



WFSC Newsletter Issue 6 | January 2017

World Food System Center News

WFSC News

New Executive Office Staff

At the end of 2016, we bid farewell to Bastian Flury and Aimee Shreck. We thank them for their highly valuable contributions to the Center, and we wish them the best of luck in their future endeavors. We also welcomed three new team members: Jonna Cohen (Education Manager), Jeanne Tomaszewski (Communications Manager), and Jukka Nystrom (Marketing Communications / Design). Please see the [Executive Office page](#) on the center website for further information about the team.

We're Moving!

As of April, the Executive Office will be located at Stampfenbachstrasse 52/56. A few more stairs away from ETH, but not all that much further.

Prof. Nina Buchmann was elected as Department Head of D-USYS in December 2016. She will remain as Chair of the WFSC until end of July, and Prof. Michael Siegrist has been nominated as successor. Voting by the WFSC Steering Committee will take place in April.



EIT KIC Food Consortia to Begin

ETH Zurich and the World Food System Center are very pleased to be a partner in the successful EIT KIC Food consortia. The large-scale initiative brings together a group of 50 research and industry partners across 13

countries to work towards the goals of "improving nutrition and creating a connected food system, centered on the consumer and built on trust." Activities will develop new talents, deliver business creation and acceleration support, and create consumer-valued food for healthier nutrition. The activities are launching in early 2017. See more at eit.europa.eu/eit-community/eit-food.

Check out our website For updated news and event listings from the Center, click on www.worldfoodsystem.ethz.ch.

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The new offices of the WFSC at Stampfenbachstrasse 52/56 in Zurich.

Research

Flagship Project Update: Enhancing Resilience in Food Systems

The WFSC flagship project on food system resilience has recently published guidelines on how to assess and design interventions for food system resilience. These guidelines integrate aspects of transdisciplinarity and aim to bridge the gap between science and practice through participatory-based approaches. Through the support from TFEarth and the University of Malaysia in Sabah, a stakeholder workshop took place in December 2016 in Sandakan, Malaysia about the resilience of the palm oil value chain in Sabah. This workshop brought together suppliers, producers, processors, and scientific experts to discuss challenges and opportunities for building resilience. As part of the Coop WFS Grants project [AERTCvc](#), a similar workshop was conducted in January 2017 in Kumasi, Ghana. In joint collaboration with



Palm oil fruit processing in Sabah, Malaysia.



Participants at the Resilience Stakeholder Workshop in January 2017 in Kumasi, Ghana.

the Kwame Nkrumah University of Science and Technology and the Ethiopian Institute of Agricultural Research, the project compares resilience of a food security crop (tef in Ethiopia) versus a cash crop (cocoa in Ghana) against key shocks such as drought and flooding. As part of the work with the Swiss Federal Office of Agriculture (BLW) and FAO, the SHARP tool of FAO for resilience assessment was adapted to Swiss agricultural conditions and successfully tested with 30 Swiss farmers in the Kanton Vaud. Lastly, the BLW project on the Swiss food system is in full swing with the first multi-stakeholder workshop planned for this spring. Learn more about this flagship project at www.resilientfoodsystems.ethz.ch.

New Flagship Project Underway: Novel Proteins for Food and Feed

The second WFSC flagship project focusing on the topic of novel uses of alternative proteins for feed and food has gotten underway with Prof. Alexander Mathys signing on as the Principal Investigator, in collaboration with nine different WFSC member groups. The first workshop to establish collaboration took place in January, and efforts are now underway to secure funding to build the initiative. A first project exploring insects for animal feed will kick off in the coming months.

Update on ETH Studio AgroFood: Digitalization in the AgroFood Sector

As a first step to understand the needs, challenges, and opportunities of digitalization in the AgroFood sector in Switzerland, the Studio performed several interviews with stakeholders at the local level in the past months. The information gathered in these interviews showed not only a great potential for innovation and collaboration, but also a clear and urgent need to define the priorities on education and research within this topic. With these ideas in mind, a workshop on digitalization in the Swiss AgroFood sector will take place on 16 May 2017.

World Food System Grants Platform

Further information about the ongoing postdoctoral and doctoral projects funded through the WFS Grants Platform can be found at www.worldfoodsystem.ethz.ch/research. The next call for proposals will open in June 2017.

Q&A with Rafaela Konz, doctoral fellow on the project “Towards nutritional security through organic management of soil fertility in orange-fleshed sweet potato systems.”



