

BIOTECHNOLOGY

Preliminary results of determining some virus diseases in passionfruit in Tien Giang, Nghe An and Dak Nong provinces

Bui Thi Ngoc Lan, Ho My Tu, Tran Thi Thu Yen, Pham Van Vui and Nguyen Van Hoa

SUMMARY

Passionfruit cultivar Tainung No.1 is the most commercial cultivar in Vietnam. Virus diseases are major limiting factors for growing this plant. The main objective of the present study was to identify some major virus diseases infected in passionfruit in Tien Giang, Dak Nong and Nghe An provinces. Passionfruits and some grass samples were collected in the passionfruit farm from these provinces with typical symptoms such as mottling, mosaic, small leaves, curling leaf and misshapen fruits. PCR, RT-PCR and Nested PCR using universal primers for Begomovirus, Potyvirus, Cucumovirus and phytoplasma respectively were performed. The results confirmed the presence of EAPV, PaLCuGDV and EuLCV. Some grasses were also positive with Begomovirus and Potyvirus universal primers.

Keywords: Passionfruit virus disease, EAPV, EuLCV, PaLCuGDV, host range.

FRUIT SELECTION AND BREEDING

Identification of tetraploidy pummelo trees by counting of chromosome number and evaluation of their morphological characteristics

Nguyen Thi Nga, Dao Thi Be Bay and Tran Thi Oanh Yen

SUMMARY

Seedlessness is important one of characteristics in citrus to produce seedless citrus varieties from seedy commercial varieties, crossing 4x x 2x to make triploidy trees has been used popularly. In this research, we treated Colchicine on seeds of Da xanh and Red pummelo to obtain citrus tetraploidy plants. Results there are 279 Da xanh pummelo trees and 355 Red pummelo treated with Colchicine have been grown in the field. Survey and count on numbers of chromosome on young leaf cells of 194 Da xanh pummelo (of 279 treated Da xanh trees) and 224 Red pummelo (of 355 treated Da xanh trees), we obtained 40 and 33 tetraploidy pummelo trees, respectively. Observation on morphological characteristics showed that tetraploidy trees gave vigour trees, thicker and larger in leaves.

VCU trial on potential hybrid individuals on dragon fruit in Tien Giang province

Huynh Van Chanh, Tran Thi Thao Nhu, Nguyen Ngoc Thi and Tran Thi Oanh Yen

SUMMARY

The VCU trial of 20 potential hybrid individuals has been conducted in Tiền Giang

province from May 2012. Up to December, 2014, agronomic characteristics, yield and fruit quality of dragon fruit hybrids were evaluated through 2 seasons (2013 and 2014). Preliminary results showed that all 20 hybrids having vigour growth, flowering, setting fruit naturally and good fruit quality. Among them, four hybrids coded as L7, L9, L11, L23 gave good characteristics on fruit quality and yield in comparison with those of other hybrids.

Results on evaluation of pineapple hybrid individuals

Nguyen Thi Ngoc Diem, Tran Thi Oanh Yen and Nguyen Phuong Thuy

SUMMARY

The objectives of breeding programme on pineapple are cylindrical fruit shape, high fruit quality (brix $\geq 17\%$, TSS ≥ 15 mg/100 ml), deep yellow flesh, shallow eyes.... To obtain above objectives, from January 2014 to December 2014, we evaluated 554 hybrids of 630 hybrids from crossing between three pineapple hybridizations: Mauritius (Queen) x Cayenne Long Định 2, Josepine x Mauritius and Josepine x Mauritius. The preliminary results indicated that the hybrid individual with coding III-33 has good characteristics such as a spiny leaf, cylindrical fruit shape and high fruit weight (1650 g), yellow flesh, high T.S.S (brix 17,5%) and delicious taste. Thus, it could be a potential variety and proposed for Value of cultivation and use (VCU) trial in the South of Vietnam.

Results on trials of 7 pineapple varieties having potential from collected pineapple varieties

Nguyen Thi Ngoc Diem, Nguyen Phuong Thuy and Tran Thi Oanh Yen

SUMMARY

Five introduced Queen varieties from France and two local varieties (Kien Giang and Ben Luc) have been grown for trial at Tien Giang and Long An from 2009 to 2010. The preliminary results indicated that GU044 (France) has produced high yield (>60 tons.ha⁻¹), cylindrical fruit-shape and high fruit weight ($>1,345$ g), yellow flesh and high T.S.S (brix 16,8-17,01%). Thus, it could be a potential variety and proposed for trial on a large scale at pineapple planting areas of the South of Vietnam.

Tests for Distinctness, Uniformity and Stability and tests for Value of cultivation and use of hybrids Mango and mutations mango

Le Thi Huyen and Pham Thi Muoi

SUMMARY

With the aim of selecting the varieties of mango have high quality to meet the goal of good breeding. The mutations and hybrids mango were grown at the experimental garden in the Southeast Fruit Research Center in October, 2012.

Test for VCU mutations mango: At 24 months after planting in field, the 3.0-69 line and Hoa Loc variety showed better growth as compared to the others. Test for DUS mutations mango: In 2014, 19/79 botany characteristics of leaf, strunk and tree of the 6 mutant lines to Hoa Loc variety on traits of: Crown shape, leaf blade shape, leaf attitude in relation to branch, leaf base shape, colour of young leaf. Test for VCU hybrids mango: At 24 months after planting in field, the XL-034 line showed the best growth. Test for DUS hybrids mango: In 2014, 19/79 botany characteristics of leaf, strunk and tree of the 2 mutant lines to Hoa Loc variety on traits of: Crown shape (XL-049, Đ/C), tree growth habit (Đ/C), leaf blade shape (Đ/C), leaf attitude in relation to branch (Đ/C), leaf texture (Đ/C).

Evaluation on Hoa Loc individuals treated with gamma rays

Ho Thi Ngoc Hai, Dao Thi Be Bay and Tran Thi Oanh Yen

SUMMARY

Cat Hoa Loc mango is one of the best mango cultivars in fruit quality in Vietnam. However, it has thin fruit skin and low yield. To improve these characteristics, inducing mutation by treating gamma rays on budwoods of cat Hoa Loc mango was conducted. Budwoods were collected from a mature 'Cat Hoa Loc' mango individuals in the orchards of Tien Giang province and exposed to gamma rays with dosages as 3.0, 3.5, 4.0, 4.5, 5.0, 6.0 and 7.0 Krad (Kr) at Nuclear Research Institute (Da Lat - Lam Dong province) in 2011. Up to now (December, 2014), 39 treated mango individuals were evaluated on fruit skin thickness and fruit quality traits. Results showed that some traits such as fruit skin and flesh colour, and skin thickness did not have any differences in comparison with those of untreated cat Hoa Loc mango individuals (used as control individuals) in survey. Only one treated mango individual with coding as 4.0-6 had the thickest fruit skin (1.5 mm) in comparison with that of the control fruits (average 1.1 mm).

