Center for Integrated Agricultural Systems
UW-Madison College of Agricultural and Life Sciences

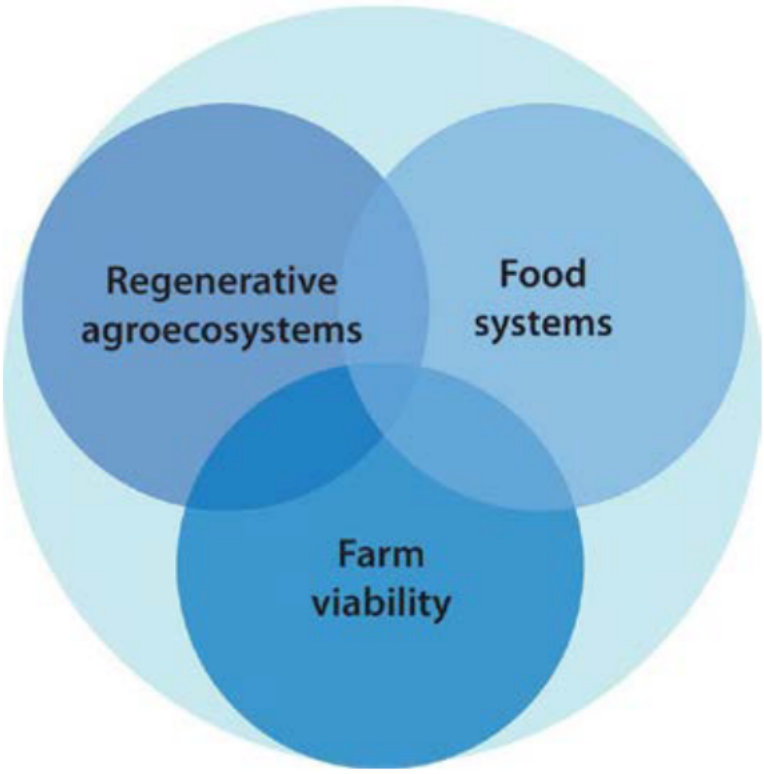
10-Year Review Self-Study Report 2010-2019

CIAS mission and history

The Center for Integrated Agricultural Systems (CIAS) was created in 1989 to address the environmental, economic and social sustainability of agriculture. During the farm crisis of the 1980s, issues including declining farm profitability, decreasing farm numbers and the environmental costs of chemical-intensive agriculture led to farmer criticism of the UW-Madison College of Agricultural and Life Sciences (CALS). In 1987, CALS created a faculty and staff committee to discuss how the university might better engage in sustainable agriculture and address these criticisms. Based on the committee's recommendations and the strong involvement and support of farm and citizen groups, CIAS was created.

From the beginning, part of CIAS's charge has been to work with a Citizens Advisory Council (CAC) that provides oversight and input on CIAS's programs. CIAS also partners with Faculty Associates, representing multiple departments across CALS and campus, on research, publications and other functions.

Figure 1. CIAS areas of work



Convening teams of faculty and practitioners to further sustainable food and farming systems on small to mid-scale operations is the focus of CIAS's efforts. Our research, training and outreach programs are systems-oriented, with a strong participatory component. The program areas of CIAS's early years—grazing dairy systems and regional food systems—have evolved into three intersecting areas of work: regenerative agroecosystems, food systems and farm viability (Figure 1).

Today, CIAS is one of a handful of sustainable agriculture research centers in North America recognized for its participatory, farmer-centered research, academic contributions and leadership. Our commitment to involving citizens and academics as equal partners helps the college fulfill its mission and is a strong example of the Wisconsin Idea. Many of the projects described in our annual reports align with priority themes in the CALS strategic plan: changing climate, economic and community development, food systems, health and

wellness, and healthy ecosystems. CIAS's current vision and mission statements were adopted at the December 1998 CAC meeting.

CIAS Vision: Our vision is of sustainable agricultural and food systems that contribute to the ecological, economic, and social well-being of families, workers, consumers, and their communities.

CIAS Mission: We take leadership for the continued development of diverse and sustainable agricultural and food systems utilizing multidisciplinary, multiprofessional research and education approaches. We seek creative production and marketing solutions to challenges facing people involved in small to medium agricultural and food enterprises.

College and campus-wide impact

CIAS adds value to CALS and the broader campus community through what we do, how we work and whom we serve. We undertake multidisciplinary research, education and outreach, providing opportunities for faculty, staff and students interested in organic and perennial agriculture, managed grazing, emerging markets, regional food supply chains, farm labor and profitability, and more. Our focus on serving beginning and established farmers, their business partners and communities across the state furthers the college's—and the university's—commitment to the Wisconsin Idea.