Q. What was the impetus to focus on sweet potato cultivation in Mozambique?

A. The International Potato Center, our main collaborator in this research, developed the orange-fleshed sweet potato as a food source to combat vitamin A deficiency. In sub-Saharan Africa, many rural communities face this form of malnourishment and would benefit from consumption of this sweet potato; however, a lack of proper soil fertility management limits yield and causes serious soil degradation. Therefore, our motivation is to develop cultivation methods that improve soil fertility, increase productivity, and sustain the nutritional value of the crop.

Q. What are your most interesting findings thus far?

A. We performed a survey with 107 farmers in Mozambique’s capital, Maputo, and found out that 90% of the farmers utilize intercropping systems and 79% practice crop rotation. We see this as a great opportunity to use known agroecological practices to improve soil fertility, based on local experience and resources.

Q. Who are the envisioned beneficiaries of this project?

A. The main beneficiaries of this study are sweet potato farmers in Mozambique, where this research is carried out. To better reach this group, we will share our research findings with public extension agents. Our findings will also be available to our collaborators at the International Potato Center, which currently manages sweet potato breeding programs throughout Africa, Asia, and Latin America. Hence, this research will ultimately be relevant to farmers worldwide who use locally available resources to manage soil fertility.

Rafaela Konz is a doctoral student working with Prof. Johan Six on a research project funded by the WFSC’s Mercator Research Program, Organic Production Systems. Co-investigator Dr. Maria Andrade will be the featured lecturer at the WFSC Spring Public Lecture in April.

Outreach

Beyond Organic: Diversification in the Food Systems

For our fall public lecture in October 2016, keynote speaker Emile Frison introduced the findings of the IPES-Food report “From Uniformity to Diversity: A paradigm shift from industrial agriculture to diversified agroecological systems” published in spring 2016. After presenting the findings of the report, Dr. Frison answered questions from doctoral students working on projects funded through the WFSC

Mercator Research Program. Relating the findings of the report to their own work, the students asked Dr. Frison’s for his opinion on biofortification in wheat, using LCA as a tool to assess the value of diversified systems and implementing the transition to diversified systems. These questions kicked off a lively discussion in the room among the scientific community, practitioners, and speaker. At the end of the event, many of the almost 200 people attending the lecture also took the opportunity to talk to Emile Frison during the reception.



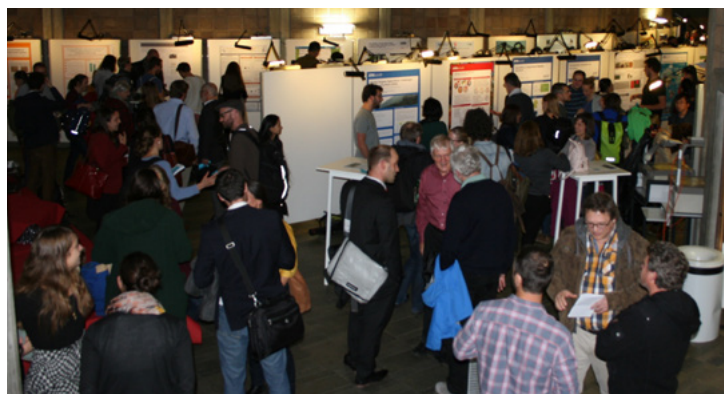
Dr. Emile Frison presenting to full lecture hall at the fall public lecture.

WFSC Annual Symposium

The WFSC’s first annual symposium took place in November 2016 with 200 attendees from 60 organizations. Participants heard six presentations and viewed nearly 50 posters featuring food systems research conducted at ETH Zurich. The presentations featured conclusions from the first six doctoral and postdoctoral projects funded by the WFS Grants platform: Greenhouse gas emissions of dairy production systems based on longevity and zero-concentrate strategy as compared to conventional systems ([LLC](#)), presenter Florian Grandl; Managing trade-offs in coffee agroforests ([MOCA](#)), presenter Maike Nesper; Zinc biofortification of wheat through organic matter management in sustainable agriculture ([ZOMM](#)), presenters Benjamin Costerousse and Roman Grüter; Improving buckwheat as an agronomically attractive crop for healthy food ([IMPROBUCK](#)), presenter Dr. Eduardo Pérez; Cadmium availability in soils and its uptake by cocoa in Latin America ([CdCOCA](#)), presenter Dr. Anja Gramlich; and Novel approach to biologically control spoilage of fresh vegetables using naturally produced reuterin ([BioControl](#)), presenter Dr. Anna Greppi.



Dr. Anna Greppi presents her research at the Symposium.



The lively poster session at the Symposium.

Symposium attendees also had the opportunity to learn about a wide variety of our members' projects and programs. The vote for the Best Poster Award was a tie, with the award shared by two doctoral students: Julian Helfenstein, from the group of Plant Nutrition (Prof. Emmanuel Frossard) and Jianbo Zhang, from the Laboratory of Toxicology (Prof. Shana Sturla). To find out more about these projects and see posters from the symposium, check the links in the [Outreach section](#) of the WFSC website.

