

**Article 1:**

**Selection of high quality and short duration black rice lines**

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Tien Giang University

**Abstract**

Twenty four seeds with low amylose and high protein named as D1, D2... to D24 were selected from 500 individual rice seeds by protein electrophoresis SDS-PAGE. Nine lines including D1, D2, D7, D8, D10, D13, D20, D23 and D24 were chosen after evaluating uniformity. Three lines (D10, D13 and D20) were selected after evaluation of agromorphological traits and grain quality. The black rice line D13 with 90 days duration, uniform black color grain, medium short grain, 1000 grain weight of 20.69 g, amylose content of 14.89% (milled rice), low gelatinization temperature, medium grain protein (9.04%) was selected for further production testing.

**Keywords:** Black rice variety, black grain rice, selection, low amylose, high protein

**Article 2:**

**Selection of suitable soybean varieties for Winter crop season and development of pilot for soybean variety DT26 in rice based land in Hanoi**

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**Abstract**

Thirteen soybean varieties were tested at different places in Hanoi in Winter crop season including: DT26, DT22, DT51, D.147, DT30, DTR3, DVN6, DVN14, DT96, D8, D2101, control varieties: DT84 and DT90. The results showed that the growth duration of soybean varieties (DT26, DT30 & DT51) varied from 90 days to 95 days; grain yield reached from 2.02 to 2.37 tons per ha, higher than that of the control varieties by 21% - 30%. Besides, selected varieties were well lodging resistant, adaptable to winter crop season and suitable for cultivation conditions in Hanoi. Especially, DT26 was accepted by farmers in Hanoi and was

developed in some districts such as Ba Vi, Phuc Tho and My Duc. The profit was recorded about 18 - 19 million VND per ha, higher than that of the control varieties by 4.7 - 6.6 million per ha.

**Keywords:** Soybean varieties, selection, yield, Winter crop season, Hanoi

### **Article 3:**

#### **Genetic diversity analysis of *Citrus* cultivars using simple sequence repeat markers (SSR)**

Nguyen Thi Tuyet<sup>1</sup>, Nguyen Thi Xuyen<sup>2</sup>, Nguyen Thi Lan Hoa<sup>2</sup>,  
Bui Thi Thu Giang<sup>2</sup>, Tran Danh Suu<sup>1</sup>

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#### **Abstract**

In this study, genetic diversity of 06 grapefruit accessions was assessed by simple sequence repeat (SSR) markers. Of the 25 SSR markers amplified, a total of 44 alleles was detected by 20 polymorphic SSR loci and maximum 4 alleles were amplified. The average of alleles per primer pair was 2.2 and the average polymorphism information content (PIC) value was 0.29. The CgEMS-138 and CgEMS-139 markers were highly informative ones as it revealed PIC value (0.54 and 0.48, respectively) and maximum number of alleles (4). Genetic similarity coefficient ranged from 0.79 to 0.99 among genotypes. These coefficients were used to construct a dendrogram by the unweighted pair group of arithmetic means (UPGMA). The genotypes were grouped into 2 clusters: Cluster 1 included 4 genotypes (Polo, Da xanh, Que Duong and Duong Hiep Thuan); Cluster 2 included 2 genotypes (Bon mua and chua). According to these results, it can be concluded that the markers CgEMS-138 and CgEMS-139 are useful indicator for genotyping Vietnamese grapefruit accessions in general and for grapefruit Bon mua in particular.

