



Many hands make light work: invitation to CAAST, a community of practice that connects agricultural sustainability teachers on the way to the 2030 Agenda

A White Paper for teachers in sustainable agriculture and food systems,

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Introduction

Our⁴ global challenges

Past decades have seen huge progress in humanity's ability to produce food and other agricultural goods. Agriculture produces about 24 million tonnes of food per day, with a current market value of 7 billion US\$. The agricultural sector employs more than a third of the world's workforce and provides livelihoods for 2.5 billion people living in rural households ([FAO, 2014](#)). Yet, sustainability in the holistic sense of the United Nations 2030 Agenda and the 17 Sustainable Development Goals⁵ (SDG) has not been achieved in contemporary food systems. Current and imminent threats include unhealthy diets, obesity and malnutrition on the consumption side (e.g. [Webb et al., 2020](#)), and resource scarcity (e.g. of freshwater; [FAO, 2020](#)) and degradation (e.g. of fertile soils; [Badraoui et al., 2015](#)) as well as pollution (causing e.g. hypoxia and acidification in the oceans; [Chan et al., 2019](#)) and imbalances in geo-ecological cycles (contributing e.g. to climate change; [IPCC, 2021](#)) on the production side of the food system. The current trajectory of growth in agricultural production is deemed unsustainable and food systems are heading towards "an unprecedented confluence of pressures" that is likely to compromise the long-term capacity of agriculture to fulfil its vital functions ([FAO, 2014](#)). The large variety of land use forms summarized as "agriculture" are not the sole culprits for the mentioned problems, but they contribute substantially to many of these crises and are of key importance in tackling them. This is because, no matter how complex and globalized value chains have become, agricultural land use remains a huge nexus linking human economies to natural ecosystems. Hence the prominence of agricultural aspects in e. g. SDG 2 "Zero hunger" and SDG 15 "Life on land".

Many problems of the past, such as the "wheat problem" of the 1890s, were solved by human ingenuity and the exchange and dissemination of ideas. As to the problems of the present, many technological, biological and social innovations bear promise of facilitating more sustainable food systems. But the dimensions and the urgency of problems like climate change demand more innovation, exchange and practical implementation. Given the dimensions of food systems and their impacts in the "anthropocene" ([Crutzen, 2002](#)), we can only make the necessary progress in all countries and on all sustainability goals by working together: many hands make light work.

The CAAST initiative

The authors work in higher education on sustainable agriculture, at the University of Bern, the University of Hohenheim and the Bern University of Applied Sciences. They have gained experiences as students, researchers and teachers of agriculture; they have done farm, field, lab and desk research in temperate, subtropical and tropical countries and on various production systems, conventional and organic. We consider ourselves a nucleus of a future larger community of practice, to which new

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⁴ The word "our" is always used in an inclusive sense in this paper: "readers and authors alike".

⁵ [THE 17 GOALS | Sustainable Development \(un.org\)](#)

members from anywhere in the world are all equally welcome. In this initiative, we all work together to achieve the 2030 Agenda and want to learn with and from each other. Therefore, exclusion and discrimination have no place in our community.

Motivation of CAAST

We believe that the many agricultural research and education institutions crowding six continents, can and should make a major contribution in spreading a holistic view on agriculture, thus fostering knowledge-driven food system transformations.

We postulate that education for sustainable food systems has much to gain from more exchange and cooperation between teachers and students of agriculture around the globe. Hence, we are fully aligned with SDG 17, “Partnership for the Goals” as well as the UNESCO global action program “Education for sustainable development” (Resolution 12/37 C). Our research and teaching experiences, along with published literature, have convinced us that getting and staying in touch with farmers and their realities is a must for an effective education of change agents for sustainable agriculture.

Purpose of this white paper

The white paper sets out to present three postulates on education for sustainable agriculture, followed by some ideas and first steps on the road to a global community of practice in this field, called Community for Applied Agricultural Sustainability Teaching (CAAST), and concluded by an invitation to the readers to join CAAST and enrich the discussion with their opinions, experiences and ideas.

CAAST postulates

Postulate 1: Holistic approaches to the challenges of sustainable food systems

Sustainability issues in food systems in a globalized world have become more and more wicked ([Messerli & Bieri, 2018](#)), and the science of sustainability is one of dealing with trade-offs. Therefore, it is essential that the people concerned have the necessary knowledge and tools to understand and deal with the complexities and intricacies within and around these social-economic-ecological systems.

Furthermore, we must accept that in social-ecological systems there are no ever-present drivers of change and no cure-all solutions to challenges faced by the actors in those systems. Sustainability science must build on diagnostic and analytical capabilities and recognize the different realities of actors on the ground (e. g. [Ostrom et al., 2007](#)). In teaching contexts, it was found that integrating a holistic view of environmental, social, and economic aspects of sustainability issues and of their local, regional and global nature with a pluralistic approach allowing for different viewpoints and opinions to be addressed and critically reflected can be an effective way to induce more sustainable behaviours ([Boevende Pauw et al., 2015](#)).

