ETH zürich

WFSC Newsletter Issue 8 | January 2018

World Food System Center News

Center News

A successful transition of leadership took place at the Center last fall, with Dr. Martijn Sonnevelt taking on the post of Executive Director and Michelle Grant moving into her new role as Education Director. Please see the Executive Office page on the Center website to learn more about our team.

The Executive Office team at the Research Symposium in October 2017.

Welcome to our New Members

Prof. Ruben Kretzschmar and Prof. Hubert Pausch were voted in as new members at the annual General Assembly in November 2017. Prof. Kretzschmar leads the group of Soil Chemistry in the Department of Environmental Systems Science. The group works to understand the soil chemical processes controlling nutrient and contaminant behavior in terrestrial ecosystems in order to sustain soil quality and food security. One goal of their work is to develop soil management strategies to minimize the uptake of toxic elements by food crops such as rice.

Prof. Hubert Pausch heads the group of Animal Genomics, also in the Department of Environmental Systems Science. He introduced his research on «Sequencing entire animal populations for genome-enabled precision breeding» at his Inaugural Lecture at ETH in November 2017. The group's work aims to develop and implement strategies that extract useful information from large genomic datasets, thereby enabling sustainable and efficient animal breeding.

Congratulations to Michelle Grant

Michelle received the University of Queensland Distinguished Young Alumni Award 2017. On 11 October 2017, Michelle was honored at the Courting the Greats ceremony for her success and contributions as a food systems specialist and educator.

Join the Conversation!

We have launched a World Food System Center LinkedIn group, 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.

World Food System Center

Flagship Project: Enhancing Resilience in Food Systems
The WFSC Flagship Project on food system resilience continues connecting stakeholders and developing practical tools. 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), stakeholder workshops were held in Kumasi, Ghana in October and in Debre Zeit, Ethiopia in November. The goals of these workshops were to validate the results from the recently conducted survey on the resilience of value chain actors to key shocks and to develop action plans together with local value chain stakeholders to build resilience in the cocoa (Ghana) and tef (Ethiopia) value chains.

As part of the work with the Swiss Federal Office of Agriculture (BLW) and the FAO, a modified version of the SHARP assessment is currently being applied in the Canton of Vaud, Switzerland to assess the resilience of farmers.

In a project supported by a Swiss Excellence Scholarship, doctoral student Kenza Benabderrazik studies the behavior

Cocoa farmers from Ghana prepare their action plan to build resilience (Kumasi, October 2017).

of tomato farmers in response to market and climate change influences in Morocco and Ghana. Lastly, the BLW project on the Swiss food system will launch a survey in February to assess the resilience of all actors in the milk, beef, wheat, wine, and potato value chains. This survey will assess the resilience based on identified key risk scenarios for Switzerland, such as summer dryness, biological diseases, and the potential of agricultural free trade with 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 continues to develop, with six projects underway, some of which were introduced at the Annual Symposium of World Minds in Zurich in December 2017 by Principal Investigator Prof. Alexander Mathys.

The symposium «Addressing the Global Food Challenge with Algae,» organized by Prof. Mathys and collaborators from Wageningen University and EnerGaia will take place at the American Association for the Advancement of Science AAAS 2018 Annual Meeting in February. The Flagship Project is a collaboration of nine different WFSC member groups, and efforts continue to secure funding to further build the initiative.

Lukas Böcker and Iris Haberkorn at World Minds 2017.

ETH Studio AgroFood: Digitalization in the AgroFood Sector
Project Manager Dr. Eduardo Peréz presented at the Agridea workshop focused on digitalization in agriculture and decision support in November 2017. He provided a critical evaluation on the progress of digitalization in agriculture and the importance of the human component - the farmer - in the implementation of new technologies. Work continues to design a new course for ETH students on the topic and to develop multi-stakeholder projects. Learn more about activities of the ETH Studio AgroFood on the Center website.

WFSC Research Programs
Further information about the ongoing postdoctoral and doctoral projects funded through the Center's Research Programs can be found at www.worldfoodsystem.ethz.ch/research.