Tests for expand of two mutation mangoes and two hybrid mango

Le Thi Huyen and Pham Thi Muoi

SUMMARY

The trial of objective was to develop new mango variety having high yield, good quality, pest and disease tolerance. The hybrid mangoes (XL-034, XL-049) and the mutation mangoes (4.5-15, 4.5-23) were grown at the experimental garden in the Southeast Fruit Research Center in 11/2013 and 6/2014. In 2014, the hybrids mango and the mutation mango grew normally.

Traditional crossing on mango and evaluation of mango hybrid individuals

Ho Thi Ngoc Hai, Dao Thi Be Bay and Tran Thi Oanh Yen

SUMMARY

Cat Hoa Loc mango is one of the best mango cultivars in fruit quality in Vietnam. However, it has thin fruit skin and low yield. To improve these characteristics, traditional hybridization method was used. The mango varieties such as Vandyke, Tommy atkin, Cat Chu, Dasherhari, Yellow gold, Langra, Mallika, Amparali were used as mothers and crossed with Cat Hoa Loc variety as father individual. A total of 682 hybrid individuals were grown for fast evaluation at Farm A of SOFRI from 2002. Up to December 2014, only 65 hybrid individuals were evaluated on skin thickness and fruit quality traits. Results showed only one hybrid with coding XL-049 having thick fruit skin (1,6 mm) in comparison with Cat Hoa Loc mango (1,1 mm) with fruit weight 384,0g, brix (22,8%) and pulp ratio (76,7%), good quality during 4 years of survey.

FRUIT PRODUCTION

Study on the effect of doses of plant regulators on yield and quality of dragon fruit LD5 variety

Doan Thi Cam Hong and Nguyen Trinh Nhat Hang

SUMMARY

The present study “Effect of doses of plant regulators (NAA và GA₃) on yield and quality of dragon fruit LD5 variety” was conducted at Farm A, Southern Horticultural Research Institute in 2014. The result showed that applied of NAA 30 ppm + GA₃ 40 ppm and NAA 40 ppm + GA₃ 40 ppm at different stages (10 days after flower bud initiation; 5 days after bloom; 10 days after bloom; 15 days after bloom; 20 days after bloom) were increased the flesh firmness (1,17-1,53 kg/cm²), fruit weight (365,300- 431,00 g/fruit), fruit pulp (74,64-78,87%) and yield (22,39-31,69 kg/tree). NAA 40 ppm + GA₃ 40 ppm and Thien nong + GA₃ 40 ppm was improved the colour of sink.

Research effects of Calcium and Kali on the quality of pinkish flesh dragon fruit variety LD5

Le anh Nhu Quynh and Nguyen Trinh Nhat Hang

SUMMARY

The effects of Calcium and Potassium on pinkish flesh dragon fruit variety LD5 were studied. The result showed that the combination of Potassium fertilizer and spraying Calcium did not affect the weight of fruit skin. However, the combination of potassium fertilizer and spraying calcium could increase the thickness of fruit skin, fruit firmness, prolonged shelf life of 6 days and showed an increase in Brix as compared to the control.

Research effects of Calcium Boron on the quality dragon fruit

Nguyen Ngoc Long, Le Anh Nhu Quynh and Nguyen Trinh Nhat Hang

SUMMARY

The effects of Calcium Boron on dragon fruit were studied at Quon Long village, Cho Gao district. The result showed that Calcium Boron (20-40 ml/16 l water) increased fruit firmness (1,80-2,18 kg/cm²), improved blue scale thickness of scale when compared to control.

Selecting the scion-rootstock combinations of citrus grafted trees for drought tolerance at Mekong Delta

Le Thi Khoe and Nguyen Minh Chau

SUMMARY

*From 28 genotypes of citrus, the results of selecting the scion-rootstock combinations of citrus for drought tolerance at Mekong Delta reviewed that screening the citrus genotypes for drought tolerance under natural field conditions and greenhouse resulted in kaffir lemon (*Citrus hystrix*), Chua pumelo (Dong Nai), Thanh tra pumelo, Do pumelo and Carrizo citrange were good drought tolerance. Subsequently, the evaluation of scion-rootstock combinations showed that the grafted trees, of Da xanh pumelo and Nam roi pumelo, the currently commercial varieties, on Chua pumelo (Dong Nai), Thanh tra pumelo and Do pumelo were better drought tolerance, tree growth and development. Meanwhile, grafted trees of Sanh orange (*C. nobilis*) on kaffir lemon (*C. hystrix*) were precocity, good fruit quality, as compared to original cultivar characteristics.*

Keywords: Citrus, drought, grafted trees.

Early selecting the scion rootstock combinations of citrus grafted trees for acid sulfate soil tolerance at Mekong Delta

Le Thi Khoe and Nguyen Minh Chau

SUMMARY

*From 18 local genotypes of citrus, the results of selecting the citrus genotypes for acid sulfate soil tolerance at Mekong Delta reviewed that screening the citrus genotypes for acid sulfate soil tolerance, under open field conditions combined with hydroponic cultivation resulted in Sweet seedless orange (*C. Senensis*), Tau lemon (*C. lemon*), Long co co pumelo and Carrizo citrange were good acid sulfate soil adaption with soil pH value below 4. Subsequently, the evaluation of scion-rootstock combinations viewed that the grafted trees of Seedless sweet orange on Sweet orange were better acid sulfate soil tolerance, compatibility, good fruit yield and quality, as compared to original cultivar*

characteristics.

Keywords: Acid sulfate soil, citrus, grafted trees.

Effect of watering control and flower-inducing chemicals application on flowering rate of early-producing mangosteen in the Southeast of Viet Nam

Nguyen An Đe

SUMMARY

The study aimed to find out the levels of interval watering and flower-inducing chemicals application (Paclobutrazol, Potassium chlorate) on the flowering rate of early-producing mangosteen in dry season of the Southeast.

Two factors experiment (split plot) was carried out with the main-plots including 4 watering intervals levels of 20 days, 40 days, 60 days, and 3 days (as control); the sub-plots including 3 doses of two chemicals drenched including paclobutrazol (PBZ) 1.0 g a.i.; 1.5 g a.i.; and 2.0 g a.i.; KClO₃ 20 g a.i.; KClO₃ 30 g a.i.; and KClO₃ 40 g a.i. per 1 m canopy diameter and an untreated treatment as control. The results showed that PBZ at 1.5 g a.i. combined with watering interval 40 days (at November 25) increased significantly the rate of flowering and yield, and reduced significantly the translucence fruit and root damage rate. KClO₃ was less responsive than PBZ, moreover KClO₃ at 30 or 40 g a.i. per 1 m canopy diameter increased the root damage rate.

Keywords: Mangosteen, Paclobutrazol, Potassium chlorate, induced flowering.

Effect of gibberrellic acid and potassium foliage sprays on productivity and fruit quality of seedless guava

Nguyen Ngoc Long and Nguyen Trinh Nhat Hang

SUMMARY

Plant hormone plays a key role in guava production by influencing directly or indirectly various plant processes like productivity of guava. These also can influence size, appearance and quality parameters of fruits by indirectly affecting the crop growth and development or directly by synchronizing flowering, improving fruit-set, decreasing pre-harvest fruit drop and thinning of excessive flowers or young fruits. Experiments were carried out to study the effect of foliar spraying with different concentration of gibberrellic acid (50 and 100 ppm), potassium (0,5 and 1,0%) on productivity and fruit quality of seedless guava. Results showed that all treatments increased fruit set, number of fruit, fruit size, yield and fruit quality (TSS, vitamin C) were achieved as compared to control.

