



WFSC Newsletter Issue 10 | December 2018

World Food System Center News

Center News

New Executive Office Staff

This month we bid farewell to Jonna Cohen, our Education Manager. We thank her for her valuable contributions to the Center and our summer schools, and we wish her the best in her future endeavors.

We welcome Monika Piessens to the team. Her interdisciplinary academic background covers a variety of topics such as sustainable development and curriculum development. Before joining the Center, she held various project management positions in the international cooperation sector. She is taking over the position of Education Manager, coordinating our education programs such as summer schools, workshops, and events. Please see the [Executive Office page](#) to learn more about our team.



Welcome to our New Members

We welcome Prof. Lenny Winkel and Prof. Christain Schöb as new members in 2018. Prof. Winkel leads the group of Inorganic Environmental Geochemistry in the Department of Environmental Systems Science. The group focuses on achieving a mechanistic understanding of global trace element cycling and predicting trace element distributions in the environment. Their work striving to understand the cycling of health-impacting trace elements is essential to prevent future health hazards, today and in the future.



Prof. Christain Schöb heads the group of Agricultural Ecology, also in the Department of Environmental Systems Science. He introduced his research at his Inaugural Lecture at ETH Zurich «An ecologist's view on cropping systems» in May 2018. The group's work takes a community ecological perspective on crop systems, with particular emphasis on the investigation of plant-plant interactions and their evolutionary and environmental context dependence.



Join the Conversation!

Our World Food System Center LinkedIn group is growing, with the aim to connect students and professionals who are interested in working towards sustainable food systems. Join at <https://www.linkedin.com/groups/12070987> and follow us on [Twitter](#) and [Facebook](#).



The Executive Office team in November 2018.

Flagship Project: Enhancing Resilience in Food Systems

The WFSC Flagship Project on food system resilience continues connecting stakeholders and developing practical tools. The WFSC Research Programs project AERTCvc in Ethiopia and Ghana is in its final stage. After conducting a resilience assessment among value chain stakeholders (input suppliers, cooperatives, farmers, traders, retailers and consumers) in the first year of the project, the focus in 2018 was on identifying measures to build resilience in both value chains. Final project reports are now available at www.resilientfoodsystems.ethz.ch.

As part of a collaboration with the Food and Agricultural Organization (FAO) and FOAG, Dominique Barjolle led a workshop in Torino, Italy, on 19-20 September 2018. This workshop «Forum Origin, Diversity and Territories» focused on the plurality of channels for measuring the resilience at the farm-system scale and emphasized the importance of taking into account the dynamics and complexities of this system.



Discussions to identify strategies for building resilience in the tef value chain in Ethiopia

The Sustainable Agroecosystem Group, chaired by Prof. Johan Six, and their partners were awarded funding by the Global Programme Food Security of the Swiss Agency for Development and Cooperation for their project “The rural-urban nexus: Establishing a nutrient loop to improve city region food system resilience (RUNRES)”. Also, in collaboration with CABOZ AG (a cocoa trader), they received funding by the Swiss State Secretariat for Economic Affairs (SECO) for a three-year project “Village post-harvest processing and farmer support centres.”

For the recent project newsletter and to learn more about the 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 continues to develop, with several projects underway. The Flagship Project is a collaboration of nine different WFSC member groups, and efforts continue to secure funding to further build the initiative.

The projects «Insect production from biowastes for animal feed» and «New sustainable food formulations based on algae proteins» continue to be highlighted in the media, such as on the [SRF business magazine Eco](#) and [NZZamSonntag](#). Principal Investigator Prof. Alexander Mathys also presented the projects at the ETH-Industry Dialogue on the Future event in November.



Stefan Diener, collaborator in project «Insect production from biowastes for animal feed» give visitors at the Olma, the Swiss Fair for Agriculture and Nutrition, a closer look at black soldier flies.