Annual 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 25 October 2017, six researchers shared results from their Center supported projects. The presentations included "How to sustainably intensify organic Basmati rice production in Uttarakhand, India (BasmaSus)", presenter Prof. Claire Decock; "A virtual cold chain method to improve ventilated packaging for fresh fruit (PACKCHAIN)", presenter Dr. Wentao Wu; "Elements of successful novel dual purpose chicken production systems (INDUCE)", presenter Dr. Isabelle Gangnat; "Development of a high energy red clover (HERC)", presenter Dr. Mike Ruckle; "Management practices for improved soil structure in organic farming: A look into the nitrogen cycle (NORGS)", presenter Viviana Loaiza; and "Integrating conservation goals and meat production on marginal lands (EG4BM)", presenter Tobias Zehnder.

After hearing updates from the Center's ongoing Flagship projects, the nearly 300 attendees then networked while viewing 50 posters highlighting food systems research of our members and other groups at ETH Zurich, Agroscope, Eawag, FiBL, and University of Zurich. We congratulate the winners of the two poster prizes awarded at the symposium: Best Overall Poster Prize: "The value of species diversity in grasslands (DIVERSGRASS)" by Sergei Schaub, Nina Buchmann, Andreas Lüscher, and Robert Finger, and The Mercator Poster Prize: "Boost algae supply chain applying holistic up- and downstream processes" by Leandro Buchmann, Chaudhary Abhishek, Lukas Böcker, and Alexander Mathys.

We thank all presenters and contributors for making this networking event such a success! To find out more about these projects and see posters from the symposium, check out the Outreach section of the Center website.

Flagship Project Updates at the WFSC Research Symposium.

Networking during the poster session at our Research Symposium.

Poster Prize winners Sergei Schaub and Leandro Buchmann with Michelle Grant and Michael Siegrist.

Q&A with Leandro Buchmann, winner of the Mercator Poster Prize at the WFSC Research Symposium: "Boost algae supply chain applying holistic up- and downstream processes"

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

A. Microalgae have a huge potential to ensure food security in the future. By using novel upstream approaches, photoautotrophic cultivation can become a sustainable source for food in the future.

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

A. Bridging the Gap

Q. How did you get involved with the project?

A. As a doctoral candidate in the group of Sustainable Food Processing, you are always seeking novel approaches to ensure sustainable food production.

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

A. The ability to improve production of a nutritious protein food source, especially one that grows on non-arable land and fixates CO_2, supports global food and nutrition security.

Leandro Buchmann is a doctoral student working with Prof. Alexander Mathys.

Q&A with Sergei Schaub, winner of the Best Overall Poster Prize at the WFSC Research Symposium: "The value of species diversity in grasslands (DIVERSGRASS)"

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

A. I presented initial results from two projects about the value of species diversity in grasslands, which show that higher species diversity leads to higher and more stable nutrient yields. I also received valuable feedback that is very helpful for my next steps.

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

A. Diversity | Benefits | Risk Reduction.

Q. How did you get involved with the project?

A. After I completed my Masters, I had the opportunity to start working as a doctoral student on the DIVERSGRASS project jointly with the Agricultural Economics and Policy and Grassland Sciences groups at ETH. I feel lucky to be able to work on the value of species diversity in grassland production.

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

A. Diversity of species in grasslands is often considered desirable from a conservation or "green" perspective. However, species diversity actually also has a positive economic value and promotes additional ecosystem services. I think my research can highlight the economic value of species diversity and promote sustainable intensification in grassland production.

Sergei Schaub is a doctoral student working with Prof. Robert Finger and Prof. Nina Buchmann on the DiversGrass research project.

Fall Public Lecture: Tackling Malnutrition with Biofortification

The Center invited World Food Prize laureate Dr. Marie Andrade to present a keynote address at our Fall Public Lecture on 12 September. Dr. Andrade highlighted the most successful case of biofortification to date – orange flesh sweet potatoes (OFSP) in Mozambique and Uganda. Dr. Andrade addressed local and regional strategies for sweet potato dissemination, including reaching out to communities via song and dance. She spoke to the challenges of breeding drought resistant varieties of the crop, as well as targeting women and children as entry points for dietary change.

Dr. Marie Andrade speaking at the Fall Public Lecture.

Joining the debate on global food security

At the first of the Global Challenges Debates Series on 20 September 2017 at Queen's University Belfast, the Center's Michelle Grant along with Professor Chris Elliott of Queen's University Belfast, discussed the challenges in food security facing consumers and industry alike. The discussion focused on issues concerning integrity of the supply system, food production as well as access, and food fraud.

