



Protected Agriculture Technology in Vietnam

FOR

Regional training on

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*Present by: **Nguyen Viet Anh***

Vietnam Institute of Agricultural Engineering & Post harvest Technology

[Email: vietanhvcd@gmail.com](mailto:vietanhvcd@gmail.com), anhnv.viaep@mard.gov.vn



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1. Introduction

Land Area	330,951sqkm
Capital City	Hanoi
Population	Over 93 millions
Language	Vietnamese (official),
Religion	Buddhism, and Catholic.
Climate	North Vietnam has Southern Mediterranean type climate. South Vietnam has a tropical monsoon climate.
Local Time	GMT +7
Currency	Vietnamese Dong (VND)
Agriculture produces:	Rice, maize, coffee, tea, cashewnut, rubber, fishesies, shrimp, ..





1. Introduction

Climate (World Atlas)

- Vietnam locates between $8^{\circ} 30'$ to $23^{\circ}22'$ latitudes in the north tropic latitudes; therefore it belongs to the tropical area. Climate in Vietnam is mostly warm all year round.
- The southern part is full with sunshine; the northern part is also covered with eve sunny months.
- Average air temperature is $22^{\circ} - 28^{\circ} \text{ C}$ but this air temperature in a year is quite different between the north and south region.



1. Introduction

Climate (World Atlas)

- The southern part is characterized by two seasons, a wet season from May to October and a dry season for the rest of the year.
- The northern part has four seasons summer, autumn, winter and spring separately. Average air humidity reaches to 70%-80%, and average of rainfall is about 1500-2000 mm some high mountainous areas could be over 2500-3000 mm a year as. Annual rainfall, frequently causing floods.

1. Introduction

Land area

- Vietnam has a total area of about 33,123,077 ha;
- Agricultural land area is 27,302,206 ha, accounting for 82.43% the total natural area;
- Land for agricultural production 11,530,160ha, and paddy field area is achieved about 85% of this cultivable land.





1. Introduction

Position of strength Export Agriculture

- Rice
- Coffee
- Pepper
- Fruits products
- Aquaculture: fish, shrimp, etc...
- Forestry
- Other products

2. Status of Agriculture mechanization



A lot kinds of machines for land preparation for rice, maize, sugar cane and industrial crops

2. Status of Agriculture mechanization

Machines made in Vietnam (less than 30 HP)

- 53% tractor <12HP
- 35% 12-35HP
- 12% > 35HP
- Capacity of machine increate



2. Status of Agriculture mechanization



Conservation tillage (Direct seeder)

2. Status of Agriculture mechanization



40% agricultures machine are made in Vietnam

2. Status of Agriculture mechanization



Rice (maize) Dry 10 tan/time



Food processing machine for fish



2. Status of Agriculture mechanization

Agriculture Problems

- **Small size of field**
- **Policy for testing Agri. machine is not clearly**
- **Employments not too excellent**
- **Low invest**
- **Old equipments**
- **The establishments also do testing alone and announce that their products are suitable to the fundamental standards;**
- **However, the formation and application of standards are still very limited.**

3. Protected Agriculture Technology in Vietnam

Vietnam's agricultural achievements

- According to the Ministry of Agriculture and Rural Development, 2017 is an impressive year for agriculture, with an export turnover of \$ USD 36.37 billion.
- Vegetables and fruits, with an export turnover of US \$ 3.45 billion, up over 40% over the previous year, far outstripped of rice export turnover (about USD 2.66 billion), coffee (over USD 3.2 billion).
- Especially for the first time after many years of negotiations, many fruits like breast milk fruit have "tickets" to the US, lemons exported to the EU, mango to Australia, ect.

3. Protected Agriculture Technology in Vietnam

Vietnam's agricultural achievements

- **In 2018, the Ministry of Agriculture and Rural Development strives to achieve a growth rate of at least 3.0%.**

- **Export turnover about 40 billion USD.**
 - **Crops products: USD 21 billion**

 - **Aquaculture: USD 9 billion**

 - **Forestry: USD 8.5 billion**

 - **Other products were USD 1.5 billion.**

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Greenhouse and Net-house application in Vietnam

- In Vietnam, we applied greenhouse and net-house models to produce fresh vegetables and high-tech flowers, most in Lam Dong province, especially Dalat, which is considered the key vegetable and flower production areas of the country.
- According to statistics in 2015, the area of greenhouse, net house and nursery is 5,897.5 ha, accounting for 0.07% of land area and aquaculture land every year.
- According to unofficial statistics, the area of green house and net-house in Vietnam is about 11,000 ha, accounting for 0.1% land area for agricultural production.
- The area has been growing rapidly in recent years. And strong development in Lam Dong Province, Ha Noi, Vinh Phuc, Ho Chi Minh City, Binh Duong. etc ...