**Keywords:** Grapefruit, Citrus, SSR markers

### **Article 4:**

#### **Evaluation of adaptability of salt tolerant rice varieties in saline areas of Tra Vinh province**

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## **Abstract**

Global warming and salt water intrusion are unpredictable and threaten rice production area in Mekong delta. Rice breeding programs for salt tolerance play a key role to maintain food security and rice export. To overcome these challenges, salt tolerant varieties was created and tested in the saline areas of Tra Vinh province in Winter - Spring of 2016 - 2017. The results showed that varieties OM9921 (6.8 t/ha), OM376 (6.5 t/ha) and OM376 (7.4 t/ha), OM359 (7.1 t/ha) had the highest yield at Chau Thanh and Tra Cu locations, respectively. All of agronomic traits and yield components were significantly different in those varieties tested in the same location but they were not different when compared between two trial locations. The trials need to be tested in more seasons to confirm varietal adaptability and the best varieties will be recommended to rice growing farmers and companies for production in large scale.

**Keywords:** Rice varieties, salt tolerance, adaptability, yield

## **Article 5:**

### **Evaluation of response to bacterial wilt *Ralstonia solanacearum* of groundnut lines/varieties by artificial inoculation**

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Le Tuan Tu<sup>3</sup>, Nguyen Xuan Thu<sup>4</sup>, Pham Bich Hien<sup>2</sup>, Ta Hong Linh<sup>2</sup>

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<sup>4</sup> Field Crops Research Institute (FCRI)

## **Abstract**

The artificial inoculation was used to evaluate response to bacterial wilt *Ralstonia solanacearum* of groundnut lines/ varieties for breeding of resistant varieties. Among 100 studied peanut lines/varieties by artificial inoculation, 19 lines/varieties were highly resistant (19.0%); 23 lines/varieties resistant (23.0%); 31 lines/varieties moderate resistant (31.0%); 20 lines/varieties moderate susceptible (20.0%) and 6 lines/varieties were susceptible (6.0%) and 1 variety highly susceptible (1.0%). 42 lines/varieties were determined to be resistant to bacterial wilt and could be used as materials for breeding programs.

**Keywords:** Groundnut, bacterial wilt, *Ralstonia solanacearum*, resistance

## **Article 6:**

### **Testing result of hybrid pineapple line “Dua lai 2” in Tien Giang and Long An provinces**

Nguyen Thi Ngoc Diem, Nguyen Phuong Thuy, Vo Huu Thoai

Southern Horticultural Research Institute (SOFRI)

#### **Abstract**

Eight pineapple varieties/lines derived from collecting and breeding sources were tested in Tien Giang and Long An provinces from April, 2014. The results showed that hybrid pineapple line “Dua lai 2” had good traits such as average plant height (91.42 cm), leaf length (81.73 cm) and leaf number (36.5). There were few spines distributed at the tip and at the base of leaves. The ratio of flowering was high (98,5%), fruit weight varied from 1,339.67 - 1,418 g, cylindrical fruit shape, yellow fruit skin and yellow flesh, high brix degree (17.01%), vitamin C content (17.07 mg/100 ml) and yield (72.53 tons/ha).

**Keywords:** Hybrid pineapple line “dua lai 2”, Tien Giang province, Long An province

## **Article 7:**

### **Testing of growth characteristics and yield of six aromatic rice lines with brown planthopper resistance for production and exportation**

Nguyen Tri Yen Chi, Truong Trong Ngon

Biotechnology Research and Development Institute, Can Tho University

#### **Abstract**

Hybrid lines in BC3F4 populations of six backcross combinations of aromatic rice with brown planthopper resistance were selected from crossed process of three aroma rice varieties (ST5, ST20 and VD20) with two brown planthopper resistance rice varieties (OM4103 and OM10043). The rice lines were cultivated in Winter - Spring of 2016-2017 in Long Phu district, Soc Trang province to determine their growth characteristics and evaluate BPH resistant capacity under artificial conditions at the Plant Protection Department, Cuu Long Delta Rice Research Institute. Results showed that all hybrid lines had the shorter growth duration in comparison to that of the aromatic rice varieties about 7-15 days; the plant heights of 6 tested lines were classified into intermediate plant height group. Two lines namely B2-21 and D1-6 with high grain number per panicle, high filled grain ratio, average growth duration (103 and 97 days) and with BPH-slightly resistance (average resistant degree of 4.3) were selected.

