

## Rice breeding for resistance to blast via marker assisted selection

**B**LAST, caused by the blast fungus *Pyricularia grisea*, is one of the most serious diseases of rice. Molecular markers with Marker Assisted Selection (MAS) have become an important tool for durable resistance screening; minimizing the time, cost and other breeding problems; and helping detect the target traits at the early stage of rice plants.

Two Indica cultivars, CR 203 and SHZ 2, were used in this study. The first cultivar has good quality and wide ecological adaptation but was susceptible to the blast disease, while another one, SHZ 2, has excellent resistance to blast even in the environment conducive to the disease. The backcross generations were developed from the cross between CR 203 x SHZ 2, and at each next backcross generation, the cultivar CR 203 was used to backcross to the selected rice plants based on DNA analysis.

The resistant lines were selected based on the analysis of the genetic relationship using Resistant Gene Analog (RGA) marker. The eight selected rice lines are: CS 2, CS 11, CS 18, CS 35, CS 36, CS 62, and CS 67. The selected rice inherited the high resistance to blast from the cultivar SHZ 2 and the good agronomic traits from the cultivar CR 203. These promising rice lines can replace the susceptible cultivar CR 203 being grown in the country.

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

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## Integrated nutrient management for sustainable agriculture

**T**HIS STUDY aimed to determine the effect of continuous application of organic fertilizer alone or in combination on rice yield and to recognize their effects on microbial communities in rice soil conditions.

The experiment started in 1997 with four treatments: T1, Control, ONOPOK; T2, 100% organic fertilizer, 7 tons/ha; T3, 50% organic fertilizer + 50% inorganic fertilizer (60 N - 15 P<sub>2</sub>O<sub>5</sub> - 15 K<sub>2</sub>O kg/ha in the dry season and 40 N - 20 P<sub>2</sub>O<sub>5</sub> - 15 K<sub>2</sub>O kg/ha in the wet season); and T4, 100% inorganic fertilizer (120 N - 30 P<sub>2</sub>O<sub>5</sub> - 30 K<sub>2</sub>O kg/ha in the dry season and 80 N - 40 P<sub>2</sub>O<sub>5</sub> - 30 K<sub>2</sub>O kg/ha in the wet season). Variety IR 64 was used in the experiment.

The average data from two rice crops per year for 4 years of IR 64 showed that a continuous application of 100% organic fertilizer (T2) increased rice yield over the control by 13.9%, while continuous application of 50% organic + 50% inorganic fertilizers (T3) increased rice yield over the control by 22.5%.

The microbial population dynamic in the soil in T3 was also higher than that in T2 and T1. The data obtained also showed that under conditions of continuous application of 100% organic fertilizer (T2), the appearance of major insect pests and sheath blight disease was delayed and the microbial population in the soil gave higher stabilization as compared to the application of 100% inorganic fertilizer (T4).

In conclusion, T3 with the combination of organic and inorganic fertilizers had the best rice yield and microbial population dynamic, suggesting that organic manure plays an important role as a nutrient supplement to chemical fertilizers for sustainable agriculture and environmental conservation.

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

For further information, see *Omon Rice*, Cuu Long Delta Rice Research Institute, Issue 10, Vietnam.

# Evaluation of some unconventional plants as ruminant feed

**THIS STUDY** evaluated the nutrient value of *Trichanthera gigantea*, *Hibiscus rosa-sinensis*, and *Muntingia calabura* as additional ruminant feeds in the dry season.

Leaves and young shoots of the target trees were sampled for chemical analysis and identification of rumen degradability of dry matter and fermentation *in vitro*. Experimental results showed that crude protein content found in leaves and young shoots of *T. gigantea*, *H. rosa-sinensis*, and *M. calabura* were 12-12.4, 14.2-16, and 17.2-18.4%, respectively. Meanwhile, rumen degradability in leaves and young shoots of *H. rosa-sinensis*, *T. gigantea*, and *M. calabura* at 24 hours after feeding were 71.9-92.1, 46.8-48.2, and 39.6-46.5 respectively.

Data obtained showed that crude protein content and degradability of *H. rosa-sinensis* are much higher than those of *T. gigantea* and *M. calabura*. *H. rosa-sinensis* seemed to be a promising fodder especially in the dry season in Central Vietnam. However, there is a need to further investigate the anti-nutritional and food intake characteristics of *H. rosa-sinensis*.

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

For further information, see *Science & Technology Journal of Agriculture and Rural Development*, No. 12, 2002, pp.1089-1090.

# Fruit genetic resources in the south of Vietnam

## Review of investigation, collection, conservation, evaluation and utilization

**SINCE 1994**, the Southern Fruit Research Institute (SOFRI) has carried out the investigation, collection, conservation, evaluation, and utilization of the fruit genetic resource in the South of Vietnam. The above activities were aimed to:

- ❑ Create information of the present status of genetic resource of fruit trees;
- ❑ Collect and conserve, as well as evaluate domestic and exotic germplasm of fruit trees in order to select genetic resources well adapted to micro-ecological regions and possessing resistance to pests of high economic importance;
- ❑ Select valuable planting materials for breeding program; and
- ❑ Set up a database for information exchange.

Forty fruit types with 653 varieties, including 317 local varieties/clone and foreign varieties/clone were collected and conserved. Most of these have been evaluated and tested in different ecological regions in the South of Vietnam. Those evaluated as having good potential development are as follows:

### Domestic fruit types:

Pummelo cultivars: Namroi, Da xanh, Duong la cam  
Orange cultivars: Mat, Soan  
Mandarin cultivars: Quit duong, Tieu son, Cam sanh  
Rambutan cultivars: Chom chom nhan, Java

Banana cultivars: Gia bent tre, Gia da lat, Bom, Cau trang, Xiem trang  
Water apple cultivars: Hong dao da, Da xanh, Trang sua, Cho lach  
Longan cultivars: Xuong com vang, Tieu da bo, Super  
Durial cultivars: Com vang hat lep, Sua hat lep, Ben tre, Hat lep Dong nai  
Dragon fruit: Thanh long, Binh thuan  
Guava cultivars: Xa li nghe, Xa li gion, Ruot do da lang  
Mango cultivars: Cat hoa loc, Cat chu, Canh nong  
Star apple: Lo re

### Exotic fruit types:

Nakon pummelo, Tangelo orlando, SRA 21, Rong rieng rambutan, Mongthong durial, Red flesh dragon fruit, and Khieu sa voi mango

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

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