EHzürich



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World Food System Center News

Center News

Summer School Design in Focus

A study by Education Director Michelle Grant, member Prof. Nina Buchmann, and former team member Aimee Shreck published in GAIA explores how educators can design food systems education programs to help graduates think and work in new ways. We hope that outlining this holistic design, including 12 discussed design criteria, supports other educators to reflect on existing food systems education initiatives or to design new ones.

WFSC Visits ETH Agri-Food Alumni

The yearly meeting of the ETH Agri-Food Alumni took place at ETH Zurich on 12 June. The WFSC contributed to the event with a presentation from Vice Chair Prof. Robert Finger, who introduced the many activities of the WFSC.



Prof. Robert Finger presenting at Agri-Food Alumni meeting.

Annual Report

We published our 2017 Annual Report in May, which features highlights from the broad range of activities in research, education, and outreach that we plan, develop, and execute together with our over 40 members. Download online



New Center Staff Member

In June, Dr. Nadia Castro-Izaguirre started a six-month internship with the Center. She obtained a doctorate in ecology from the University of Zurich and has experience in research, nature conservation, and development cooperation. Nadia will support the team in its various research communication and outreach activities. Please see the **Executive Office page** on the Center website to learn more about our team.

Connect!

Keep up to date on all of Center news, events, member research, and more by following us @ethzWFSC on Twitter and Facebook. We also share videos from the Center on our new YouTube channel.

All WFSC members, alumni, partners and collaborators are invited to join our World Food System Center LinkedIn group, with the aim to connect students and professionals who are interested in working towards sustainable food systems: https://www.linkedin.com/groups/12070987.



Research

Flagship Project: Enhancing Resilience in Food Systems

The WFSC Flagship Project on food system resilience continues to excel. As part of the WFSC Research Programs project AERTCvc and in collaboration with the Kwame Nkrumah University of Science and Technology of Ghana and the Ethiopian Institute of Agricultural Research (EIAR), the third and final stakeholder workshops were conducted in Debre Zeit (Ethiopia) and in Kumasi (Ghana) in June. The goal of these workshops was to identify implementation strategies to build resilience through tailored action plans for different activities (production and post-production) in the tef (Ethiopia) and cocoa (Ghana) value chains. The enthusiasm of the participating stakeholders at the workshops to engage in the process of building resilience was very encouraging.

Also, doctoral student Kenza Benabderrazik completed surveys among tomato producers in Morocco and Ghana to analyse their resilience against drought. Doctoral student William Thompson also kicked-off his transdisciplinary WFSC Research Programs project **OrRes**, with the key objective to compare how different production systems (organic, certified and conventional) have implications on



Stakeholders in tef value chain talk about strategies at workshop.

the resilience of cocoa farmers against drought in Ghana as well as of banana farmers in the Dominican Republic.

The BLW project on the Swiss food system launched an online survey this spring to assess the resilience of all actors in the milk, beef, wheat, wine, and potato value chains. Doctoral student Elena Monastyrnaya reports that preliminary results show asymmetries exist between producers and processors in terms of expected price changes caused by a potential free trade agreement between Switzerland and the EU.

For workshop reports and to learn more about this Flagship project, visit www.resilientfoodsystems.ethz.ch.

Flagship Project: Novel Proteins for Food and Feed

The WFSC Flagship project focusing on the topic of novel uses of alternative proteins for feed and food has several projects underway. The project "Insect production from biowastes for animal feed," has been highlighted in several media outlets, Neue Zürcher Zeitung am Sonntag and ETH News. Projects focused on algae as sustainable proteins sources were also highlighted in Tages-Anzieger and Migros Magazine.

The symposium "Addressing the Global Food Challenge with Algae," organized by Principal Investigator Prof. Alexander Mathys and collaborators from Wageningen University and EnerGaia successfully took place at the American Association for the Advancement of Science AAAS 2018 Annual Meeting in February.

ETH Studio AgroFood

In collaboration with ETH Global, ETH Studio AgroFood organized the public event "Smart Farming - What does it mean for Switzerland?" on 15 June. Bundesrat Johann Schneider-Ammann, ETH president Lino Guzzella, and Studio lead Prof. Achim Walter highlighted different ways ETH Zurich can help develop innovative technologies providing high potential to make agriculture more sustainable.

Prof. Walter shared a video with the audience of about 250 attendees showing the potential of robotics and automation in crop and livestock sciences, highlighting the need for concerted activities not only between researchers but also in a transdiciplinary approach with practitioners and other stakeholders of the agricultural value chain. President Guzzella pointed out the role of ETH Zurich as a creator of innovation and multi-faceted actor in the Swiss research environment. Minister Schneider-Ammann advocated an efficient use of information and communication technology to decrease the burden of administration of farmers. Learn more about activities of the ETH Studio AgroFood on the Center website.



Audience listens to Prof. Walter at Smart Farming event.