Having developed, used and disseminated methods for the holistic multi-criteria assessment of farms and food systems for many years ([Llanque et al., 2021](#); [RISE project](#)), we have learned that such approaches can help students acquire a 360° perspective on agricultural and food systems, thus taking a step on the way to becoming experts in sustainable agriculture.

Postulate 2: Constructivist co-creation of knowledge about sustainable food systems

A global understanding of sustainable development, as provided by the SDGs, is a necessary precondition for global sustainability. Yet, the operationalization of sustainable development must build on locally adapted solutions. This means that sustainability goals and principles must be translated and adapted to local contexts, including to the needs and demands of local populations, as sustainable development is very much about people, their wishes and ideas, and about cooperation. Change agents are the ones who facilitate and drive this translation from the global to the local context. Sustainability

change agents in food systems require a bundle of skills, including coordination competencies, networking competencies, problem-solving competencies, facilitation competencies, knowledge-creation skills, communication skills and decision support skills ([Charatsari & Lioutas, 2019](#)). Young people at universities are important change agents, as they are the professionals of tomorrow. Providing them with the necessary tools and knowledge is crucial.

In the CAAST network, we want to exchange teaching methods to impart knowledge and skills and bring together experts from different fields to exchange on challenges and possible solutions. There is so much we can learn from each other: how food is produced elsewhere, what are the strengths and challenges of food systems, what solutions were found by whom. This should lead to a better understanding of food systems, to more informed and tolerant decisions and to a more rapid dissemination of good solutions. Mutual and joint learning about the most effective didactics for teaching and learning sustainable agriculture, e. g. transdisciplinary, skills- and competency-oriented approaches, are at the heart of CAAST activities.

Postulate 3: Effective learning with practical classes and technological tools

We strongly advocate for practice- and dialogue-oriented learning – talking with farmers and not just about them – as active authentic experimentation, seeing real life examples and exchanging knowledge with practitioners are preferable learning methods ([Cooreman et al, 2018](#)).

On top of that, combining the new possibilities of information and communication technology (ICT) and technological tools with classical teaching settings and with practical classes, such as field excursions, visits and demonstrations in farms, bears major promise for letting students explore sustainable agriculture in an authentic yet modern way ([Smeds et al., 2015](#); [Baptista et al., 2021](#)).

Table 1. The CAAST postulates and examples (in *italics*) of their application.

360° perspective	Constructivism and partnership	Feet on the ground
Holistic interpretation of sustainability (SDG). <i>When teaching production systems, always consider economic, social and ecological aspects.</i>	Community of equal partners – we all can teach and learn. <i>Open online presentations for sharing didactical innovations and experiences.</i>	Practical classes on farms and with farmers. <i>Farm sustainability analysis with farmer interview and feedback discussion.</i>
Teach and learn in inter- and transdisciplinary ways. <i>Explore agriculture-based value chains in mixed teams of agriculture and food students.</i>	Quality knowledge for everyone. <i>Share cases, examples and experiences, get free access to colleagues.</i>	Contact to other stakeholders from food systems. <i>Explore views of the population on land use practices in their region.</i>
	Respect and try to understand stakeholder perspectives. <i>Joint lectures of students from 2 climate zones, to get real-life insight into different agri-systems.</i>	
	Take time and resources to develop fair solutions. <i>Explore opportunities and limitations in real-work ag production and value chains.</i>	

CAAST implementation

The CAAST network is meant to foster quality education for sustainable agriculture and food systems. It connects experts in the educational landscape and creates synergies for the continuous improvement of teaching. CAAST promotes innovative didactic approaches that enable students to bridge the gap between theory and practice in sustainable agriculture and food systems in their working and living environments. After their education, the young professionals can be change agents that drive the transformation towards sustainable agriculture and equitable food systems. To provide students with a good foundation for this, agricultural sustainability teachers need effective, up-to-date tools and didactical ideas for appropriate teaching. The CAAST network supports the dissemination and co-creation of such tools and ideas.

CAAST facilitates learning processes among lecturers and provides support in three areas: Experts, Exchange and Examples (Fig. 1).

