CROP PRODUCTION CONSTRAINTS

Conventional high value crop production in an open field is susceptible to extreme solar radiation, high rainfall, weed competition, pests and diseases. Pest and disease damages were reported to be between 50%-100% if the infestation is high. The spraying of weedicides, pesticides and fungicides is necessary to ensure the continuation of crop production. However, excessive chemical spraying often leaves a high amount of residual in the produce which is harmful for human consumption.

A continuously high level of rainfall damages young plants, flowers and fruit settings. The cultivation area becomes wet and is exposed to the spread of diseases which impedes mechanised crop maintenance. Moreover, the surface runoff will wash away valuable fertiliser.

Extreme long wave and short wave solar radiation are detrimental to crop growth in the tropical region, however, photostically active solar radiation (PAR) is required for the photosynthesis process. During the drought season, an irrigation system is necessary. Therefore, greenhouses structures and fertigation systems were developed to address these constraints.

GREENHOUSE STRUCTURES

Several greenhouse structures were specifically developed for the Malaysian environment. These structures are naturally ventilated and mechanically controlled environment greenhouse structures. Standard engineering codes of practice, and plant physiological and agronomic requirements are considered in the design of these structures. The naturally ventilated greenhouse structures are rain shelter, insect-screen, insect-screen rain shelter and solar radiation shade.
The basic materials used to construct naturally ventilated greenhouse structures are concrete foundation, galvanised steel structural frame, transparent polyethylene thermic film, polyethylene insect-screen, polyethylene shade net and cladding clamp profile. The enclosed crop growth chamber or naturally ventilated greenhouses assisted by mechanical environmental control means are typical examples of mechanically controlled environment greenhouses. Examples of mechanical means are artificial lighting, carbon dioxide injector, cooling systems, ventilation or fertigation systems.

IRRIGATION AND FERTIGATION SYSTEMS
Various types of irrigation systems were also developed for crop production under greenhouse structures. Basically, the systems are micro drip, sprinkler and hydroponics. Micro drip and hydroponics systems supply water with a fertiliser solution directly to the crop root zone. These systems are frequently called fertigation system. The micro sprinkler system supplies water or foliar fertiliser to the crop canopy and also the root zone.

The hydroponics systems are made static or with a recycled nutrient solution. Examples of the hydroponics systems are ebb-flood, aeroponics, deep flow technique, nutrient flow technique and static aerated. The basic components of all systems are the water source, nutrient tank, irrigation controller, water pump, distribution pipe, pressure valve, gate valve, nozzles and growth media.

THE COMMERCIAL POTENTIAL OF HIGH VALUE CROP PRODUCTION
Varieties of high value tropical, subtropical and temperate crop have been successfully grown under greenhouses in the lowlands as well as the highlands. For example, the Chinese cabbage, kailan and star fruit grow well under naturally ventilated insect-screen greenhouse structure using the micro-sprinkler irrigation system. Broccoli, cauliflower, cabbage, tomato and melon have also adapted well using the fertigation system under naturally ventilated and mechanically controlled environment greenhouse in the lowlands.

However, herbs, ornamental plants and flowers are more suited to the solar radiation shade greenhouse structure using the micro sprinkler and fertigation systems. Most of the crop production under the greenhouse structures and fertigation systems produce a high yield and premium quality produce compared to the open field production. In addition, crop production is also continuous throughout the year, technically feasible and economically viable. The fruits and vegetables can be grown organically and chemical free.

WARNING NOTICE
This is to inform all concerned persons, companies, institutions that Nehemiah Reinforced Soil Sdn Bhd (“NRSSB”) is the owner of a portfolio of Intellectual Property Right (IPRs) as shown below amongst others.

A) INDUSTRIAL DESIGN (MY 03-00185) & B) UTILITY INNOVATION (UI 20031580)
Anchorage lug used in pre-cast concrete facing panels

Design 1 Design 2 Design 3 Design 4 Design 5

C) PATENT GRANTED
Earth Retaining Wall System (MY 110930-A)

NRSSB has spent substantial amounts of resources, time and money to develop and acquire the IPR which it intends to fully exploit. NRSSB has not granted any authority, licence, or consent to any other party to exploit the above mentioned IPRs. It has come to the notice and attention of NRSSB that others are infringing or attempting to use the IPRs without its consent. NRSSB will not hesitate to initiate legal proceedings against all those who attempt to / or infringe the IPRs as it has done against a third party in Kuala Lumpur High Court.

Any party interested in using the IPRs identified above is advised to contact us.

Yours sincerely,

Nehemiah Reinforced Soil Sdn Bhd
No.55-3, Jalan Cecawi PSB 6/19A, Sekyen 6, Kota Damansara, 47810 Petaling Jaya, Selangor Darul Ehsan
Tel 603-6140 5233 Fax 603-6140 5860 Website www.nehemiah.com.my Email enquiry@nehemiah.com.my