Agora Project: Forschung zum Aufessen / Edible Research

The outreach project "Edible Research: Hands-on learning for sustainability in agroecosystems" started in August. The project will offer one-day workshops for students aged 12 to 15 from lower secondary schools in Zurich to connect them to the world of agricultural ecosystems, their tasty products, and the impacts of food consumption and production. Since August, the team has been designing the project activities, preparing the greenhouse and its surroundings for the school classes, and planting the tropical home garden. The team is now preparing for the first teachers' workshop in March; the program will be presented to a group of interested teachers who will then help to adapt the teaching program and activities to the needs of the target students. Learn more about the project at the [Outreach section](#) of the WFSC website.

Delivering Food Security on Limited Land (DEVIL) in Beijing

At the end of October 2016, the WFSC met with the collaborators from the DEVIL project in Beijing, China for the Global Land Project- Open Science Meeting and the second Annual Project Meeting. Most of the DEVIL collaborators presented their work in the special sessions highlighting projects funded through the Belmont Forum Collaborate Research Action on Food Security and Land Use Change. After the Global Land Project meeting, nearly 20 DEVIL

collaborators met for the Project Meeting, which allowed the partners to interact and discuss research challenges, milestones, and future plans. For more news from the DEVIL project, including the first [newsletter](#), check out deliveringfoodsecurity.org.

Food System Stories

The blog launched in April 2016 and continues to produce interesting stories about projects and educational activities by the WFSC alumni network (participants in our summer schools and study tours) and researchers from WFSC member groups. We invite you to read the stories and follow the blog at www.foodsystemstories.org.

ETH Zukunftsblog

Under the topic of world food systems, many of our members post regular contributions to this blog hosted by ETH Corporate Communications. Read the recent features on plant breeding, the acceptance of insect protein as a food source, and food waste. Follow the blog at www.ethz.ch/en/news-and-events/eth-news/zukunftsblog.html.



The DEVIL Team at the Annual Project Meeting in October 2016.

Education

WFS Summer School “Organic Agriculture and Food Systems”

We had the pleasure of again holding the course at the Gut Rheinau organic farm in Switzerland from 07-21 August 2016. The program introduced 24 students from 17 countries to ways in which a systems perspective can help one to understand the complexities of the world food system. The participants learned about many aspects of food systems with a focus on organic agriculture and food systems; the course took place in a range of settings, from a historic classroom at Gut Rheinau to the farm fields. For example, a two-day excursion took the group to Alp Weissenstein, the research station of the Institute of Agricultural Sciences at ETH Zurich, in the eastern part of Switzerland. On the excursion, researchers from ETH Zurich and Agroscope presented their research and imparted the challenges of alpine farming to the students. During fieldwork at Gut Rheinau, students experienced organic farming first hand; they also interacted with entrepreneurs from Switzerland and Nepal in a case study.

Future Summer Schools – South Africa and Ivory Coast

Our upcoming summer schools will take place in South Africa in summer 2017 and the Ivory Coast in January 2018. In South Africa, the two-week intensive academic course entitled “Food Systems in Transition” will be hosted at the Sustainability Institute in Lynedoch Ecovillage, near Stellenbosch. The program takes an integrated approach that considers interactions across the food system, with its environmental, social, political, and economic boundary conditions. This course is offered as part of the research project, Delivering Food Security on Limited Land (DEVIL). This project is led by an international and multidisciplinary consortium of researchers from eight countries and generously supported by national funding bodies, coordinated through the Belmont Forum and the FACCE-JPI Initiative. More details about the program and the application procedure are available at www.worldfoodsystem.ethz.ch/education/summer-schools.html.

Sustainable Campus Catering

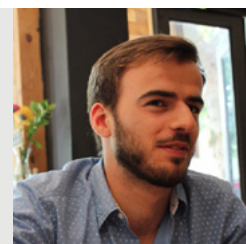
In collaboration with the Seed Sustainability platform, the WFSC has supported several collaborative Master’s thesis projects on sustainable campus catering at ETH Zurich. The results from these projects informed the activities of the ETH Gastro Commission and supported their development of a sustainable catering policy. The Swiss journal for the hotel and gastronomy sector, *Hotellerie Gastronomie Zeitung* (04 Aug 2016), reported on these catering initiatives in an article featuring an interview with Dörte Bachmann from



Students in the fields at the Gut Rheinau summer school.