Public Event: Fraud in Organic Food

At the Center's public event "Fraud in Organic Food," keynote speaker Professor Chris Elliott from Queens University Belfast led a discussion on fraud in organic food and how science can play a role in its detection and prevention. Prof. Elliott addressed the audience of 100 guests on 26 April in the Semper Aula at ETH Zurich.

Prof. Elliott introduced instances of food fraud from around the world, focusing on false claims in organic. He mentioned that he has seen fraud is on the rise, and he desires to help before customer confidence in organic labeling is eroded. Prof. Elliott also focused on the topic of detection, mentioning fraud in organic is difficult to detect, so numerous tools such as audits, inspections, and digital supply chains are used. He introduced various new analytical techniques used to identify fraudulent products, such as pesticide-residue or metabolites analysis. Hans Ramselier from BioSuisse and Patrik Aebi from the Swiss Federal Office for Agriculture then joined the discussion, providing a Swiss perspective on fraud in organic food. We thank all for making this public event such an interesting discussion. You can also watch Executive Director Martijn Sonnevelt interview Prof. Elliott: https://youtu.be/4bR1-vd0lQQ.



Prof. Elliott at the «Fraud in Organic» public event.



Panel discussion at symposium on «Managing Risk in Agriculture.»

A symposium focused on innovations in agricultural insurance and digitization co-organized by WFSC Vice Chair Prof. Robert Finger (Agricultural Economics and Policy) and the ETH Risk Center was attended by 150 participants on 05 July. The aim of the event "Managing Risk in Agriculture" was to present and discuss recent scientific developments in the field of agricultural risk management and discuss novel insights and innovative approaches in risk mitigation with international academics and industry experts. These topics were discussed on both presentations and a lively panel discussion, moderated by Dr. Bastian Bergmann from the ETH Risk Center. Presenters included Dr. Hans Feyen (Swiss Re), Prof. Yann de Mey (Wageningen University & Research), Prof. Joshua Woodard (Cornell University), and Prof. Finger.

ETH Zukunftsblog

Rebooted at the beginning of 2018, the ETH science blog now hosts commentaries in the focus areas of digitalization and health alongside sustainability. Read the recent contributions from our members on protecting plants intelligently, a brief history of agriculture, and scaling-up efforts to restore forests and follow the blog at https://www.ethz.ch/en/newsand-events/zukunftsblog.html.

WFSC Research Projects in the News

ResPEAct: New review in *Plant, Cell & Environment* summarizes current knowledge of resistance against soil-borne pathogens in grain legumes.



MOCA: New publication in *Journal of Applied Ecology* shows diverse shade tree canopies increase nutrient cycling and resilience in coffee agroforestry systems.



PACKCHAIN: New publications focus on method to model the postharvest temperature history and quality as well as packaging design

INDUCE: New publication in *Poultry Science* tested the performance of novel and traditional dual-purpose types of chickens.



NewAlgae: New publication in *Bioresource Technology* focuses on a comprehensive system characterization of an emerging nonthermal technique, pulse electric field, and its application in microalgae processing for consumption.

WFSC Research Programs: Further information about ongoing projects can be found at www.worldfoodsystem. ethz.ch/research. The next call for proposals will open in July 2018.

Education

World Food System Summer School 2018

The WFS Summer School 2018 took place in Côte d'Ivoire, in collaboration with the Centre Suisse de Recherches Scientifiques en Côte d'Ivoire (CSRS). In order to understand the world food system and find ways to deal with its complexity, 26 graduate students and young professionals from around the world took part in the two-week (27 January - 10 February) intensive course, which focused on two value chains - yams, a local food security crop, and cocoa, an export cash crop.

The two-week program in Côte d'Ivoire included a mixture of theoretical inputs, participant led discussions, peer to peer learning, field trips, case study work, design thinking approaches, and simulation games. A diverse range of faculty contributed inputs from different disciplines and sectors to add to the rich learning experience. The students were able to discuss the challenges facing smallholder yam farmers in the region with local villagers and learn about the increasing challenges with soil fertility and declining yields, against a backdrop of climate change. Several days were also spent learning about the cacao value chain and understanding the challenges and opportunities facing this cash crop and those involved in its production. For many of the participants, after years of eating chocolate, it was their first chance to see how cacao grows and learn about the serious complexities involved in growing and transforming the bean. Follow the journey of these students with daily pictures from the course at #wfsceducation.

Thanks again to all our contributors, and and we wish our alumni the best of luck as they continue their journey in the world food system! Find out more about our educational offerings at http://www.worldfoodsystem.ethz.ch/ education.html.



Talking with farmers at organic cocoa cooperative at WFS Summer School.



WFS Summer School 2018 participants.

FAO Course: Food security in an urbanized world

Since 2014, the WFSC has collaborated with the Food and Agriculture Organization of the United Nations (FAO) and the Sustainable Agroecosystems Group to offer a threeday course for ETH Zurich Master's students at the FAO headquarters in Rome. This year, the course in April focused on food security in an urbanized world. The course coincided with the Second International Symposium on Agroecology, which allowed the students the experience of joining an international symposium held at the FAO as part of the Swiss delegation.