Prof. Chris Elliot and Michelle Grant take part in the debate.

PACKCHAIN workshop

The PACKCHAIN project focuses on the development of eco-smart ventilated packaging to reduce food loss during transport and storage of fresh fruit and is led by Dr. Thijs Defraeye. To share the findings of the project with experts from academics and industry that work on cold-chain and packaging technology for foods, the workshop entitled "New cold-chain and packaging technologies to reduce food losses" was held on 27 August 2017 at ETH Zurich. A consortium of over 35 food engineering researchers and practitioners attended.

WFSC at Scientifica 2017

The World Food System Center organized a public exhibit of food systems research at the recent ETH/UZH Scientifica, 01-03 September. Our interactive exhibit "**Sustainable Nutrition with Bits and Bytes**" focused on the influx of data from information and communication technology in agriculture. Three components came together to showcase research along the entire food value chain, with contributions from the ETH Zurich Crop Science and Sustainable Agroecosystems groups as well as PubliFarm and ETH Zurich Grassland Sciences.

Anett Hofman from Sustainable Agroecosystems answering questions from young scientists visiting the WFSC Scientifica exhibit.

Joining PubliFarm at OLMA 2017

At a special exhibit of the The OLMA Swiss Fair for Agriculture and Nutrition, the PubliFarm project aimed to bring the public closer to scientific research in the field of biodiversity and climate change and its connection with Swiss agriculture. The WFSC provided an **informative display** for the exhibit last October.

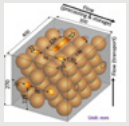
ETH Zukunftsblog

Under the topic of this world food system, many of our members post regular contributions to this science blog hosted by ETH Corporate Communications. Read the recent features on organic farming and sustainable yam systems in West Africa. The blog has been rebooted in 2018, with focus areas of digitalization and health in addition to sustainability. Follow the blog at **https://www.ethz.ch/en/news-and-events/zukunftsblog.html**.

WFSC Research Projects in the News

ZOMM: New publications in *Plant Soil* and *Applied Environmental Microbioogy* investigate increasing zinc (Zn) phytoavailability.

MOCA: New publication in *Agriculture, Ecosystems and Environment* showing diverse native tree shade cover leads to enhanced coffee production and quality.



PACKCHAIN: A new study in *Applied Thermal Engineering* virtually tracks the temperature-time history of individual citrus fruit during the postharvest supply chain.

CdOCOA: New publication in *Science of the Total Environment* investigates cadmium uptake by cocoa in Honduras.

AERTCvc: Reports released from stakeholder workshops held to help build resilience in the cocoa (Ghana) and tef (Ethiopia) values chains.

Check out our news feed: **www.worldfoodsystem.ethz.ch/news**

Delivering Food Security on Limited Land

The Belmont Forum Collaborate Research Action on Food Security and Land Use Change team met for its third annual meeting from 28 November to 1 December 2017, held at Wits Rural Facility near Acornhoek, South Africa. Nearly 20 researchers from around the world attended the meeting to update each other on the progress made in the past year and discuss challenges and next steps. Jonna Cohen and Anna K. Gilgen represented the WFSC and got valuable inputs for further outreach activities within the project and for the upcoming summer school in Brazil. For more news from the project, check out **deliveringfoodsecurity.org**.

The Delivering Food Security on Limited Land team in South Africa.

Future Summer School – Côte d'Ivoire

Our next summer school begins at the end of January in Côte d'Ivoire. The two-week intensive academic course entitled, "Food Systems in Transition," aims to understand challenges and solutions along the value chain by focusing on both yams and cocoa, important staple and cash crops in the region. Participants will delve into the importance of yams through field visits to local formal and informal markets, and through a visit to a yam field site to meet with farmers and innovation platform members. The participants will also have a chance to explore the challenges and opportunities that cocoa plays in the area by interacting with a panel of experts from both industry and academia. Follow the journey of these students on Facebook (@ethzWFSC) and #wfseducation.

ETH Zurich Climate Prorgamme starts

In close cooperation with the catering companies on campus, ETH Zurich is developing solutions for sustainable catering, backed by its own education and research activities. The ETH Catering Commission launched a project in 2013 to find ways that catering companies could contribute to ETH climate goals and to determine the critical factors influencing sustainable catering. ETH Seed Sustainability and the World Food System Center came onboard to lead the project. The Climate Programme, which begins in January 2018, aims to reduce the CO_2eq footprint of the campus catering facilities significantly over the next three years. In principle, the Climate Programme is based on voluntary participation and self-commitment. So far, the SV Group and the Compass Group have made voluntary commitments to cut back their emissions by 10 percent over the next three years. Watch the launch video from ETH Sustainable Campus at www.ethz.ch/climateprogramme.

