



FRUIT AND VEGETABLE RESEARCH INSTITUTE



Add: Trâu Quỳ - Gia Lâm - Hà Nội

Tel: 0084-4 38276254; Fax: 0084-4 3876148

E-mail: vrqhnvn@hn.vnn.vn <http://www.favri.org.vn>

Fruit and Vegetable Research Institute Research Divisions

1. Division of Vegetables and Spices
2. Division of Fruit Crops
3. Division of Biotechnology
4. Division of Post-harvest Technology
5. Division of Fruit and Vegetable Quality Analyse
6. Division of Economics and Marketing

Fruit and Vegetable Research Institute

- ✓ One of 18 members of **VAAS** (Vietnam Academy of Agricultural Sciences)
- ✓ Human resources:
278 staffs (156 permanent staffs), including:
- 22 PhD, 27 senior researcher, 90 M.Sc, 89 B.Sc.



Fruit and Vegetable Research Institute Support Departments:

1. Dept. of Science Management and International Cooperation
2. Dept. of Administration and Personnel
3. Dept. of Finance and Accounting

Satellite Centers:

1. Gia Lam Horticultural Experimental Research Center
2. Xuan Mai Citrus R & D Center
3. Flower and Ornamental R & D Center

Business Company

- ❖ Consultation, Investment and Development for Horticulture Production Limited Company (CIDHOP Co. Ltd.)

OUTSTANDING ACHIEVEMENTS ON HORTICULTURAL R&D

1. FRUIT CROPS

SOME OUTSTANDING ACHIEVEMENTS ON R & D

Achievements (for the last ten years)

New varieties: 58, including:

- Fruits: 17
- Vegetables: 24
- Flowers: 17

New techniques: 46, including:

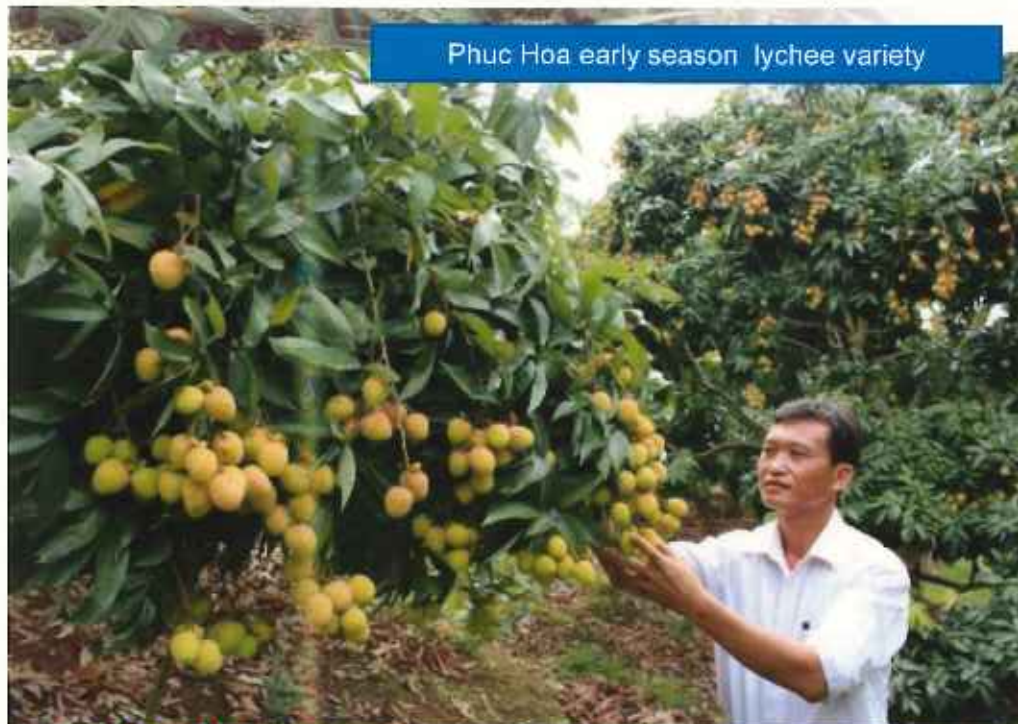
- Fruits: 14
- Vegetables: 13
- Flowers: 15
- Post harvest: 4