CIAS's work furthers the university's mission of discovering, examining and transmitting knowledge that will improve the well-being of present and future generations. The participatory nature of our research, education and outreach efforts ensures that UW-Madison research addressing urgent and complex problems—such as climate change, soil health and family farm viability—is accessible to people across Wisconsin. CIAS fosters collaboration with CALS and campus departments and programs through research, outreach and service, professional development, campus involvement and student support:

- We provide opportunities for faculty and staff to meaningfully engage with family farmers, the
organizations that serve them, and other key stakeholders in participatory research.

- We facilitate the development of multidisciplinary research proposals. Over the past decade, we've worked with PIs and departments across the college on research grants providing over $7.5 million of extramural support to the college.

- Our research has furthered the knowledge base in sustainable food and farming systems. Since FY10, CIAS staff and directors have published 57 peer-reviewed articles and book chapters (Appendix A).

- We support faculty, staff and graduate students by communicating their research with

people
who can directly benefit from it. Since FY 09, CIAS has produced 80 publications, including reports, research briefs and other outreach tools geared toward practitioners (Appendix B).

- Our donor-funded mini-grant program brings researchers and graduate students together by
providing funding for summer research. This program is just one example of how CIAS contributes to student education (p. 8).

- CIAS staff have served on campus and CALS governance committees including the Committee on Academic Staff Issues, the Academic Staff Assembly and the Retirement Issues Committee.

CIAS contributes to the recruitment and retention of outstanding faculty and staff by providing a hub for research on sustainability and food systems. Additionally, we provide faculty and staff with formal opportunities for engagement and leadership in our research and outreach. They can join CIAS as a Faculty Associate or Associate Staff members (p. 5) and participate on our Governance Committee (p. 4).

Broader impact: Putting the Wisconsin Idea into practice
From its inception, CIAS has held the Wisconsin Idea as one of its core guiding principles. We offer citizens meaningful input into CALS research agendas. We connect them with UW researchers eager to serve the citizens of Wisconsin through their work addressing sustainable agriculture and food systems challenges. This participatory process (Appendix C) integrates research with service and outreach.

We embody the Wisconsin Idea through our partnership with our Citizens Advisory Council (below). CIAS staff and CAC members together identify and define the challenges faced by farmers and other practitioners across the state, and beyond. Our research cycle begins with this input (Appendix D).

We return research results to the communities we serve through a variety of outreach strategies (p. 10). Community members frequently voice new challenges, and the participatory research cycle begins again. CIAS extends CALS's educational resources to non-traditional students including beginning and aspiring farmers, and other adult professionals, through our beginning farmer schools and other learning opportunities (p. 13). Our outreach not only bolsters the university's commitment to the Wisconsin Idea, but also holds us accountable to the citizens we serve.

Leadership, administration, governance and staff climate

CIAS currently has a staff of eight plus a faculty director. The **CIAS director** is a CALS faculty member who reports to the dean. The director guides programming, fundraising and public relations efforts, and holds ultimate responsibility for CIAS administrative, budgetary and

personnel decisions. CIAS directors during the period of this review include:

- Michelle Miller (interim), March-August 2009
- Russ Groves, Daniel Kleinman and Jack Kloppenburg (interim), September 2009-October 2011
- Michael Bell, November 2011-February 2019
- Michel Wattiaux (interim), March 2019-present

CIAS associate directors are staff members who support the administrative, programming, public relations and fundraising work of the director. The associate directors and the center director collectively form an administrative team that works on personnel and budgetary decisions.

Our day-to-day research, training, outreach and communications functions are performed by **academic staff**. CIAS staff foster and support the collaborative relationships necessary for multidisciplinary and participatory work. The CIAS staff and director typically meet weekly to discuss emerging projects and work in progress. For a current list of key personnel, see Appendix E. For the CIAS organizational chart, see Appendix F.

CIAS is currently part of an **administrative hub** headed by Sandy Bennett in Agronomy. From 2009-2011, we were part of an administrative hub in Community and Environmental Sociology.

The CIAS **Citizens Advisory Council** (CAC) brings the perspectives and experiences of small and mid-size producers and businesses to CIAS and CALS. With 14 members, half of whom are required to be actively farming, the CAC provides advice and guidance regarding CIAS program activities, including identification of emerging issues and development of priority work areas. The CAC recruits its own members who are ultimately approved by the CALS dean. This group meets twice a year and engages with CIAS between meetings by participating in job searches, events, project committees, grant-funded research, the CIAS Governance Committee and review of CIAS publications (Appendix G).

