

FACULTY OF AGRICULTURE
ACADEMIC STAFFS AND THEIR MAJOR FIELDS AND RESEARCH
INTERESTS

Course of Applied Biological Sciences

Improvement of Tropical Crops **Zheng, S.H. and Fujita, D.**

1. Physiology and Eco-morphology of tropical leguminous crops.
2. Sustainable cropping system which adapted to tropical agriculture.
3. Improvement of yield-related traits in rice through genetic and breeding studies.
4. Genetic and breeding studies for resistance to planthopper and leafhopper in rice.
5. Genetic improvement for days to heading in indica rice.

Animal Production **Wada, Y. and Yamanaka, K.**

1. Animal breeding using DNA marker.
2. Molecular genetics for domestic animal.
3. Efficient production of offspring from genetically superior individuals by reproductive technologies.
4. Application of reproductive technology to fertility treatment.
5. Recent problems in animal reproduction.

Analysis of Plant Metabolism **Ishimaru, K.**

1. Chemical analysis of plant secondary metabolites.
2. Biotechnology and plant metabolic regulation.
3. Development of functional food materials.

Vegetable and Ornamental Horticulture **Isshiki, S. and Ogura-Tsujita, Y.**

1. Genetics and systematics of eggplant and its related Solanum species.
2. Cell, tissue and organ culture of vegetables and ornamentals.
3. Breeding of eggplant.
4. Seed germination experiments.
5. Molecular identification of symbiotic fungi in vitro culture of orchid seeds and fungi.
6. Survey of wild orchid habitats.

Horticultural Physiology **Kotoda, N.**

1. Studies on genetic resources of Citrus spp. and its relatives.
2. Elucidation of involvement of phytohormones in the early development of fruit.
3. Studies on juvenility, flower induction and embryogenesis in fruit trees.
4. Functional genomics in horticultural crops such as tree fruits.

Genetics and Plant Breeding **Anai, T.**

1. Molecular breeding in rice and soybean.
2. Development and utilization of breeding methods based on gene manipulation.
3. Improvement of soybean fatty acid composition by induced mutation.

Plant Virology **Ohshima, K.**

1. Functions of plant virus genes.
2. Genetic structure of populations of plant viruses.
3. Molecular evolution and ecology of plant viruses.
4. Interactions between host and plant virus genes.

Plant Mycology **Kusaba, M.**

1. Classification and identification of plant pathogens.
2. Genetics of pathogenicity of plant pathogens.
3. Genetic diversity in fungal population.

Entomology **Hayakawa, Y.**

1. Physiological roles of insect cytokines.
2. Neurochemical and endocrinological regulation insect metamorphosis and diapause.
3. Defense mechanism in insect hemolymph.
4. Chemical ecology and physiology of provisioning shield bug, *Parastrachia japonensis*.

Animal Behavioral Ecology **Nomakuchi, S.**

1. Behavioral ecology of insects and other animals, and theoretical analysis using mathematical models and quantitative methods.

Nematology **Yoshiga, T.**

1. Biological and physiological characteristics of plant parasitic nematodes.
2. Growth regulation and pathogenicity of entomopathogenic nematodes.
3. Species diversity and ecological significance of brackish water nematodes.

Systems Ecology **Tokuda, M.**

1. Insect-plant interactions.
2. Mechanism and adaptive significance of host manipulation by insects.
3. Evolutionary ecology and biosystematics of gall-inducing insects.
4. Insect pest management.

Course of Agro-Environmental Conservation

Environmental Geotechnics **Kondo, F. and Miyamoto, H.**

1. Sedimentation and self-weight consolidation characteristics of soft clay.
2. Solidification of soft and contaminated clay by fly ash-based geopolymer.
3. Soil management and conservation for sustainable crop production.

Rural Environment **Haraguchi, T.**

1. Conservation of the water environment in agricultural field.
2. Water utilization for agriculture.

Environment of Shallow Sea and Tidal Flat **Koriyama, M. and Yuge, K.**

1. Conservation of tidal flat environment.
2. Environmental monitoring of shallow sea area.
3. Quantification of water consumption in agricultural field.
4. Multi-functionality in agriculture.

5. Sustainable land use planning in Japanese rural area.

Environmental Subsurface Science **Cho, H.**

1. Transport of water, salts, ions and heat in unsaturated soil.
2. Prevention of salt accumulation in the soil using phytoremediation methods.
3. Measurement of soil hydraulic properties and salt movement.

Environmental Analytical Chemistry **Ueno, D.**

1. Investigation of environmental pollution by man-made organic chemicals in air, water, soil and biota.
2. Instrumental analytical chemistry (mainly using GC/MS and LC/MS) for detection of environmental pollutants.

Water Environment in Rural Areas **Anan, M.**

1. Evaluation of agricultural water management in paddy field.
2. Modeling of water flow and quality in rural area.
3. Quantification of flood mitigation function in agricultural field.