**Keywords:** Aromatic rice, brown planthopper resistance, testing, Winter-Spring crop season, Soc Trang

**Article 8:**

**Basic test of flue cured tobacco hybrid combinations in Cao Bang**

Tao Ngoc Tuan, Nghiem Tien Dung

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**Abstract**

Seven flue cured tobacco hybrid combinations were tested in Spring season of 2017 in Cao Bang province and the results showed that the growth of these tobacco hybrid combinations was superior in comparison to that of control varieties K.326, GL2 such as higher total leaf, stem height and stem diameter. The hybrid combinations had higher yield of dry leaf than that of control varieties K.326, GL2, especially hybrid combinations including THL3, THL4, THL5, THL6 gave very high yield, over 2.9 tons/ha. The ratio of dry leaf in good grade of these new hybrids was more than 50%; THL2, THL5 had higher ratio of leaf lamina. Hybrids THL2, THL4, THL6 scored higher in sensory evaluation of materials with good flavor, taste. Hybrid combinations including THL2, THL4, THL5, THL6 were identified as promising ones by combining of evaluated traits for further variety development.

**Keywords:** Flue cured tobacco, tobacco hybrids, basic variety test, tobacco growing areas Cao Bang

**Article 9:**

**Morphological and anatomical characteristics  
of *Morinda officinalis* plant in the North of Vietnam**

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Nguyen Van Them<sup>1</sup>, Tran Thi Bich Huong<sup>2</sup>, Pham Hong Hien<sup>3</sup>

<sup>1</sup> Quang Ninh Science and Agriculture - Forestry Production Center

<sup>2</sup> North East College of Agriculture and Forestry

<sup>3</sup> Vietnam Academy of Agricultural Sciences (VAAS)

**Abstract**

This study focused on morphological and anatomical traits of seven *M. officinalis* samples collected from four provinces of Vietnam including Quang Ninh, Thai Nguyen, Vinh Phuc, Bac Giang. The data helped to distinguish *M. officinalis* among seven samples and other fake

species. Morphological studies showed that those samples differed in leaf characteristics (leaf color, leaf margin and leaf trichome). The anatomical analysis of root also showed that the tuberous root had the highest percentages of parenchyma which is useful for medicine purpose. Among seven *M. officinalis* samples, the one from Tien Yen, Ba Che, Hoanh Bo (Quang Ninh) had the highest percentages of parenchyma which need to be preserved and propagated for medicine production purpose.

**Keywords:** *Morinda officinalis*, anatomy, morphology, parenchyma

### **Article 10:**

#### **Surveying subchronic toxic of meshima wild mushroom (*Phellinus* sp.) in white mouse**

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<sup>1</sup> An Giang University; <sup>2</sup> Can Tho University

#### **Abstract**

A safety survey of extract from meshima *Phellinus* sp. wild mushroom dose 0,4g/kg mouse weight in long time was carried out by using the quantitative assay kits for total protein, triglycerid, urea, creatinin, GOT, GPT provided by the Human and German's provision companies. The result showed that surveying indicators such as: weight, blood parameters (red blood, hemoglobin, white blood, white blood cells, platelets, the indicators relevant to red blood as: MCV, MCH, MCHC, RDW); the liver parameters (GOT, GPT, total protein, triglycerid), the kidneys parameters (creatinin, urea) in one month were recorded at normal level.