FRUIT PROTECTION

Influence on systemic acquired resistance substances against yellow-brown spot on dragon fruit crop (Hylocereus undatus Haw.)

Nguyen Thanh Hieu, Dang Thuy Linh, Nguyen Thanh Hai and Nguyen Van Hoa

SUMMARY

Dragon fruit (Hylocereus undatus Haw.) is a tropical fruit crop, with high economic efficiency, acreage of dragon fruit of constantly expanding. Symptoms of yellow-brown spot in cladodes appeared widely in the Southern provinces, reducing the ability of flowering, fruit set and yield dragon. The study was carried out in the farmer's field in Quon Long commune, Cho Gao district, Tien Giang province in 2014. The experiment was laid out in a completely randomized block design with six treatments (Salycilic acid, Oxalic acid, Nicotinic acid, KH_2PO_4 , Silica và đối chứng). Each treatment was replicated four times and each replication was a plant.

Experimental results showed that there was not affecting the growth of the young dragon fruit cladodes by systemic acquired resistance substances. Oxalic acid is a promising systemic acquired resistance substance as delaying time for the appearance of symptoms of yellow-brown spot on cladodes, reducing disease incidence at 42 NSXL as well as there were higher survival incidence of chlorenchyma, high levels of chlorophyll contains and electrolyte leakage average cell membrane. There was inability to prevent or slow the development of lesions caused by Fusarium equiseti and Bipolaris crustacea by systemic acquired resistance substances.

Keywords: Hylocereus undatus, Fusarium equiseti, Bipolaris crustacea, systemic acquired resistance, chlorenchyma, chlorSophyll, electrolyte leakage.

NGHIÊN CỨU XÁC ĐỊNH TÁC NHÂN VÀ ĐẶC ĐIỂM SINH HỌC CỦA NẤM GÂY BỆNH RỈ SÉT (Bipolaris) TRÊN THANH LONG (Hylocereus undatus L.)

Le Thi Tuong, Nguyen Huy Cuong, Nguyen Thanh Hieu and Nguyen Van Hoa

SUMMARY

Dragon fruit (Hylocereus undatus L.) is one of special fruit which occupied more than 34,000 ha in Vietnam and promoting income for producers at Binh Thuan, Tien Giang and Long An. It has been exporting to many countries of whole the world. However, it is also facing many problems: brown spot, anthracnose, bacteria, yellow cladode... Unfortunately, black spot disease attacked severely at flowering stage and caused serious problem in reducing yield. These investigation results showed that Bipolaris sp. causal organism.

The growth rates were fastest on DRA, medium to fast on PDA. Several enviromental factors including temperature, pH were investigated on pathogens. Mycelium growth of

Bipolaris strains were constantly inhibited by ranges of under 20⁰C and above 40⁰C, while the range of 25-30⁰C was quite suitable for their growth. Similarly, under different pH condition, the growth of test fungi were mostly developed at pH level from pH 6 to 8.

Keywords: Black spot, *Bipolaris* sp., dragon fruit, *Hylocereus undatus*.

Influence of MKP, CaCl, AC Cabo Ron, Trí Việt 6 productions against yellow - brown spot disease on dragon fruit crop (Hylocereus undatus)

Nguyen Thanh Hieu, Nguyen Ngoc Anh Thu, Ho Truong Thinh and Nguyen Van Hoa

SUMMARY

Dragon fruit (*Hylocereus undatus* Haw.) is a tropical fruit crop, yellow cladode-brown spot disease with high economic efficiency, acreage of dragon fruit oconstantly expanding. Cladodes appeared widely in the southern province, reducing the ability of flowering, fruit set and yield dragon. The study was carried out in the farmer's field in the An Luc Long commune, Chau Thanh district, Long An province in 2014. The experiment was laid out in a completely randomized block design with 7 treatments. Each treatment was replicated four times and each replication was a plant.

Experimental results showed that mid-macro nutrient and Trí Việt 6 were not affected the growth of the dragon fruit cladodes but reducing the amount of damaged cells, reducing change from green to yellow and reducing diameter of spots caused by the fungus *Bipolaris crustacea* after 56 days application compared to control. The Acid humic and Canxi bo were able to increase levels of chlorophyll contains, reducing the length of yellow lessin on old cloades, reducing length suntanned lession on the old and electrolyte leakage when using single and combine with Canxibo + humic acid, Canxibo + MPK. There was inability to prevent or reduce disease incidence of yellow brown spot in dragon fruit.

Keywords: *Hylocereus undatus*, *Fusarium equiseti*, *Bipolaris crustacean*, chlorenchyma, chlorophyll, electrolyte leakage.

Study morphological and biological characters of snail Achatina fulica damaged dragon fruit and management solution in lab. condition

Luong Thi Duyen, Tran Thi My Hanh and Nguyen Thanh Hieu

SUMMARY

Survey results of morphological and biological characters of snail *Achatina fulica* damaged dragon fruit in lab. condition showed that snails oviposited 128-168 eggs, incubation period from 3 to 5 days with percentage ratio from 88.9-90%. After the larvae hatched 3 days, they begin to move in search of food. Both larvae and adult have got two pairs of antennae, the first pair of antennae is longer than the second pair of antennae

and eyes at the top beard. Both two pairs of antennae are very flexible operation, help them move in the right direction and appropriate food choices. They are usually active at night, eating out young parts of the dragon tree with hard and sharp teeth. The larvae change their color and the coils according months from 1 to 120 days of age: from milky white to yellowish brown and when their age is greater the body begins to appear as stripes violet color same as adult color. The coils of the larvae also change from 2-4 coils and adult snails have 5-6 rounds.

The results showed that control of snail *Achatina fulica* in dragon fruit use Padan 95 SP, Toxbait 120 B, Agrimorstop 66, 124 EC, Bay oc 750 WP and extract *Strychnos nuxvomica* were high effected in the management of dragon fruit snail in lab. condition.

Keywords: Dragon fruit, *Achatina fulica*, morphological and biological characters.

The effect of chemicals and plant extracts against pineapple pink disease

Dang Thi Kim Uyen, Nguyen Thanh Hieu and Nguyen Van Hoa

SUMMARY

Recent years, on pineapple can got serious problem due to pink disease, it attached the fruit under field conditions without any visible symptom but when it was under processing, it appeared to have pink patches on fruit flesh. In the year 2013, its causal agent was identified as *Pantoea citrea*. In this studies, many chemicals and plant extracts have been tested under Lab and field conditions. Under Lab conditions, the Metalaxyl M + Mancozeb and Kasugamycin + Coper oxychloride treatments could inhibited well the development of the bacteria; in addition, SOFRI- *Streptomyces* and plant extracts from neem and stramonium (Thorn apple) could also inhibited well the development of the the bacteria. Under field conditions, many chemicals and plant extracts have been tested and shown good results in controlling of the diease, amongst them, the combination of Kasugamycin + Coper oxychloride shown best control of the pink disease under field conditions.