Prof. Michael Kreuzer serves as the ETH's representative on the Agrovet-Strickhof management team. ETH Zurich, University of Zurich, and the Canton of Zurich held an official opening ceremony at Agrovet-Strickhof, their joint collaboration in the livestock sector, on 01 September 2017.

Prof. Johan Six, Prof. Sonia Seneviratne, and Prof. Michael Zimmerman received the Highly Cited Researcher 2017 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. Alexander Mathys and Prof. Robert Finger with Dr. Robert Huber, Prof, Nina Buchmann, and Prof. Achim Walter awarded project funding under the Swiss National Science Foundation «Sustainable Economy" NRP 73.

Dr. Adrian Müller's work on organic agriculture highlighted in several media outlets in November 2017, including the 3sat science program *nano*, SRF 2, SWR, Bayrischer Rundfunk, Channel Africa, *The Guardian*, *Le Monde*, *El Pais* and *The Los Angeles Times*.

Prof. Shana J. Sturla, is the new editor-in-chief of the American Chemical Society journal *Chemical Research in Toxicology*, as of January 2018.

Emilia Schmitt, previous doctoral student from the group of Prof. Johan Six, received the Hans Vontobel award 2017 for her outstanding dissertation on «Comparing local and global Food - a Definition Framework and Sustainability Assessment».

Martina Bozzola, postdoctoral researcher from the group of Prof. Robert Finger, received a tenure track assistant professor position at Queens University in Belfast.

Martina Bozzola and Thomas Böcker from the group of Prof. Robert Finger took home best paper awards at the EAAE and the GEWISOLA Agricultural Economics Congresses.

UPCOMING EVENTS

WFS Summer School (27 January - 10 February 2018) The 2018 course on "Food Systems in Transition" will take place in Côte d'Ivoire.

WFSC Spring Public Event (26 April 2018) An evening discussing food fraud with Prof. Chris Elliot of the Queens University Belfast Institute for Global Food Security.

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

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.

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Böcker, T.; Britz, W.; Finger, R. Modelling the Effects of a Glyphosate Ban on Weed Management in Silage Maize Production. *Eco. Econ.* **2018**, 145, 182–193. doi: 10.1016/j.ecolecon.2017.08.027

Bozzola, M.; Massetti, E.; Mendelsohn, R.; Capitanio, F. A Ricardian analysis of the impact of climate change on Italian agriculture. *Eur. Rev. Agric. Econ.* **2018**, 45 (1), 57–79. doi: 10.1093/erae/jbx023

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Frossard, E.; Aighewi, B. A.; Aké, S.; Barjolle, D.; Baumann, P.; Bernet, T.; Dao, D.; Diby, L. N.; Floquet, A.; Hgaza, V. K.; et al. The challenge of improving soil fertility in yam cropping systems of West Africa. *Front. Plant Sci.* **2017**, 8. doi: 10.3389/fpls.2017.01953

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Grüter, R.; Meister, A.; Schulin, R.; Tandy, S. Green manure effects on zinc and cadmium accumulation in wheat grains (*Triticum aestivum* L.) on high and low zinc soils. *Plant Soil* **2017**, 1–17. doi: 10.1007/s11104-017-3486-4

Gschwandtner, A.; Hirsch, S. What drives firm profitability? A comparison of the US and EU food processing industry. *The Manchester School* **2017**. doi: 10.1111/manc.12201

Meraner, M.; Finger, R. Data on German farmers risk preference, perception and management strategies. *Data in Brief* **2017**, 15 (Supplement C), 102–105. doi: 10.1016/j.dib.2017.09.014

Müller, A.; Ferré, M.; Engel, S.; Gattinger, A.; Holzkämper, A.; Huber, R.; Müller, M.; Six, J. Can soil-less crop production be a sustainable option for soil conservation and future agriculture? *Land Use Policy* **2017**, 69 (Supplement C), 102–105. doi: 10.1016/j.landusepol.2017.09.014

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