**Keywords:** Meshima wild mushroom (*Phellinus* sp.), subchronic toxic, white mouse, survey

### **Article 11:**

#### **Building the models for intergrated management of weevil (*Xyleborus fornicatus*, *Xyleborus similis*) and beetle (*Plocaederus ruficornis*, *Sybulus* sp.) in Durian and Mango in Vinh Long province**

Luong Thi Duyen, Vo Minh Man,  
Dang Thi Kim Uyen and Nguyen Van Hoa

Southern Horticultural Research Institute (SOFRI)

## **Abstract**

The models for integrated management of durian weevils (*Xyleborus fornicatus*, *Xyleborus similis*), and mango beetles (*Plocaederus ruficornis*, *Sybulus* sp.) were carried out at Quoi Thien and Thanh Binh commune, Vung Liem district, Vinh Long province from July 2016 to April 2017. The obtained results showed that the infestation rate of durian weevil in the control plot was 32%, meanwhile the experimental (IPM) plot was only 4% after 6 months of IPM application. The infestation rate caused by mango beetles was 4% on the mango in the experimental (IPM) plot and was significantly different with those of 16% in the control plot. Therefore, the yield of experimental plot was higher than those of control plot. Results also showed that the effectiveness of control of durian weevils and mango beetles in durian and mango models by IPM application helped increasing the profit rate of the experimental plot by 0.75 - 0.95%.

**Keywords:** Intergrated management, Weevil (*Xyleborus fornicatus*, *Xyleborus similis*), Beetle (*Plocaederus ruficornis*, *Sybulus* sp.), Mango (*Mangifera Indica*), Durian (*Durio zibethinus*)

## **Article 12:**

### **Effects of drying temperature and time on bioactive compounds and antioxidant activity of black garlic product**

Nguyen Ai Thach and Nguyen Minh Thuy

College of Agriculture and Applied Biology, Can Tho University

## **Abstract**

Black garlic (aged garlic) is a type of caramelized garlic (a Maillard reaction) first used as a food ingredient in Asian cuisine. It is important to study the changes of bioactive compounds content in black garlic at various temperatures. In this research, black garlic was produced from ordinary white garlic whole bulbs by aging at appropriate temperatures without any additives. After aging, black garlic was dried at 50, 60 and 70°C for 8, 12 and 16 hours. The total polyphenols content, total flavonoids content and antioxidant activity were determined. The results showed that the changes in the bioactive compounds content and antioxidant activity of the garlic occurred during drying. The optimal drying was found at 58.78°C for 12.25 hours by means of response surface methodology. The total polyphenol content, total flavonoid content and antioxidant activity in black garlic at optimal drying condition were 18.53 mgGAE/g, 8.71 mgQE/g and 84.90%, respectively and higher than in the control (untreated) samples (17.00 mg GAE/g, 5.06 mg QE/g và 60.50%, respectively).

**Keywords:** Antioxidant activity, bioactive compounds, temperature, time, black garlic

### **Article 13:**

#### **Morpho-biological characteristics of predatory mite (*Amblyseius longispinosus*), a biological control agent of *Eriophyes dimocarp* on longan**

Tran Thi My Hanh, Nguyen Van Hoa

Southern Horticultural Research Institute (SOFRI)

#### **Abstract**

The predatory mite (*Amblyseius* sp.) is an important predator of several agricultural pests in Vietnam. In this study, the morpho-biological characteristics of *Amblyseius* sp. in reducing density and injury level of the eriophyid mite (*Eriophyes dimocarp*) on longan was studied under laboratory conditions from September 2016 to May 2017. *Amblyseius* sp. fed on *E. dimocarp* completed its life cycle in  $6.07 \pm 0.70$  days. A female of *Amblyseius* sp. laid  $10.30 \pm 3.33$  eggs and the rate of hatching was 96.7%. An adult consumed  $17.53 \pm 2.14$  individuals of *A. dimocarp* per day.

