Innovation in Integrated & Organic Horticulture

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PROGRAM AND ABSTRACT BOOK

INNOHORT is organized by
PARTICIPATORY DESIGN OF INNOVATIVE HORTICULTURAL INTERCROPPING SYSTEMS IN PROTECTED MARKET GARDENING PRODUCTION

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In different agroecosystems, intercropping has proved to be a promising way to reduce pesticide use, as it can reduce risks of pests or diseases damages (i) by limiting their dispersal (physical or chemical processes) and (ii) by diversifying resources for natural enemies. However, up to now, intercropping in protected market gardening is poorly referenced. Biological processes operating in specific crop combinations are only partially understood and guidelines to design and manage these complex agro ecosystems are scarce. However, few market gardeners already develop intercropping under shelter on diversified farming systems. In order to design innovative cropping systems, we developed a participatory research program involving producers, extension agents and researchers. This research combined: (i) the organization of design workshops gathering these stakeholders. During these workshops, we collectively explored hitherto unseen ways, to design prototypes of innovative intercropping systems aiming at reducing pesticide reduction; (ii) the tracking of on-farm systems based on intercropping. We looked out for the rare intercropping systems developed by farmers to analyze their agronomical logics (practices, objectives inherent to their development) and their performances; (iii) the on-station experiment of innovative intercropping systems. System experiments allowed us to analyze biological processes operating in intercropping and to assess the performances of such systems. Combining these different resources allowed us to explore the complexity and diversity of intercropping systems as well as the diversity of motivations driving farmers to develop them, in order to discuss their benefits and drawbacks. This communication aims to present results of this method which led (i) to design prototypes which were tested and assessed on station, and (ii) to identify guidelines to design, assess and manage intercropping systems suited to contrasted farming systems.

Keywords: design workshop, intercropping, market gardening under shelter, participatory research, system experiment, tracking on-farm innovations.

TOPIC 4, SESSION 2 (Plenary, 11th of June, pm)

ORAL PRESENTATIONS

MULTIDISCIPLINARY AND MULTIAGENT INTERACTIONS FOR INNOVATIONS IN HORTICULTURE – PARADOXES BEYOND THE WORDS

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The progression towards sustainable horticulture is usually associated with scientific and methodological breakthroughs. As a consequence, the innovation processes in the fields of biology and ecology and their agronomical implementation are increasingly recognized as main drivers to improve horticultural systems. At the same time, a horticultural system cannot be conceived without a good knowledge of the social and economic contexts in which it is embedded. It has to be considered as an integrated social-ecological system. This strong intertwining of the different research fields, as well as among agents along the horticultural chain from the grower to the consumer, poses new landmarks. There is a need for interdisciplinary researches combining the scientific fields usually involved in the studies of agricultural systems: biology, agronomy, environmental sciences and socioeconomy. Designing new horticultural systems in such a systemic framework is also relevant to develop and better implement exchanges of knowledge among agents. For example, this cross-knowledge constitutes the back-bone for building crop ideotypes and cropping systems well fitted to ecologically-based horticultural systems including genetics, agronomy and social-environmental levers and constraints. There is also a need in more participatory research and scaling-up to achieve adoption of innovations along the horticultural chain. Thus, the former linear and top-down scheme, i.e., from basic science to applied science and field work, is now reconsidered and the design of innovative agricultural production systems is viewed as an integrated, interactive and participative organization where agents are dynamically interacting. The new challenge is to better combine the detailed knowledge typical of the dominant reductionist paradigm mostly oriented towards the “one-size-fits-all” objective and the paradigm of complexity where the “custom-fit” approach predominates. Progressing towards these frameworks of knowledge and relationships among agents poses epistemological questions about multidisciplinarity and hybridization between scientific and expert knowledge.

Keywords: agroecology, innovation, integrated sciences, multiagent approach, participative organization, social-ecological-agrosystem, systemic approach.

COGNITIVE MAPPING OF ORGANIC VEGETABLE PRODUCTION IN FLANDERS TO SUPPORT FARMERS STRATEGY DESIGN