

## Academic Prizes and Awards

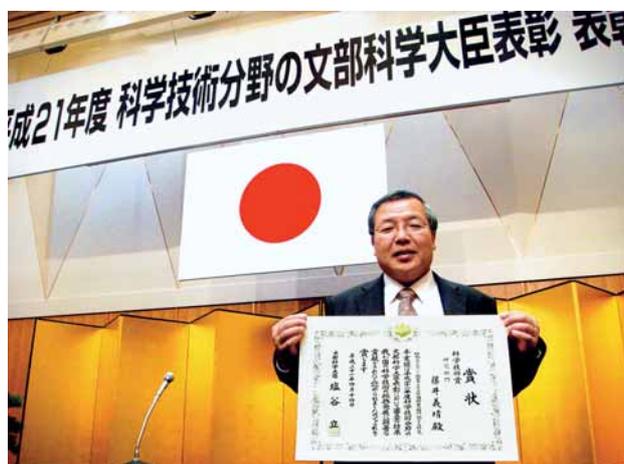
### 1. 2009 Commendation (Research Category) by the Minister of Education, Culture, Sports, Science and Technology Awarded for “Study on Understanding of Allelopathic Phenomena of Plants and their Active Substances”

Recipient: Yoshiharu Fujii (Biodiversity Division)

Senior Researcher Fujii developed four new bioassay methods for assessing various types of allelopathic activity. He screened about 4,000 species of plants and found that the velvet bean (*Mucuna pruriens*) and hairy vetch (*Vicia villosa*) had strong allelopathic action, and demonstrated that they were active in controlling weeds in farms. By analyzing the allelopathic substances contained in these plants, Dr. Fujii identified L-dopa in velvet beans and discovered, for the first time in the world, cyanamide occurring naturally in hairy vetch. In addition, Dr. Fujii discovered nine new bioactive substances and obtained patents on them.

As a result of these studies, hairy vetch has been adopted by farmers across Japan as a green manure crop which efficiently controls weeds in orchards and rice paddies. By utilizing hairy vetch on their farms, some orchardists and rice farmers have obtained JAS certification for their organic produce.

An outcome of Dr. Fujii's research is that his methods have been adopted as the international standard for assaying allelopathy. The newly identified allelopathic substances are very likely to be helpful for the development of safer agrochemicals to replace conventional synthetic chemicals, which in turn will help the production of safer food through direct use of plants containing these substances in organic farming.



Recipient: Y. Fujii

### 2. 2009 Commendation (Promotion of Understanding Category) by the Minister of Education, Culture, Sports, Science and Technology Awarded for “Promotion of Understanding of Biodiversity in Rural Landscapes by Creation and Exhibition of a Miniature Village”

Recipients: Hiroshi Moriyama (formerly Department of Environmental Management), Kokichi Matsumoto (Experimental Farm Management Division), Naokuni Harada (Biodiversity Division), Makoto Ide (Head, Research Planning Office), Shori Yamamoto (Biodiversity Division)

The leader of the award-winning team, Researcher Emeritus Moriyama, clarified that the organisms unique to the environments of rural landscapes were maintained by small disturbances caused by the actions of humans engaged in agriculture. By constructing life-size models of farming village environments (miniature villages) complete with secondary forest, irrigation pond, paddies and fields and temple forests he demonstrated that placement of habitat spaces (such as rice paddies, fields, irrigation ponds and secondary forests) were important factors for the survival of the organisms. Through his numerous books and lectures, Dr. Moriyama explained the development of a secondary natural environment in rural landscapes and advocated the importance of preserving biodiversity, and by means of the miniature farming village, he promoted an understanding of its importance.

Mr. Matsumoto of Experimental Farm Management Division was responsible for the miniature village and worked tirelessly to maintain it using the traditional management practices of the surrounding areas as a reference. These outcomes have helped in raising



Recipients: From left, S. Yamamoto, K. Matsumoto, H. Moriyama, N. Harada, M. Ide

awareness of the importance of nature maintained by human actions under the National Strategies for Biodiversity, and have been adopted in numerous efforts for the preservation of biodiversity in rural landscapes.

Mr. Matsumoto passed away on July 4, 2009 after a brief illness. May he rest in peace.

### 3. The 2009 Academic Achievement Award of the Environmental Science Society

Recipient: Junko Shindo (Carbon and Nutrient Cycles Division)

The award was given to the “Study on human activity-derived nitrogen flow and its environmental impact”. By use of a nitrogen cycle model and field studies Senior Researcher Shindo demonstrated that changes in dietary habits, increased demand for food and feed, and increased use of nitrogen fertilizer for agricultural production increased the nitrogen load to the environment, resulting in a serious impact on quality of groundwater and rivers.



With the winner (center)

### 4. The 54th Achievement Award of the Japan Society of Soil Science and Plant Nutrition

Recipient: Kazuyuki Yagi (Carbon and Nutrient Cycles Division)

The award was given in recognition of the merits of the “Study on Evaluation of Greenhouse Gas Emissions from Farm Soil”. Senior Researcher Yagi measured emissions of carbon dioxide, methane, and nitrous oxide (dinitrogen monoxide) from farmland in Japan and other countries in Asia, and identified the characteristics of generation and factors for control. He also carried out a wide-area evaluation of emissions. At the same time, he

investigated various techniques to reduce emissions.



At a survey site in Thailand

### 5. The 2009 (8th) Award for the Advancement of Agricultural Science

Recipient: Nobuyasu Seike (Organochemicals Division)

Senior Researcher Seike won the award for his “Understanding the dynamics of POPs remaining in farm soil and development of risk reduction technologies”. Dr. Seike established a method for the ultratrace analysis of Japanese farm soil for long-term residual dioxins and POPs, such as dieldrin and heptachlor used in the past as pesticides. He also used statistical techniques to analyze data and identify risks extending into the future in the agricultural environment, and developed practical risk reduction technologies, including a technique for diagnosing crop pollution.



Recipient: N. Seike

### 6. The 2009 Award for Young Agricultural Researchers

Recipient: Hiroko Akiyama (Murakami) (Carbon and Nutrient Cycles Division)

Senior Researcher Akiyama won the award for her “Study of the Estimation and Mitigation of Greenhouse Gas Emissions from Agricultural Lands”. This award is given by the Chairman of the Agriculture, Forestry and Fisheries Research Council to young researchers who have achieved excellence in research and development in the field of the agriculture, forestry and fisheries sector and related industries. The award-winning study concerned the estimation of greenhouse gas emissions from agricultural lands and the development and assessment of mitigation options with respect to nitrous oxide (N<sub>2</sub>O). The new emission factor developed by Dr. Akiyama has been adopted for 2006 IPCC (Intergovernmental Panel on Climate Change) Guidelines for National Greenhouse Gas Inventories.



Recipient: H. Akiyama