**Keywords:** Predatory mite (*Amblyseius* sp.), *Eriophyes dimocarp*, longan tree

### **Article 14:**

#### **Preliminary results of construction phylogenetic tree of *Colletotrichum* spp. causing anthracnose diseases on dragon fruit in Southern provinces**

Dang Thi Kim Uyen<sup>1</sup>, Tran Nhan Dung<sup>2</sup>, Nguyen Van Hoa<sup>1</sup>

<sup>1</sup> Southern Horticultural Research Institute (SOFRI); <sup>2</sup> Can Tho University

#### **Abstract**

Forty four isolates of anthracnose disease on dragon fruit in Southern provinces were investigated to observe their genetic diversity. First, they have been collected, then all were isolated in PDA Merd medium to get spore formation from mycelium (cultures of mycelium). DNA from fungus was extracted using procedure developed by Dung *et al.* (2011). After that, ITS regions were amplified by PCR method with specific primers ITS1 and ITS4. Finally, the ITS sequences of 44 isolates were analyzed and phylogenetic tree was created to express genetic relationship among studied isolates. The results showed that the causal organism of anthracnose disease on dragon fruit in Southern provinces was 84.09% of isolates belonging to *Colletotrichum gloeosporioides* species, 13.63% isolates belonging to *Colletotrichum capsici* and about 2.27% isolates belonging to *Colletotrichum truncatum* species. Schematic phylogenetic tree also showed that there were 3 groups: The first group included 37 *Colletotrichum gloeosporioide* strains at high bootstrap (99%); the second group included 6

*Colletotrichum capsici* strains at bootstrap (98%) and the third group was *Colletotrichum truncatum* species at bootstrap (98%).

**Keywords:** *Colletotrichum* spp., dragon fruit, Internal transcribed spacer

### **Article 15:**

#### **Evaluation of bacterial antagonists for controlling *Phytophthora palmivora* and *Fusarium solani* causing root rot disease on citrus in greenhouse condition**

Nguyen Ngoc Anh Thu<sup>1</sup>, Nguyen Thanh Hieu<sup>1</sup>,  
Nguyen Van Hoa<sup>1</sup>, Tran Thi Thu Thuy<sup>2</sup>

<sup>1</sup> Southern Horticultural Research Institute (SOFRI); <sup>2</sup> Can Tho University

#### **Abstract**

In recent years, rot root and yellow leave diseases have caused severe damage in the citrus orchards in the Mekong Delta. These diseases were caused by *Phytophthora* spp. and *Fusarium solani*. The effectiveness of the antagonistic bacterial strains in greenhouse conditions showed that treatment 2 (only insolate with BS in 108 and 6 (isolate fusarium before isolate BS) had the best control of *Phytophthora palmivora* and *Fusarium solani*.

**Keywords:** Citrus, *Fusarium solani*, *Phytophthora palmivora*, *Bacillus subtilis*

### **Article 16:**

#### **Study on antagonistic activity of actinomyces isolates on anthracnose and brown spot disease on dragon fruit**

Le Thi Tuong, Dang Thi Kim Uyen,  
Nguyen Thanh Hieu, Nguyen Van Hoa

Southern Horticultural Research Institute (SOFRI)

#### **Abstract**

The research aims to screen actinomyces isolates which are able to control anthracnose and brown spot disease caused by *Colletotrichum truncatum*, *Colletotrichum gloeosporioides* and *Neoscytalidium dimidiatum*. In this study isolate TG12 could reduce mycelia growth of *C. truncatum*, TG17 could reduce mycelia growth of *C. gloeosporioides*, TG3 could reduce mycelia growth of *N. dimidiatum*. Two isolates TG12 and TG17 could reduce mycelia growth of *Colletotrichum truncatum*, *Colletotrichum gloeosporioides* and *Neoscytalidium dimidiatum* fungus with antagonistic efficacy of 60.37%, 71.33% and 52.03%, respectively at 9 days inoculation. TG12 isolate could grow maximally at 7% NaCl and TG17 at 1% NaCl.