NEW VARIETIES:

- ❖ Early season lychee varieties: Binh Khe, Yen Hung, Yen Phu
- ✓ Harvesting time: from 5 to 20 May; 15-20 days earlier than other varieties)
- ✓ Acceptable quality
- ✓ Higher income



Phuc Hoa early season lychee variety



NEW VARIETIES:

❖ Early season orange variety: CS1

-Harvested in early October to Mid November

-Yield: 23.41-27.32 tons/ha, 210-230 g/fruit

-Quality: good quality, juicy, low fibre ratio, sweet and good taste.



NEW VARIETIES:

❖ Late-season longan varieties: HTM-1, HTM-2, PHM99.1.1, PHM99.2.1

- ✓ Harvested on: 25/8 – 20/9 (20-30 days later than mid-season cultivars).
- ✓ Reliable flowering and fruiting.
- ✓ Good quality, higher price than mid-season longan varieties.



NEW VARIETIES:

Pink Cavendish Banana

Growth duration: 10-11 months

Fruit weight: 150g/ fruit.

Yield: 45-50 tons/ha

Good quality even in Summer



NEW VARIETIES:

❖ Mango Variety GL4

- ✓ Fruit weight: 650-700g
- ✓ Edible proportion: 80-82%
- ✓ TSS: 16-20°Bx
- ✓ Yield: 12-15 kg/4-5 year old tree
- ✓ Tolerance to pests and diseases
- ✓ Consumable when it is at the green-mature stage.



❖ Cayen pineapple H180

- ✓ Fruit weight: 1,7 kg
- ✓ Yield: 60-65 tons/ha
- ✓ Quality: good, used for fresh consumption and processing



NEW VARIETIES:

❖ Pineapple variety: MD2

- ✓ Fruit weight: 1.5 kg
- ✓ Yield: 50-55 tons/ha
- ✓ Fruit quality: good, could be used for fresh consumption and processing



Red pulp dragon fruit variety TL4



Fruit weight: 450 – 500 g
Yield: 20-25 tons/ha
High quality

CULTIVATION TECHNIQUES

Lychee and longan propagation by grafting technique:



CULTIVATION TECHNIQUES

Lychee and longan topworking



CULTIVATION TECHNIQUES



Early season lychee variety topworking demonstration in Lạc Ngạn, Bắc Giang, in 2010

Late longan topworking demonstration in Song Ma, Sơn La



CULTIVATION TECHNIQUES

❖ Additional pollination for pummelo

- ✓ Use pollen for other sour pomelo varieties to additionally pollinate the Doan Hung, Dai Minh and Phuc Trach pomelo varieties.
- ✓ Yield of additionally pollinated pomelo is 6-8 times higher while its fruit quality is kept as good as the non-additionally pollinated one.

❖ Cultivation Techniques for banana intensive production

- ✓ Use tissue culture banana seedlings
- ✓ Apply intensive cultural practices to regulate harvesting time



21

2. VEGETABLES AND SPICIES

SOME OUTSTANDING ACHIEVEMENTS ON R & D

NEW VARIETIES:

❖ Hybrid tomato variety: FM29

- ✓ Crop cycle: 140-160 days
- ✓ Most suitable planting time: Sep-Nov.
- ✓ Yield: 50 tons/ha
- ✓ Virus resistant variety (especially resistant to *phytophthora*).



NEW VARIETIES:

❖ Tomato variety: HPT10

- ✓ Crop cycle: 110-120 days
- ✓ Most suitable planting season: Fall-Winter and Spring-Summer.
- ✓ Yield: 60-65 tons/ha/year
- ✓ Good resistance to diseases.