Keywords: Pink diease, Pineapple, chemicals, plant extract, *Pantoea citrea*.

Investigations on insecticidal activities of some plant extracts, soft chemical, chemical insecticides and entomopathogenic fungus against pineapple scale *Diaspis* sp.

(Hemiptera: Diaspididae)

Huynh Thanh Loc, Nguyen Hoang Ngoc Thao and Nguyen Thanh Hieu

SUMMARY

Pineapples are infected by variety of insect pests: mealy bugs, scale, thrips, fruits borer, bub moths, midgets, fruit flies, white grubs, beetles, weevils, termites and mites. The pineapple scale, belong to order: Hemiptera, family: *Diaspididae*, *Diaspis* sp., is likely to

be found on upper leaf surfaces of pineapple leaves and fruits worldwide.

The toxicity of some plant methanol extracts, bio-chemical, soft chemical and chemical insecticides were investigated for insecticidal properties against nymphs scale. They were *Melia azedarach* L., *Azadirachta indica* A. Juss, *Artocarpus altilis* F., *Nicotiana tobacum* L., Abamectin, Clothianidin, Imidacloprid and Chlorpyrifos ethyl. In bioassay with the first nymphs scale, Chlorpyrifos ethyl, Clothianidin, chinaberry and neem methanol leaf extract (5% concentration) were the most toxic (73.53, 71.68, 70.04 and 65.79% mortality at three days after treated, respectively). In bioassay with the second and third female nymphs scale, Chlorpyrifos ethyl was the most toxic (99.36% mortality at 21 days after treated. Clothianidin, tobacco leaf and Imidacloprid were medium toxic (63.97, 58.01 and 55.70% mortality, respectively). Two another ones were low toxic (less than 35% mortality).

Keywords: Pineapple, scale, *Diaspis* sp., toxicity.

NGHIÊN CỨU BIỆN PHÁP QUẢN LÝ RỆP SÁP *Dysmicoccus brevipes* (Hemiptera: Pseudococcidae) BẰNG CÁC LOÀI NẤM KÝ SINH VÀ THUỐC HÓA HỌC, SINH HỌC TRÊN CÂY DỨA

Tran Thi My Hanh, Nguyen Duong Tuyen, Nguyen Phuong Thy and Nguyen Thanh Hieu

SUMMARY

Study of management of mealybug *Dysmicoccus brevipes* were conducted at SOFRI from June to December 2014. The results showed that Lorsban 40EC, Mopride rubi 500WP, Penalty Gold 50EC, Ascend 20SP, Dantotsu 50WDG, Confidor 100SL and Reasgant 5EC effected against the mealybug. At laboratory and greenhouse condition *Paecilomyces TH* fungi were fairly good effect to the management of mealybug respectively 71.43% and 69.84% at 14 days after processing.

Keywords: Pineapple, mealybug *Dysmicoccus brevipes*, *Beauveria bassiana*, *Metarhizium anisopliae*, *Paecilomyces*, pesticide.

Effects on fungicides and extract of Datura metel for control of black fruit rot disease on pineapple (Ananas comosus)

Dang Thuy Linh, Nguyen Thanh Hieu and Nguyen Van Hoa

SUMMARY

Pineapple (*Ananas comosus*) is an important economic crop in tropical areas. Black fruit rot on pineapple (*Thielaviopsis* sp.), common pre and post harvest disease, is the big problems for farmers because of productivity losses. The study was carried out in the farmer's field in the Phuoc Lap commune, Tan Phuoc district, Tien Giang province in 2014. The experiment was laid out in a completely randomized block design with seven

treatments: five fungicides, extract of *Datura metel* and control. Each treatment was replicated four times and each replication was a plot with 5m². Data on the following parameters were collected: disease incidence, disease severity and calculated their efficacy.

The result of this work showed that there was reduced black fruit rot disease on pineapple. Averaged disease incidence after seven spraying times of different treatments were from 1.76% to 4.76% and disease severity were from 0.2% to 1.05 compared with control (16.68% and 4.64%). Averaged efficacy was the highest in Thiophanate methyl (Topsin M) is 94.08%, followed is the extract of *Datura metel* (88.93%), Hexaconazole (Anvil) 88.9%, Difenoconazole + Propiconazole (Tilt super) 79.61%, Difenoconazole (Score) 77.47% and finally Metalaxyl + Mancozeb (Ridomyl) 62.26%.

Keywords: *Ananas comosus*, *Thielaviopsis* sp., *Datura metel*.

The survey of current cultivation and sudden dead and slightly cracking of peel on Hong mandarin crop at Lai Vung, Dong Thap province

Luong Thi Duyen, Nguyen Thi Kim Thoa, Tran Thi My Hanh, Huynh Thanh Loc, Nguyen Ngoc Anh Thu, Dang Thi Kim Uyen, Dang Thuy Linh, Nguyen Huy Cuong, Vo Minh Man and Nguyen Thanh Hieu

SUMMARY

The investigation of current cultivation and sudden dead and slightly cracking of peel on Hong mandarin crop were carried out at Long Hau, Tan Thanh and Tan Phuoc commune-Lai Vung district-Dong Thap province. To collect datas, hundred of survey questionnaires were interviewed and field observed at every farmer. Some of important points of the investigation are mentioning as below: approx. 40% and 45%, respectively in year of 2013. Symptom of slightly cracking of peel oftenly occur in May to December, while sudden dead frequency appear on August to November. Most of the famer did not know clearly about causal organism of these problems, therefore the growers' application seem bad to solve an issues. Base on the results of this survey, it's very useful to make full view for research activities which can be managed these problems.

Keywords: Hong mandarin, slightly cracking of peel, sudden dead.

Effect of badfruit and cover nylon with slightly cracking disease of Hong mandarin (Citrus reticulata Blanco) at Lai Vung district - Dong Thap province

Nguyen Huy Cuong, Pham Cong Tan, Nguyen Thanh Hieu and Nguyen Van Hoa

SUMMARY

Citrus reticulata Blanco which is specialty fruit of Dong Thap province, is highly

economic value. The slightly cracking disease is appearance and harmful common when fruit is prepare harvest, it is reduce income of farmer.

The experiment bagfruit and cover nylon was carried out with four treatment and five times of repeat. The treatment were set up at Lai Vung distrist of Dong Thap provine, when the fruit was 5 months old. The result showed that treatment of badfruit and cover nylon were redacted slightly cracking disease.

Influence of some effective of trace elements and minerals to “slightly cracking of peel” on Hong mandarin crop at Lai Vung district, Dong Thap province

Luong Thi Duyen, Tran Thi My Hanh, Nguyen Thanh Hieu and Nguyen Van Hoa

SUMMARY

Base on results of the survey of current cultivation and situation of slightly cracking of peel on Hong mandarin crop at Lai Vung, Dong Thap province and combined with many references, with the hypothesis that “slightly cracking of peel” was damaged by plant physiology problem, the expt. “Influence of some effective of trace elements and minerals to “slightly cracking of peel” on Hong mandarin crop at Lai Vung district, Dong Thap province” was carried out to identify how the hypothesis done.