The CIAS Governance Committee:

- Monitors CIAS program policy in consultation with the CAC;
- Serves as a sounding board for, and provides guidance to, the CIAS director;
- Performs an annual evaluation of the CIAS director;
- Provides a forum for airing and resolving conflicts that may arise within CIAS;
- Approves changes to CIAS's governance structures and procedures.

The governance committee is comprised of five members. Three members are UW-Madison

faculty, including the center director and two members elected from and by the Faculty Associates. Two members are elected representatives of the CAC and staff. CIAS's governance structure was formalized in writing, and approved by the CALS Academic Planning Council, in 2013.

Because CIAS emphasizes collaborative governance and shared leadership, we strongly encourage our staff members to take advantage of **professional development opportunities** that enhance job performance and contribute to the overall leadership capacity of CIAS. During the past decade, CIAS staff took project management courses through the Wisconsin School of Business. Two staff members completed the Facilitating by Heart workshop series offered through Continuing Studies, one completed the Fully Prepared to Lead certificate through Learning and Talent Development, and another completed Lean Six Sigma training through campus professional development.

The CIAS director reviews **staff performance** twice a year. CIAS reviews staff salaries annually and is aware of the campus-wide issue of wage disparities. We recognize and reward staff for their contributions to CIAS and we work toward equitable salary growth.

CIAS created and administered our own **staff climate** surveys in 2017 and 2018. The 2017 survey revealed that while CIAS provided a friendly and enjoyable work climate, many staff members did not feel they could raise difficult issues at staff meetings and expressed concerns that speaking time was not shared equally. The survey also revealed weaknesses with conflict resolution and the introduction of innovative ideas. In response, we made changes to increase opportunities for staff meeting leadership. As a result, we saw improvement in many areas in the 2018 climate survey.

CIAS strives to foster **inclusion** through our commitment to participatory, collaborative research. This involves developing equitable partnerships with communities to shape research questions, methods and products. We believe this approach is especially important when working with Indigenous peoples and their Nations, LGBTQ+ farmers, farmers of color, and other communities that are traditionally underrepresented in the CALS project portfolio. CIAS staff members have participated in racial equity conferences, training and learning opportunities including the YWCA Racial Justice Summit, the Structural Racism Training led by the People's Institute for Survival and Beyond, and the annual Food Solutions New England 21-Day Racial Equity Challenge.

Members

CIAS has two categories of membership: Faculty Associates and Associate Staff. Both provide input on emerging issues, research priorities, funding needs and programming. Their work, practice and/or interests align with the mission and vision of CIAS. Both types of members are appointed by the CIAS director, in consultation with the staff. Over the past decade, our Faculty Associates included 68 faculty members from across campus, with the majority residing in CALS. During the same time period, our group of Associate Staff included seven CALS

academic staff and Extension representatives who worked closely with CIAS.

Benefits of being a Faculty Associate or Associate Staff member include invitations to CIAS events, collaboration with members from other departments, and networking opportunities with farmers and other practitioners. Members are welcome to join CIAS staff meetings. Faculty Associates' graduate students are eligible for the CIAS mini-grant program. While there are no formal requirements, our members are strongly encouraged to attend and present their work at CAC meetings. Often, Faculty Associates serve as reviewers for CIAS publications. We do not have a formal process for maintaining Faculty Associate status. Our governance document specifies a three-year, renewable term and annual check-in with the director for Associate Staff.

Research

Research is central to the mission of CIAS. We apply multidisciplinary, participatory, systems-oriented approaches to address emerging challenges in production agriculture and the food system. Because CIAS was created to build UW sustainable agriculture research programs that respond to farmer and citizen needs, relationships are at the core of everything we do.
The goal of CIAS research is to engage diverse disciplinary perspectives and methods to understand and meet the needs of our audiences. CIAS is uniquely positioned within the college to engage citizens in participatory action research for the public good. Our governance structure supports collaboration with stakeholders, including people and entities traditionally underserved by CALS. These relationships firmly place our research in real-world challenges and constraints, while generating solutions and knowledge grounded in both science and affected communities. CIAS's model of inquiry welcomes research that is basic or applied; occurs in the field or lab; and may be short- or long-term. We convene collaborative research teams that integrate the biological and social sciences, and humanities, into research characterized by rigorous experimental design, hypothesis testing, analysis and synthesis. Results are strategically communicated through both peer-reviewed publications and outreach to farmers, consultants and other practitioners. This approach closely links our research activities, research outcomes and outreach activities, and provides a timely, responsive and iterative approach outlined in the CIAS Project Development Process (Appendix D).