3. Protected Agriculture Technology in Vietnam

Greenhouse and Net-house application in Vietnam

- By 2020, Vietnam will have 10 high-tech agricultural parks in Hau Giang, Phu Yen, Thai Nguyen, Quang Ninh, Thanh Hoa, Khanh Hoa, Lam Dong, Ho Chi Minh City, Binh Duong and Can Tho.

- In Vietnam, applying greenhouses and net-houses for vegetable growers and flower production have many benefits to agriculture:
 - It helps protect vegetables against insect infestation, thereby minimizing the use of pesticides. As a result, vegetables are easy to reach high standards of safety and value.

 - Vegetable growers also create a good environment for vegetables to grow and develop.



3. Protected Agriculture Technology in Vietnam

Greenhouse and Net-house application in Vietnam

- Combined with adequate care and fertilization will increase the yield of vegetables leading to high profitability for farmers.
- The net house will help protect the vegetables from the effects of weather, avoid the rain to crush the leaves of vegetables. The grid also has an automatic sprinkler system that reduces labor considerably.

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Greenhouse and Net-house application in Vietnam

➤ Disadvantages

- It is in the hot season, the net house temperature will be 1-2 ° C higher than the outside temperature if not well ventilated. This is a factor that can affect the growth rate of vegetables.
- The net house model is limited in area. If you do not calculate the net area and plant area correctly, it will be very easy to grow fungi.
- The price of vegetable growers is quite high so farmers are still hesitant to invest.



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Greenhouse and Net-house application in Vietnam

- At present, in Vietnam, there are two kinds of vegetable growers: open-meshed house and closed net-house.
- Open-meshed house is a "net house" that is covered mainly on the roof or a portion of the surrounding.
- Closed net houses: The net type is covered with net both on the roof as well as around, the door is covered with mesh.

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Greenhouse and Net-house application in Vietnam

- **Open-meshed houses:** This type of net-house is mainly to limit the effect of rain and wind, to be able to cultivate during the rainy season. Does not work to prevent insects.



Some Photos of simple open-meshed houses

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Greenhouse and Net-house application in Vietnam



Some Photos of modern open-meshed houses



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Greenhouse and Net-house application in Vietnam

- In terms of design of open-type net house:
 - Roof type: equal or tilt.
 - Frame: made of concrete or iron frame, welded or bolted. Even simpler homemade homemade can be made of wood or wire to hold the net.
 - Height: from 2 to 2.5m



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Greenhouse and Net-house application in Vietnam

- **Advantages of open net-house type**
 - **Open all year round.**
 - **Simple design, so the cost of investment is much lower with a closed net.**
 - **It is easy to expand the scale of many households that can be linked together.**

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Greenhouse and Net-house application in Vietnam

- **Type of net house:** The type of net house is covered entirely with the net both on the roof as well as around, the door is also covered with mesh.



3. Protected Agriculture Technology in Vietnam

Greenhouse and Net-house application in Vietnam

- Used to prevent insect infiltration (mainly butterflies, beetles, flying insects).
- It is designed with a flat roof and tilted sides. The frame is made of concrete or iron frame or screws. The height is only 2.0 - 3.9 m.
- Area size: 500 - 1,000 m² per household for cultivation. Mesh material: Mesh type of white or green mosquito nets made of domestic materials by simple net weaving techniques.
- The net is not processed to increase UV resistance, sunshine, wind ... so the strength is not high, only good use from 6 to 8 months is torn, damaged.



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Greenhouse and Net-house application in Vietnam

➤ Advantages of closed net house type

- + Because insect prevention should reduce pesticides, protect plants, help vegetables safer.
- + Increased seasonal rotation due to planting all year round.
- + The quality of vegetables is guaranteed even in rainy or sunny seasons, even in the rainy season, while in the sunny season, there are measures to improve the growth of the crop.



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Greenhouse and Net-house application in Vietnam

➤ In terms of design of closed greenhouses

+ Roof type: can be roof or flat roof.

