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農学国際専攻とは

世界の人口は、発展途上国を中心におよぼす影響を続けており、その一方で地球環境の変化はますます速くなっています。こうした中で、世界中の人々が適切な食料を供給すると同時に、生物圈を保全し回復することは、人類にとって今後最大の課題の一つです。農学国際専攻は、この課題の解決に貢献できる人材、とりわけ学問と政策・実践をつなぐ能力を備えた人材の育成をめざして、1997年に設立されました。

農学国際専攻の教育・研究体制

農学国際専攻は9研究室と連携講座で構成されています。各研究室は、それぞれ異なる専門分野に属しますが、専攻で一体となった教育・研究を行っています。例えば、修士課程に入学した学生は、「専攻として修業を終える」典拝」が提示されます。これらの典拝を通して、学生は自分自身所属する研究室の専門分野だけではなく、農業、食料、水産、森林、環境等について、最新の成果を学び研究の現状と課題を学ぶことができます。学生はまた、「海外実地研究」に参加して、海外の現場で課題を発見し理解し、そして解決への自己効力と自己を学むことができます。その際、海外だけではなく、日本の農業・農村との対比が重要であることも学びます。

農学国際専攻では、専攻内内の研究室のゼミに参加し、複数の教員からの研究指導を受けることが可能であります。「副専攻制」を利用して、他専攻の教員の指導を受けることもあります。さらに、専門の研究室に加えて「連携講座」があり、外部の研究機関の優れた研究者を教授し、先端の教育・研究を学びます。外国からは、優れた研究者を客員教員として招聘するため、英語での講義と研究指導を受けることが可能であることがあります。

また、発展途上国における農業と環境、資源管理の課題解決に農学的アプローチで貢献できる人材育成を目的として、英語のみで修士および博士の学位が取得できる「国際農業開発コース」を2010年に設置しました。

農学国際専攻は、まだ比較的若い専攻です。この専攻の特徴は、「課題指向性」、「学問性」、「国際性」を強く追求しています。

農学国際専攻の特徴

研究・教育にあたって、農学国際専攻では「課題指向性」、「学問性」、「国際性」を追求しています。

課題指向性

農学国際専攻は、世界各地のフィールド（現場）を重視し、そこで生じている環境・資源・エネルギーをめぐる課題の解決へ向け、農業の知を結集して教育・研究に取り組みます。学びを通して、基礎科学から応用科学を問わず、その下に示す一連の能力育成を目指した教育・研究をめざしています。

・自ら課題を発見し解決する能力
・課題の背景を含む本質を把握する能力
・課題解決への手がかりを織り成す能力

学問性

これからの農学には、個々の技術開発だけでなく、それらの技術を適切に組み合わせ、人々の生活を豊かで快適・安全なものにすることが求められます。そのためには、特定の分野に拘泥しない柔軟な思考と、複数の学問分野に関連する学際的なアプローチが必要となります。それを実現するため、農学国際専攻では、「技術とする分野」をもったうえでその周辺に位置する２～３つの分野の講義にも導入できる能力を養成します。「技術とする分野」は、自らが挑むとしている課題群に対して有効と思われる複数の分野の中から、自分の学問経験や資質に照らして選択されます。このような教育・研究を通じて、あらゆる課題の解決に必要な様々な分野の研究者や専門家を組織化（進学機関との連携）し、有意義な連携のあり方を提案できるオーガナイザーの育成をめざします。

国際性

農学国際専攻は、国際協力や国際開発に役立つ研究を行っています。しかし、農学国際専攻で目指す「国際性」とは、そのような学問分野に限定されるものではなく、国際的に重要なテーマを帯びた研究を意味しています。たとえば、日本を含む一国での地域を対象とする場合、それを国際的に重要なテーマ（例えば、自然資源の利活用管理など）で研究することを通じて、また研究対象地の特殊性を把握する研究であれば、他国や地域への教訓を示すことを通じて「国際性」が獲得されます。
Department of Global Agricultural Sciences

More than ever in today’s world, it is imperative to find solutions to the world’s food and agricultural issues. The Department of Global Agricultural Sciences specializes in preparing students for dynamic careers in the agricultural industry, where success requires a broad spectrum of knowledge and skills.

