

Rapid growth taking place with efficient glasshouse industry

The hydroponics and glasshouse industry is growing rapidly in Australia, with the trend being driven by retailer demand for year-round produce of consistent high quality.

According to Syngenta's Product Manager, Covered Crops, Levi Nupponen, greenhouse operations allow almost total control over the growing environment, meaning quality can be very tightly controlled and excellent yields can be achieved.

"An outdoor tomato operation, for instance, will produce anywhere from four to seven kilograms per square metre, compared with an indoor operation which can return yields of over 65 kg per square metre.

At the same time glasshouses are around 500 per cent more water efficient," he said.

Australia's glasshouse industry is expected to grow by about 17 per cent in the coming year. "The future for most growers will be in the domestic market because transporting fresh produce can be difficult, though some companies are looking to capitalise on export opportunities."

While Australian and New Zealand growers are producing a range of crops including strawberries, cucumbers and capsicums, tomatoes are the most commonly-produced greenhouse crop in Australasia.

Syngenta works with its glasshouse clients to help them get the right product to market.

"We breed new varieties and conduct extensive market research. We also offer broad-ranging technical advice.

"When clients are looking to move in new directions we talk to them about what new products might work for them, how they might find a market and how to

most or better their previous yield. We also work on using varieties that offer a disease resistance package that meets or betters their existing line, and help them find options that suit their climatic conditions.

"We sometimes even help organise study tours and liaise with retailers and producers. It's an integrated approach that is

An indoor operation can return yields of over 65 kg per square metre, compared to around 7kg with an outdoor operation and glasshouses are around 500 per cent more water efficient.

about getting a great product to the market."

D'VineRipe Pty Ltd operates a \$30 million truss tomato glasshouse in South Australia. The D'VineRipe facility is the largest single glasshouse built in one stage in Australia.

The 8.2 hectare glasshouse at Two Wells, north of Adelaide, produces approximately 5,000 tonnes of truss tomatoes a year, including varieties new to the Australian marketplace.

Research indicates that consumers want tomatoes that have real flavour and taste like they are home grown.

Glasshouse tomatoes generate about 40 per cent of the retail value for the tomato industry in Australia.

"They have gone from being a niche product taking up less than 10 per cent of supermarket shelf space to a commodity

product sharing space almost equally with field grown varieties.

Products Manager, Levi Nupponen said the two major supermarket chains in Australia want to see Australian produce in their stores, and they want consumers to be able to purchase the same basic product all year round.

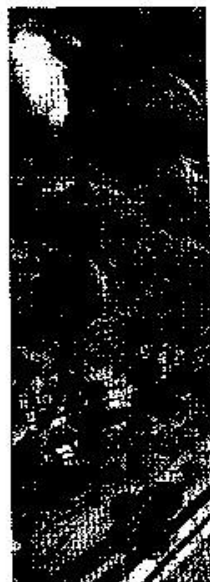
But while glasshouses make it so easy to grow great quality produce at high yields, not all growers are moving under glass.

"A glasshouse is a huge investment, costing up to \$2 million per hectare. Return on investment is about 10 to 25 per cent per year, so there are lots of factors to consider," Mr Nupponen said.

"High temperatures can be an issue in Australia. You can cool a glasshouse anywhere but depending on location it can cost a fortune. If you're in a dry area and can use evaporative cooling it costs less, but it still equates to around a 30 per cent cost increase for infrastructure and similarly on energy and water usage.

"You also need to have access to clean and reliable water, be within relatively close proximity to your market and have a skilled labour force. The skills shortage is a major issue because this is not seasonal work, it's year round production."

Mr Nupponen said that while sorting out the logistics of a glasshouse operation can be tricky, finding the right product is the real key to success. "The market is first and foremost. You have to bring innovative products to the market and know it's going to work before you make that kind of investment."
www.syngenta.com
Levi Nupponen, Syngenta Seeds,
0407 499 946