ETH Studio AgroFood

With the goal of empowering ETH Zurich students to explore and develop their own ideas around the topic of digitalization of the AgroFood sector, Project Manager Eduardo Pérez led the new course «Innovation in Precision Agriculture» in fall 2018. The 10-week course had support from Dr. Jana Thiel (Chair of Entrepreneurship, ETH), Daniel Böhi (Founders Institute), the Student Project House, as well as guest lecturers from different organizations (HAFL, Agroscope, Barto). In November, the students presented their concepts at an inspiring evening that hopefully starts creating new solutions for the future of agriculture. Eduardo also presented the Studio at the Swiss Agritech & Food Industry Event ([video](#)). Learn more about [activities of the ETH Studio AgroFood](#) on the Center website.

WFSC Research Programs Loads of updates about projects funded through the Center’s Research Programs can be found at www.worldfoodsystem.ethz.ch/research.

Research Symposium: Share | Network | Connect

The annual World Food System Center Research Symposium is a public event showcasing food systems research at ETH Zurich. At the event on 08 November, four researchers shared results from their Center supported projects. The presentations included “Iodine in milk and dairy products in relation to iodine in feed and the contribution to iodine intake in Swiss adults ([MIOD](#))”, presenter Olivia van der Reijden; “Inactivation of microorganisms on seeds for sprout production using cold atmospheric pressure plasma ([microPLASMA](#))”, presenter Markus Schuppler; “Soft matter approach to effective preservation of African leafy vegetables by drying ([SoLVED](#))”, presenter Leonie van ‘t Hag; “Assessing the resilience of tef and cocoa farmers against drought in Ethiopia and Ghana ([AERTCvc](#))”, presenter Jonas Joerin. All presentations can be [viewed online](#).

Our own Michelle Grant and Jonna Cohen then introduced how our summer schools build the capacity of the next generation of food system leaders. The over 300 attendees then networked while viewing 50 posters highlighting food systems research of our members and other groups at ETH Zurich, Agroscope, Eawag, Empa, FiBL, and University of Zurich. We congratulate the winners of the two poster prizes awarded at the symposium: Best Overall Poster Prize: «Determinants of collective climate change mitigation in agriculture» by Cordelia Kreft, Robert Huber and Robert Finger, and the Mercator Poster Prize: «Improving disease resistance of pea - clues from plant-microbe interaction» by Lukas Wille, Pierre Hohmann, Monika M. Messmer, and Bruno Studer.

We thank all presenters and contributors for making this networking event such a success! To find out more about the symposium, [check out our website](#) or [watch our video](#) of participants' impressions at the poster session.



Networking during the poster session at our Research Symposium.



Olivia van der Reijden presenting at Research Symposium.



Martijn Sonneveld asking for questions from audience during panel discussion.

Q&A with Lukas Wille, winner of the Mercator Poster Prize at the WFSC Research Symposium: “Improving disease resistance of pea - clues from plant-microbe interaction”

Q. What was the most important aspect of your project that you shared with the public at the Research Symposium?

A. Pea is an underutilized crop despite its nutritional value and exceptional potential to strengthen sustainable farming systems. The resPEAct project tackles one important challenge in pea cultivation, namely resistance against soil-borne pathogens, as part of a collaboration between the ETH Zurich Molecular Plant Breeding group, WFSC, and FiBL.

Q. How do you see this project impacting the food system?

A. This project promotes pea resistance breeding. Incorporating pea or other legumes in crop rotations is a means of sustainably intensifying modern farming systems. And, pea is a delicious locally harvested veggie full of protein!

Q. May we ask what poster you voted for and why?

A. Irrigation modernization by Sandra Pool et al. I got their message in less than two minutes without reading a lot of text or interpreting complicated graphs.

Q. The tagline of the Symposium was Share | Network | Connect. What would a 3-word tagline for your project be?

A. Breeding | Resistance | Microbes

Lukas Wille is a doctoral student working with Prof. Bruno Studer and Dr. Monika Messmer (FiBL) on the [ResPEAct](#) project.