Our department was established in 1997, which is the second newest department in our graduate school. The department’s long-established interdisciplinary programs train students to approach various issues in global agriculture in an integrated manner so that they become able to form solution strategies based on the latest research in various sub-disciplines of agricultural sciences.

As one of the 12 departments in the Graduate School of Agricultural and Life Sciences, we have access to the school’s state-of-the-art research facilities, as well as a network of collaborators from all over the world.

Vision and Mission

The educational mission of the Department of Global Agricultural Sciences is to develop human resources with the ability to link academics, policymakers and industrial practitioners. We aim to nurture students who can contribute to the establishment of a peaceful and prosperous society where food production and conservation of the biosphere are achieved simultaneously. In order to accomplish these missions, the faculty at the department have designed curricula that reflect frontier research in all sub-disciplines of agriculture, offering an interactive environment where the staff and students can work together for the advancement of science. In particular, the department has the following three principles for education and research.

Issue orientation

We recognize that a deep understanding of agricultural issues around the world is an important part of academic research, and therefore place an emphasis on on-field activities. Through basic and applied sciences both, we foster students’ capacity to identify and define the issue, capture the underlying cause of the issue, and solve the issue.

Trans-disciplinary

Rather than being confined to a single discipline, we encourage students to acquire techniques which allow them to integrate tools and findings from various fields of research. While offering world-class training in each student’s specialty area, we actively encourage students to acquire knowledge and skills in sub-disciplines that are complementary to their major so that they can be employable, for example, as competent project leaders who can moderate multidisciplinary discussions.

Global scope

As an academic leader in the Asia Pacific region, we conduct research fostering international cooperation and development. Moreover, we choose issues of global importance as our research topics and offer concrete solutions to them. Rather than focusing on site-specific knowledge, we teach skills from a broad spectrum of disciplines that are applicable worldwide.
国際水産開発学研究室
Lab. of Global Fisheries Science
水産業は人類が再生産可能な資源を利用する代表的な活動の一つです。ここでは人間社会と環境の調和が求められており、研究課題も自然科学から社会科学まで幅広く存在します。この研究室では日本国内をはじめアジアや北米などをフィールドとして課題解決に関する研究を行い、あわせて外国研究機関との共同調査や国際シンポジウムの開催など多様な活動を行っています。これらを通して国際的に活躍できる人材育成を目指します。

Our laboratory focuses on science and policy related to conservation and sustainable use of living aquatic resources. Economic and social studies are carried out in Japan and other countries. Research collaborations with American, Asian, and European institutes are ongoing. Recent laboratory members and visiting scholars include persons from Bangladesh, Cambodia, Colombia, China, France, Germany, Japan, Madagascar, Norway, Sweden, Taiwan and the USA.

国際動物資源科学研究室
Lab. of Global Animal Resource Science
動物感染症、人畜共通感染症の出現・拡大は、世界や日本の動物資源の保全・再生の大きな影響を及ぼし、社会に脅威を与えています。問題解決につながる実証的な疫学研究（輸入リスク評価、感染症モニタリング、小動物の疫学等）に取り組んでいます。松本グループでは、リーチュマニア、ニューカッスル病ウイルス、肝炎などの病原微生物の宿体内における生存戦略と宿主動物の対応に興味を持ち、海外調査および実験を行っています。

Emergence of animal and zoonotic infectious diseases affects the animal production and public health resources in the world. To tackle this problem we are engaged in epidemiological research (import risk assessment of animals, antimicrobial use and resistance, and companion animal epidemiology). Matsumoto group is focusing on host-pathogen relationship in Leishmania, Fasciola, and Newcastle disease virus, by epidemiological survey and laboratory experiments.