ETH Sustainability. The final report of the project with an implementation proposal is awaited this year. See more details on the [project website](#).

Q&A with Pienaar du Plessis,
participant in the 2016 WFS Summer
School at Gut Rheinau organic farm in
Switzerland.



Q. Why did you want to attend the summer school at Gut Rheinau?

A. I wanted exposure to academic and industry experts focusing on organic agriculture, which is almost unheard of in South Africa, so I was very excited to be able to learn from them, as it is an area I wish to specialize in myself. I also wished to broaden my knowledge outside of my own field of Agroecology, as understanding different disciplines is essential for understanding complex systems.

Q. What did you like best about the experience?

A. Being able to meet people from all around the world who all share an interest in food and agriculture was truly amazing. There was so much exchange of ideas outside of lectures, simply from sitting around the dinner table, talking.

Q. How have you been able to take ideas learned at the summer school back to your home institution?

A. I think I have gained a more holistic perspective on food issues. Coming from a field focusing on production it is easy to ignore the other aspects of the food value chain or even the social side of food and food production. I hope to integrate these perspectives into my upcoming master’s research.

Pienaar du Plessis is pursuing a master’s degree in Sustainable Agriculture at Stellenbosch University. He will be a student assistant for the upcoming WFS Summer School in Stellenbosch in summer 2017.

Recent Food System Publications

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

Armengot, L.; Barbieri, P.; Andres, C.; Miltz, J.; Schneider, M. Cacao agroforestry systems have higher return on labor compared to full-sun monocultures. *Agron. Sustain. Dev.* **2016**, 36 (4), 70. doi:10.1007/s13593-016-0406-6

Garland, G.; Bünenmann, E. K.; Oberson, A.; Frossard, E.; Six, J. Plant-mediated rhizospheric interactions in maize-pigeon pea intercropping enhance soil aggregation and organic phosphorus storage. *Plant Soil* **2016**. doi:10.1007/s11104-016-3145-1

Helfenstein, J.; Müller, I.; Grüter, R.; Bhullar, G.; Mandloi, L.; Papritz, A.; Siegrist, M.; Schulin, R.; Frossard, E. Organic wheat farming improves grain zinc concentration. *PLoS One* **2016**, 11 (8). doi:10.1371/journal.pone.0160729

Liu, W.; Yang, H.; Liu, J.; Azevedo, L. B.; Wang, X.; Xu, Z.; Abbaspour, K. C.; Schulin, R. Global assessment of nitrogen losses and trade-offs with yields from major crop cultivations. *Sci. Total Environ.* **2016**, 572, 526–537. doi:10.1016/j.scitotenv.2016.08.093

Løes, A.-K.; Bünenmann, E. K.; Cooper, J.; Hörtenhuber, S.; Magid, J.; Oberson, A.; Möller, K. Nutrient supply to organic agriculture as governed by EU regulations and standards in six European countries. *Org. Agric.* **2016**. doi:10.1007/s13165-016-0165-3

Pfister, B.; Sanchez-Ferrer, A.; Diaz, A.; Lu, K.; Otto, C.; Holler, M.; Shaik, F. R.; Meier, F.; Mezzenga, R.; Zeeman, S. C. Recreating the synthesis of starch granules in yeast. *Elife* **2016**, 5. doi:10.7554/eLife.15552

Pincus, L.; Margenot, A.; Six, J.; Scow, K. On-farm trial assessing combined organic and mineral fertilizer amendments on vegetable yields in central Uganda. *Agric. Ecosyst. Environ.* **2016**, 225, 62–71. doi:10.1016/j.agee.2016.03.033

Sangakkara, U. R.; Frossard, E. Characteristics of South Asian rural households and associated home gardens – A case study from Sri Lanka. *Trop. Ecol.* **2016**, 57 (4), 765–777.

Smetana, S.; Palanisamy, M.; Mathys, A.; Heinz, V. Sustainability of insect use for feed and food: Life Cycle Assessment perspective. *J. Clean. Prod.* **2016**, 137, 741–751. doi:10.1016/j.jclepro.2016.07.148

Visschers, V. H. M.; Postma, M.; Sjölund, M.; Backhans, A.; Collineau, L.; Loesken, S.; Belloc, C.; Dewulf, J.; Emanuelson, U.; Grosse Beilage, E.; Siegrist, M.; Stärk, K. D. C. Higher perceived risks of antimicrobial use are related to lower usage among pig farmers in four European countries. *Vet. Rec.* **2016**, 179 (19), 490. doi:10.1136/vr.103844

Willersinn, C.; Mouron, P.; Mack, G.; Siegrist, M. Food loss reduction from an environmental, socio-economic and consumer perspective - The case of the Swiss potato market. *Waste Manag.* **2017**, 59, 451–464. doi:10.1016/j.wasman.2016.10.007

Member Highlights

Executive Director Michelle Grant now represents the World Food System Center in the Swiss National Committee of the FAO ([CNS-FAO](#)). In October 2016, the CNS-FAO presented a discussion paper to the FAO in Rome and further conversed about the role of Switzerland in working towards sustainable food systems. While in Rome, the CNS-FAO also attended a reception with FAO, WFP, and CNS-FAO staff at the Istituto Svizzero and took part in the official World Food Day event.