Q&A with Cordelia Kreft, winner of the Best Overall Poster Prize at the WFSC Research Symposium: "Determinants of collective climate change mitigation in agriculture: a Swiss case study"

Q. What was the most important aspect of your project that you shared with the public at the Research Symposium?

A. As the poster presented the overall framework of my doctoral project, the most important aspect is best reflected by a hypothesis: Bottom-up collective action of farmers and interactions between farms have an important potential for effective climate change mitigation in agriculture.



Q. How do you see this project impacting the food system?

A. Farmers' decisions with respect to practical climate change mitigation are crucial for future-oriented food systems. Investigating the influences of social networks, personal preferences and interactions can help to deepen the understanding of these decisions and eventually contribute to efficient policies for effective mitigation in agriculture.

Q. May we ask what poster you voted for and why?

A. Willemijn Vroege's poster on Satellite weather index insurance. Her research focuses on how satellite data can improve the risk reducing capacity of weather insurances. The topical closeness of Willemijn's tools makes them a perfect complement to my work. Only a balanced mix of mitigation and adaptation strategies will allow farming systems to cope with future climate.

Q. The tagline of the Symposium was Share | Network | Connect. What would a 3-word tagline for your project be?

A. Collaborate | Initiate | Mitigate

Cordelia Kreft is a doctoral student working with Prof. Robert Finger and Dr. Robert Huber.



Researchers from the Consumer Behavior group leading visitors through a food disgust survey at the exhibit.



Prof. Bruno Studer shares the exhibit guide with Swiss Federal Councilor Johann Schneider-Ammann (Image: Michael Huwiler).

Swiss Fair for Agriculture and Nutrition

Visitors gathered for ten days (11-21 October) at the Olma, the Swiss Fair for Agriculture and Nutrition, to visit stands showcasing the latest products and innovations from Swiss agriculture and food industries. A special show, open to the general public, was called Erlebnis Nahrung (Experience Food). ETH Zurich presented an exhibit at the show highlighting its innovative research focused on our food system. Visitors could walk through and interact with many exhibit components to learn more about our food system and how our daily choices in what we eat matters. The Plant Science Center coordinated the exhibit, led by Juanita Schl pfer-Miller. The World Food System Center contributed content focusing on the issue of how we feed nine billion people in 2050 while ensuring human health, environmental sustainability, and social well-being for us all. Over the ten days, over 16,000 visitors came to the [ETH Zurich exhibit](#).

Edible Research Delivers

The SNF Agora project Edible Research has had another success, packaging two role-playing games based on the palm oil value chain and food choices for use as teaching materials on sustainable food systems. Anett Hofmann from the WFSC member group of Sustainable Agroecosystems at ETH Zurich delivered the boxed games in August to the Zurich University of Teacher Education (PHZ), where staff will use the game material during continuing education workshops with lecturers from several Swiss universities of teacher education.

Caf  Scientifique

At the first Caf  Scientifique presented by the Life Science Zurich, Executive Director Martijn Sonneveld spoke about the topic "Feeding the world in 2050." At the forum on 02 October in Zurich, he highlighted the importance of looking at the challenges from a systems perspective.

Screening of *In Our Hands* documentary

The ETH Zurich NADEL Center for Development and Cooperation in collaboration with the Center hosted a public screening of *In Our Hands: Seeding Change*, a new documentary exploring the sustainability and cultural importance of local food chains. At the event on 21 November, the audience of 90 people first listened to an introduction from Executive Director Martijn Sonneveld about challenges in the food system and how we as consumers make choices that matter. After the screening, a panel discussion moderated by NADEL's Linn Borgen Nilsen provided insights from Professor of Agricultural Ecology Christian Schöb and Lukas Peter, co-founder of the local cooperative basimilch Dietikon.



Martijn Sonneveld providing an introduction at screening.