Course of Resource Recycling Agrobiolgy and Agro-Production Systems

Crop Science **Arima, S. and Suzuki, A.**

1. Morpho-physiological analyses on crop plants and their application to crop production.
2. Molecular mechanism on symbiosis between leguminous plants and rhizobia.

Agricultural Production Engineering **Tanaka, M.**

1. Environmental control for hydroponic culture of vegetables.
2. Nondestructive quality evaluation of agricultural products.

Soil Microbiology **Someya, T.**

1. Fluorescent microscopic estimation of soil microbial biomass.
2. Bioremediation of contaminated soil and groundwater.
3. Microbial community structure analysis of soil and manure.

Agricultural Machinery and Information Technology **Inaba, S.**

1. Running resistance of agricultural rubber crawler.
2. Vibration analysis for agricultural vehicles.
3. Database for agricultural production.
4. Management of glassy ratio of rye with image processing technology.

Fermentation Microbiology **Kitagaki, H.**

1. Breeding of yeast strains appropriate for production of bioethanol and alcohol beverages.

Plant Genetic Resources **Komai, F.**

1. Breeding and production of horticultural crops.

Animal Science **Ebara, F.**

1. Animal behavior and management.

Integrated Field Science **Ueno, K.**

1. Production methods for sustainable agriculture.

Course of Rural Development Studies

Economics of Agricultural Marketing Shiratake, Y. and Tsuji, K.

1. Market structure and organization.
2. Farm management.
3. Agricultural economics.
4. Rural development in Asia.

Regional Resource Management Igarashi, T. and Nakai, S.

1. Geographical studies on landscape, communities, and land utilization of rural settlement.
2. Land improvement and sustainable developments.
3. Food culture from an anthropological perspective.

Human Ecology Inaoka, T. and Fujimura, M.

1. Environmental change and human survival in Asia and South Pacific.
2. Issues relating to development and conservation in rural community.

Course of Applied Biochemistry and Food Science

Biochemistry Watanabe, K. and Tsujita, T.

1. Structure and mechanism of enzyme catalysis and regulation.
2. Roles of proteins in complex cellular processes.
3. X-ray crystallography of proteins.
4. Discovering oxidative stress recognition/response molecular mechanisms using genetically modified mice and cell lines
5. Identifying oxidative stress modifiers from natural and synthetic chemical compounds

Applied Microbiology Kobayashi, G and Goto, M.

1. Development of acetone-butanol-ethanol fermentation from biomass.
2. Microflora analysis by PCR-DGGE.
3. Isolation and characterization of useful bacteria and fungi.
4. Molecular breeding of fungi for production of organic acids, enzymes.

Biomolecular Chemistry Ueda, T. and Soh, N.

1. Structure-activity relationship of anti bacterial and/or antifungal peptides.
2. Cytotoxicity of amino acid derivatives.
3. Bioanalysis based on fluorescence.
4. Biohybrid materials using artificial polymer or inorganic nanosheet.

Molecular and Cellular Biology Nagano, Y.

1. Genomics and transcriptomics of various organisms, especially of *Citrus* species.
2. Highly efficient DNA cloning method and its applications.
3. Study of insect gustatory and olfactory sense, and lipid metabolism.

Food Science Hayashi, N. and Noma, S.

1. Mechanism and biochemical control of enzymatic browning in fruits and vegetables.
2. Isolation and characterization polyphenoloxidase and other oxidases in plants.
3. Difference spectral analysis of polyphenolic compounds and L-ascorbic acid in foods.
4. Oligosaccharide and ethanol production from biomass waste through pressurized hot water process.
5. Functional materials extraction using hot compressed solvent.
6. Control of microorganisms in foods using carbon dioxide.
7. Development of flavor enhancer derived from fish.

Food Chemistry Mitsutomi, M.

1. Isolation and characterization of chitin-related enzymes.
2. Enzymatic modification of chitin and chitosan.

Bioresource Chemistry Hama, Y. and Mitsutake, S.

1. Structure and function of mucus glycoproteins and algal polysaccharides.
2. Isolation and characterization of novel glycolipids from marine animals.
3. Biochemical functions of deaminated neuraminic acid (KDN) and poly N-glycolyl-neuraminic acid.
4. Isolation and characterization of novel glycosidases from marine animals and microorganisms.
5. Synthesis, metabolism and cellular signaling of membrane lipid in health and disease.
6. Development of Functional food materials.

Nutrition Biochemistry Nagao, K.

1. Control of lipid and lipoprotein metabolism by food ingredients and drugs.
2. Nutrition and physiology of polyunsaturated fatty acids.
3. Enzymatic and genetic regulation of glycerolipid metabolism.
4. Lipid metabolism and cytokine regulation in hepatic diseases.

Science of Naturally Derived Active Substances Kamei, Y.

1. Screening and application of bioactive natural products.