Glasshouse operations

HYDROPONIC SYSTEMS

NFT – NUTRIENT FILM TECHNOLOGY

DRIPPER - RUN TO WASTE

DRIPPER – RECIRCULATION

FLOOD & DRAIN

CAPILLARY MATTING

AEROPONICS

ISSUES / PLANNING

CROP SELECTION : VEGETABLE

FLOWERS

LETTUCE

HERBS

ISSUES / PLANNING

SYSTEM TYPE : ECONOMICAL

PRACTICAL

GREENHOUSE : BASIC STRUCTURE

HIGH TECH

ISSUES / PLANNING

IRRIGATION : SIMPLE LOW COST

HIGH TECH

CLIMATE : COMPLETE

SELECTED

BASIC

ISSUES / PLANNING

PRODUCTION : **QUICK TURNOVER**

LABOUR SAVING

CROP NEEDS

MAINTENANCE : **HIGH LABOUR**

HIGH COST

LOW COST

ISSUES / PLANNING

WATER USE : QUALITY

LOW USAGE

HIGH USAGE

STORAGE

RELIABILITY : CONSISTANT

QUALITY

BACKUP

HYDROPONIC MEDIA

MEDIA BENEFITS :

INERT/CLEAN

DRAINAGE

COCO PEAT :

GOOD MOISTURE

GOOD DRAINAGE

CHEAP

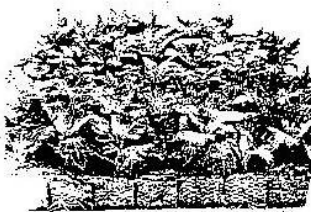
REUSE

GOOD AIR

GOOD FOR ENVIRONMENT

RECIRCULATE / FILTERS

GROWING WITH ROCKWOOL



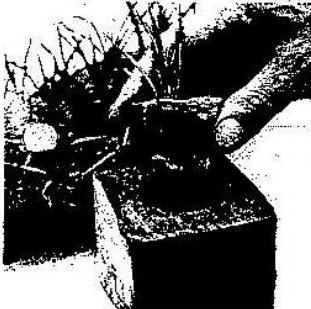
1. *Chrysanthemum* struck in rockwool propagating blocks.



2. Carnations ready to transplant.



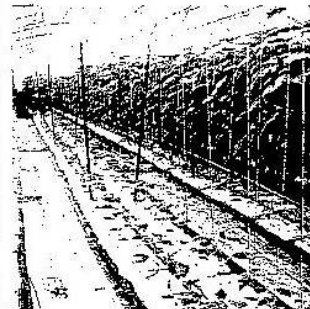
3. Separating individual rockwool blocks.



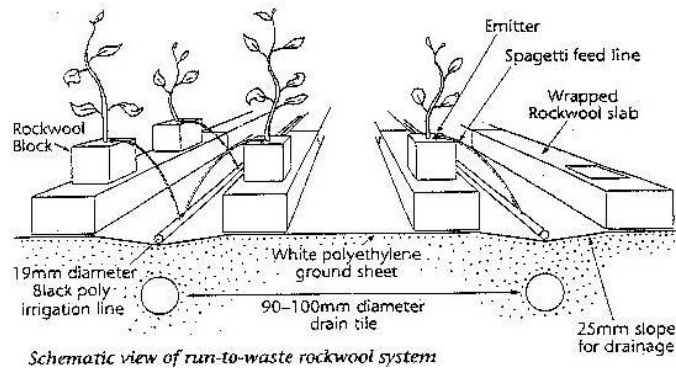
4. Carnation block, transplanting into wrapped cube.



5. Gerbera in a cube, transplanting onto a slab.



6. Recently transplanted cucumbers and a more advanced crop.



ROCKWOOL CULTURE

GROWOOL / GRODAN:

GOOD MOISTURE

GOOD DRAINAGE

COSTLY

REUSABLE OVER 2 YEARS

DISPOSAL POOR

RECIRCULATE GOOD

SAWDUST : GOOD MOISTURE

CHEAP

NOT REUSABLE

RAW TYPES ONLY

DECOMPOSES

AVERAGE AIR

ALTERNATIVES:

SAND/GRAVEL

EXPANDED CLAY

PERLITE

VERMICULITE

SCORIA

SYSTEMS

RUN – TO – WASTE

OPEN SYSTEM

SIMPLE SYSTEM :

**LOW COST
LESS EQUIPMENT**

LOWER DISEASE :

**FLUSHING
NEW NUTRIENT**

NUTRIENT QUALITY :

