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"Agronomy – Crops and cropping systems)
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Agropolis International training and education

in the Agronomy field

Agropolis International proposes a complete training-education programme provided through its member institutions (universities and engineering schools, as well as vocational training institutions).

The training-education programme includes more than 80 diploma courses (from Bac +2 to Bac +8: technician, engineering degree, Master's, PhD), as well as vocational training modules (existing or developed upon request).

The tables below outline the training-education courses related to the Agronomy domain. They specify the diploma levels, a description of the training and the institutions where the training is provided.

Training-education programmes

Level	Degree	Title	Institution
Bac +1	***Diplôme d'Université*** **(University certificate)**	Oleology	UM1
Bac +2	***Brevet de Technicien Supérieur (BTS)*** **(Advanced vocational training certificate)**	Plant technologies	Lycée Frédéric Bazille Agropolis
		Viticulture-Oenology	Lycée Frédéric Bazille Agropolis
Bac +3	***Licence professionnelle*** **(BSc with professional scope)**	Sustainable agriculture and environmental certification	Montpellier SupAgro, UM3, EPLEFPA Carcassonne
		Sustainable viticulture and environmental certification	Montpellier SupAgro, UM3
Bac +5	***Master recherche*** **(Research MSc)**	Biology, geoscience, agroresources, environment (BGAE) Focus 'Functioning of natural and cultivated ecosystems' (FENEC)	UM1, UM2, CIRAD
	Master d'École d'ingénieur **(Engineering MSc)**	Agriculture, agronomy and agrifood production Specialization 'Mediterranean and tropical horticulture' (HortiMet)	Montpellier SupAgro, Agrocampus Ouest, CIRAD
		Agriculture, agronomy and agrifood production Specialization 'Plant health'	Montpellier SupAgro, AgroParisTech, Agrocampus Ouest
		Agriculture, agronomy and agrifood production Specialization 'Tropical farming systems and development management' (SAT)	Montpellier SupAgro
		Agriculture, agronomy and agrifood production Specialization 'Innovative systems and techniques for sustainable agricultural development' (STIDAD) Focus 'Development and assessment of agricultural production systems' (CESPA)	Montpellier SupAgro, CIRAD
		Agriculture, agronomy and agrifood production Specialization 'Viticulture, oenology, economy and vitivinicultural management'	Montpellier SupAgro, ENITA Bordeaux
	Master européen **(European MSc)**	Sustainable development in agriculture (AGRIS MUNDUS)	Montpellier SupAgro & 5 European universities
		Viticulture and oenology / Vinifera EuroMaster	Montpellier SupAgro, ENITA Bordeaux & 9 European universities

Level	Degree	Title	Institution
Bac +5	***Ingénieur* (Engineering degree)**	Agricultural engineering Specialization 'Sustainable crop production'	Montpellier SupAgro
		Agricultural engineering Specialization 'Crop protection and the environment'	Montpellier SupAgro, AgroParisTech, Agrocampus Ouest
		Agricultural engineering Specialization 'Viticulture-oenology'	Montpellier SupAgro
		Engineering 'Sustainable agricultural and agrifood systems in developing countries' Specialization 'Agricultural and rural development'	Montpellier SupAgro
		ISTOM engineering International agrodevelopment	ISTOM
Bac +8	***Doctorat* (PhD)**	Integrated systems in biology, agronomy, geoscience, hydroscience and environment - ED 477 SIBAGHE	AgroParisTech, Montpellier SupAgro, UM1, UM2, UPVD

Short training-education programmes

Institution	Title
CIRAD	Identification of market garden crop pests in tropical periurban areas (5 d)
	Agronomic and environmental impact of organic matter management. Application to developing countries (5 d)
	Agronomic and environmental impact of organic matter management in tropical environments (4 d)
	Locust expertise: pest locust management (upon request)
	Crop modelling with the ECOTROP platform (5 d)
	Racin'situ: in situ analysis of annual and perennial root development (5 d)
	Locust control and crop protection treatment techniques
	Sugarcane fertilization (4 d)
	Agronomic features of natural rubber cropping (upon request)
	Agronomic features of oil palm cropping (upon request)
	Agronomic features of coffee cropping (upon request)
	Agronomic features of cocoa cropping (upon request)
	Agronomic features of banana and plantain cropping (upon request)
	Field training on banana black leaf streak disease and biological warning method (2 d)
	Agronomic features of mango cropping (upon request)
	Agronomic features of pineapple cropping (upon request)
	Agronomic features of citrus cropping (upon request)
	Agronomic features of vegetable cropping (upon request)
	Greenhouse hydroponic tomato growing in the tropics (upon request)
Montpellier SupAgro	Agroforestry
	Phytophagous mites and predators in arboriculture
	Scale insects in tree crops (14 h)
	Dipterans of agronomic importance: scouting and biological features (3 d)
	Insects of agronomic importance: laboratory identification techniques (5 d)
	Sprayer management trainer (21 h)

Agropolis International training and education

Graduate school focused on agronomy issues

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A PhD diploma is obtained after 3 years of laboratory research. PhD students are de facto attached to a Graduate school. Graduate schools gather research units and laboratories working on major themes. Their mission is twofold: 1) to ensure direct scientific support for PhD students; 2) to provide additional training throughout the 3 years, in organizing seminars, scientific conferences and training modules. The purpose of these modules is to improve the scientific education of the PhD students and help them prepare their professional future. Only one graduate school focuses on the 'Agronomy' theme:

Graduate school *'Integrated Systems* in Biology, Agronomy, *Geoscience, Hydroscience* and Environment*' (SIBAGHE)

The SIBAGHE graduate school is affiliated with UM2 for life and earth sciences. It has joint accreditation with Montpellier SupAgro, AgroParisTech and the *Université d'Avignon* for Agricultural and Environmental Sciences, with the university for genomics, botany, microbiology and parasitology, the ecology of emerging diseases and water sciences.