ETH students at course on food secutriy in Rome.

Excursion: Sustainable local food systems

In partnership with Bachsermärt, the Center offered the excursion "Sustainable local food systems" in April, at which a group of ETH Zurich Bachelor students spent the day exploring regional food networks in Zurich in order to learn more about sustainable local food systems. We thank Patrick Honauer at the Bachsermärt for his support in the educational excursion.

Member Highlights

Prof. Nina Buchmann held a kick-off meeting of new Horizon 2020 project **SUPER-G** on Sustainable Permanent Grassland systems and policies.

Dr. Wenfeng Liu from the group of Prof. Hong Yang was awarded the Chinese government's National Award for Outstanding Doctoral Students for his dissertation «Modeling Global Water-Food-Environment-Trade Nexus in the Context of Agricultural Intensification.»

The new project InnoFarm, a collaboration of the groups of **Prof. Robert Finger, Prof. Nina Buchmann, and Prof. Achim Walter**, started work in the Kanton of Solothurn, recruiting farmers to participate in interviews and field measurements by drones in order to gain new scientific knowledge in the context of smart farming.

Carole Alice Epper and Damien Tschopp from the group of Prof. Emmanuel Frossard featured in CIAT blog on «Farming in transition.»

Also, **ETH Sustainability** lauched the **ETH Zurich and the Agenda 2030** website focused on how ETH Zurich contributes to achieving the 17 sustainable development goals (SDGs).

Voices from the WFS Summer School

During the 2018 WFS summer school, contributors were interviewed to reveal an intimate look at the rich learning experience.

Michelle Grant: "Wonderful opportunity to learn about changes that are happening in our food system" explains the unique opportunities afforded by holding a course in different agriculture regions.

Jonna Cohen: "With an eye towards how people access healthy and diverse food" comments how the students collectively explore food system challenges.

Emmanuel Frossard and Delwendé Innocent Kiba: "Really working with farmers makes the difference" talks about the importance of sustainably improving yam yields.

Lucien Diby: "Cocoa production is becoming less attractive to the younger generation" explains the challenges facing cocoa production in Côte d'Ivoire.

ation social media campaign

The Center ran a **#wfsceducation** social media campaign focused on the summer school, which ended with 34 posts, reaching nearly 20,000 and liked 370 times.



UPCOMING EVENTS

OLMA Swiss Fair for Agriculture and Nutrition (11-21 October 2018) ETH Zurich will have an exhibit showcasing its research in the «Erlebnis Nahrung» (Experience Food) themed hall at this year's OLMA in St. Gallen. The focus of the hall this year is «Cereals.» The Plant Science Center is coordinating ETH's exhibit, and the WFSC is contributing content and support.

WFSC Research Symposium (08 November 2018) Our public research symposium highlights research from our programs as well other food system relevant research conducted by our members and their groups at ETH Zurich, Agroscope, and Eawag.

ETH AgriTech Day (25 May 2019) A public event highlighting technological inovations in Smart Farming.

WFS Summer School 2019 (17 August-01 September 2019) Our next course will take place in Rheinau, Switzerland.

www.worldfoodsystem.ethz.ch/outreach-and-events/upcoming-events.html





Recent Food System Publications

Below is a selection of recent publications from WFSC members that highlight their work on food system topics.

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Blaser, W.J.; Oppong, J.; Hart, S.P.; Landolt, J.; Yeboah, E.; et al. Climate-smart sustainable agriculture in low-to-intermediate shade agroforests. Nature Sustainability 2018. https://doi. org/10.1038/s41893-018-0062-8

Buchmann, L.; Bloch, R.; Mathys, A. comprehensive pulsed electric field (PEF) system analysis for microalgae processing. Bioresource Technol. 2018. https://doi.org/10.1016/j.biortech.2018.06.010

Caporgno, M. P; Mathys, A. Trends in microalgae incorporation into innovative food products with potential health benefits. Front. Nutr. 2018. https://doi.org/10.3389/fnut.2018.00058

Chaudhary, A.; Gustafson, D.; Mathys, A. Multi-indicator sustainability assessment of global food systems. Nature Comm. 2018. https://doi.org/10.1038/s41467-018-03308-7

Chaudhary, A.; Marinangeli, P. F.; Tremorin, D.; Mathys, A. Nutritional combined greenhouse gas Life Cycle Analysis for incorporating Canadian yellow pea into cereal-based food products. Nutrients 2018. https://doi.org/10.3390/nu10040490

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Follow us on Facebook www.facebook.com/ethzWFSC Mathys, A. Perspective of micro process engineering for thermal food treatment. Front. Nutr. 2018. https://doi.org/10.3389/ fnut.2018.00024

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Ruckle, M. E.; Bernasconi, L.; Kölliker, R.; Zeeman, S. C.; Studer, B. Genetic diversity of diurnal carbohydrate accumulation in white clover (Trifolium repens L.) Agron. 2018. https://doi.org/10.3390/ agronomy8040047

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