



# Adaptive greenhouse horticulture in tropical lowlands

Examples based on experience in Malaysia, Taiwan and Indonesia

## Tropical low land

The climate provides several advantages:

- High diurnal temperatures (T) so limited heating requirements
- Ample light so limited assimilation light requirements

The climate also provides challenges:

- High humidity (RH) requires ventilation to remove transpiration
- High T/RH favours insects/diseases so measures are necessary
- High winds (taifoons) may require constructional measures

## Economic context (South East Asia)

Protected cultivation in SE Asia is of big economic importance:

- Food production for nearby metropolises
- Decreasing imports even as countries are rapidly industrialising

Issues are:

- Increasing the technical level of local growers (empowering):
- Reducing the emission of fertilisers and plant protection products into the environment
- Increasing the volume and quality of locally produced vegetables and ornamentals



*A local constructed greenhouse for lowland tropics (Taiwan)*



*A local constructed greenhouse for lowland tropics (Malaysia)*

## Adaptive greenhouse horticulture for tropical lowlands

Adaptive greenhouse horticulture means stepwise developing local growers, using local supply industry and local extension networks.

For tropical lowlands this means for example:

- Year round production modelling based on local climate data.
- Sector assessments based on local prices.
- Introduction of Integrated Pest Management.
- Reduced emissions by recirculating substrate systems.
- Improved greenhouse design for local contractors.
- Instruction and coaching of local research staff to act as example and knowledge bank for local growers.

## Cases by Wageningen UR Greenhouse Horticulture

Wageningen UR Greenhouse Horticulture contributed to developments in Malaysia, Taiwan and Indonesia.

- Malaysia: locally build improved greenhouse design. Local staff trained to use automated irrigation equipment
- Taiwan: typhoon proof greenhouse design. Screen technology was more cost effective than investing in any other technique
- Indonesia: Locally build improved greenhouse. Local substrate (rice husk). Less disease by improved climate regulation.