国際植物資源科学研究室
Lab. of Sustainable Agriculture
生態系と調和し、生態系を豊かにしながら食糧生産を行うには、どのような技術開発や社会の変化が必要でしょうか。または、そうした技術や社会の変化はどうして、あるいはどんな時に受け入れられ、広がっていくのでしょうか。こうした問いに答えるために、当研究室では現地調査、農場実験、室内実験、シミュレーションモデルの開発などを主体として、農業と生態学、および社会学を融合した研究を進めています。

The aim of our laboratory is to develop ecologically sustainable food systems that enrich agroecosystem diversity. What practices can we apply to aid production, sustainability, and biodiversity? How can changes in these practices be realistically adopted, and further developed? To explore this, we integrate agriculture, ecology, and sociology using various experimental methods including field surveys, field and laboratory experiments, and simulation model development.

国際植物材料科学研究室
Lab. of Global Plant Material Science
開発途上国における森林バイオマスの有効利用は、素材の科学的特徴を踏まえ、かつ地域の生態系バランス、地球環境の保全を将来に渡り考慮したものでなければなりません。国際植物材料科学研究室では、質的、量的特性、地域社会との関連、持続的システムを把握した物理的、化学的、生物学的、微生物的手法から見詰め、森林バイオマスを可能に採り、材料や化学物質に変換するための調査・研究を行っています。

To effectively utilize forest biomass in developing countries, it is necessary to have fundamental knowledge on the nature of plant bioresources, and to understand the future prospects of local ecosystem balance as well as the global environment. With a physical, chemical, and biological approach, our research aim is to transform biomass into usable materials and chemicals, while considering the sustainability of the local and global communities.
**国際森林環境学研究室**

*Lab. of Global Forest Environmental Studies*

現代の地球環境問題の多くは森林に関わる問題であり、その解決は人類の責任です。森林は地球に与えるインパクトが大きく、地球上の生物資源やの主体をなすことから、その持続的利用をいかにして達成すべきかが重要な課題となっています。本研究室では、現在の地球環境問題解決の重要な鍵を握る森林とそれを取り巻く環境を対象として、ジオインフォマティクス技術等を利用した持続可能な森林管理についての研究を行っています。

Forests have a significant influence on the environment and humanity as they occupy a major portion of biomass on the Earth. Currently, we are experiencing the consequences of deforestation and forest degradation more than ever. All the researches in our laboratory aim to support sustainable forest management and conservation using geo-informatics methodologies as it is of the utmost importance.

**新機能植物開発学研究室**

*Lab. of Plant Biotechnology*

植物が持っている能力を利用・増強し、不良環境に生育可能な耐性植物を創製すること、低投入型農業に適した作物を創製することによって、途上の持続的食糧生産を先進国の環境調和型農業への貢献を進めています。植物の環境耐性機構、根吸収機能などを生理学、細胞生物学、分子生物学それぞれのレベルから解析し、その過程に関与する遺伝子を同定、変異して形質転換することによってストレス耐性、生理活性物質生産といった新しい機能を持った植物を作成します。

Agricultural productivity is severely decreased by high soil pH where metal ions are sparingly soluble and not available for plant growth. Our aim is to increase agricultural productivity in problem soils using biotechnology. We identified genes related to iron acquisition from soil in plants and produced transgenic rice plants that had enhanced tolerance to low iron availability and contained higher iron in seeds.

**国際農業開発学研究室**

*Lab. of International Agricultural Development*

途上国の農業・農村の現場に立脚して、研究のための研究ではなく、何が途上国の農民にとっての益となる技術・研究なのかを問い続けながら研究を行っています。強いなる研究分野は、作物学、土壌肥料・植物栄養、作物モデルなどで、社会・経済調査も必要に応じて行います。CIATやAfrica Rice Centerなどの国際研究機関との連携も強く、学生の長期現地滞在も視野にいれた研究を行っています。

We seek researches truly uplifting farmers’ livelihood in the developing countries. Disciplines such as crop science, soil/plant nutrition, modeling are our strength, but we also conduct sociological and economical studies. We have close collaborations with the international research institutions such as CIAT and Africa Rice Center, and sending the students to overseas for the long-term basis.