The results showed that out of eight treatments checked, Calcium (560 g/l) and Calcium (560 g/l) + Cu (10%) were the best treatment in reducing incidence and severity of “slightly cracking of peel” infection on Hong mandarin as compared to control and others.

Keywords: Hong mandarin, slightly cracking of peel, trace element, Lai Vung.

Studying results on fruit rot and its management on soursop

Đang Thuy Linh, Le Thi Tuong, Nguyen Van Hoa and Huynh Thanh Loc

SUMMARY

*Soursop tree (*Annona muricata*), grafted on pond apple (*Annona glabra*) root stock, has confirmed its position on salty soil acidification, due to its easy growing, high yield stability. Recently, fruit rot diseases, soft brown black spots and lesions with hard black cracking on the fruit surface are big problems for farmers because of productivity losses. The two fungi were isolated, reinoculated to the fruits following Koch postulate and were identified as *Lasiodiplodia pseudotheobromae* and *Colletotrichum gloeosporioides* referring to morphological characteristics, gene sequencing results and Blast Search. In in vitro conditions, the many chemicals as active ingredients Mancozeb + Matalaxyl (Ridomyl), Difenoconazole (Score), Carbendazim (Vicarben) and Thiophanate Methyl (Topsin) were able to inhibit the growth of the fungi and *C. gloeosporioides* and *L. pseudotheobromae* from 73,3% to 100% at the right level of 50 ppm. Out of the five*

different botanicals tested, the **completely** inhibit the growth of *C. gloeosporioides* and *L. pseudotheobromae* was obtained with the use of *Datura metel* extract.

Keywords: Soursop, *Annona muricata*, pond apple, *Annona glabra*, *Colletotrichum gloeosporioides*, *Lasiodiplodia pseudotheobromae*, *Datura metel*.

Evaluation of various longan varieties susceptible the infection dynamic of longan witches' broom disease in Mekong Delta

Tran Thi My Hanh, Nguyen Thanh Hieu, Dao Thi Be Bay and Nguyen Van Hoa

SUMMARY

Long nhung mite *Eriophyes dimocarpi* is a vector of longan witches' broom disease (LWBD). The causal agent of this disease is very intricate and difficult to control. Management of this disease was variety solution, control of vector. Study of management of long nhung mite and LWBD were conducted at SOFRI and longan growing areas in Mekong Delta from April 2013 to November 2014. The results showed that: Tieu da bo variety was high susceptible. Edor, Vung Tau and Thach kiet varieties were susceptible. Xuong com trang, Cui, Long Hung Yen varieties and NL1-19 hybrid were moderately susceptible. Giong, Sai Gon and NL1-23 hybrid were moderately resistant. Meanwhile, Xuong com vang, Long and Super varieties were highly resistant to this disease after 11 months treatment. NL1-23 hybrid was moderately susceptible to this disease after 12 months planting.

Keywords: Longan witches' broom disease, longan varieties, longan orchards, long nhung mite *Eriophyes dimocarpi*.

Initial results research of method to control disease (*Xanthomonas campestris* pv *citri*) on pomelo variety Duong la cam in the Southeast region

Huynh Thi Bich Tuyen and Nguyen An Đe

SUMMARY

Canker disease on pomelo known as *Xanthomonas campestris* bacterial cause. This disease has reduced the growth and yield on pomelo variety Duong la cam, so research them and find out the control measures are necessary. An experiment about using drug chemical and envelopment fruit to control disease (*Xanthomonas axonopodis*) on pomelo variety Duong la cam was implemented from April 2014 to December 2014 in Dong Nai province. There are 5 treatments on this experiment: (1) used Copper Oxychloride; (2) used Kasugamycin; (3) used Copper oxychloride combine Kasugamycin; (4) envelopment fruit; (5) not used drug as a control. Initial results showed that all chemicals are effective to prevent the canker disease, the best effective is Copper oxychloride (0.45 g.ai/l) combined Kasugamycin (0.02 g.ai/l). However, envelopment fruit (by fiber bag) with no effective.

Control of pomelo fruit borer (Citripestis sagittiferella) by usage fruit bagging in Tien Giang province

Luong Thi Duyen, Tran Thi My Hanh, Nguyen Huy Cuong and Nguyen Thanh Hieu

SUMMARY

The experiment of observation of pomelo fruit borer Citripestis sagittiferella was carried out at My Loi commune, Cai Be dist. and Long Khanh commune, Cai Lay dist. from January to December, 2014. Highest infection rate was recorded on the months of January, February, March, April, October, November and December. By this time, fruit borer can be free -attack many stages of fruit growth.

To our knowledge, fruit bagging is playing as a good practice to control this pest. Among of four types of bag which checking to fruit borer as well as how fruit skin get any damage due to improper bagging materials. The results showed that plastic net (49 holes/cm²) was the best treatment not only can avoid fruit borer attacked but also keep fruit skin quality with out any injuries. Usage fruit bagging at 2-3 weeks after fruit setting were known as best time for fruit bagging on pomelo crop.

Keywords: Fruit borer, bagging fruit, Citripestis sagittiferella, pomelo, Citrus grandis.

Effect of agro lime water methods to control pomelo fruit borer Citripestis sagittiferella Moore on pomelo

Nguyen Phuoc Sang, Pham Tan Hao and Le Quoc Dien

SUMMARY

Fruit borer is an important insect causing damage on pomelo. It presents on all pomelo cultivated areas and on all varieties of pomelo in Vinh Long province. Farmers had used a lot of insecticides to manage it, which leads the fruit borer to tolerance to chemical used. The results of the investigations showed that pomelo fruit borer Citripestis sagittiferella mainly attack at fruit top; Using agro lime water (1%) plus (15 ml bean oil plus soapy bowl water) were high effective on Citripestis sagittiferella in Nam roi pomelo orchard; Application of agro lime water (1%) plus 10 ml (15 ml bean oil plus soapy bowl water)sprays should commence during fruit as soon as possible after the first 45 days fruit set; It is estimated that in most instances 3-5 sprays will need to be applied at 15 days intervals during fruit.

Efficacy of some insecticides against Phyllocnistis citrella Stainton on pomelo c.v Duong la cam in the Southeast of Vietnam

Huynh Thi Bich Tuyen, Nguyen An De and Mai Van Tri

SUMMARY

The citrus leafminer, Phyllocnistis citrella Stainton, is an important pest of pomelo in

Vietnam. Citrus leafminer mines young leaves, surface tissue of young shoots and stems, and less frequently the fruit. Although the insect causes indirect damage to young leaves, which predisposes them to infection by citrus canker. Therefore, controlling the pest is a vital component of citrus cultivation. This study was carried out to elucidate effect of some selected pesticides including imidacloprid (0,085 g a.i./l), phosalone (3,5 g.ai/l), abamectin (0,4 g.ai/l) and petroleum sprayoil 10 g.ai/l for controlling citrus leafminer on pomelo in field condition. Application of abamectin, imidacloprid, petroleum sprayoil, and phosalone decreased significantly the incidence and severity of citrus leafminer to lower level than that of the control. However, the decrease caused by imidacloprid was significantly lower than that of the other insecticides. Result showed that petroleum sprayoil might be considered as potential alternative to replace broad-spectrum synthetic insecticides for control of leafminer.

