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YOUR WAY

5 GREENHOUSES & HYDROPONICS

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Greenhouses & Hydroponics

Hydroponics

5b

5b1- Hydroponics

HYDROPONICS

Hydroponics is a new agricultural production system in which the production takes place in soil less mediums using either an artificial soil medium or water channels. Nutrients and fertilizers are supplied to the crop through drip irrigation in the soil medium system or through the water in the channel system. It is an efficient alternative to soil based agricultural production. It offers un-surpassed opportunities for environmental control resulting in a high production levels of small defined areas, a very high quality of product, an extremely efficient use of water, no waste of nutrient solutions, and adoption of biologically-based integrated pest management. Hydroponics is the production of crops in isolation from the soil, either with or without a medium (NFT or Substrate), with their total water and nutrient requirements supplied by the system. Production takes place either in a greenhouse or outdoors and systems can recirculate or allow nutrients to 'run-to-waste'. A wide variety of crops including 'fancy' types of lettuce, cut flowers such as roses, gerberas, carnations and lisianthus, and other crops such as tomatoes, capsicum, eggplant, strawberry and cucumbers are all grown under hydroponics.

Advantages of hydroponic production

* No soil
* Control over nutrient, water pH, climate conditions
* Higher yield
* Pest & disease control and ilimination of weed
* Best suited for crops requiring closed controlled environment
* Less land utilization and water requirements
* Higher product price
* An answer to urban encroachment on productive agricultural land
* Potentially lower labour costs
* Critical mass of production

Hydroponics is a comprehensive greenhouse control system, optimized for the control of highly dynamic horticultural environments and specialized equipment control strategies employed to enhance plant growth processes. This includes:

* Assimilation and photoperiodic lighting
* Complex irrigation and nutrient control
* Mist, fog, pad & fan evaporative cooling
* Precision humidity management
* Shade and thermal curtain systems
* CO2 measurement
* Daily or multi-day climate settings
* Heat storage
* Range of other crop specific control requirements

Fully Controlled System:

A complete software package adapted for research and production control which includes many modules which give:-

* Event recording for logging equipment cycles, motor starts etc.
* Comprehensive programmable alarms and alarm display.
* The system differentiates between critical and non-critical alarms. It monitors outside and inside climate and equipment conditions with visual, audible, and signal output capabilities.
* Graphic display of all logged data in selectable parameter combinations. Data should be displayable in daily, weekly, monthly, or yearly graphic and tabular intervals.
* Long-term archival data storage
* Data export capability for all recorded data files to Microsoft Excel.
* User-programmable menus and graphical display options

* Comprehensive display on a control group basis of measured environmental conditions, set points, control parameters, and outputs.
* User-configurable display of current measured environmental conditions, set points, and control parameters.
* On-screen help files for all functions available at all times.
* A programmable start-up sequence to permit sequential starting of each piece of greenhouse equipment. The sequence will be initiated at each power up and after a power failure.
* A weather station to monitor global radiation, air temperature, rain detection, wind speed, and wind direction.
* Reference to absolute or relative time values i.e. before/after solar dawn/dusk vs. absolute time of day.
* Up to four diurnal (happening during the day as opposed to at night) climate temperature/humidity set point periods.