ETH Zukunftsblog

Under the topic of sustainability, many of our members post regular contributions to this science blog hosted by ETH Corporate Communications. Read the recent features on effective breeding methods, reducing the risks of pesticide use, and benefits of biologically diverse plant communities at www.ethz.ch/en/news-and-events/zukunftsblog.html.

Food System Stories

The Center launched a blog in 2016 featuring the voices and perspectives of the WSFC alumni community. This creative space offers a platform to share stories such as the recent contributions from Leandro Buchmann, Sergei Schaub, and Anubha Garg. Follow the blog at www.foodsystemstories.org/

Delivering Food Security on Limited Land

A new animated video «[Grazed and Confused? How much can grazing livestock help to mitigate climate change?](#)» summarizes the conclusions of a Food Climate Research Network (FCRN) report co-authored by team members of the international consortium Delivering Food Security on Limited Land. For more news, check out [deliveringfoodsecurity.org](#).

Alumni Community Update

The World Food System Alumni Community is a vibrant and diverse group of individuals who are interested in creating change in the food system. Totalling 164 alumni from 49 countries, this dynamic group has attended either one of the Center's seven summer schools from 2013 to 2018 in Switzerland, India, South Africa, or Cote d'Ivoire. Since we now have a critical mass of alumni, we feel it is time to realize their potential as a community.

As a first step, we sent out a survey with 30 questions on different topics: roles, knowledge and skills, networks, future offerings, and demographics. We then held a three-day alumni workshop in Berlin, Germany in June 2018. The purpose of the workshop was to enrich the survey data by conducting focus groups, as well as build up alumni driven projects. The workshop resulted in the creation of a working group to further develop three interrelated activity areas: establishing an organizational structure, creating opportunities for ongoing learning and contribution, and building an online platform for alumni engagement.



Cooking class at Über den Tellerrand during alumni workshop in Berlin.

In November, we hosted a strategy workshop in Zurich. The working group drafted a mission, vision, and values for the alumni cohort, as well as shared progress in the three focus areas with the larger alumni community.

Many thanks all of the alumni who have participated in the survey, the alumni workshop, and the strategy workshop. We at the Center are excited to see what 2019 brings!

ETH Ambassadors Blog

A recent post by H  l  ne Gonnet highlights her experiences at the World Food System Summer School in C  te d'Ivoire.

Dr. Christian Andres of the group Prof. Johan Six received the Josef G. Knoll European Science Award 2018 for his work on «Transdisciplinary systems research to reduce the cocoa swollen shoot virus disease in Ghana.»

Dr. Wilma Blaser of the group Prof. Johan Six was honored with the Swiss Forum for International Agricultural Research (SFIAR) Award for her project «Optimizing agroforests for sustainable agricultural development in West Africa.»

Prof. Nina Buchmann was recognized as an American Geophysical Union 2018 Fellow for her «visionary leadership and scientific excellence which have fundamentally advanced research in biogeosciences.»

Leandro Buchmann from the group of Prof. Alexander Mathys was awarded the GNT Young Scientist Award 2018 at the European Federation of Food Science and Technology International Conference.

Prof. Nina Buchmann, Prof. Sonia Seneviratne, and Prof. Michael Zimmerman received the Highly Cited Researcher 2018 award from Web of Science. The list includes scientists worldwide who have written the greatest number of highly cited papers, ranking among the top 1% most cited.

Prof. Consuelo De Moraes has received the prestigious Nan-Yao Su Award for Innovation and Creativity in Entomology from the Entomological Society of America.

Prof. Emmanuel Frossard, Dr. Christain Stamm, and Dr. Astrid Oberson are among the organizers of the International Phosphorus Workshop «[Putting Phosphorus first? How to address current and future challenges](#)» in July 2019 at ETH Zurich.

