



Overview of Protected Cultivation in the Philippines

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Name	Ronaldo B. Saludes
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Research Interest	1. Controlled Environment Agriculture 2. Agricultural Waste management 3. Precision Agriculture
Recent Project Involvement	1. Project Staff (January 16 – present) Smart Plant Production in Controlled Environment (SPICE) 2. Study Leader (Nov 4, 2013 – March 31, 2017) Water Management, Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) 3. Project Leader (Jan 1, 2016 –Dec 31, 2016) Introduction of Innovation Technologies for Corn-Based Cropping System

Status of Protected Cultivation in the Philippines

- most of the vegetables produced in the Philippines come from open field
- protective cultivation is gaining popularity because it overcomes seasonality, water scarcity, pest infestation
- intended for crop protection from adverse weather conditions - excessive heat, cold temperature (highlands), heavy rains, winds, and pests
- adoption of protected cultivation started in the late 1980s
- In 2006, about 100 ha of land are used for protected cultivation
- ranged from small-scale to commercial production of cruciferous vegetables and cut flowers

Types of Protective Structures

1. Simple structures

- low cost
- use plastic coverings with frames made from wood and bamboo, and galvanized iron pipes
- rain shelters, shade houses, and plastic tunnels

2. Permanent structures

- commercial greenhouses of modified types from Israel, Korea, Africa etc.
- made from glass or plastic coverings with metal frames
- fully automated environmental control and fertigation systems
- design varies from less expensive (USD 1,500/ 100 sq m) to very expensive models (USD 40,000 – 100,000/1,000 sq m)

Low Cost Vegetable Growing Structures in the Philippines



Gable-roof type rain shelter in Leyte, Philippines



Bamboo-type greenhouse in Quezon Province, Philippines

Commercial Greenhouses in the Philippines



Harbest Agri-Plastic Greenhouse System in Masbate, Philippines



Greenhouse Lettuce Production at Costales Nature Farms, Laguna, Philippines

Commercial Greenhouses in the Philippines



Advanced Greenhouse Facility for Cut Flower Production in Cavite, Philippines (source www.islandrose.net)

Indoor Vertical Farming in the Philippines



Agritech Shipping Container Vegetable Farm in Manila



Multi-layer hydroponic system inside the container van equipped with controlled environment system

Problems and Constraints

- 1. Covering Materials**
- 2. Management of Inside Temperature and Humidity**
- 3. High initial cost of investment for commercial greenhouses**
- 4. Lack of small farm machineries suitable for protected cultivation**
- 5. Lack of training support on greenhouse production technology**
- 6. Lack of standards on design of protected structures**

Thank you