NEW VARIETIES:

❖ Hot pepper variety: HB9

- ✓ Crop cycle: 110-120 days
- ✓ Most suitable planting season: Fall-Winter and Spring-Summer.
- ✓ Yield: 20-25 tons/ha (30-35 tons/ha with intensive cropping)
- ✓ Anthracnose resistance
- ✓ Suitable for processing



NEW VARIETIES:

❖ Hot chilli: GL1-1

- ✓ Crop cycle: 110-120 days.
- ✓ Most suitable planting season: Fall-Winter and Spring-Summer.
- ✓ Average fruit weight: 14-16 g.
- ✓ Yield: 25-30 tons/ha
- ✓ Anthracnose resistance



NEW VARIETIES:

❖ Hybrid cucumber variety: CV29

- ✓ Crop cycle: 80-90 days
- ✓ Fruit size: (3.5-4) x (25-35) cm
- ✓ Yield: 40 tons/ha (two harvests)
- ✓ Downy mildew and powdery mildew resistant
- ✓ Suitable for both fresh consumption and processing.



NEW VARIETIES:

❖ Hybrid cucumber variety GL1-2

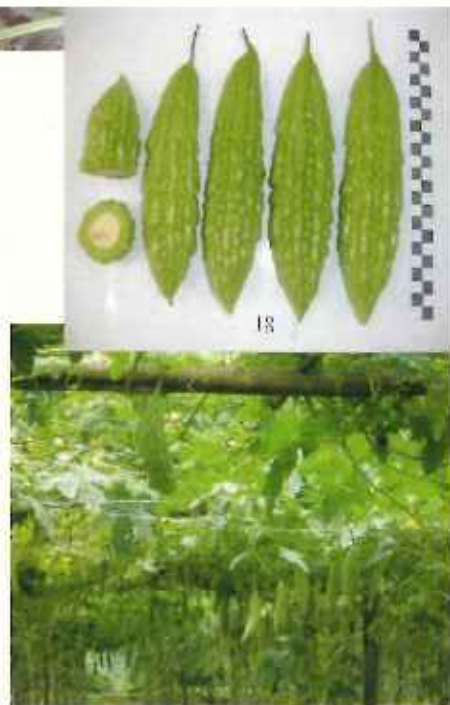
- Crop cycle: 80-85 days.
- Yield: 50-60 tons/ha.
- Fruit size: 18-20 cm length x 4.0-4.2 cm diameter.
- Most suitable climate area and planting season: Winter and Spring-Summer.



NEW VARIETIES:

❖ Hibrid bitter melon MD1

- Yield: 50-55 tons/ha (spring-summer season), 30-40 tons/ha (fall-winter season).
- Fruit size (18-20 cm in length x 3.5-4.0 in diameter), light green color skin.
- Good quality, mild bitter.
- Suitable to spring-summer and fall-winter seasons in the North of Vietnam.
- Downy mildew and powdery mildew resistant.



CULTIVATION TECHNIQUES:

❖ Grafting tomato on eggplant rootstock technique

- ✓ Flooding tolerance
- ✓ Resistance to Bacterial wilt, nematode.
- ✓ Yield: 15-20 tons/ha higher than that of non-grafted

(Demonstration in Nam Sach, Hai Duong, gave yield of >100 tons/ha, with crop cycle of 6 months)



NEW VARIETIES:

Vegetable Soybean Variety: AGS 346

- High yield (9-10 tons of fresh fruits /ha)
- Resistance to diseases and pests and large adaptation
- Suitable quality for export and domestic markets



Transfer grafting techniques for tomato plants in Vinh Tuong, Vinh Phuc (20ha in techn2013)



Grafted tomato demonstration in Off season conditions in the Red River Delta



Cultivation Techniques

Vegetables:

- ❖ Safe vegetable production technique in protected areas



Cultivation Techniques

Vegetables:

- ❖ Hydroponics Vegetables (or NFT) Technique



Cultivation Techniques

Vegetables:

- ❖ Safe vegetable production technique in open areas



Cultivation Techniques

Vegetables:

- ❖ Good Agriculture Practices (GAP) for Vegetables



TECHNICAL ADVANCES

- ❖ Vegetable sprout production technique



FLOWERS AND ORNAMENTALS

SOME OUTSTANDING ACHIEVEMENTS ON R & D

NEW VARIETIES

- ❖ Lily Sorbonne:
 - ✓ Crop cycle: 90-95 days (in the sub-tropical region) and 108-117 days (in the temperate region)
 - ✓ Planting density: 25 bulbs/m².
 - ✓ Wide adaptation, good disease resistance.
 - ✓ Acceptable Quality by consumers