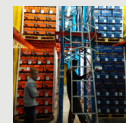
Corinne Hertäg from the group of Prof. Consuelo De Moraes won the Best Student Oral Presentation at the International Society for Chemical Ecology Annual Meeting in Budapest Hungary.

Dr. Wenfeng Liu from the group of Prof. Hong Yang was awarded the Otto Jaag Water Protection Prize 2018 for his dissertation «Modelling Global Water-Food-Environment-Trade Nexus in the Context of Agricultural Intensification».

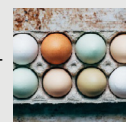
New Fact Sheets for WSFC Research Program Projects

We have published fact sheets for several completed projects highlighting results and relevance to stakeholders.

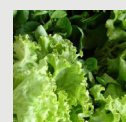
PACKCHAIN: Showing how packaging design and cooling schemes affect fruit quality and the carbon footprint of the citrus supply chain.



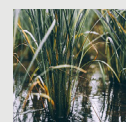
INDUCE: Assessing the potential of farming chickens that produce both eggs and meat (dual-purpose) and measuring consumer willingness to pay more for dual-purpose eggs.



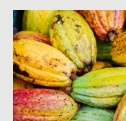
BIOCONTROL: Establishing the use of natural, antimicrobial reuterin as a novel method to reduce microbial load on fresh produce.



BasmuSus: Investigating the environmental, social, and economic impacts of organic Basmati rice production by smallholders farmers in India.



CdOCA: Measuring cocoa bean cadmium concentrations in Bolivia and Honduras, finding soil parent material and soil acidity affect soil and bean cadmium concentrations.



More about ongoing projects at www.worldfoodsystem.ethz.ch/research.

Prof. Alexander Mathys awarded Swiss National Science Foundation funding for project on high pressure preservation.

Dr. Monika Maurhofer has been awarded the title of Adjunct Professor at ETH Zurich.

Dr. Astrid Oberson from the group of Prof. Emmanuel Frossard was elected president of the Swiss Society of Agronomy.

Dr. Christian Stamm awarded project funding by the Federal Office for Environment for «MachTrend: Feasibility study for Evaluating the Swiss National Pesticide Action Plan.»

The LERNfeld project was highlighted in [ETH News](#). The Grassland Sciences group of Prof. Nina Buchmann is a partner in the environmental education and dialogue program.

UPCOMING EVENTS

ETH AgriTech Day (25 May 2019) A public event highlighting technological innovations in Smart Farming.
More: www.worldfoodsystem.ethz.ch/smartfarming.html

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

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

Ahrends, H.; et al. Genetic yield gains of winter wheat in Germany over more than 100 years (1895-2007) under contrasting fertilizer applications. *Environ. Res. Lett.* **2018**. <https://doi.org/10.1088/1748-9326/aade12>

Brütsch, L.; Rugiero, S.; Serrano, S.S.; et al. Targeted inhibition of enzymatic browning in wheat pastry dough. *J. Agric. Food Chem.* **2018**. <https://doi.org/10.1021/acs.jafc.8b04477>

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>

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

Christian, A.; Hoerler, R.; Home, R.; et al. Social network to inform and prevent the spread of cocoa swollen shoot virus disease in Ghana. *Agron. Sustain. Dev.* **2018**. <https://doi.org/10.1007/s13593-018-0538-y>

Cooper, J.; Reed, E. Y.; Hörtenhuber, S.; et al. Phosphorus availability on many organically managed farms in Europe. *Nutr. Cycl. Agroecosys.* **2018**. <https://doi.org/10.1007/s10705-017-9894-2>

Diserens, F.; Choptiany, J. M. H.; Barjolle, D.; et al. Resilience assessment of Swiss farming systems: Piloting the SHARP-Tool in Vaud. *Sustainability*. **2018**. <https://doi.org/10.3390/su10124435>

Emmel, C.; et al. Integrated management of a Swiss cropland is not sufficient to preserve its soil carbon pool in the long term. *Biogeosciences*. **2018**. <https://doi.org/10.5194/bg-15-5377-2018>