Keywords: Citrus leafminer, Imidacloprid, Phosalone, Mineral oil, Abamectin.

Study on morphological, biological and management of citrus fruit borer Citripestis sagittiferella Moore (Lepidoptera: Pyralidae) in Tien Giang

*Tran Thi My Hanh, Nguyen Thi Kim Thoa, Nguyen Cao Trong, Luong Thi Duyen,
Nguyen Duong Tuyen, Nguyen Thanh Hieu and Nguyen Van Hoa*

SUMMARY

Study of morphological, biological and management of citrus fruit borer Citripestis sagittiferella were conducted at SOFRI and citrus growing areas at My Loi A commune, Cai Be district, Tien Giang province from September 2013 to September 2014. The results showed that the adult of Citripestis sagittiferella is grey yellow to dark brown color, antennae of male is saw-tooth, antennae of female is thread. The egg is white to pink color. The larva is four stages. Pupa stage of the insect is brown-yellow to dark brown, in a very loose cocoon. The life cycle of Citripestis sagittiferella is completed in 28,5-38,5 days. The results showed that Fipronil (Regent 800WG), Emamectin benzoate+Matrine (Rholam super 50WSG) and Lambda-Cyhalothrin (Karate 2.5EC) could against citrus fruit borer at laboratory conditions. Emamectin benzoate+Matrine (Rholam super 50WSG), Chlorantraniliprole (DuPontTM Prevathon[®] 5SC, Cypermethrine+Petroleum oil (Visher 25EC) và Chlorantraniliprole+Thiamethoxam (Virtako 40WG) were effective to the management of citrus fruit borer in field conditions.

Keywords: Pomelo tree, citrus fruit borer Citripestis sagittiferella, pesticides.

POSTHARVEST TECHNOLOGY

Efficacy of 1-Methylcyclopropene (1-MCP) fumigation to quality of rambutan cv. Java during cool storage

Nguyen Van Phong

SUMMARY

Efficacy of 1-Methylcyclopropene (1-MCP) fumigation to quality of rambutan cv. Java during cool storage was investigated. Results indicated that treatment of 1-MCP maintained the quality of rambutan fruits cv. Java during cool storage. Among them, the treatment regime of 1-MCP 1.5 ppm, 4 h at 20-22°C was the most suitable in terms of delaying pericarp browning; rotten rate and changes of TSS, total acidity and ascorbic acid content during storage at 13°C. Pre-treating by dipping into hot water (43°C) for 6 min. before fumigating by 1-MCP 1.5 ppm, 4 h 20-22°C, would be better in delaying pericarp browning, fungal rotting rate and reducing losses of TSS, total acidity and ascorbic acid content during storage at 13°C. However, there was no significant impact to quality of fruit when pretreated by combinations of CaCl₂ and Citric acid or hot water dip (43°C/6 min.) and CaCl₂ and Citric acid.

Keywords: 1-Methylcyclopropene, pericarp browning.

Study on effective near-harvest treatments for prolonged storing and maintainable quality of Java rambutan at postharvest

Nguyen Thanh Tung, Tran Dinh Manh, Duong Thi Cam Nhung, Do Van On, Nguyen Khanh Ngoc and Nguyen Van Phong

SUMMARY

*Rambutan fruit was deteriorated by transpiration, developing browning and postharvest disease, which were factors that limit the storage life of fruit. The study on effective near-harvest treatments were conducted for prolonged storing and maintainable quality of java rambutan at postharvest. This research was established following the Randomized Complete Design. The factor included 6 treatments used were Taiwan white paper bag (35x60 mm) and micro-perforated polypropylene bag (35x50 mm) tied in a bunch of fruits (9÷20 fruits) at 80 days after fruit set; chitosan coating(0.25%), chitosan coating(0.25%) combination with umikai preservative (0.2%); chitosan solution contained DC2 bacteria (*L. fermentum*) sprayed twice at 10th và 5th before harvest, and non-bagged (farmer handled). Fruits were packed lifespan packaging and evaluated at harvest, 20°C-7days and 12, 14 days- 13°C at postharvest. The results of the study recorded that: Taiwan white paper bag didn't affect fruit size and color development compared non-bagged at harvest. This bag also inhibited postharvest diseases and maintained quality of fruit during storage at 7 days - 20°C and 12 days - 13°C. The*

chitosan solution sprayed near-harvest was affected colour change of fruit. The chitosan coating contained DC2 bacteria wasn't effected on inhibition of postharvest diseases of fruit in storage. Micro-perforated polypropylene bag and chitosan coating contained DC2 bacteria were influenced fruit size at harvest.

Keywords: Rambutan, postharvest disease, chitosan coating, bag, near-harvest treatment, quality.

Study on the finishing process of postharvest storage for Java rambutan fruit

Nguyen Thanh Tung, Tran Dinh Manh, Duong Thi Cam Nhung, Do Van On, Nguyen Khanh Ngoc and Nguyen Van Phong

SUMMARY

Deterioration that associated with decay loss, transpiration and developing browning, which were factors that limit the storage life of rambutan fruit. The objective of reduced postharvest losses needed to apply combinations of technology postharvest on rambutan fruit. The finishing process of postharvest storage for rambutan fruit was conducted to choose the effective treatment for prolonged shelf-life and maintained quality. This research was done three main experiments to properly determine modified atmosphere packaging, preservative and handling treatment for rambutan fruit at postharvest. In the first experiment, the effect of packaging films on some physicochemical properties of rambutan during storage at 13°C. The films used were LDPE, HDPE, PP, PVC, lifespan, peakfresh, so compared unwrapped fruits. Rambutan was handled two preservatives : calcium lactate (0.1; 0.15; 0.2; 0.25 and 0.3%) and presim (0.03; 0.04 and 0.05%) and control at 20°C-7 days for the second experiment. The final experiment was done in order to study the effect combinable treatments on quality and storability of rambutan fruit at during storage 13°C-18 days. The results of this study recorded the modified atmosphere CO₂ (7-10%) and O₂ (1-2%) or combined for effectiveness in limiting fungal development and maintenance of quality for rambutan during storage at 13°C-12 days. Packaging of lifespan was effective on rambutan fruit at postharvest. Dipped presim 0.04% during the 5 minutes inhibited postharvest diseases and maintained quality for rambutan at 20°C- 7 days. Handled presim 0.04% during 5 minutes and packed lifespan packaging after that conditioned at 13°C for 8 days prior to moving down 8°C- 5 days was capable of maintaining the quality of rambutan at 13°C-16 days.

Keywords: Rambutan, postharvest, preservative, packaging, quality, storage.