CIAS research fills a gap between CALS departmental research and priority themes identified in the college's strategic plan. With an emphasis on integration, CIAS possesses the capacity to address the complex environmental, economic and social challenges wrapped up in these themes through long-term research that transcends typical grant cycles. For example, our Wisconsin Integrated Cropping Systems Trial (WICST) and regional food systems research program have been ongoing for the past 30 years.

Our most significant accomplishments over the past 10 years include:

Long-term ecosystems research. Launched in 1989 under the leadership of the late Josh Posner, WICST is a 60-acre, 30-year cropping systems experiment located at the UW-Madison's Arlington Agricultural Research Station. The trial was designed to compare the productivity, profitability and environmental impacts of different farming system spanning

conventional, organic, cash grain, dairy forage, perennial bioenergy and livestock grazing enterprises. WICST is arguably the most diverse long-term cropping systems experiment in the U.S., if not the world. What's more, WICST is one of the longest-running organic research experiments in the U.S. While CIAS has worked closely with WICST since its inception, it formally became part of CIAS in 2015.

More than 15 years of production data demonstrated the organic systems at WICST were capable of producing forage yields equivalent to conventional systems, and grain yields at 90 percent of their conventional counterparts. A follow-up study on long-term yield trends highlighted the production benefits of crop rotation in high-stress years, the lack of acceleration in annual yield gains with GMOs, and the rapid improvement in organic yields with improved weed control and organic crop genetics. These results were bolstered by an economic analysis showing that organic- and pasture-based farming systems were the most profitable at WICST. Quantifying the capacity of alternative systems to sequester atmospheric CO2 requires decades of observations of soil organic carbon (SOC), which is only possible with long-term trials. Learn more at the WICST website.

Developing a commercially viable hazelnut industry for the Upper Midwest. CIAS is part of a large, multi-institution project developing American hazelnut cultivars, and hybrid crosses of disease-resistant American and highly productive European hazelnuts. This woody perennial has the potential to generate income for growers and improve resilience in the face of climate change, through both farm enterprise diversification and protecting soil from extreme weather events. CIAS worked on behalf of 130 hazelnut growers in the Driftless region, to identify potential hybrids for this emerging perennial crop. Successful growers were able to sell their nuts to the American Hazelnut Company in Gays Mills. CIAS is also researching and developing supply chains—including processing and marketing—to build a hazelnut industry in the Upper Midwest. CIAS's former director Brent McCown remains engaged in cultivar development. Learn more about this work at our hazelnut story map.

Understanding farm labor and profitability. CIAS received multiple grants for qualitative and quantitative research about labor practices on farms and in food businesses. Our research team explored certification, negotiation, coalition building and public policy strategies to ensure a fair return on labor and good working environments. We investigated efforts to improve fair labor practices and apply lessons learned from the global fair-trade experience. We worked closely with researchers in Agricultural and Applied Economics who compared farm labor wage and earnings outcomes across agricultural sectors, and with other jobs. The economic analysis and case studies were then synthesized to link the quantitative and qualitative findings. A second CIAS research project studying financial performance and labor on fresh market vegetable farms contributed to the development of downloadable financial tools to help producers actively manage their farms for profitability.

Building local and regional food supply chains. Over the past ten years, CIAS has worked to address burgeoning demand for locally and regionally grown food through the creation of supply chains that move local food into wholesale channels, restaurants, grocery stores and

institutional markets. In FY 10, CIAS published a report—*Scaling Up*—documenting eleven models of regional food aggregation and distribution. This was followed by case study research with the Agriculture of the Middle initiative on values-based food supply chains. Our research on sustainable, regional food freight and infrastructure resulted in the City of Madison allocating $100,000 for a feasibility study of a food terminal and cross- dock facility that would help independent farmers, distributors and retailers compete in an increasingly consolidated market.