MEASURED

LOWER SALT LEVELS / BUILDUP

**HIGH WATER USE : AVAILABILITY
QUALITY**

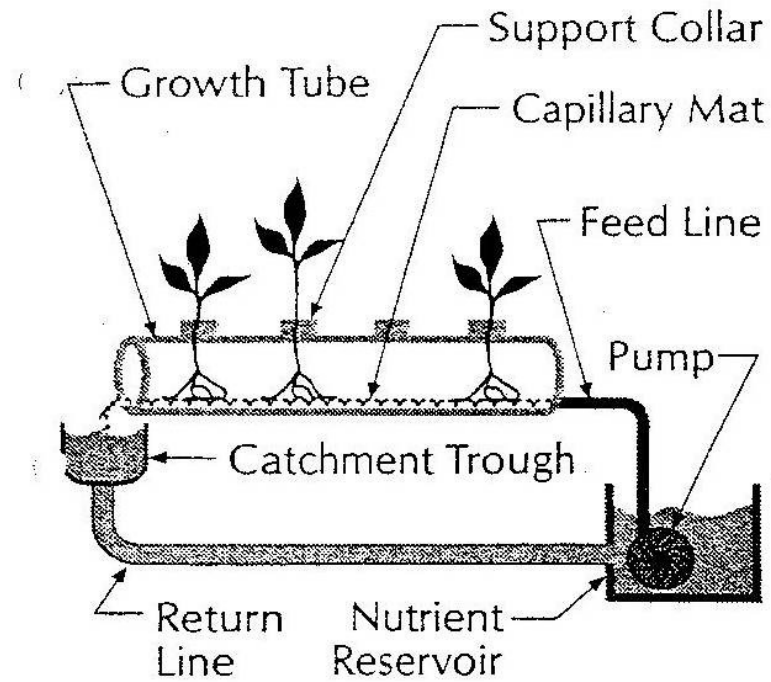
HIGHER NUTRIENT USE : COST

RUN OFF ISSUES :

