

# PLANT PRODUCTION SYSTEMS – Our goal is to establish sustainable crop production systems with high yield and in harmony with the environment

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**Agriculture in the 20th century, that achieved remarkable increase of the crop production, was largely dependent on intensive utilization of fossil fuels, fertilizer and pesticides. However, such industrialized agriculture has used natural resources excessively and inefficiently, and has been degrading ecosystems and creating a variety of environmental problems. In the Laboratory of Plant Production Systems, we examine the present agricultural practices from the viewpoints of the structure and function of the ecosystems to establish sustainable crop production systems with high yield as well as in harmony with the environment.**

Interview with farmers in a village in Yunnan Province, China



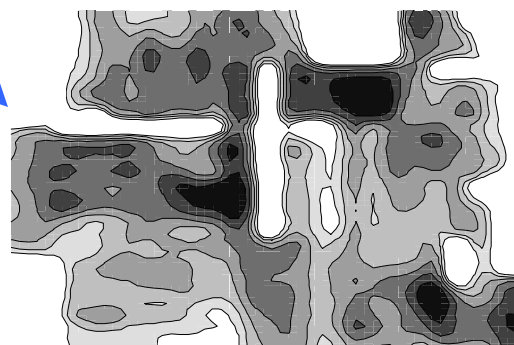
Remote-sensing of the growth status of crop plants in a field



Sampling of soils, which is an indispensable media for crop production



Survey and analysis of the environmental factors associating with crop yield



**Mapping the spatial variation of crop growth and natural resources**

**Examination and modeling of the structure and function of the ecosystems**

**Establishment of sustainable crop production systems with high yield and in harmony with the environment**

## Key words

*Agricultural ecosystem, Cycling of materials, Agricultural systems, Crop production, Farming systems, Land use, Soil fertility, Sustainable agriculture, Industrial agriculture, Spatial variation of crop growth and natural resources, Nitrogen fixation*

## Recent publications

### **The Effect of Precipitation on Growth of No-tillage Soybean in the Upland Field Converted from Paddy Field.**

Murata M, Inoue H, Inamura T (2012)  
Jpn. J. Crop Sci. (in press)

### **Effects of the Long-term Application of Anaerobically-digested Cattle Manure on Growth, Yield and Nitrogen Uptake of Paddy Rice (*Oryza sativa* L.), and Soil Fertility in Warmer Region of Japan.**

Nishikawa T, Kunzhi L, Inoue H, Umeda M, Hirooka H, Inamura T (2012)  
Plant Prod. Sci. (in press)

### **Physicochemical changes in soil following land use change from paddy fields to greenhouse and upland fields in the southeastern basin of Dianchi lake in Yunnan province, China.**

Moritsuka N, Nishikawa T, Yamamoto S, Matsui N, Inoue H, Kunzhi L, Inamura T (2012)  
Pedosphere (in press)

### **Dietary nitrate loads on cows in dairy farm near Lake Dian, Kunming City, Yunnan Province, China.**

Anzai H, Oishi K, Li K, Irbis C, Hirooka H, Inamura T, Kumagai H (2011)  
Trace Nutrients Research. Reviewed. 28:54-57

### **Dynamics of clay-fixed ammonium as a sink or source of exchangeable ammonium in a paddy soil.**

Matsuoka K, Moritsuka N (2011)  
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### **Remote sensing and agricultural production**

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Agriculture in the 21st century, the 1st volume "the future of crop production" Kyoto University press, Kyoto pp.221-248

### **Development and evaluation of sustainable animal production systems integrated with crop production**

Inamura T (edited by Hirooka H, Kume S, Mato T, Inamura T) (2009)  
Kyoto University press, Agriculture and Forestry Statistics Publishing Inc. Tokyo pp.204

**Spatial variability of soil properties in contiguous small-scale paddy fields under paddy-upland crop rotation**

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**Path analysis of tiller density of winter wheat demonstrates the importance of practices that manipulate clod size based on soil moisture at seeding in the rice-wheat cropping system**

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**Identification of a novel gene *ef7* conferring an extremely long basic vegetative growth phase in rice**

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**Multiple alleles at Early flowering 1 locus making variation in the basic vegetative growth period in rice (*Oryza sativa L.*)**

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**Distortion in a village induced by rapid economic development in China**

Inamura T (2009)

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**Effects of nitrogen mineralization on paddy rice yield under low nitrogen input conditions in irrigated rice-based multiple cropping with intensive cropping of vegetables in southwest China**

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**Evaluation of site-specific management zones on a farm with 124 contiguous small paddy fields in a multiple-cropping system**

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**Geostatistical analysis of spatial variability of paddy rice nitrogen in paddy-upland rotational fields for extension of precision agriculture**

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**Analysis of the Sources of Variations of Wheat Yield in the Field, and Possibility of the Variable Rate Management**

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**Nitrogen and phosphorus utilization and their cycling in mixed farming systems for beef cow-calf and rice production**

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**Analysis of the Variations of Rice Yield in Paddy-upland Rotational Fields**

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**Control of the Low-densified Level of Cadmium in Brown Rice by the Methane Fermented Manure Liquid**

Inamura T, Chin F, Matoh T, Inoue H, Yamasue Y (2006)

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**Spatial relationships among different forms of soil nutrients in a paddy field**

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