W01 - Transdisciplinarity in agricultural and food sciences

Time: Wednesday January 19th 2022 18:00-20:00

Location: ULB Campus Plaine, Forum G or **Teams**

Organizer: Christian Hermans
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Schedule:

18:00-18:10 Welcome

18:10-18:40 Prof. Dr. **Seth C. Murray**
Department of Soil and Crop Sciences, Texas A&M University, USA
Culture clash! Identifying and surviving the complex challenges of transdisciplinary research to improve agriculture

18:40-19:10 Eng. **Amaury Beaugendre**
Agroecology Lab, Interfacultary School of Bioengineers, Université libre de Bruxelles (ULB), Belgium
From "more ecology in agricultural sciences" to "entirely requestioning agricultural good practices": a case study of a transdisciplinary chain reaction.

19:10-19:40 Prof. Dr. Eng. **Christophe Snoeck**
Maritime Cultures Research Institute, Department of Art Sciences & Archaeology, Vrije Universiteit Brussel (VUB), Belgium
Research Unit: Analytical, Environmental & Geo-Chemistry, Department of Chemistry, VUB, Belgium
You are what you eat – using isotope geochemistry to reconstruct past diets

19:40-20:00 Discussion

The Covid Safe Ticket (CST) is required to access that event. Wearing a mask is mandatory while seated in the theater.

About BrIAS *- The newly founded Brussels Institute for Advanced Studies (BrIAS), co-founded by the Université libre de Bruxelles (ULB) and the Vrije Universiteit Brussel (VUB), aims to expand upon the mission of other IASes as an incubator of ideas and research by focusing on current and urgent themes with a great societal impact.*
Located in the heart of Brussels, it aims to attract the very best scientists, artists or designers, coming from various fields or countries and with no philosophical or political restriction, and provide the opportunity to work in an atmosphere of complete freedom, collaboration, mutual emulation and cross-fertilisation. In this context, BrIAS aims to facilitate collaborations with countries facing critical challenges pertaining to sustainability.
For more information and updates about BrIAS, our upcoming events, and our current research theme ***The past, present and future of food, climate and sustainability****. Follow us on our* ***webpage****, on* ***LinkedIn****,* ***Facebook*** and ***Youtube****.*

Prof. Dr. **Seth C. Murray**

Culture clash! Identifying and surviving the complex challenges of transdisciplinary research to improve agriculture

The easiest problems in agriculture have mostly been solved and could largely be addressed in isolation. Current and future production of safe and sustainable food under a changing climate, for a growing world population that expects better living standards, is a complex challenge requiring engagement of many stakeholders. Agricultural research is generally conducted in isolation of disciplines, divided by institutional histories and bolstered by incentives for specialization. Specific disciplines are typically where students are trained and where researchers work. Within agriculture some allied disciplines already connect to others based on shared goals. Typically, these disciplines benefit from shared culture, shared language and past examples of success. More complex problems and more complex technological solutions are requiring further interactions outside of discipline specific training. Unlike multi- or cross-disciplinary activities, where each contributes their domain knowledge, transdisciplinary activities work together in building something completely new. While transdisciplinary activities provide our biggest opportunities for gains, the difficulty and complexity of these interactions are magnified by lacking shared paths forward, languages, roadmaps for success, or reward structures. My personal experience co-leading an unoccupied aerial systems for agriculture project, which grew to over 40 faculty across five colleges domains will be used as example.

Eng. **Amaury Beaugendre**

From "more ecology in agricultural sciences" to "entirely requestioning agricultural good practices": a case study of a transdisciplinary chain reaction

"Agricultural sciences" is, by nature (and as hinted by the plural), a multidisciplinary field of science, mixing together disciplines such plant physiology, ecology, soil sciences, genetics, economics, and much more. Along the development of agricultural sciences, this mix could be said to have sedimented into its own set of disciplines, such as phytopathology or plant breeding. Together with the gradual installation of "conventional agriculture" as the dominant and referent cropping system, these agricultural sciences have generally been anchored in relatively reductionist and linear "problem – solution" paradigms.
Out of the growing need for a more sustainable agriculture (in both its social, economic and environmental aspects), a new discipline has progressively taken shape and grown since the 1980's: agroecology. Although several definitions of agroecology exist, one of its indisputable characteristics is adding more ecology and social sciences to the mix of agricultural sciences and stirring it all up again. A commonly accepted result of this new mix is a shift towards a more holistic approach: as agroecology strives to "work with" ecological processes, it is bound to understand and account for the multiplicity of interactions and interconnections that make (agro-)ecosystems go round – or not.
This intervention aims to illustrate this phenomenon through the presentation of our own research on heterogeneous wheat cultivars. As we try to gain better understanding on new dynamics of plant interactions brought by in-crop diversity and their benefits for sustainable agriculture, our research progressively leads us to challenge as-yet unquestioned agricultural practices, until we are left with more questions that we originally set out to answer.

Prof. Dr. Eng. **Christophe Snoeck**

You are what you eat – using isotope geochemistry to reconstruct past diets

Diet represents a fundamental aspect of our everyday life. A wide range of social and cultural parameters can influence the type of foods we consume both nowadays and in the past. However, in archaeological contexts, especially in pre-historic times, limited information is available about the diet of past populations. Fortunately, all food and drinks we consumed during our lives leave a mark in our tissues, including our bones and teeth, that are often found in archaeological excavations. Through the geochemical analyses of these bones and teeth, using the isotope ratios of carbon (C), nitrogen (N) and other chemical elements (H, S, Sr, etc.), it becomes possible to gain insights into not only the types of food that were consumed by past populations (i.e. meat, fish, etc.), but also the geographic origin of that food. As such, it offers the possibly to evaluate how and when changes in subsistence strategies occurred (e.g. from hunting/gathering to agriculture), get information about trade and exchanges, characterise past weaning practices, and much more.