**Keywords:** Actinomyces, *Colletotrichum truncatum*, *Colletotrichum gloeosporioides*, *Neoscytalidium dimidiatum*, radiuses of inhibition, dragon fruit

### **Article 17:**

#### **Identification of *Colletotrichum truncatum* causing dragon fruit anthracnose and the efficacy of several plant extracts on mycelial growth of the fungus**

Dang Thi Kim Uyen<sup>1</sup>, Tran Vu Phen<sup>2</sup> and Nguyen Van Hoa<sup>1</sup>

<sup>1</sup> Southern Horticultural Research Institute (SOFRI); <sup>2</sup> Can Tho University

#### **Abstract**

One of the most severe fungal diseases on dragon fruit (*Hylocereus undatus*)(DF) is anthracnose caused by *Colletotrichum gloeosporioides*. Recently, anthracnose on the dragon fruit and blade has new symptoms such as rusty brown, blisters, soft rot ... other than the symptoms caused by *C. gloeosporioides*. In this study, morphological, biological, and molecular identifications of the fungi were identified. In addition of *C. gloeosporioides*, the *C. truncatum* was also presented. The favorable temperatures for colony growth on PDA medium were of 25 to 37°C and the pH of 4.5 to 7.5. On the effect of seven fungicides, the result showed that Difenoconazole, Propiconazole + Difenoconazole, and Azoxystrobin + Definoconazole were the most inhibitory to fungal growth at 50 ppm and 100 ppm; percentages of the inhibition was up to 83.75; 93.75 and 93.75%, respectively. Among three plant extracts of *Impatiens balsamina*, *Pachyrhizus erosus*, and *Caulis opuntiae*, the extract of *I. balsamina* at 2.0; 3.0 and 4.0% was most efficient on inhibition of mycelial growth of the fungus, up to 93.7%.

**Keywords:** Dragon fruit (DF), new anthracnose disease, *Colletotrichum truncatum*, *C. gloeosporioides*, *Impatiens balsamina*, internal transcribed spacer

### **Article 18:**

#### **Study on integrated management of a new fruit borer (*Tirathaba* sp.) on rambutan in Tien Giang province**

Tran Thi My Hanh

Southern Horticultural Research Institute (SOFRI)

#### **Abstract**

The identification of suitable bagging materials and fruit bagging time for controlling a new rambutan fruit borer *Tirathaba* sp. and the evaluation of efficacy of chemical and biological insecticides were conducted on rambutan field conditions from June 2016 to November 2017.

The obtained results showed that the use of plastic bag with 49 holes/ cm<sup>2</sup> and the fruits bagging time at 1 month old fruit had high effectiveness for controlling rambutan fruit borer. Study results also indicated that Chlorantraniliprole and Abamectin + Azadirachtin had high efficacy for controlling this pest under field conditions.

**Keywords:** Rambutan tree, bagging materials and fruit bagging time, insecticides, rambutan fruit borer *Tirathaba* sp.

### **Article 19:**

#### **Study on micropropagation of *Achillea ptarmica* in Vietnam**

Pham Phuong Thu<sup>1,2</sup>, Chu Duc Ha<sup>2</sup>,  
Phan Thi Trang<sup>1</sup>, La Viet Hong<sup>1</sup>

<sup>1</sup> Hanoi Pedagogical University 2; <sup>2</sup> Agricultural Genetics Institute (AGI)

#### **Abstract**

*A. ptarmica* is known as a flowering plant, belonging to Asteraceae family, has high economic value and is used to isolate yarrow oil. In this study, the protocol of the micropropagation of *Achillea ptarmica* was proposed and completed. *A. ptarmica* seeds were highly recommended to be sterilized by immersing in NaClO 5% for 15 minutes. Formula for callus induction from *A. ptarmica* samples was found to be MS medium containing 0.5 mg/l BAP. The highest callus induction rate reached 24.4 times with good quality. In the treatment of NAA, the amount of roots ranged from 12.2 ÷ 16.0 roots per sample. Among them, MS medium containing 0.3 mg/l NAA was the most appropriate formula for root induction in *A. ptarmica* seedlings. In the greenhouse condition, *in vitro* plants could survive and develop in the 100% sand substrate.

