERING	DARK DAY GENERATIVE STEERING
Start time	+2.0 hrs SR	+3.0 hrs SR
Stop time	-2.0-3.0 hrs SS	-3.0-4.0 hrs SS
Target day level WC	Slab >75% Block >50%	Slab >75% Block >50%
Target decrease WC overnight	Not relevant	Not relevant
Moment 1st drain	Not relevant	Not relevant
EC drip	3.5-4.0mS	3.5-4.0mS
EC slab	3.0-3.5mS and lower than block	3.0-3.5mS and lower than block
Delta EC	Not relevant	Not relevant
24-hr Drain	Not relevant	Not relevant
Session length	200-250ml/m ²	250-400ml/m ²
ml/joule	Not relevant	Not relevant
Night irrigation	High pipe temp (>60oC) and blocks too dry (<40%)	Not relevant for generative steering focus on stop time

Table 4.0: Typical strategy for steering tomato plant development in phase two.

	BRIGHT DAY VEGETATIVE STEERING	DARK DAY GENERATIVE STEERING
Start time	+2.0 hrs SR	+3.0 hrs SR
Stop time	-2.0 hrs SS	-3.0-4.0 hrs SS
Target day level WC	50-55%	45-50%
Target decrease WC overnight	10-12%	12-15%
Moment 1st drain	Before 12.00 hrs	After 12.00 hrs
EC drip	3.5-4.0mS	3.8-4.2mS
EC slab	5.0-6.5mS	5.5-8.0mS
Delta EC	1.5-2.5mS	1.7-3.8mS
24-hr Drain	15-25%	0-15%
Session length	Week 4:300-350ml/m ² Week 8:350-400ml/m ²	Week 4: 350-450ml/m ² Week 8:450-500ml/m ²
ml/joule	Not relevant	Not relevant
Night irrigation	No	No

Note: data values are specific to a dual density rockwool slab.

Table 5.0: Typical strategy for steering tomato plant development in Phase Three.

	BRIGHT DAY VEGETATIVE STEERING	DARK DAY GENERATIVE STEERING
Start time	+1.0-2.0 hrs SR or 60-100 J/cm ² or 150 W/m ²	+3.0-4.0 hrs SR or when WC falls 1.5-2.0% from SR
Stop time	-1.0-2.0 hrs SS or 70-100 J/cm ² or 150-200W/m ²	-3.0-4.0 hrs SS
Target day level WC	50-60%	45-50%
Target decrease WC overnight	8-10%	10-15%
Moment 1st drain	400J/cm ² or 600W/m ²	Less than 4 irrigations
EC drip	3.0-3.3mS	3.5-3.8mS
EC slab	4.0-5.0mS	4.5-5.5mS
Delta EC	1.0-1.7mS	1.0-1.7mS
24-hr Drain	20-30%	10-20%
Session length	300-350ml/m ²	400-500ml/m ²
ml/joule	Not relevant	Not relevant
Night irrigation	No	No

Note: data values are specific to a dual density rockwool slab.

Table 6.0: Typical strategy for steering tomato plant development in Phase Four.

	BRIGHT DAY VEGETATIVE STEERING	DARK DAY GENERATIVE STEERING
Start time	+1.0-2.0 hrs SR or 60-100J/cm ² or 150 W/m ²	+2.0-3.0 hrs SR or when WC falls 1.5-2.0% from sunrise
Stop time	-1.0-2.0 hrs SS or 70J/cm ² 150-200W/m ²	-3.0-5.0 hrs SS
Target day level WC	70-75% increasing 75-80% week 22	70% increasing 75% week 22
Target decrease WC overnight	8%	10%
Moment 1st drain	400J/cm ² or 600W/m ² 4-6 irrigations	Less than 4 irrigations
EC drip	2.8-3.3mS	3.0-3.5mS
EC slab	3.8-4.5mS	4.5-5.2mS
Delta EC	1.0-1.2mS	1.5-1.7mS
24-hr Drain	25-30%	10-20%
Session length	Morning 350-500ml/m ² Afternoon 300-400ml/m ²	350-500ml/m ²
ml/joule	3ml/J	Not relevant
Night irrigation	No	No

Note: data values are specific to a dual density rock wool slab.

Table 7.0: Typical strategy for steering tomato plant development in Phase Five.

	BRIGHT DAY VEGETATIVE STEERING	DARK DAY GENERATIVE STEERING
Start time	+1.0-2.0 hrs SR or 60-100J/cm ² or 150 W/m ² or when WC falls 1.5-2.0% from SR	+2.0-3.0 hrs SR or when WC falls 1.5-2.0% from SR
Stop time	-1.0-2.0 hrs SS or 70J/cm ² or 150-200W/m ²	-3.0-4.0 hrs SS or 70J/cm ² or 150-200W/m ²
Target day level WC	75-80 %	70-80% (average 3-5% lower than a bright day)
Target decrease WC overnight	8-10%	10-12 %
Moment 1st drain	400J/cm ² or 600W/m ² 4-6 irrigations	Less than 4 irrigations
EC drip	2.8-3.3mS	3.0-3.5mS
EC slab	3.5-4.5mS	4.0-5.0mS
Delta EC	0.7-1.2mS	1.0-1.5mS
24-hr Drain	30-35%	10-20%
Session length	Morning 350-400ml/m ² Afternoon 250-300ml/m ²	350-450ml/m ²
ml/joule	2.8-3.5ml	Not relevant
Night irrigation	Only if corrective actions are required delta WC >10%	No

Note: data values are specific to a dual density rock wool slab.

Table 8.0: Typical strategy for steering tomato plant development in Phase Six.

	BRIGHT DAY VEGETATIVE STEERING	DARK DAY GENERATIVE STEERING
Start time	+1.5-2.5 hrs SR or when WC falls 1.5-2.0% from SR	+3.0-4.0 hrs SR or when WC falls 1.5-2.0% from SR
Stop time	-2.0-3.0 hrs SS aiming for at least 100J/cm ² to SS after last irrigation	-3.0-4.0 hrs SS aiming for at least 100J/cm ² to SS after last irrigation
Target day level WC	70-75% decreasing to 60-65%	70% decreasing to 60%
Target decrease WC overnight	8-10%	10-15 %
Moment 1st drain	4 irrigations or 400J/cm ²	Less than 4 irrigations
EC drip	3.0-3.3mS	3.3-3.5mS
EC slab	3.5-4.5mS	4.5-6.0mS
Delta EC	0.5-1.2mS	1.2-2.5mS
24-hr Drain	20-30%	10-20%
Session length	Morning 350-450ml/m ² Afternoon 300-400ml/m ²	400-500ml/m ²
ml/joule	2.8-3.2ml	2.5-3.0ml
Night irrigation	No	No

Note: data values are specific to a dual density rock wool slab.