**国際環境経済学研究室**

*Lab. of International Environmental Economics*

WTO（世界貿易機関）やFTA（自由貿易協定）の締結交渉の中で、アジア農村の貧困の緩和に資するような経済連携や、生態系や環境の保全に配慮した多様な農林水産業の共存を目指していかなければなりません。不完全競争性のパラメータを導入した同時方程式モデル体系の国際貿易モデルへの適用や、現地調査に基づく計量経済分析により、国民経済や環境、世界の様々な階層への影響評価や、調整政策の解明に取り組んでいます。

While under negotiations for WTO and FTA, we should aim for an economic partnership that contributes to the poverty reduction and fosters the coexistence of diverse agriculture, forestry and fisheries. To cope with these problems, we conduct the impact evaluation and elucidate an optimal policy by applying a new international trading model and an econometric analysis based on field study.
**International Agricultural Issues**

International agricultural issues have been expanding worldwide which cannot be handled by a single university. Therefore, Department of Global Agricultural Sciences is inviting eminent researchers and professors from various research institutes and universities all over the world, as well as other departments and graduate schools in the University of Tokyo.

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**International Agricultural Program in Agriculture and Informatics**

Agricultural sciences are multidisciplinary studies to accurately understand nature, to properly use scientific knowledge, and to make some kind of contribution to people’s livelihood in the field. Our laboratory studies on agriculture and informatics, soil and water, food and foodways, etc., to resolve global food and environmental issues by using interdisciplinary approaches as advanced agricultural engineering.

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**International Agricultural Program in Agricultural Development Studies (IPADS)**

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IPADS offers MSc and PhD programs conducted solely in English. The purpose is to nurture the international leaders who can contribute to the solution of various issues in agriculture, environment, and resource management in the developing countries. We have close collaboration with the University of Bonn (Germany) having some lectures and practices together.

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**Multi-disciplinary Programs**

We offer two Master’s programs, i.e. Regular Program (RP) and International Program in Agricultural Development Studies (IPADS). Both are the two-years’ programs consisting of coursework and research, offering the students opportunities to develop the requisite expertise across disciplines and country boundaries to tackle agricultural and environmental problems in the developing countries around the world. While students of these two programs meet frequently in lectures, research seminars and other departmental activities, these programs operate under separate rules of admission and administration.

**Regular Program at the Department of Global Agricultural Sciences (RP)**

Most of the lectures of this Program is conducted in Japanese. The program is designed so that the candidates obtain 30 credit points required to graduate by attending various lectures and conducting researches. Admission screening is made through the entrance examination, which is conducted at the university campus in Tokyo. The applicants have to appoint their intended supervisors at the time of application, and therefore they need to have clear idea about the research themes in advance. The academic calendar of this program starts in April.

**International Program in Agricultural Development Studies (IPADS)**

IPADS is the Department’s program entirely conducted in English. Admission screening is made by the document screening and video interview via internet. After six months’ coursework, the students will choose their research topics and supervisors and typically spend one and half years for their research to write the thesis. Some lectures and practices are conducted in collaboration with the University of Bonn of the Germany. The academic calendar of this program starts in September.

**PhD Programs**

Our Department offers three PhD programs, i.e. Regular Program (RP), Special Course for Sustainable Agriculture (SCSA), and International Program in Agricultural Development Studies (IPADS). All are the three-years’ research-only programs. Admissions of RP and SCSA are conducted by the Graduate School, while IPADS’s admission is conducted by our department. Academic calendar starts from April in Regular Program, and from September in SCSA and IPADS.