

BAM2016

5th Belgian Agroecology Meeting

Bridging gaps between principles and practices in agro-ecology



Gent (UGent - ILVO) — 20th September 2016



DETAILED PROGRAMME BELGIAN AGROECOLOGY MEETING 20 SEPT. 2016, GHENT



9u30 -10u	REGISTRATION and welcome with coffee	
MORNING PLENARY SESSIONS		
10u -11u	Keynotes on topic 1 and 2 – Chair: Prof. dr. ir. Dirk Reheul (UGent) 1. Inspiring examples and developments within the biophysical system: 2. Inspiring examples of transdisciplinary approaches	TOPIC
10u	Biodiversity and ecosystem services of agricultural landscapes Prof. Guillaume Decocq, Université de Picardie Jules Vernes, Amiens, France	1
10u30	The challenges and opportunities of 'doing' co-innovation: integrating different knowledges Prof. Julie Ingram, Countryside and Community Research Institute, University of Gloucestershire, UK	2
11u -12u	Short presentations on topic 1 and 2 – Chair: Dr. ir. Bert Reubens (ILVO)	
11u00	Productivity impact and ecosystem services delivery of grass strips and wooded strips adjacent to arable land Van Vooren, L. - ILVO/UGent/VITO	1
11u05	Tall fescue in cut grassland: rooting deeper and higher dry matter and nitrogen yield Cougnon, M. - UGent	1
11u10	Silvoarable agroforestry: yield, soil characteristics and agricultural biodiversity Pardon, P. - UGent/ILVO	1
11u15	Development of a 3-D modelling framework for studying light distribution in agroforestry systems Roldan, I. - ILVO	1
11u20	The after-effects of grass-clover green manuring and non-inversion tillage on grain yield and protein content of <i>Triticum aestivum</i>. Willekens, K. - ILVO	1
11u25	Opportunities and barriers for different types of plantation in chickens' free-range areas Stadig, L.M. - ILVO	1
11u30	Co-designing a decision-support tool with farmers as the basis for a participatory approach Guillaume, M. – CRA-W	2
11u35	Gender in Agroecology: unearthing smallholders' approaches to building resilient food systems Sarrouy Kay, C. – Coventry University/ULB	2
11u40	Ex-post evaluation of a transdisciplinary approach: a case study of the Flemish agri-food system Hubeau, M.- ILVO	2
11u45	Functional agrobiodiversity in apple and pear pest management in Belgium Jamar, L. - CRA-W	2
12u -13u	Meet and greet: All delegates meet presenters of sessions 1 and 2	
13u -14u	LUNCH	
AFTERNOON PLENARY SESSIONS		
14u -15u	Keynotes on topic 3 and 4 – Chair: Prof. dr. ir. Fleur Marchand (ILVO/UA) 3. Transitions of our food system and the use of system approaches: 4. Effects of present and future threats (e.g., climate, globalization,...) or existing drawbacks (policy issues, legal questions, knowledge exchange system)	TOPIC
14u	Key features of more resilient agricultural and food systems: some findings from the international RETHINK research programme Prof. Dr. Karlheinz Knickel, Research Associate at Instituto de Ciencias Agrarias e Ambientais Mediterranicas (ICAAM) at Universidade de Evora, Centre for Rural Research (CRR) Trondheim and Institute for Rural Development Research (IfLS) Frankfurt.	3
14u30	The role of policy and governance in transitions towards just and sustainable food systems: a global perspective on threats and opportunities for agroecology Prof. Jessica Duncan, University of Wageningen, The Netherlands	4

15u -16u	Short presentations on topic 3 and 4 – Chair: Prof. dr. ir. Pieter De Frenne (UGent)	
15u00	Assessing the capacity of Voedselteams to contribute to a sustainable food system in Flanders Zwart, T.A. - KUL	3
15u05	Quality of work of vegetable growers, in conventional and agroecological systems, in the Walloon Region (Belgium) Dumont, A.M. - UCL	3
15u10	Socio-professional paths and identities of ecological farmers Pailleux, C. - LARESS	3
15u15	How to identify low input(s) dairy farming? Bijttebier, J. - ILVO	3
15u20	Creation of added value in direct selling microfarms: a quantitative exploration through modelling Morel, K. - INRA	3
15u25	Collective work in professional market gardening: a resource in suburban agroecological experiments in Brussels. Van der Linden, M. - UCL	3
15u30	Nurturing agroforestry systems in temperate regions: an analysis of discourses for an enabling environment in Flanders, Belgium Borremans, L. – ILVO/ULB	4
15u35	Key competencies for an agroecological farmer Debruyne, L. - ILVO	4
15u40	Agroecology in farmer education in Flanders: a survey. Triste, L. - ILVO	4
15u45	Exploring the little concern for biodiversity among sustainable food consumers Bernardin, C. – LARESS/AgroParisTech	4
16u -17u	Meet and greet: All delegates meet presenters of sessions 3 and 4	
17u -18u	NETWORKING with reception	

Organising and Scientific committee

The organising committee consists of Prof. Dirk Reheul (UGent), Prof. Pieter De Frenne (UGent), Dr. Bert Reubens (ILVO), Prof. Fleur Marchand (ILVO/UA), Prof. Pierre M. Stassart (ULg), Prof Marjolein Visser (ULB), Prof. Marc Dufrêne (ULg).

The scientific committee consists of Prof. Dirk Reheul (UGent), Prof. Pieter De Frenne (UGent), Dr. Bert Reubens (ILVO), Prof. Fleur Marchand (ILVO/UA), Prof. Pierre M. Stassart (ULg), Prof Marjolein Visser (ULB), Prof. Marc Dufrêne (ULg), Prof. Denise Van Dam (UNamur), Dr. Julie Hermesse (UCL), Dr. Louis Hautier (CRAW) and Corentin Hecquet (ULg).

