RESAD – Resources, Agricultural Systems and Development

Coursework Objectives

The "Green Revolution" and development assistance aiming to promote forms of "modern agriculture" (inputs, selected varieties, mechanisation, etc.) have done little to benefit poor smallholder farmers in developing countries. The goals of food security and economic and social development have not been attained (and do not seem likely to be attained anytime soon). At the same time, the modes of managing milieus and natural resources that have been promoted have all too often turned out to be ecologically unsustainable: multiple forms of pollution, erosion (of soil, biodiversity), dependency on non-renewable or dwindling resources (phosphates or petrol, etc.).

The current results are that, among other things, (i) the majority of the 850 million undernourished men and women on the planet are farmers (and their families) who live in developing countries, and (ii) in these same regions, environmental damages and the ripple effects on human health are numerous and sometimes irreversible.

Yet, among these rural populations – the poorest in the world – many peasant communities have developed agricultural systems that are both effective and sustainable, despite sometimes strong environmental constraints. These agricultural systems are, among other things, extremely diverse and often very far from the immobilism sometimes attributed to them: smallholder farms in the Red River Valley that feed a population of more than 1,000 inhabitants per square kilometre and large Brazilian plantations farming thousands of hectares able to compete with the agricultural systems of developed countries are both "developing country agricultural systems"!

This broad "duality" is therefore what characterises developing country agricultural systems. While many show remarkable ability to adapt to their environments, they are not very competitive and this inability to compete is weakening them even further every day. The ecological and social consequences of the most economically efficient systems are often problematic: degradation of resources and ecosystems, poverty, rural exodus, unemployment, etc.

The RESAD course of study aims to train agronomists to:

- understand and assess agricultural systems taking into account their technical, ecologic, economic and social dimensions;
- propose and support changes for and with farmers that aim to improve the economic sustainability of the most ecologically efficient agricultural systems and the ecologic and social sustainability of the most economically competitive agricultural systems; and
- define and manage development projects and programmes.

General Course Organisation

The RESAD coursework is devoted to the study of agricultural and rural development dynamics in Mediterranean and tropical zones. It provides the knowledge, methods and tools to *(i)* analyze and assess agriculture on the regional scale, and *(ii)* identify and lead interventions that support or guide agriculture towards economic, ecologic and socially sustainable development.

The skill areas developed in the RESAD coursework focus specifically on technical agricultural production systems viewed on the scale of individual farms and on territorial scale as well as in the

context of the systems' interactions with the surrounding ecological, economic and social environment. The coursework is organised in several multidisciplinary teaching units (UE, or "unités d'enseignements"):

1. AGRARIAN SYSTEMS AND AGRICULTURAL DEVELOPMENT (UE R1) – Using the comparative agriculture approach, the aim is to analyse and understand an agricultural system. That is to say, identify the various types of farms and the problems each one faces, and understand their interactions and how they contribute to sustainable development.

   This sequence includes an initial field internship of a limited duration (2 weeks) to diagnose the diversity and dynamics of agricultural systems on the scale of a small region.

2. DESIGNING AND SUPPORTING CHANGES ON FARMS (UE R2) – The aim is to design and support technical and/or organisational changes on farms; in particular changes that foster synergy between cropping and animal rearing activities so as to limit the use of industrial inputs. To accomplish this, the following are covered successively: *(i)* analysing the technical functions of a farm, modelling the farm, and assessing it; *(ii)* producing an ex ante simulation of changes to measure their impacts in a systemic manner; and *(iii)* designing and implementing (individual and collective) advice for farms.

   Particular attention is paid to the methods, tools and know-how for interactions with farmers.

3. AGRO-ECOSYSTEMS, ECOLOGICAL INTENSIFICATION AND NATURAL RESOURCE MANAGEMENT (UE R3) – Based on knowledge of how biophysical milieus are organised and operate in tropical and Mediterranean regions, the aim is to (i) propose methods by which to diagnose and assess agro-ecosystems in these regions; (ii) study the interactions that exist between the conditions in the milieu and farming modes (including the social dimensions relating to natural resource management), and (iii) analyse the effectiveness and sustainability of the technical systems in ecologically intensive agricultural production.

4. APPROACHES, METHODS AND TOOLS FOR INTERVENTIONS WITH GROUPS (UE R4) – The aim is to design and lead interventions and/or projects that help farmers move towards sustainable development. Centred on (i) intervention methods and tools (project advice, territorial governance, empowerment, etc.) and (ii) intervention postures in regard to groups.
   This sequence combines classes and case studies supervised by researchers and agricultural development professionals so as to best illustrate professional practices and intervention professions. Individual work will allow the students to study in depth the question of co-elaboration of agricultural and rural development interventions.

5. PROFESSIONAL PRACTICE / GROUP INTERNSHIP (UE R5) – The methods and tools acquired during the year will be put into practice during a second field internship abroad in a tropical or Mediterranean area. Conducted in a professional context – that is to say, in response to a request from a company, NGO or research institution – this group internship gives rise to the production of a written report submitted to the party commissioning the study.

6. SUSTAINABLE DEVELOPMENT REFERENCE SYSTEMS, INDICATORS, AND ASSESSMENT (UE TR) – The aim is to develop the capacity to integrate the issues specific to agricultural production and agrifood issues. The teaching provides a shared reference system to (i) understand the stakes behind quality approaches and certification, (ii) understand the challenges involved in sustainable natural resource management and environmental assessment principles, and (iii) report on and assess interventions in the overall framework of sustainable development.

Module	ECTS
Agrarian systems and agricultural development (UE R1)	9
Designing and supporting changes on farms (UE R2)	6
Agro-ecosystems, ecological intensification and natural resource management (UE R3)	6
Approaches, methods and tools for interventions with groups (UE R4)	5
Professional practice / group internship (UE R5)	2
Sustainable development reference systems, indicators, and assessment (Ue Tr)	2
Master thesis	30
Total	**60**