PLANT PRODUCTION FOR HYDROPONIC SYSTEMS

Most plants are usually produced from seeds, but some crops, especially some flower and herb crops are done from cuttings.

SEEDS.

- Use only high quality seeds, do not store seeds in warm, damp condition, and don't freeze them.
- Reseal containers when only a small quantity is used at a time.
- Always sew more seeds than required, to allow for non germination, and elimination of rogue or poor plants, see the seed container for expected germination rate, and sew accordingly.
- Seeds are available in either bare form or pellet for easier handling, or machine planting.

MEDIAS.

Propagation medias have certain basic requirements, these include;
1/. Be open grained structure to allow air to reach the roots, and it must not change after seeding, harden or set like concrete with age.
2/. Have moisture retention between irrigation cycles, but not get too wet to eliminate air flow to the roots.
3/. Be sterile, have no weeds, insects, mineral salts or toxic substances.
4/. Be light coloured to avoid overheating seeds in high sunlight.

Suitable medias include;

- Perlite.
- Vermiculite, and combinations of these two. (60% Perlite with 40% Vermiculite is and ideal seeding mix for just about any crop type)
- Jiffy 7's for larger seeds or plants, Tomatoes for example.
- Rockwool type materials, suite just about any crop type.
- Pumice, (sterile only)
- Course washed river sand. (Not sea sand under any circumstances)
- Un-sterile potting mixes are not recommended.

Method for Tomatoes/Cucumbers/Peppers and similar plants.

- Use a seed mix (60% Perlite & 40% vermiculite) in clean plastic seed trays. Moisten media with water, then spread seed evenly over the surface of the media and cover lightly with seed mix, do not bury too deeply or you will never see them again.
- Place in a warm, sunny situation, hot pads at 20 to 25 ^{0}C with grow lights will produce the most consistent results.
- Keep the media moist with water until the seed germinates, then feed with fully balanced nutrient at 5 to 6 CF, apply the nutrient as a foliar spray with a fine mist spray.
- When the plants are 4 to 5 cm high, transplant into presoaked Jiffy 7's, (Jiffy's should be presoaked for at least 20 mins, and be swelled to full size, drain off surplus water)
- When transplanting seedlings do not handle them by the stem, as damage will result in loss of the plant, handle only by the leaves, as these can always be replaced by the plant.
- Using a dibbler (or pencil) enlarge the hole in the Jiffy's and ease the plant out from the media, taking care not to damage the root system. Lower the tap root into the Jiffy and firm the Jiffy around the stem to support the plant. Place the Jiffy in a flat bottom tray with no holes in the base, or on a suitable flood and drain bench.

- Apply fully balanced nutrient to the young plants at 8 to 12 CF, by adding to the tray or bench, but do not drown the Jiffy, over watering can spoil the plants.
- Place in a warm sunny location or on hot pads under lights.
- Grow the plants on until of sufficient size to enter the Hydroponic system.
- As the plants grow, increase the CF until at planting its 18 CF.
- Keep moving the plant apart to allow space for growth, this will avoid thin spindly plants stretching for light.
- Keep a look out for insects and fungal problems, spray with suitable fungicides and insecticides prior to planting out.

Alternatively plant seed directly into 25mm propagation Rockwool cubes, moisten with water, when germinated, irrigate (flood and drain is ideal) with a fully balanced nutrient at CF 5-6 slowly increasing as growth appears. Transplant into larger Rockwool cubes 65mm x 65mm x 40mm when at a suitable size and continue irrigation but don t allow cubes to sit in any residual nutrient, fully drain between irrigation cycles, plant out into the system at a suitable height. This method is suitable for plants for either NFT or Rockwool slab production, or run to waste bag systems.

Method for Lettuce or similar small plants.

These seeds can either be direct sewn into containers (pots) or blocks (Rockwool) or into cell trays of suitable size, up to 30mls capacity.

There are a variety of pots available in either reusable types or the disposable type, and a variety of cell trays, all of these require either a media such as Perlite/pumice/vermiculite or similar.
Fill pots with media and dampen with water before sewing, sew the seed on the surface, do not bury. Place the pots in a flat bottom tray with no holes in the base, place the trays on hot pads in a sunny place or under grow lights, add only water until the seeds germinate, then apply a fully balanced nutrient at 3 to 5 CF until the plants are large enough to put into the nursery bed system.

Blocks such as the 25mm x 25mm x 40mm Rockwool, can be directly seeded with either bare or pellet seed.
Place blocks into flat bottom seed trays with no holes in the base, place on hot pads in sunlight, or under grow lights, use water only until the seed has germinated, then feed with a fully balanced nutrient at 3 to 5 CF. When plants are of sufficient size, they can either be placed directly into gullies or be placed in disposable pots in the gullies. The pots help to keep the plant in position, and assists in periods of strong wind when some plants can be blown out of the gully on outside systems.

Eliminate poor looking plants at every stage and only plant the healthy plants.
If at any stage of production the seedling or plants droop, from lack of water, they will apparently recover and look good when watered again, however they will grow on stunted and run to seed at a early age, its best to cut your losses on this batch at the earliest point and reseed again, as these plants will never be good enough to produce top quality