+ Frame: made of concrete or iron frame or bolted.

+ Grid: if made of nets or poor quality film, the life expectancy is less than 1 year, if good quality is several years.

+ Height: from 2-4m.

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Greenhouse and Net-house application in Vietnam

- Of course it also has disadvantages as many other models: by intensive farming should also arise some diseases, some insects in the soil, etc.
- However, there are ways to overcome and limit.



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Greenhouse and Net-house application in Vietnam

- Some leading companies in green house application: VinEco of Vingroup; Unifarm is a member of U & I Group.



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Greenhouse and Net-house application in Vietnam

Vingroup

- On a scale of 24.5 hectares, located in 3 districts of Vinh Phuc province, Vingroup's VinEco Tam Dao greenhouses use the famous greenhouse technology of Teshuva Agricultural Projects (TAP, Israel). With the total value of nearly VND 1,000 billion, using Israeli technology.
- Produce and supply all kinds of vegetables as well as leaf and fruit vegetables according to VietGAP and GlobalGAP standards with annual output of 3,500 tons, which is environmentally friendly.
- VinEco deployed in Cu Chi (HCMC), on an area of 30 hectares. And localities: Quang Ninh, Sa Pa (Lao Cai), Hai Duong, Thanh Hoa and Kon Tum.

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Greenhouse and Net-house application in Vietnam

Vingroup



3. Protected Agriculture Technology in Vietnam

Greenhouse and Net-house application in Vietnam

Unifarm

- U & I Agriculture Corporation (Unifarm), a member of U & I Group, and has experience in high technology agricultural production in the world's leading agricultural countries such as Israel, Japan, New Zealand, etc ...
- The standards such as GLOBAL GAP, VIET GAP, etc...
- Hi-tech Agriculture Park (UniFarm) An Thai, Phu Giao district, Binh Duong province, a member of U & I Group.



3. Protected Agriculture Technology in Vietnam

Greenhouse and Net-house application in Vietnam

Unifarm

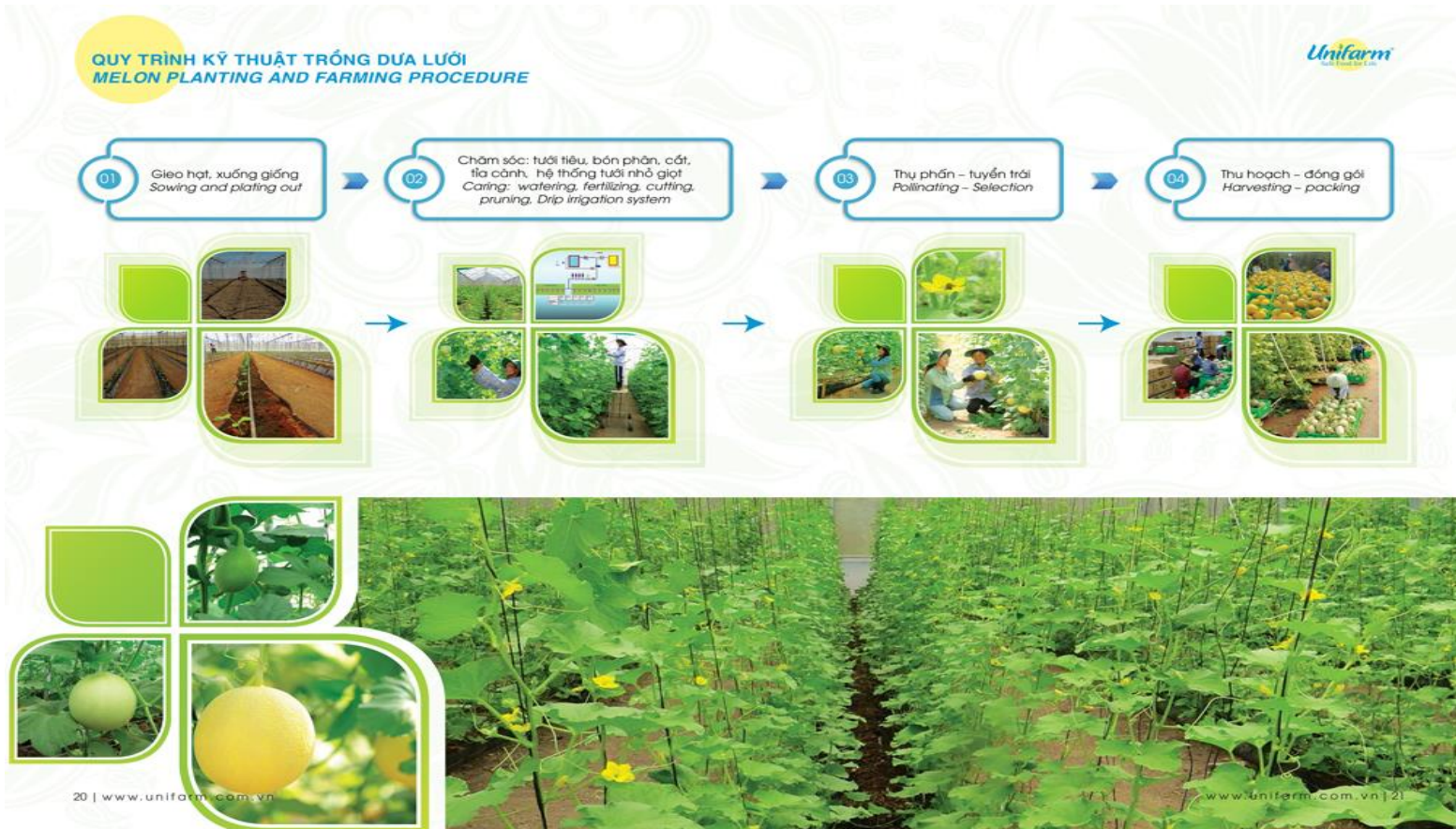
- **Melon planting and farming procedure: the planting time is 70-75 days, the average yield is 4 tons / 1.000 m², with the price of 25,000 VND / kg, the profit is over 40 million / crop / 1.000 m².**



