

Biological control of post-harvest diseases of orange and lily

THE STRAIN YJP-111 with high antifungal activity was isolated from soils collected in Suwon, Korea, and identified as a *Bacillus* sp. YJP-111. A purified substance, shown by chromatography to be antibiotic against *Penicillium italicum*, was crystallized. The substance was composed of oligosaccharides, with a molecular weight of 366 and a melting point of 155-157°C. It was identified as a novel antibiotic substance. The efficacy of this new antifungal substance was very strong in inhibiting the growth of

the fungal pathogen, *Penicillium italicum*, which causes post-harvest diseases in orange and lily. No toxicity against fish was observed up to a concentration of 10mg/L. Thus, this substance is considered to have low toxicity.

News source: **National Institute of Agricultural Science and Technology, RDA, Suwon 441-707, Korea**

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Biological control of foliar diseases of tomato grown in soilless culture

FOLIAR diseases are important in tomato production under rain shelters in the Cameron Highlands of Malaysia. The rainshelter or greenhouse environment is very conducive to several diseases, particularly powdery mildews caused by *Leveillula taurica*, grey mold caused by *Botrytis cinerea*, and late blight caused by *Phytophthora infestans*. Biocontrol represents an attractive alternative for the future because of widespread consumers concerns over pesticide residues. Recent in-vitro studies of the effect of bacteria on these foliar diseases indicated five promising isolates which showed high antagonistic activity against late blight and grey mold. The isolates are SC96, CT1, LT2, KTTW2 and T5. They were identified as *Bacillus* sp., *Enterobacter agglomerans*, *Enterobacter gergoviae*, *Comamonas acidovorans* and *Bacillus amiloliquesaciens*,

respectively. The performance of the isolates was tested, in terms of their ability to control the three foliar diseases under farm conditions. The bacterial isolate which was most active against powdery mildew was SC96. The incidence on stem and calyx was 20%, and less than 30% on the leaves. The other isolates were not very effective in controlling powdery mildew. The isolate SC96 also gave good control of late blight. Various frequencies of application and mixtures of antagonists were tested. The results showed that weekly applications of SC96, and a mixture of SC96 and T5, were effective in controlling powdery mildew and late blight.

News source: **MARDI, Malaysia**

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Nutrient deficiency symptoms in sweetpotato roots

NUTRIENT deficiency in sweetpotato was determined by visible symptoms in the roots by researchers (A. Tulin, *et. al.*) from the Philippine Root Crop Research and Training Center, Visayas State College of Agriculture, Leyte, Philippines. Two traditional cultivars (Kaangi and Kasapad) and two recommended varieties (PSB SP 17 and PSB SP 19) were used. Results revealed the following. Nitrogen deficient plants were characterized by lower biomass and roots with fewer branches, and shorter roots in PSB SP 17. Phosphorus deficiency resulted in lower root biomass, limited growth or branching of lateral roots and in Kaangi, reduced biomass. Potassium deficient crops had greatly reduced biomass and stunted lateral roots. Calcium deficiency led to the reduced growth of the apical meristem, which eventually died, and softening of root tissues which led to their collapse. Magnesium deficiency resulted in greatly reduced root biomass and stunted growth of root tips. Iron deficiency resulted in

reduced root biomass and stunted growth of root tips. Overall, micronutrient deficiencies resulted in reduced root biomass, lesser production of fibrous roots and stunted development of root tips. These results were consistent with farmers' perceptions and indigenous knowledge. However, the study showed that that farmers' expectations of crop performance were based, not on the roots of sweetpotato, but on the color, shape and size of the leaves. Visible symptoms in the roots may be a way for researchers and farmers to learn and experiment together. For extension workers, visible symptoms can serve as a basis for designing relevant exercises in training and other educational activities.

News source: **The Philippine Council for Agriculture, Forestry and Natural Resources Research and Development**

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Propagation of hybrid acacia by tissue culture

SOME EXPERIMENTS were carried out to find the optimal cultural conditions for the efficient propagation of hybrid Acacia by tissue culture. The following results were obtained.

- 1) Buds for plantlets were successfully sterilized with 0.1 % HgCl₂ solution.
- 2) May and August were the best season for the collection of buds.
- 3) For the foundation media, Murashige & Skoog (MS) was used. The best combination and concentration of growth regulators for rooting the materials differed according to the hybrid line. For instance, for line No. 10, a combination of IBA 3.0-5.0 mg/L, NAA 1.0 mg/L, and IAA 3.0 mg/L was the best, For line No. 32, a combination of IBA 2.0-

4.0 mg/L, NAA 1.0 mg/L, and IAA 2.0-3.0 mg/L was the best.

- 4) Rooted plantlets were transplanted into sand media in a greenhouse 20 days after being sprayed with benlate. Later, they were transplanted again into plastic bags filled with soil, and were kept in a nursery bed outdoors.
- 5) Thus it was found that tissue culture was a practical way of propagating hybrid Acacia.

News source: **Department of Agriculture and Forestry Extension, MARD**

For further information: Journal of Agriculture and Rural Development. No.6, 2001

Biological control of greenhouse whitefly by encarsia formosa

ONE OF THE most famous and successful natural enemies in the world, the tiny parasitoid wasp *Encarsia formosa*, was imported into Korea in 1993 to control greenhouse whitefly on greenhouse vegetables. Since this introduction, research and extension have focused on the adaptation of this parasitoid to the Korean situation, and on the implementation of biological control in farmer's greenhouses. The rearing system and biology of *E. formosa*, as well as harvesting and storage of mummies and quality control factors in

rearing technology, have been studied. The effect of fluctuating temperatures, humidity, and pesticides has also been analyzed. Some extension trials are now being carried out, with a view to future implementation of biological control.

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