Functional agrobiodiversity in apple and pear pest management in Belgium

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State-of-the-art

Functional AgroBiodiversity (FAB) including beneficial animals, mainly arthropods but not only, such as natural enemies (predator and parasitoid) which support agricultural production by regulating pests and diseases, becomes more and more important in agriculture to get sustainable ecosystem services. Specific techniques and managements are needed to favour FAB (FAB techniques). Perennial crops are very suitable for implementation of sustainable FAB techniques (Simon et al, 2010). The need to reduce agricultural inputs (particularly pesticides) without significant productivity loss may require a fundamental re-design of orchard systems (Smith et al., 2014; Jamar et al, 2015). In the framework of both 'Eco-Orchard' CORE Organic+ FP7 ERA NET project, and a research project with financial support of the Rural Development Administration (RDA) of the Republic of Korea, a study started two years ago with as first aim to compare during two growing seasons, the type and abundance of beneficials in Belgium orchards under conventional and organic production systems applying different FAB techniques. The second aim of this study is to collect the existing information about FAB and its management techniques to improve knowledge and practical experience between scientists, advisors and owners of the fruit orchards. The final aim of this study focus on the co-design and establishment of innovative fruit-based agroforestry cropping systems, including the best registered FAB techniques, in order to conduct a long-term sustainability study of such systems.

Methods

For the first study, the field assessments of beneficials are conducted inside a network of fourteen pome fruit orchards, seven orchards under conventional production systems and seven orchards under organic. Insect sampling is done by the classical branches beating system used at random three times a years and during two growing season. Such method is completed by placing specific shelters for monitoring specific beneficials. Concerning FAB techniques, advisors and farmers have been interviewed in Belgium as well as in nine European countries. The structured interviews have been conducted face-to-face, with advisors and with mainly organic farmers (n=15 for Belgium). The sample covers a variety of farming contexts to describe as much as possible bottlenecks for FAB-techniques adoption or implementation. Concerning the co-design and establishment of innovative fruit-based agroforestry cropping system, that combine pome fruit trees and vegetables, various spatial arrangements and prototypes were proposed and evaluated through participatory discussions involving scientists, advisors and farmers. During the participatory design process, several meetings were organized in order to discuss how to (i) develop a multidimensional project via a multi-actor design process, (ii) increase the intra- and interspecific diversification to enhance the food supply and habitat opportunities for natural enemies and pollinators in orchards, (iii) optimize the various ecological processes associated with adapted biodiversity (e.g., microclimate regulation, protection against erosion, biological control, soil life processes, allelopathy and pollination), and finally (iv) deal with genetic innovations for rootstocks and cultivars. A literature review, as well as visits to current agroforestry system experiments, gave us an insight into the prospects and limits of system designs and the basic ecological processes to be optimized

Main results

The first results concerning relationship between beneficial's and FAB techniques, show that (i) beneficial's are more abundant (x 3.1) in organic compared to conventional orchards and (ii) the diversity of beneficial are significantly higher (x 2.2) in organic compared to conventional orchards. Several FAB techniques are used for pest management in orchards in Belgium, some of them are natural elements in the orchards or implemented because of other aims. For almost all used FAB techniques, farmers do not relate with FAB and do not evaluate their efficacy. The implemented FAB-techniques differ according to growers' personal knowledge and experiences. A total of 34 techniques have been described and can be divided into 3 categories: long-term ecological infrastructures, dynamic agricultural practices adaptable from a season to another (e.g.: to adapt inter-row mowing) and deeper system redesign requiring strong interactions with the production system (e.g.: crop diversification) (Fernique et al., 2016). In particular, concerning innovative fruit-based agroforestry cropping system, an experimental agroforestry orchard was planted in 2014 at Gembloux, Belgium with the aim of testing three hypotheses: (i) a mixture of selected robust fruit and vegetable cultivars creates a functional biodiversity that significantly reduces the risk of pest and disease damages; (ii) the useful impact on soil functions and biological processes; and (iii) where distances between vegetables and trees in intensified alley-cropping systems are optimized, tree shading does not reduce light levels below the threshold of light saturation. Two other on-farm fruit-based agroforestry cropping prototypes, designed by our team and located on two pilot farms in Belgium, are being developed in Belgium.

Conclusions

The implemented FAB-techniques differ according to growers' personal knowledge and experiences. A total of 34 techniques have been described. The most Functional Agro-Biodiversity techniques, as ranked by farmers, are (i) flower strip, (ii) hedgerows, (iii) to reduce pesticides uses and (iv) to adapt interrow mowing. However, there is a lack of correct and easy to use monitoring/evaluation techniques available to farmers. The innovative fruit-based agroforestry cropping system, still need to determine if the interactions between perennial and annual crops has a positive impact on biodiversity and on the presence of some natural enemies, which could improve the resilience and health balance of fruit agroecosystems. The authors acknowledge the Belgium advisors and farmers interviewed for sharing their precious time and competence; the financial support of 'EcoOrchard' project, provided by transnational funding bodies being partners of the FP7 ERA NET project, CORE Organic Plus and the cofund from the European Commission; the Pear Research Institute (PRI) of the National Institute of Horticultural & Herbal Sciences (NIHHS) and the financial support of the Rural Development Administration (RDA) of the Republic of Korea.

References

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Meet and greet : all delegates meet presenters of sessions 1 and 2