Research and application of technology Modified Atmosphere Packaging (MAP) to preserve fresh longan “Xuong com vang” variety

Nguyen Khanh Ngoc, Ly Thi Thu Hoan and Nguyen Van Phong

SUMMARY

A study was performed on fruit quality changes in longan fruit following different MAP films for packaging longan fruit cv. “Xuông com vàng”. Fruit of uniform maturity and without defects were collected and packed in the MAP films such as Lifespan, Peakfresh, PE (Polyethylene), PP (Polypropylene), PVC (Polyvinyl chloride), HDPE (High density polyethylene), Zoe and stored at 5⁰C. Changes of pericarp color and browning, percent fruit with disease, soluble solids content, total acidity and weight loss, CO₂/O₂ composition inside the packages were recorded and analyzed. The results indicated that among the 8 treatments, Lifespan and Zoe films have created suitable CO₂/O₂ composition for preserving fresh fruit. Those treatments had the greatest effect in maintaining the quality of fruits until 28 storage days. They also minimized changes in pericarp color; percent disease index; percent disease severity, weight loss and delayed changes of pericarp browning during the storage period. There was almost no change in soluble solids, citric acid contents during the 28 days of storage.

Keywords: Longan, quality, browning pericarp, MAP, ratios of gases (CO₂/O₂).

Study on harvesting maturity and storage ability of “Xuông com vàng” longan

Duong Thi Cam Nhung, Nguyen Khanh Ngoc, Tran Dinh Manh and Nguyen Van Phong

SUMMARY

To determine proper harvesting maturity indices and storage ability of cultivar “Xuông com vàng” longan. The surveys were conducted on longan orchards being grown at Nhi Qui, Cai Lay belonging to Tien Giang. The hanging cards were used by hanging up longan bunches on the trees, which were being flowering and fruit set and the fruits were harvested at five various stages 63, 66, 69, 72, 75 days. Fruits after harvesting were brought to the lab to evaluate the physico-chemical properties and storage ability to select the most suitable harvesting index.

The results showed that harvesting maturity of “Xuông com vàng” longan cultivar was harvested at the stage of 69-72 days (after fruit set) when their skins become bright yellow, yellow-brown and the physico-chemical properties reaches optimal. Along with these indices harvesting at 69 days after fruit set the most storage ability.

Keywords: Longan, indice, quality, storage.

The effect of storage temperature on the post-harvest quality of longan “Xuông com vàng” variety

Nguyen Khanh Ngoc, Ly Thi Thu Hoan and Nguyen Van Phong

SUMMARY

Longan is one of the important tropical fruits in Viet Nam. A study was performed on

fruit quality changes in longan fruit following different storage temperature treatments. Fruit of uniform maturity and without defects were collected and packed in polyethylene (PE) bags and stored at 3, 5, 7, 10; 20⁰C and room temperature. Changes of pericarp color and browning, percent fruit with disease, soluble solids content, total acidity and weight loss were recorded and analyzed. The results indicated that among the 6 treatments, the treatment of fruit stored at 5⁰C had the greatest effect in maintaining the quality of fruits. That treatment minimized changes in pericarp color; percent disease index; percent disease severity; electrolyte leakage. It also minimized weight loss and delayed changes of pericarp browning during the storage period. There was almost no change in soluble solids, citric acid contents during the 28 days of storage. Other treatments, fruit stored at 3 and 7⁰C were also maintaining the fruit quality and limited post-harvest losses due to fungal attack and can be held for 3 to 4 weeks, although the skin loses its yellowish color.

Keywords: Longan, storage temperature, quality, browning pericarp, diseases.

Determination of harvesting maturity of purple potato vs. Nhat Ban for storage and processing

Nguyen Van Phong and Nguyen Thanh Tung

SUMMARY

To determine proper harvesting maturity indices of “Nhat Ban” purple potato, an investigation was designed as a RCBD on the fields of potato belonging Thanh commune, Binh Tan district, Vinh Long province. Result of the investigation indicated that among five harvesting times such as 104, 118, 132, 140 và 148 days after planting, the harvest times at 132 and 140 days were recorded as most suitable for purple potato. In the period of 132-140 days after planting, potato gave high yield along with a percentage of grade I highly as compared other time periods of harvesting. Quality of potato in terms of colour of skin and flesh, starch and total sugar content as well as anthocyanin content in this period of harvest (132-140 days) was also better than at other harvesting times. In addition, potato harvested in this time period had maintained a good quality with minimizing losses (in terms of weight loss and disease incidence) during storage at 20⁰C.

Keywords: Potato, maturity index, quality.

Survey on longan import of U.S market and recommendations of timing of longan crops in Mekong Delta export to U.S. market

Luong Ngoc Trung Lap and Đinh Thị Thu Bình

SUMMARY

The U.S. Department of Agriculture has approved the import of Vietnamese longan into

the U.S. market on October 6th, 2014. In the context that Vietnam is seeking to expand outlets for longan products to find deeper inroads into the U.S market open up a major opportunity for farmers and businesses in Mekong Delta.

The results indicated that the import volume and turnover of longan into the U.S. market were 841 tons and 2.9 million USD in 2013, respectively. China and Thailand are major longan supplier for the U.S. market. The import prices of Chinese and Thailand longan were 3.9 USD/kg and 5.3 USD/kg, respectively. In the months of January, February, June and November, the import volume of longan from suppliers into the U.S. market reached lowest level. The imported price of longan was highest level in February, May, November and December. To boost export and enhance competitiveness into the U.S. market, the Mekong Delta need to adjust of longan production in the months of January-February, May-June and November-December.

VEGETABLES

Influence of different rootstocks on growth, yield and fruit quality of watermelon

Tran Kim Cuong, Nguyen Ngoc Vu and Nguyen Viet Thanh

SUMMARY

This study was carried out in sunny and rainy seasons in 2013. The effect of four gourd rootstocks (Sao variety, Japan long fruit variety, Japan round fruit variety, CP variety) on growth, yield and fruit quality of watermelon under field condition was investigated. Results indicated that in the nursery all the treatments have very high seedling survival rate; but in the field in rainy season grafting on 3 rootstocks such as 2 Japan variety and CP variety resulted in 112 - 118% survival rate as compared to Sao variety and 137 - 145% as compared to ungrafted control, these 3 grafted treatments also gave higher yield ranging from 119% to 146% of that in Sao variety and from 200% to 247% of that in ungrafted control, in which Japan long fruit variety gave highest value of survival rate in rainy season and yield in both 2 seasons. Result also showed that there were not different about growth traits and fruit characteristics between all the grafted treatments, but fruits of these treatments were bigger in size and weight, peel thickness and fresh firmness as compared to the ungrafted control. Therefore, base on plant survival rate and fruit yield, Japan long fruit gourd could be used as rootstock for watermelon.

Keywords: Watermelon, grafting, rootstock, survival, yield.

Heterosis and combining ability for yield and related traits in cucumber

Tran Kim Cuong, Huynh Vu Son and Nguyen Thi Lang

SUMMARY

Combining ability and heterosis studies on yield and some related traits in cucumber

were carried out through full diallel method using eight parents. The mean square due to GCA and SCA were highly significant for all the characters studied which revealed that both additive and non-additive gene actions were important in the inheritance of these characters. Hence, for the improvement of these traits, both selection and heterosis methods of breeding can be adopted. The parents M4 and B1 were observed to be good combiners for number of characters including yield/plant. The crosses A9 x H7, A9 x L5, D1 x A9, D1 x M4, H7 x A9, H7 x D1, K13 x M4 and L1 x K13 were most promising combinations for different characters including yield/plant. There are four combinations including A9 x H7, L5 x A9, L5 x B1 and L1 x D1 having high values of average heterosis, absolute heterosis, and standard heterosis on yield/plant, number of fruits/plant, number of branches/plant and number of female flowers/main vine; and 5 another combinations including K13 x M4, K13 x B1, M4 x A9, M4 x D1 and B1 x A9 having high values of standard heterosis on yield/plant; all these nine hybrid combinations should be tested on all agronomic traits in further trials to select the most promising hybrid combinations.