3. Protected Agriculture Technology in Vietnam

Greenhouse and Net-house application in Vietnam

Unifarm





4. Vegetable and flower production in Lam Dong

Vegetable and flower production in Lam Dong province

- **Lam Dong is the leading country in terms of agricultural development towards high technology.**
- **Favorable climate and land conditions have created favorable conditions for vegetable and flower growing in the province to develop into large-scale, specialized production areas.**
- **The area of cultivating vegetables reached 57,268 hectares, with an average yield of 333.58 quintals per hectare, vegetable output reached 1,910.4 thousand tons.**
- **The area of hi-tech vegetables reached 12,655.2 hectares, accounting for nearly 22.1% of total cultivated area.**

4. Vegetable and flower production in Lam Dong

Vegetable and flower production in Lam Dong province:

- The area of flower growing is 8,400 hectares (in Da Lat city, about 5,960 hectares): the output reaches nearly 3 billion branches;
- The area of application of hi-tech agriculture is 2,424 ha, accounting for 31.9% of the total cultivated area. Each hectare of vegetables, flowers can bring profit from 500 million to 1.5 billion per year, especially the models have very high profits such as hydroponic vegetables, lilies, orchids ... VND2-5 billion / ha / year;
- Currently, the area of membrane houses and net houses of Lam Dong province is about 3,148 ha applied to vegetables and flowers.

4. Vegetable and flower production in Lam Dong

Vegetable and flower production in Lam Dong province

- **Applying many models of modern European-style membrane houses, Israeli technology has been installed by companies such as Da Lat Hasfarm, Hoa Binh Biotech Joint Stock Company:**
 - **The membrane house system is fully integrated with state-of-the-art technologies such as a screened house frame that meets the requirements of light, temperature, humidity, irrigation and controlled fertilization. via computer.**
 - **New materials such as insulating films have insect-repellent properties and greenhouse-cooling paints have been used by enterprises.**

4. Vegetable and flower production in Lam Dong

Vegetable and flower production in Lam Dong province

- **Application of water saving technology: drip irrigation, local sprinkler irrigation, underground watering. The advantage of this system is that it saves 30-60% of water compared to conventional methods, reduces labor, increases productivity and quality of crops, and can provide fertilizer through small irrigation systems. drop.**
- **Popular technologies in flower and vegetable production have been applied, including: biotechnology in multiplication (in vitro plant tissue culture, vegetable grafting technology); greenhouse technology; Drip irrigation technology with pressurized system and fertilizer supply; Lighting technology adds optical cycle control through the use of compact lights, LEDs automatically switch off in crop cultivation, ...**

4. Vegetable and flower production in Lam Dong



4. Vegetable and flower production in Lam Dong





Thanks for your attention