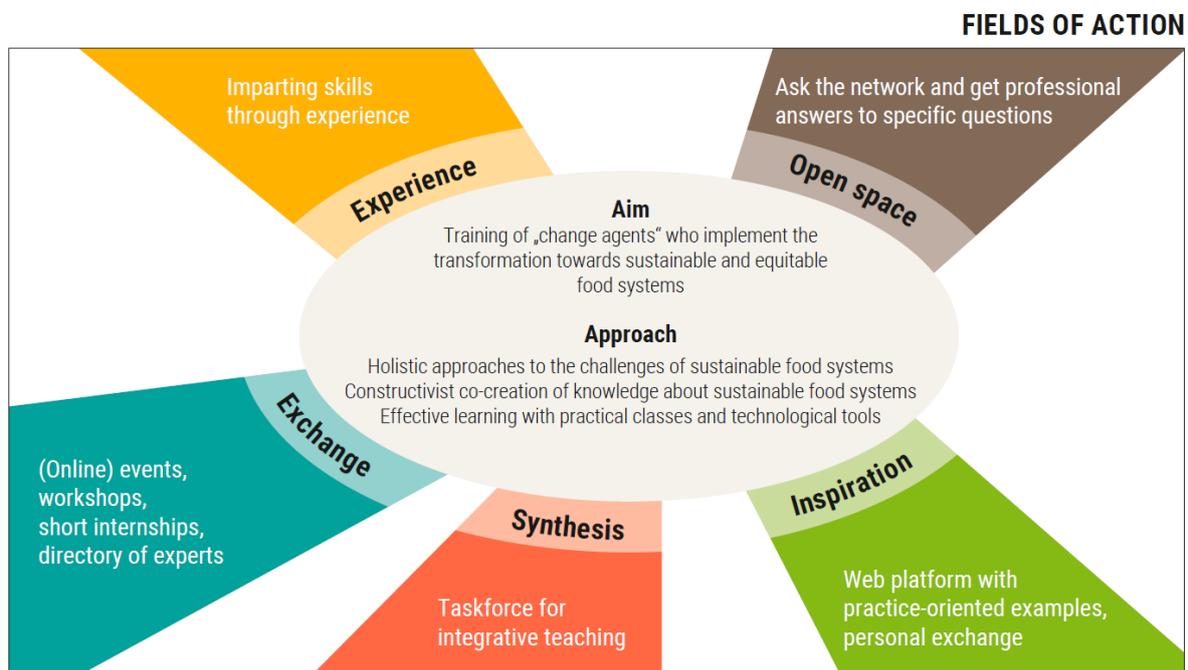


Figure 1. The activity fields of the CAAST network.

Experts

CAAST is a network of teachers (lecturers, professors, scientists) of sustainable agriculture at higher education institutions who want to improve their teaching through exchange with like-minded people. CAAST maintains and offers a publicly accessible database of experts in the field of education for sustainable agriculture and food systems. This register serves to facilitate exchange and direct contact. The index is also directly linked to the events and the library (see below).

Exchange

CAAST organizes regular 45 to 60-minute events, e. g. “brown-bag lunches”, for the exchange of experiences between CAAST members. During the events, you will get to know CAAST members, learn about their work and get insights into practice-oriented sustainability teaching. The events mostly follow this structure: (1) Input from a CAAST member who would like to share an experience. (2) Plenary discussion and exchange. Sometimes, interactive activities are organized. The events are recorded and summarized in one-pagers to share insights with a broader audience and with CAAST members who could not attend.

Examples

The CAAST library is a space for inspiration and idea-gathering for lecturers. The library contains all past events and ensures the dissemination of knowledge gained. Each event will have an own entry with the screencast of the CAAST expert input, a concise summary and further information and literature, provided from the expert. The library is foreseen to grow organically as CAAST activities and events unfold. All information is publicly available on our website: caast-network.org.

Invitation to join CAAST

By creating CAAST, we have taken a first step towards valorising the possibilities of knowledge co-creation, international networks and new communication technologies. Now is the time to open the platform, crowd it with your ideas and turn it into a living marketplace of great ideas and change-makers for a more sustainable future of food.

What we offer

CAAST experts exchange insights on education for sustainable agriculture and food systems in various peer-to-peer exchange formats (Exchange, Examples, Experts). We offer different platforms for international exchange, we publish the findings online to ensure added value beyond the events, and we facilitate an easy access to international experts. All CAAST services are open to the public and free of charge. All this in the spirit of SDG 17: Partnerships for the Goals.

Your contribution

Your greatest contribution is to promote education for sustainable agriculture and food systems at your own institution. CAAST strives to support you in this endeavour. Become a CAAST expert and share your insights with other experts! The network fully depends on the activities of our experts. Join the network by contributing to our events, registering as a CAAST expert and thereby offering your expertise to a broader public, and talking to your colleagues about our network. To receive the latest information about CAAST, you can take the following actions:

- **Become a CAAST expert:** Use this form to register as an expert or contact us by [e-mail](#).
- **Host an event and share your knowledge:** Present your insights in a CAAST event. Get in touch here or contact us by [e-mail](#).
- **Use our website for inspiration:** Regularly browse our [website](#) in search of inspiration and new ideas

How we organise ourselves

At the heart of the network are the experts who bring the CAAST vision to life with their wealth of knowledge. The enabling environment for all CAAST activities is secured by a coordination office. This office supports CAAST experts, organises events and takes care of appropriate communication via social media and the website. To ensure that the network pursues the appropriate goals in the long term and stays on track financially, there is an Advisory Board consisting of five members. All CAAST experts can make themselves available for participation in the Advisory Board.

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