Keywords: Combining ability, cucumber, heterosis, hybrid combinations, yield.

Basic testing results of some cucumber hybrid combinations in Spring-Summer and Summer-Autumn season in 2014

Huynh Vu Son and Tran Kim Cuong

SUMMARY

In the cucumber hybridization program was made by SOFRI, 56 hybrid combinations were produced and after first tested trial which was conducted in 2013, 7 hybrid combinations have been selected. In 2014, these 7 hybrid combinations are tested again in spring-summer season and summer-autumn season, and the results showed that the combination B1 x A9 is the best one. This combination gives strong growth, medium branching, many flowers on the main stem, oblong fruit, green peel color is currently popular in the market, many number of fruit (5 - 7 fruits/plant) and high yield: 29.8 t/ha in the spring-summer and 19.2 t/ha in summer-autumn season (30,1% and 12.3% higher than control, respectively). This hybrid cucumber combination is being proposed to use in trial production in the Southern provinces.

Keywords: Cucumber, breeding, hybrid combination, yield.

Results on evaluation of general combining ability of some erect fruit hot pepper lines by top crossing

Le Truong Sinh, Nguyen Ngoc Vu and Tran Kim Cuong

SUMMARY

A total of 107 erect fruit hot pepper hybrid combinations, which have been created through top crossing method, were grown on the experimental field to select the parent lines having high general combining ability based on value of yield; other agronomic traits and anthracnose resistant ability were also recorded. The result determined 3 lines including CT23, CT38, CT39 cross CT81 and CT32, CT39, CT47 cross having high general combining ability, should be used in future breeding; and 5 hybrid combinations consist of CT23×CT81, CT32×CT57, CT38×CT81, CT39×CT81 and CT42×CT57 had good traits such as: highest value of yield, high number of fruits per plant.

Keywords: Hot pepper, general combining ability, combinations, anthracnose.

The survey of agronomic traits of some erect fruit hot pepper lines (F₅)

Le Truong Sinh, Nguyen Ngoc Vu and Tran Kim Cuong

SUMMARY

A total of 86 erect fruit hot pepper lines which were collected and isolated by SOFRI were grown at the experimental field to select good lines for future breeding. The growth and some agronomic traits were recorded. The result showed that most of the lines had early flowering and harvesting. The result also showed that there were 6 lines including CT17-2, CT18-1, CT22-2, CT31-2, CT38-1 and CT40-2, which had more than 100 fruits per plant and there were 11 lines including CT4-1, CT8-2, CT16-1, CT17-2, CT18-1, CT25-2, CT28-1, CT28-2, CT38-1, CT40-2 and CT43-2, which produced more than 150 gram of fruits per plant. These lines can be used as material for hot pepper breeding hybrids in the future.

Preliminary selection of anthracnose disease resistant hot pepper lines by using both methods of backcross and Marker Assisted Selection

Huynh Thi Phuong Lien, Tran Kim Cuong and Nguyen Thi Lang

SUMMARY

In our country, hot pepper (*Capsicum annum* L.) is grown for domestic consumption and export. The area of hot pepper increase every year but the yield did not increase and anthracnose disease was main cause of this limit. Project Hot pepper breeding for anthracnose disease resistance using Marker Assisted Selection has been made by SOFRI since 2012 and this report shown preliminary selection of anthracnose disease resistant hot pepper lines by using both methods of backcross and Marker Assisted Selection were conducted. The F₁ combination CD2 x CD17 (CD2 having high yield and good fruit, CD17 is anthracnose disease resistant line) were made backcross to produce two generation of BC₁F₁ and BC₂F₁. In each generation, all the individuals were evaluated on some agronomic traits under field condition, then 60 individuals were selected for

PCR-SSR testing using 4 - 6 linking markers SSR. Finally, 10 hot pepper BC2F1 lines having good agronomical traits and anthracnose disease resistant gene has been selected.

Keywords: Anthracnose, hot pepper, backcross, marker assisted selection, SSR.

FLOWERS

Study on propagation of Petunia (Petunia hybrid.) varieties by modified tissue culture technology

Nguyen Thi Van Anh, Nguyen Thi Huong Lan and Le Nguyen Lan Thanh

SUMMARY

This research was carried out from January to December 2014 for propagation of *Petunia (Petunia hybrid.)* varieties by modified tissue culture technology. The result of this research revealed that modified MS with BA 0,2 mg/l gives high clonal propagation (under two both conditions: using tap water and distilled water). The most suitable medium for rooting stage is MS medium with a half of mineral (MS/2 improved) in quantity for healthy plant. Besides, defining that plant medium as well as the size of tray for nursery with 112 holes is appropriate for acclimatization stage *in vitro* after 14 days.

Keywords: *Petunia hybrid.*, tissue culture, varieties, flowers, rooting, acclimatization.

Research on multiplication, in vitro flowering and rooting of rose (Rosa damascena Mill.)

Le Nguyen Lan Thanh, Nguyen Thi Huong Lan and Nguyen Thi Van Anh

SUMMARY

Roses are one of the world's most important ornamentals for a long time and are most often used for ornamental, medicinal and aromatic purposes. The study reports *in vitro* multiple shoot formation, flower induction and rooting of rose (*Rosa damascena* Mill.). Results showed that the Full-strength MS culture medium containing 1-2 mg/l BA has the best results for shoot proliferation of this variety with 6.38-6.71 shoots per explant for 60 days. The sucrose concentration at 50 g/l was more suitable for *in vitro* flowering than at 30 g/l on the MS medium containing 3,0 mg/l BA and 0,5 mg/l NAA. Microshoots were rooted by improved 1/2-strength MS medium devoid of growth regulators with 100% rooting. Plantlets were acclimatized on gelidium and coconut peat mixture (1:1 v/v) and successfully transferred to the greenhouse after 40 days.

Keywords: *Rosa damascena*, multiplication, *in vitro*, flowering, nodal culture, rooting.

***Results primiliry on research of propagation to ginger (Zingiber officinale Roscoe)
'Trau' variety by tissue culture***

Nguyen Thi Huong Lan, Nguyen Thi Van Anh and Le Nguyen Lan Thanh

SUMMARY

The ginger plant Zingiber officinale Roscoe produces pungent, aromatic rhizomes that are valued worldwide as a spice and in herbal medicine. Preliminary results on research of propagation to ginger 'Trau' variety by tissue culture showed that the best medium for shoot mutiplication of this variety was MS + 3 mg/l BA+ 0.5 mg/l NAA+ 50 g/l sucrose, the best medium for rooting was MS/2aNO and the media for hardening was 3,5 coconut-peat:1 sand.

Keywords: Tissue culture, mutiplication, shoot, rooting, variety.