



STOCKER HORTICULTURAL & HYDROPONIC SUPPLIES (2004) LTD

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Hydroponic Tomato Production

This crop is grown in a NFT (Nutrient Film Technique) system. The seeds are germinated in a Vacroc Rockwool cube and then placed into a gully.

Gullies should not exceed 15 metres in length and should have a fall of at least 1 in 40 down the 15 metres. The gullies are made of Panda Film disposable gully 600mm wide, providing that the fall on the floor is even, with no dips to create ponding, this is the preferred method. You can also use timber-framed gullies 200mm wide lined with Panda or similar film or permanent 150 x 75mm PVC gully.

- Nutrient flow rate down the gully should be one litre of nutrient per minute
- CF range is 18 at planting rising to 28 TO 50 at cropping (final CF depends on variety).
- pH range is 6.0 to 6.5 (auto systems set at 6.3 pH)
- It is essential to have good oxygenation of the nutrient, the easiest and cheapest way to ensure this is to use a venturi on a bypass from the pump back into the tank.

Propagation of plants

- Plants are propagated in Vacroc Rockwool cubes.
- Propagation media temperatures are 22 to 26 degrees centigrade.
- It takes from 3 to 7 days for seed to germinate.
- Use clean water to maintain a damp media, until the seed has germinated.
- Don't allow the plants to dry out at any stage.
- At the two-leaf stage they should be fed with a balanced nutrient at 5 - 10 CF until 200mm tall, then increase the CF to 15 - 18 until 300 to 350mm tall when they can be planted into the NFT system
- Plant out at 450mm centers.

Crop training systems

Crop training systems of many types can be used, a single string to overhead wire, or a layering system may be used. Laterals should be removed at an early stage, as this reduces the risk of damage to the main stem, and possible disease entry.



Temperatures

Maintain the following temperatures until the end of the crop.

Nutrient	Minimum 18 degrees	Ideal 24 to 26	Maximum 30
Air	Minimum night 10 degrees	Minimum day 16	Maximum vent temp 28

Pollination

Insects and air movement all assist in pollination. Minimum air temperatures are required to set good fruit. Bumble Bees are the best way to pollinate the flowers.

Diseases

See NZ agrichemical manual. Main ones to watch for are Botrytis and leaf spotting/leaf mould. Good air movement and keeping the humidity down on cool damp days assists in a reduction of diseases.

Insects

See NZ agrichemical manual. White fly are the main threat, predators can be used with a totally integrated pest management program, see MAF details. Neem oil is a good safe preventative or cleanup, with no withhold period, and Pyrethrum sprays are very safe.

Root Problems

Use only clean water, preferably treated with the likes of Ozone, to reduce the introduction of root diseases such as Phytophthora and Pythium. If these occur use the MAF recommended procedures to clean out the system.

Nutritional requirements

Nutrient formulations are blended to suit the water supply, so a water mineral analysis is essential for optimum formulation.

Downwards pH correction is usually made with Phosphoric Acid, but there may be situations where Phosphoric/Nitric Acid mixes are used, or even straight Nitric Acid at times. Upwards pH correction is always carried out with Potassium Hydroxide. Common name Caustic Potash.

Note: all pH correctors are added in a very weak form, never use full strength acid or alkali to adjust nutrient solution. Dilutions of 1000 to 1 with water are normal.

With NFT systems it is often advantageous to flush out the nutrient tank regularly to avoid a build up in toxic materials or to remove a nutritional imbalance. Also if the nutrient gets dirty and you don't fancy drinking it, then flush it out. Plants respond to clean nutrient and there will be far fewer problems from disease if nutrient is regularly changed. Only nutrient analysis will show how long a specific system can run for until its out of balance, however 4 weeks is usually the maximum time between flushing.

Remember, don't put cold water into the tank and circulate immediately, raise the temperature to that required before turning on the pump. For run to waste crops this is also an essential, don't chill off the roots on a hot day or freeze them in winter. Pre-heat the water to be applied.

Installation Costs

Material costs depend on the sizes etc, but for a 1000 square metre greenhouse the cost for materials only will start at \$7500.00 + GST without the structure. This does not allow for any materials for nutrient heating, or air heating, as this will depend on your climate and varies greatly for different areas.

We offer a free design and costing service with ongoing advice and materials at very competitive prices.

If you have any queries or think you would like to try Hydroponics, please contact us one of the following ways:

Phone **07 883 1051**

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