Fuchs, K.; et al. Management matters: Testing a mitigation strategy for nitrous oxide emissions using legumes on intensively managed grassland. *Biogeosciences*. **2018**. <https://doi.org/10.5194/bg-15-5519-2018>

Fuhrmann, S.; Winkler, M.S.; Staudacher, P.; et al. Exposure to pesticides and health effects in farm owners and workers from conventional and organic agricultural farms in Costa Rica: A study protocol. *JMIR Res. Protocols*. **2018**. <https://doi.org/10.2196/10914>

Gold, M.; Tomberlin, J.K.; Diener, S.; et al. Decomposition of biowaste macronutrients, microbes, and chemicals in black soldier fly larval treatment: A review. *Waste Manag.* **2018**. <https://doi.org/10.1016/j.wasman.2018.10.022>

Hertwig, C.; Meneses, N.; Mathys, A. Cold atmospheric pressure plasma and low energy electron beam as alternative nonthermal decontamination technologies for dry food surfaces: A review. *Trends Food Sci. Technol.* **2018**. <https://doi.org/10.1016/j.tifs.2018.05.011>

Huber, R.; Bakker, M.; Balman, A.; et al. Representation of decision-making in European agricultural agent-based models. *Agric. Syst.* **2018**. <https://doi.org/10.1016/j.agry.2018.09.007>

Knorst, V.; Byrne, S.; Yates, S.; et al. Pooled DNA sequencing to identify SNPs associated with a major QTL for bacterial wilt resistance in Italian ryegrass (*Lolium multiflorum* Lam). *Theor. Appl. Genet.* **2018**. <https://doi.org/10.1007/s00122-018-3250-z>

Liu, W.; Antonelli, M.; Kumm, M.; et al. Savings and losses of global water resources in food-related virtual water trade. *WIREs Water*. **2018**. <https://doi.org/10.1002/wat2.1320>

Liu, W.; Yang, H.; Folberth, C.; et al. Achieving high crop yields with low nitrogen emissions in global agricultural input intensification. *Environ. Sci. Technol.* **2018**. <https://doi.org/10.1021/acs.est.8b03610>

Meraner, M.; Pölling, B.; Finger, R. Diversification in peri-urban agriculture: a case study in the Ruhr metropolitan region. *J. Land Use Sci.* **2018**. <https://doi.org/10.1080/1747423X.2018.1529830>

Möhring, N.; Gaba, S.; Finger, R. Quantity based indicators fail to identify extreme pesticide risks. *Sci. Total Environ.* **2019**. <https://doi.org/10.1080/09064710.2017.1363909>

Möller, K.; Oberson, A.; Bünemann, E. K.; et al. Improved phosphorus recycling in organic farming: Navigating between constraints. *Adv. Agron.* **2018**. <https://doi.org/10.1016/bs.agron.2017.10.004>

Moser, A.; Wemyss, D.; Scheidegger, R.; et al. Modelling biocide and herbicide concentrations in catchments of the Rhine basin. *Hydrol. Earth Syst. Sci.* **2018**. <https://doi.org/10.5194/hess-22-4229-2018>

Necpalova, M.; Lee, J.; Skinner, C.; et al. Potentials to mitigate greenhouse gas emissions from Swiss agriculture. *Agric. Ecosyst. Environ.* **2018**. <https://doi.org/10.1016/j.agee.2018.05.013>

Schuwirth, N.; Honti, M.; Logar, I.; et al. Multi-criteria decision analysis for integrated water quality assessment and management support. *Water Research*. **2018**. <https://doi.org/10.1016/j.wroa.2018.100010>

Webber, H.; Ewert, F.; Olesen, J. E.; et al. Diverging importance of drought stress for maize and winter wheat in Europe. *Nature Comm.* **2018**. <https://doi.org/10.1038/s41467-018-06525-2>

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