

The Asiatic palm weevil, *Rhabdoscelus lineatocollis* (Heller) Life history, ecological features, and control

THE Asiatic palm weevil, *Rhabdoscelus lineatocollis* (Heller), is a newly discovered pest in Taiwan. Its larvae damage stems, reduce yield, or kill seedlings and young palms. In the Kao-Ping areas, large acreage of yellow palms was found damaged by this pest in February 1998. Recently, damage incidences were also reported on betel nut palm but not on other crops.

The results of rearing the Asiatic palm weevil on fresh, edible sugarcane under the laboratory condition showed that the range of the duration for each stage of its development at 22-30°C (RH 85±2%) was 3.62-10.0 days for the egg stage, 33.48-66.60 days for the larval stage, and 8.32-18.73 days for the pupal stage. The adult longevity was 142-217 days at 25°C. Five different pesticides (44.9% Chlorpyrifos, 44% Dimethoate, 40.64% Carbofuran, 9.6% Imidacloprid, and 10% Phorate) were screened in the laboratory for

the control of this pest and the results showed that most of the insecticides screened provided good control of the weevil except for 10% Phorate granules. In the field experiments, 40.64% Carbofuran F.P. provided the best control. For biological control, seven strains of *Metarhizium anisopliae* and two strains of *Beauveria bassiana* were tested and the results showed that *M. anisopliae* MA-1 and 683, and *B. bassiana* F121 were significantly more effective in the control of the weevil.

It is recommended that an IPM program integrating greenhouse facility combined with chemicals and biological control agents be used to effectively control this pest.

News source: **Kaoshiung District Agricultural Improvement Station, Taiwan ROC**

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Evaluation of introduced hybrid rice combinations and some Vietnam hybrids

THIS study identified new hybrids with better grain quality and resistance to bacterial leaf blight (BLB) (*Pseudomonas campestris* pv. *oryzae*) than Shan You 63 and Shan You Gui 99. These two hybrid combinations were introduced from China and successfully grown in large scale in the northern part of the country.

Seventy (70) entries from the International Hybrid Rice Observation Nursery (1995), 17 hybrid combinations from IRRI, and 4 others from China were tested in field trials at the experimental stations in An Khanh, Ha Tay province (spring 1996) and Thanh Tri, Hanoi (summer 1996).

Following are the promising hybrid combinations from the field trials:

- Hybrid IR 6408A/827 having growth duration of 110 days gave the highest yield of 6.08 MT/ha in the summer cropping season of 1996, compared to 4.38 MT/ha of CR203 (check), 5.1 MT/ha of Shan You 63, and 4.95 MT/ha of Shan You Gui 99. Hybrid IR 6408A/827 also showed resistance to BLB.

- HRSP 783 and HRSP 789 ranked second in terms of yield, 5.78 MT/ha and 5.81 MT/ha, respectively. However, HRSP 783 showed susceptibility to BLB.
- Three hybrid combinations, 25A/19304, 25A/49461 and 25A/72, from the International Hybrid Rice Observation Nursery, as well as three hybrids 97A/58, 97A/29723, and 97A/25587 also showed good performance, such as short duration, tolerance to BLB in the field, and good grain quality. Their yields were similar to those of the Chinese hybrids.
- The two-line hybrid S3 was identified as having short duration, high yielding potential, good grain quality, and tolerance to BLB in the field.
- Bo You 64 and Bo You Gui are two well-known introduced hybrids in Vietnam. They are uniform and have high yielding potential (5.3- 5.6 MT/ha).

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

For further information, see *Science & Technology Journal of Agriculture and Rural Development*, No.3, 2003, pp.257 -259.

Application of molecular markers to rice breeding in Vietnam

MOLECULAR markers have several advantages over traditional phenotypic markers in terms of improving the efficiency of conventional plant breeding. Molecular markers applied in rice breeding in the Mekong Delta have been implemented since 1996 for some major biotic stresses [brown planthopper (BPH), bacterial leaf blight (BLB)] as well as for the analysis of genetic diversity of rice germplasm.

Through the analysis of genetic diversity of rice and its relatives in the Mekong Delta, four genetic clusters were identified by Tocher and Mahalonobis' methods based on morphological traits. Floating rice (cluster I) was found to be close to the wild rice species *Oryza rufipogon*. Cluster II included local rice accessions collected from coastal areas with salt tolerance, while Cluster III included deep water rice collected from the western region. Cluster IV, on the other hand, was composed of early-monsoon rice cultivars without photosensitivity.

Rice germplasm was classified into two major clusters and many subclusters by Random Amplified Polymorphism DNA (RAPD). Sequence tagged site markers (STS) were used to detect resistant genes for BPH and BLB. Most of the traditional cultivars were considered as good sources of genes Pi-2, Xa-5, and Xa-13. Two pairs of primer RG 457 were designed as STS markers digested with HinfI and AluI to be useful for detecting BPH resistant genes to biotypes 2 and 3. The PCR-based markers showed that the resistant genotypes had 500, 300 bp bands and 300, 250, 200 bp bands in primers RG 457 FL/RB and RG 457 FL/RL, respectively.

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

For further information, see *Science & Technology Journal of Agriculture and Rural Development*.

Breeding high quality rice by anther culture

Crossing the hybrid with an aromatic rice cultivar

THE ADVENT of various biotechnological techniques in recent years has offered new tools for developing high yielding rice varieties possessing good grain characteristics, such as aroma, to boost rice export and meet domestic demand. Among these tools, anther culture is emerging as an effective technique in rice breeding, particularly when applied to potential hybrid. Four aromatic varieties were used as parents: DS 20, IR 68144, Kloong Luang 1, and Suphan Buri. Eight F1 hybrids were selected for anther culture. N6 or MS were used as basic medium for anther culture. Panicles were collected prior to emergence from flag leaf. Cold treatment of panicles was carried out at 10°C for 7 days in the incubator. After cold treatment, the spikelets were surface sterilized with alcohol and HgCl₂. Anthers were taken out aseptically from the spikelets and placed on the callus induction medium. The cultures were incubated in the dark at 20°C. When the calli emerging from the anther lobe grew, they were transferred to the regeneration medium and placed under continuous fluorescent light for plant regeneration. A0 plants were

observed and collected to advance to A1 generation and selected for A2 generation.

Several promising lines from the hybrids Suphan Buri/OM 1490 and Kloong Luang 1/CM 16-27 were evaluated for yield potential and quality traits. Some lines showing good performance have been tested in large scale in the Mekong Delta. In addition, more than 300 additional doubled haploid lines from other hybrids are under evaluation.

This study showed that the application of anther culture holds promise in rice breeding particularly for the improvement of grain quality traits.

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

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