**Keywords:** *Achillea ptarmica*, growth regulator, tissue culture, *in vitro*

### **Article 20:**

#### **Vegetative propagation of the *Gymnema sylvestre* by cutting method on aeroponic system**

Tran Thi Quy, Nguyen Quang Thach, Truong Thanh Hung,  
Ngo Thi Lam Giang, Pham Huu Nhuong

Tat Thanh Institute of Agrobiolgy, Nguyen Tat Thanh University

## **Abstract**

*Gymnema* (*Gymnema sylvestre* B.) is a precious medicinal herb in Vietnam, which has a very positive effect in the treatment of diabetes. Aeroponic technology is the best way to keep the highest survival ratio of the post *in vitro* seedlings; the growth of the seedlings is very well. The result identified some parameters needed for propagation of *Gymnema* plant with high multiplication rate via aeroponic method. *Gymnema* cuttings including one and two pairs of leaf were the most suitable materials for propagation on the aeroponic system. After two weeks, the rooting rate of cuttings was 96.6%, the average number of roots was 7.53 per cutting and the average length of root was 42.07 cm. The improved Hoagland nutrient solution at the electrical conductivity (EC) of 1,500  $\mu\text{S}/\text{cm}$  was selected for *Gymnema* propagation on aeroponic system. The best spraying cycle for growth of *Gymnema* was in 20 seconds and then interrupted spraying in 10 minutes. The multiplication coefficient of *Gymnema* was 20.0 cuttings per month per plant on the aeroponic system.

**Keywords:** *Gymnema sylvestre*, propagation, aeroponic system

## **Article 21:**

### **Application of aeroponic technique in rapid propagation of *Polyscias fruticosa***

Truong Thanh Hung, Nguyen Quang Thach, Tran Thi Quy,  
Ngo Thi Lam Giang, Pham Huu Nhung

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## **Abstract**

*Polyscias fruticosa* L. Harms is a saponin-containing plant and it is widely used in traditional medicine as well as in modern medicine. Therefore, rapid propagation of *Polyscias fruticosa* for massive production is necessary. In fact, conventional propagation method via cuttings on soil and mixed substrates does not provide sufficient quality plants. The *in vitro* culture technique is applied to produce large disease-free materials, however, the survival rate of seedling plants is not so high when transplanting from the bottle to the greenhouse. This study aims to apply the aeroponic technique to overcome the above mentioned problems. The results showed that the survival rate of *Polyscias fruticosa* seedlings which were transplanted to the greenhouse on aeroponic system was very high, up to 95%. Using the modified Hoagland nutrient solution with an electrical conductivity (EC) of 1,500  $\mu\text{S}/\text{cm}$  in combination with spraying for 20 seconds and then interrupted spraying in 10 minutes indicated the best results for propagation of *Polyscias fruticosa* from lateral shoots on aeroponic system.

**Keywords:** *Polyscias fruticosa*, aeroponic technique, vegetative propagation

## **Article 22:**

### **Survey of fish consumption by women and children in An Giang province**

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Tran Minh Phu, Tran Thi Thanh Hien, Pham Minh Duc

College of Aquaculture and Fisheries, Can Tho University

#### **Abstract**

The aim of this study is to assess amount of food and energy provided within 24 hours for women and children and to analyze the role of food fish for daily consumption. The study was conducted from January to November 2017 in An Giang province by interviewing 300 women and 300 children in the dry and wet seasons. The study found that women's daily dietary intake in dry and wet seasons was 750.3 g/day (1,411.8 kcal) and 780.6 g/day (1,403.5 kcal), respectively. For children, daily food intake in dry and wet seasons was 683.1 g/day (764.7 kcal) and 616.5 g/day (983.7 kcal), respectively. Food fish consumption by women accounted for 18.1-18.8% in quantity (10.9 - 12.8% in energy). For children, food fish products constituted 9.5 - 9.8% in quantity (6.8 - 9.3% in energy).

**Keywords:** Fish consumption, survey, women, children