Prof. Alexander Mathys gave his inaugural lecture entitled “Sustainable Food Processing as Driver of the Global Bioeconomy” on 05 December. His group’s research was also highlighted in the recent *ETH Globe* magazine (Nr. 4/2016). The article, *Insects and algae in place of beef and chicken*, focuses on Mathys’s research into alternative protein sources. Mathys was also awarded funding for the project “Insect cultivation of waste streams” through the Sawiris Foundation as part of the Engineering for Development (E4D) scholarship program.

Prof. Michael Kreuzer and Florian Grandl of the Animal Nutrition group were featured in the July 2016 issue of the *NZZ Folio*, with the WFSC funded “Long-Life Cow” ([LLC](#)) project highlighted.

Prof. Achim Walter was in the news in summer 2016 for the launch of the Field Phenotyping Platform (FIP), a unique crop phenotyping system, at the research station in Lindau-Eschikon.

Gina Garland, a doctoral student in the Sustainable Agroecosystems group of Prof. Dr. Johan Six was awarded the 2016 SFIAR Award for her work on the use of maize-pigeon pea intercropping to enhance organic phosphorus

cycling and maize yields in Malawi. The annual award is for graduates and scientists working in agricultural research for development. The WFSC hosted the award program on 15 December, which also included a keynote presentation by Prof. Paul R. van Gardingen and a panel discussion.

Sabine Müller, doctoral student in the Animal Nutrition group of Prof. Dr. Michael Kreuzer, had her research results highlighted in *die grüne* (Nr. 11/2016). The article highlighted an extensive project on dual purpose chicken that the Animal Nutrition Group is conducting, including the WFSC funded “Elements of successful novel dual purpose chicken production systems” (**INDUCE**) project.

Wim Thiery, who is currently working on an ETH Fellowship in the Land-Climate Dynamics group (Prof. S. Seneviratne) was appointed as Assistant Professor at the Vrije Universiteit Brussels (VUB, Free University of Brussels) in early January 2017. His research is related to climate modeling and irrigation, and he will continue to work half time at ETH Zurich until mid 2018.

Yifan Zhan, a PhD student in the Sustainable Food Processing group of Prof. Alexander Mathys, competed in the finals of the Falling Walls Lab 2016. The Falling Walls Lab is an annual competitive event featuring the innovative work of academics and professionals presented in a fast-paced, interdisciplinary format. The WFSC congratulates her on her talk, “Breaking the Wall of Food Preservation.”

UPCOMING EVENTS

Spring Public Lecture at ETH Zurich (27 April 2017)
Our next public lecture will feature a keynote lecture by Dr. Maria Andrade from the International Potato Center, winner of the 2016 World Food Prize for her part in the development of the biofortified orange-fleshed sweet potato.

Nadel Food Security Course (08-12 May 2017) ETH-Nadel, Center for Development and Cooperation, will offer a course on food security for development professionals. Find more information see: www.nadel.ethz.ch/education/spring-2017/fs.html

Digitalization Workshop (16 May 2017) The first workshop of the ETH Studio AgroFood Studio will focus on digitalization in Swiss AgroFood sector.

Innovations for Resilience Workshop (18 May 2017)
This one day workshop, in the framework of a collaboration between ETH Zurich, the FAO and the Swiss Federal Office for Agriculture, will explore the concept of resilience in food systems and share the latest knowledge, innovations, practical tools and best practices based on experiences internationally and in Switzerland. The workshop is part of the WFSC Flagship Project “Enhancing Resilience in Food Systems”. For further information see: www.resilientfoodsystems.ethz.ch

FAO Course (April 2017) In the spring semester 2017, Masters students from Agriculture and Environmental Sciences can participate in a course on food security from the global to the local dimension, including a three day visit and project work at the FAO in Rome from 18-21 April.

WFS Summer School (25 June - 08 July 2017) The 2017 course on “Food Systems in Transition” will be hosted at the Sustainability Institute in Lynedoch Ecovillage, near Stellenbosch, South Africa.

www.worldfoodsystem.ethz.ch/news/event-calendar

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