NEW VARIETIES

❖ Tu Quy white lily :

- ✓ Crop Cycle: 95-102 days
- ✓ Could be grown year round
- ✓ Planting density: 25 bulbs/m².
- ✓ Durable, good quality of flowers adopted by markets



NEW VARIETIES

❖ Scarlet gladiolus 09

- ✓ Crop cycle: 83-87 days
- ✓ Planting density: 7,000 bulbs/360m²
- ✓ Largely produced in Hai Phong and Quang Ninh provinces



NEW VARIETIES

❖ Orchids: Phalaenopsis: LVN2, LVN4

- ✓ Crop cycle: 16 – 18 months
- ✓ Flower diameter: 12-14cm, 8-10 flowers/branch
- ✓ Adaptable for the Red River Delta condition
- ✓ Durable, good quality accepted by consumers



NEW VARIETIES

❖ Anthura: HMC1, HMC4

- ✓ Crop cycle: 145-152 days
- ✓ Branch-differentiation ability: high (56-65 days)



NEW VARIETIES

- ❖ Mai Vang Yen Tu (Yellow Ochna)
- ✓ Origin: Yen Tu mountain, Quang Ninh Province
- ✓ Flower diameter: 4.3 – 4.9 cm
- ✓ Green calyx, yellow petals
- ✓ Sweet scented flower
- ✓ Adaptable to condition in the North and blooms in Lunar New Year



NEW VARIETIES

- ❖ Short Gerbera: TDL03, TDL05
- ✓ Crop Cycle: 90 days
- ✓ Shooting and flowering ability: high (8-9 flowers/base)
- ✓ Crop Height: 35-45 cm
- ✓ Double flower, flower diameter: 5-7 cm



TECHNICAL ADVANCE

- ❖ Lilium

Propagating Belladonna, Manissia by scale



Techniques in cultivating lilium in Northern provinces



Techniques in propagating potted lilium



Propagating lilium by in-vitro method



TECHNICAL ADVANCE

- ❖ Gladiolus
- ✓ Propagating gladiolus by in-vitro method
- ✓ Producing Loa Ken Tu Quy (Gladiolus) seedlings from seed



TECHNICAL ADVANCE

- ❖ Butterfly orchid (Lan Ho Diep)
- ✓ Tissue-culture propagation
- ✓ Producing Lan Ho Diep at industrial scale in the North



TECHNICAL ADVANCE

- ❖ Anthura
- ✓ Techniques in cultivation potted anthura



TECHNICAL ADVANCE

- ❖ Gerbera



Technique in transplanting post
In-vitro gerbera

Techniques in cultivating potted gerbera

TECHNICAL ADVANCE

- ❖ Phương Lê
- ✓ Flowering treatment by ethrel on Phương Lê flower



TECHNICAL ADVANCES

- ❖ Demonstration pilot of orchid production in large scale
- ❖ Lighting during night for breaking flower initiation of *Chrysanthemum* in Winter



Fruit Crops

- + Early lychee varieties: account for 15-20% of total area under lychee production in Vietnam (12,000- 16,000 ha) in Bac Giang, Hai Duong, Quang Ninh provinces, contributing to pressure of main lychee distribution, spreading lychee harvesting time from 1 month to two months, increasing produce value by 30%.
- + Late longan varieties: account for 20-25% of longan area in Northern Vietnam (8,000-9,000 ha) in Hanoi, Hung Yen, Son La, spreading longan harvesting time (from 1 month of concentrated harvest to 2.5 months of spreading harvest); increasing produce value by 20% compared with main longan.