The SIBAGHE graduate school hosts around 400 PhD students and is supported by 40 affiliated research units, 450 training supervisors and several associated external research teams. Every SIBAGHE PhD student must successfully complete two scientific training modules and two professional introduction modules. The graduate school manages thesis registrations, PhD student supervision, ensures that the thesis charter is respected and organises thesis courses and professional guidance. It is assisted by a council and managed by a board.

In the agronomy field, the SIBAGHE graduate school hosts PhD candidates focusing thesis research on agrosystem functioning, crop improvement and genetic resources, soil-agrosystem-hydrosystem interactions, pest control, and pest and disease resistance management. ■

* *Systèmes Intégrés en Biologie, Agronomie, Géosciences, Hydrosciences, Environnement*

Contacts

Graduate school 'Integrated Systems in Biology, Agronomy, Geoscience, Hydroscience and Environment*' (ED SIBAGHE n°477)
(UM2, Montpellier SupAgro, AgroParisTech, UAPV, UM1, UPVD)
Director: Bernard Godelle, godelle@univ-montp2.fr
Secretariat: Joelle Lopez, Joelle.Lopez@univ-montp2.fr & David Martinie, David.Martinie@univ-montp2.fr
www.sibaghe.univ-montp2.fr

E-learning course on the agronomic and environmental impacts of organic matter management

In developing countries, organic matter is often the main input used in agricultural production systems. As there is increased interest on recycling organic matter for agricultural applications in both industrialized and developing countries, it is essential to assess their agronomic efficacy and environmental impact. In this area, CIRAD and partners have developed indicators tailored for tropical areas, along with reliable simulation models that are easy for stakeholders to apply in the field.

A training module was developed on this basis which offers a global approach to using organic matter and waste for agricultural applications, to gain insight into the advantages and ecological risks, and to learn field and laboratory measurement methods. The distinctive feature of this training, as indicated above, is that the logistic, ecological and regulatory specificities of developing countries are taken into account.

This e-learning course is intended for agronomists, environmentalists and waste processing operators. It is offered through the *Université Virtuelle Environnement et Développement* (UVED) and can be incorporated in an MSc or PhD programme.

The topics covered include:
- organic matter: function and processing
- main sources of organic matter
- measurement methods and tools
- agronomic potential
- environmental assessment
- standards and regulations.

This training course is supported by several field studies.

Contact: Francis Ganry, francis.ganry@cirad.fr
For further information: http://uved-matorg.cirad.fr

Agronomy engineering and research training programme:

Engineering specialization 'Sustainable Crop Production', and Master's specialization 'Agronomy and Innovative Cropping Systems' at Montpellier SupAgro (France)

This agronomic engineering and Master's training programme is offered by the Milieu, Crops, Resources and Systems department (MPRS, Director: J. Wéry) of Montpellier SupAgro (France). Initial and continuing education students from the North and South wishing to obtain systemic agronomy training on an international level are eligible. It opens opportunities in the agronomic engineering field and PhD training at the SIBAGHE graduate school.

The aim is to train engineers and researchers from anywhere in the world, by providing:
- Comprehensive methodological training
- Solid bases in agroecology and integrated analysis of farming systems
- Expertise in dealing with real-life physical, economic, ecological and/or human situations
- A capacity to make effective use of knowledge and networks.

This training provides candidates with a capacity to formulate questions and deal with them scientifically through case studies carried out in partnership with companies, development organizations and public institutions.

Ecological intensification issues and interdisciplinary practices are taken into account to consolidate the engineering training. Situational reconstruction is promoted and multiplied: a field assessment module, a subsector study and territorial development trip, and a full-fledged engineering project funded by a sponsor and managed by students.

There are 10 teaching units (for around 400 h of courses) on the following topics:
- Ecological intensification issues
- Initiation to *in situ* agronomic assessment
- Spatial analysis of cropping systems and soils
- Statistical analysis applied to agronomy
- Ecological functioning of soils
- Cultivated ecosystem functioning
- Agroecological engineering
- Epistemology
- Regional and commodity chains approaches (including a 1-week trip)
- Project and problem solving approaches

This programme includes a supplementary 6-week field project and a 5-7 month training period in a company, development organization, consultancy office or targeted research organization, depending on the student's personal project and within the framework of personalized tutoring. Students are required to write an Engineering/Master's thesis with an oral defence.

Contact: Alain Capillon, capillon@supagro.inra.fr