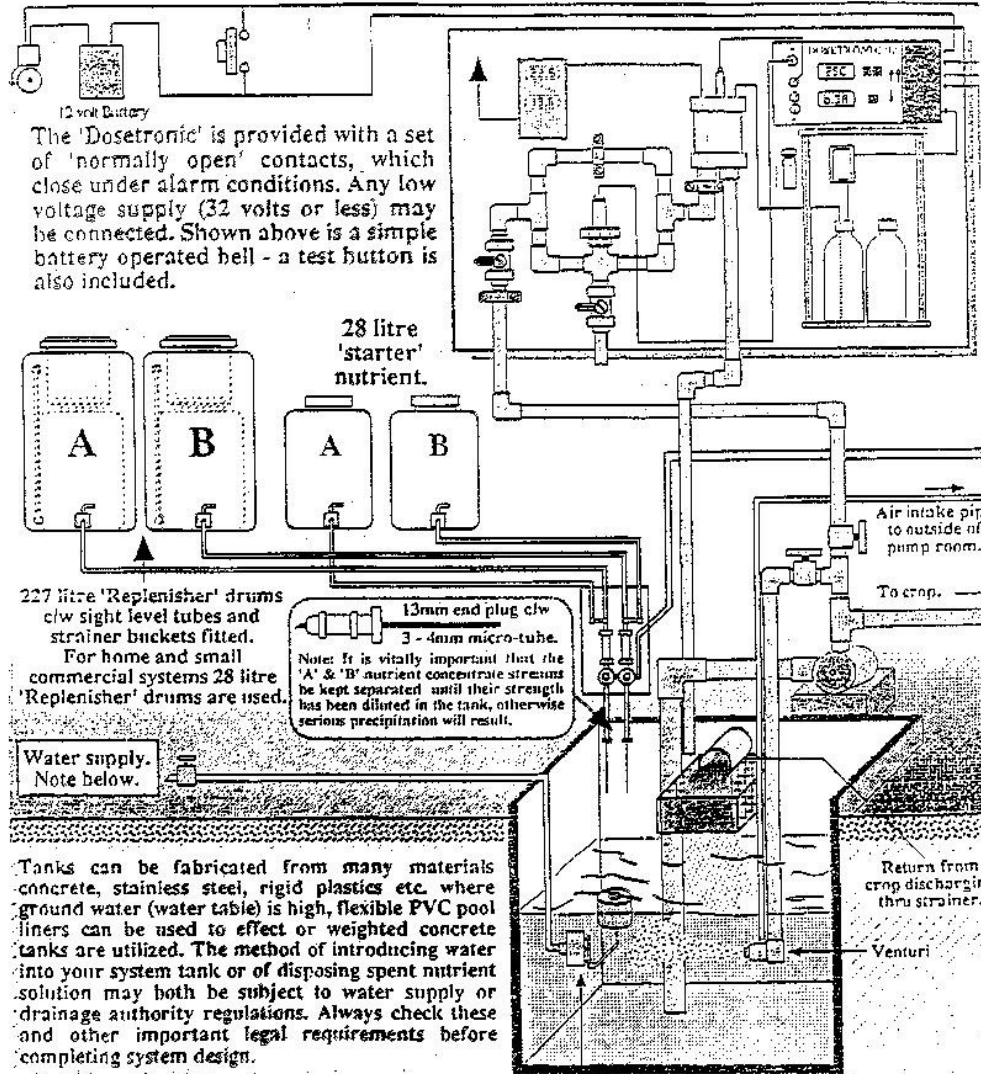
**CONTROL
EPA / COUNCIL**

MEDIA CHANGE OVER : 1 – 2 YEARS

NFT SYSTEM



Typical tank-room installation and 'Dosetronic' controller details.



The 'Dosetronic' is provided with a set of 'normally open' contacts, which close under alarm conditions. Any low voltage supply (32 volts or less) may be connected. Shown above is a simple battery operated bell - a test button is also included.

227 litre 'Replenisher' drums c/w sight level tubes and strainer buckets fitted. For home and small commercial systems 28 litre 'Replenisher' drums are used.

13mm end plug c/w 3 - 4mm micro-tube.
 Note: It is vitally important that the 'A' & 'B' nutrient concentrate streams be kept separated until their strength has been diluted in the tank, otherwise serious precipitation will result.

Water supply. Note below.

Tanks can be fabricated from many materials concrete, stainless steel, rigid plastics etc. where ground water (water table) is high, flexible PVC pool liners can be used to effect or weighted concrete tanks are utilized. The method of introducing water into your system tank or of disposing spent nutrient solution may both be subject to water supply or drainage authority regulations. Always check these and other important legal requirements before completing system design.

NFT – NUTRIENT FILM TECHNOLOGY

**RIGID CHANNEL PVC : FLAT
 OVAL
 ROUND PIPE**

FLEXIBLE PANDA FILM

**SHORT TERM CROPS : LETTUCE
 HERBS**

LONG TERM CROPS : TOMATOES

**GOOD ROOT ZONE : WATER SUPPLY
 AIR RATIO
 NUTRIENT**

ROOT ZONE WARMING – WINTER

GOOD CONTROL CHECKING

EASY TO BUILD / WORK HEIGHT

**QUALITY WATER – LOW SALT
SODIUM CHLORIDE**

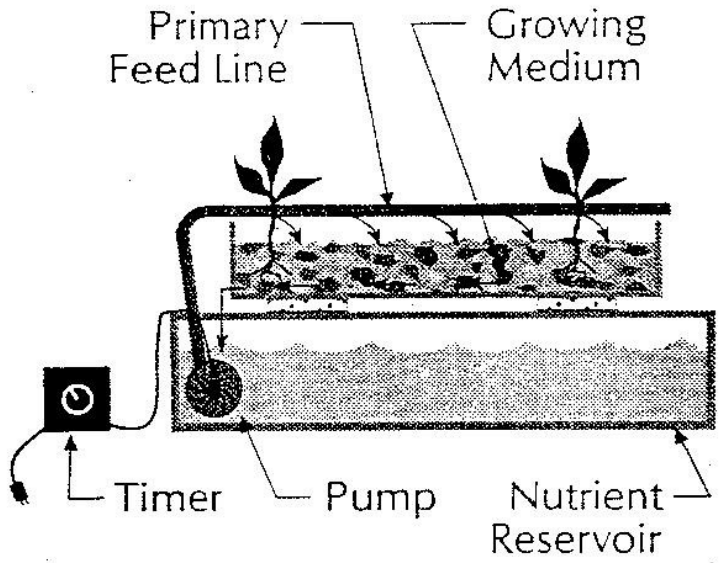
**DISEASE CONTROL : PYTHOFF
 UV
 OZONE**

**CHANNEL :FALL 1 : 40
LENGTH 12 M LONG TERM
LENGTH 18M – OR LESS SHORT**

**FLOW 1 Litre / Minute TWO TUBES
TANK HALF FULL / OVER FLOW
FLUSH TANK / 20% REGULARLY**

OUTDOOR USE LIMITED – LETTUCE

TOP FEED SYSTEM



TOP FEED DRIPPER SYSTEMS

RUN TO WASTE

RECIRCULATION

**PARTIAL 20%
FULL / TREAT**

MEDIA TYPES :

**ROCKWOOL
COCO SLABS / BAGS
POTS
BOXES / CRATE**

LONG TERM CROPS :