Some technical advances successfully transferred to production and adopted by farmers



Fruit Crops

- + Pink cavendish variety (Tissue culture seedlings): Provides 600,000- 800,000 seedlings/year to production for plantation of 300-400 ha/year. Provides seedlings and technical training, establishing concentrated commodity production zones of 400-500 ha/zone in Hanoi, Hung Yen, Phu Tho, Vinh Phuc, yielding at 45-50 tons/ha compared with common production at 20 tons/ha.
- + Top Working: Conducted top working for 1,500 ha of early lychee, 1000 ha of late longan and 100 ha of mango. This is a new technique to replace low yield, and quality varieties with higher yield and quality ones, quickly fruiting (at 2 years after top working other than 4 years for new plantation)



Vegetable crops

- Established a model of producing 1.5-2 million grafted tomato planting materials (seedlings) in Moc Chau and Hanoi to supply for Northern provinces in >80 ha
- Established off season grafted tomato demonstrations in Vĩnh Phúc, Sơn La, Bắc Ninh, Hải Dương... With total area of 60 ha, resistant to BW, tolerant to flooding in off season conditions, yielding at 80-100 tons/ha compared to 50-60 tons/ha of non grafted tomato demonstrations, double effectiveness.
- Safe vegetable production in Thủy Nguyên, An Dương, Kiến Thụy, Tiên Lãng - Hải Phòng with scale of 25 ha.

POSTHARVEST HANDLINGS

SOME OUTSTANDING ACHIEVEMENTS ON R & D

Flower and ornamental crops

Varieties and protocols of lily cultivation:

- Identify some lily varieties such as Sorbonne, Belladonna, manissa, Yelloween... adaptable to Vietnam ecological conditions
- Cultivation technique protocols for lily production in winter season have been applied to production to increase growth, quality of flowers, total marketable yield by from 70% to 90%, with regulating desirable flowering. This protocol has been successfully applied to production in Northern provinces since 2001, with area under lily cultivation of 70ha accounting for 80% of total area under lily cultivation, economic efficiency of 3-4 billion VND/ha, thereby limiting import of lily flower varieties from other countries and from Da Lat, high quality and lower prices.

TECHNICAL ADVANCES

❖ Lychee treatment and storage technique

- ✓ Shelf life: up to 4 weeks after harvest
- ✓ Loss after 4 weeks : <10%.
- ✓ Ensured commercial quality
- ✓ Significant in lychee storage during shipping to other countries for export



Postharvest and Processing

- ❖ Banana storage technique
- ✓ Storage time: up to 6 weeks.
- ✓ Losses after 6 weeks: <10%
- ✓ Acceptable quality



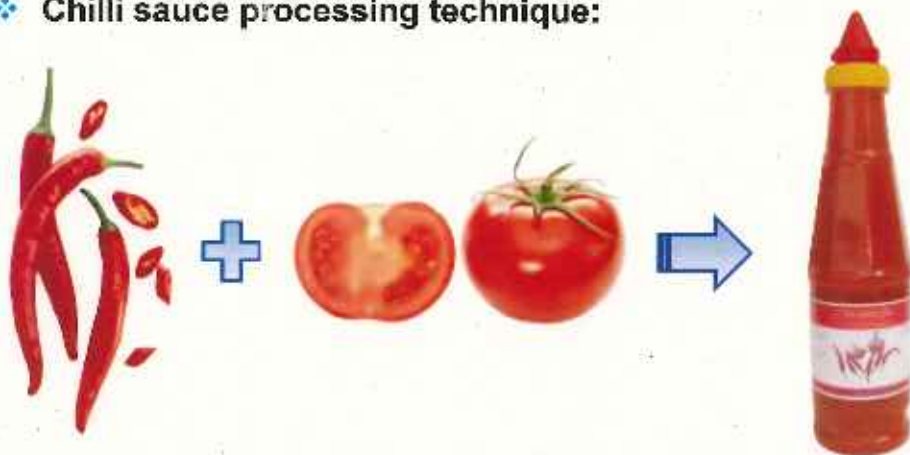
TECHNICAL ADVANCES

- ❖ Apricot juice production technique:



TECHNICAL ADVANCES

- ❖ Chilli sauce processing technique:



TECHNICAL ADVANCES

- ❖ Momordica cochinchinensis production technique



Postharvest and Processing

- ❖ Presentation of typical processed products