**TOMATOES
CUCUMBERS
CAPSICUMS**

ROOT ZONE :

**GOOD CONTROL
GOOD AIR RATIO
NUTRIENTS
FLUSHING
RESERVOIR**

EASY TO BUILD IDEAL FOR DIFFERENT PLANTS

DIFFERENT WATER TYPES :

**GOOD QUALITY
BORE WATER**

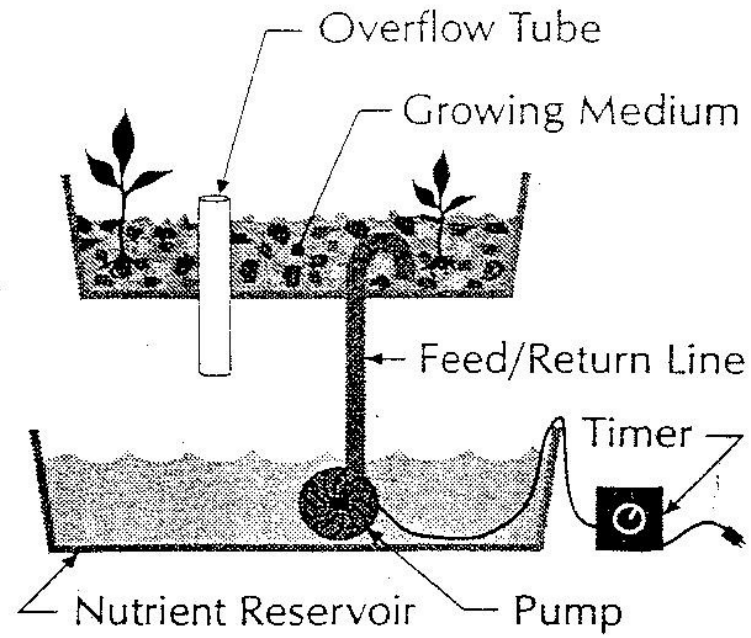
DISEASE CONTROL :

**STOPS SPREAD
REMOVE PLANTS**

IDEAL FOR COMPUTERS :

**LIGHT
HUMIDITY
TEMPERATURE
NUTRIENT**

FLOOD AND DRAIN SYSTEM



FLOOD & DRAIN

TYPES :

**BENCHES
TABLES
RECIRCULATING**

NUSERY PRODUCTION :

**POTTED COLOUR
ROSES
SEEDLING PRODUCTION
GRAFTED TOMATOES**

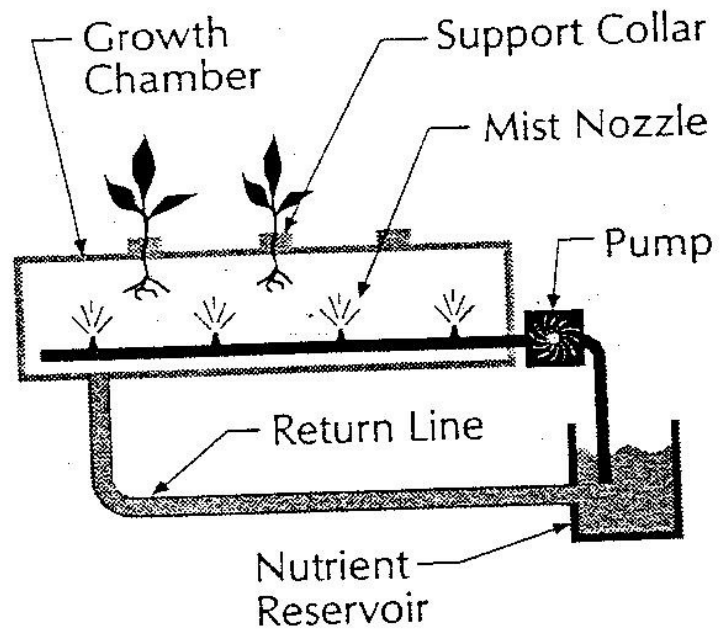
POTTING MIX :

**OPEN
SOME PEAT FOR
CAPILLARY ACTION
DRAINAGE TIME
SPECIAL POTS**

CONTROL NEEDS:

**OVER WATERING
PLANT GROWTH
DISEASE CONTROL
CLEAN BENCHES
TIME SAVING
GOOD WORK HEIGHT**

AEROPONICS SYSTEM



**THANK YOU FOR LISTENING
TO MY TALK AND FOR
TAKING AN INTEREST IN
HYDROPONICS.**