Supporting Wisconsin's emerging craft cider industry. CIAS's hard cider research emerged from our Eco-Fruit program that helped apple growers reduce pesticide risks through Integrated Pest Management (p. 11). The goal of our subsequent research was to help apple growers and cider makers select apple varieties for a high-quality, artisanal product. To accomplish this, researchers compared the results of laboratory analysis and tastings of single-varietal ciders to identify desirable flavor characteristics and explore how closely laboratory measurements of variables such as pH and phenolics reflect perceptions of characteristics such as acidity and bitterness. This work established new metrics for measuring cider quality that have been adopted by cider makers and helped them refine production practices. Our cider research and outreach was profiled in the Fall 2018 issue of *Grow* magazine. Our current cider research investigates production and distribution issues in four states.

Project selection: CIAS does not have formal policies related to grants submitted through our center. However, we have a set of filters to guide our project selection (Appendix H). These filters ensure that our projects further our mission and reflect our commitment to multidisciplinary research and participatory approaches. The filters also address our capacity—financial, staffing, and expertise—to take on new work.

See Appendix A for a complete bibliography of peer-reviewed papers published by CIAS personnel that are related to our activities and mission over the past 10 years.

Student education activities

Although CIAS does not have a formal instructional mission and does not receive any funding support for undergraduate education, we actively engage in student education activities. This engagement ranges from formal classroom instruction, to informal learning opportunities and mentorship, to paid student work opportunities. These activities connect students with faculty, integrate students into multidisciplinary research and outreach projects, and place students in learning opportunities demonstrating real-world applications of sustainable agriculture approaches. CIAS prioritizes preparing students for both academic and career success while making important contributions to CALS.

CIAS Mini-Grant Program. Established in 2013 and renewed annually with gifts from the Single Step Foundation, the CIAS mini-grant program is our signature opportunity for graduate students. CIAS annually offers competitive funding for summer research projects on sustainable agricultural production and food systems. These small grants (up to $2,500) are integral to

launching or advancing innovative student research and have proven crucial to assisting students in completing their thesis or dissertation research. This program also gives students experience in writing a grant proposal, managing a project and reporting their findings. In partnership with the Aldo Leopold Foundation, recipients participate in a day-long leadership training to orient them to the Wisconsin Idea. To date, 70 mini-grant recipients have been awarded $119,748 to complete field and lab research nationally and internationally.

A recent survey of past mini-grant recipients found this program sets students on a path to success in higher education and in their post-degree careers and prepares them to apply for major research awards. Our mini-grant students have gone on to earn Master's and Ph.D. degrees, and many are working at colleges, universities, state agencies and nonprofit organizations. Former students have leveraged their mini-grants into additional grant support, connections that helped them further their educations or careers, and academic publications. In the words of a 2015 mini-grant recipient:

"*The CIAS mini-grant allowed me to complete my fieldwork on pollinator communities of bioenergy cropping systems in central Virginia.... Through my presentation at the Entomology Society Meetings that year, I was introduced to my current supervisor, and I am now research staff at the University of Minnesota. I appreciated the opportunity to frame my entomology work within the broader context of complex agricultural systems*."

Farm and Industry Short Course (FISC). CIAS engages with students through an array of courses taught in FISC. Historically these applied, hands-on courses have been targeted to non-baccalaureate students planning to operate farms. Our innovative contributions to the FISC program have brought in 4-year degree students, as well as non-traditional (adult) students. Our Short Course courses include:

- **Pasture Based Dairy/Livestock – Pasture Management** (FISC 71), **Pasture-Based Business** (FISC 72) & **Business Planning** (FISC 73). Started 1995. 204 total students over the past 10 years. Formerly taught by Dick Cates and now taught by Nadia Alber, these courses are part of the Wisconsin School for Beginning Dairy and Livestock Farmers (WSBDF), a revenue-generating activity for CIAS (p. 13).
- Grain Crops Production & Management (FISC 104) and Forage Crops (FISC 058). Started in 2015. Taught by Gregg Sanford. 367 total students over the past 10 years.
- Urban Agriculture: **Introduction to Urban Agricultural Systems** (FISC 75) and **Farming in the City** (FISC 75). Cross-listed: Soils 375. Started 2018. 44 total students to date. These courses are associated with the School for Urban Agriculture (SUA), a grant-funded effort between CIAS, Soil Science, FISC and community partners. SUA fills a growing need for specialized training in urban farming and community leadership.

CIAS Beginning Grower Schools. CIAS offers several beginning grower schools outside of Short Course as revenue-generating activities (p. 13). Although these programs are primarily accessed by community members, each year there are opportunities for interested UW students to attend free of charge.

Instruction. Beginning in 2005, former CIAS staff member Dick Cates co-taught Grassland Ecology (Agron/Botany/Soils 371) with Randy Jackson, contributing knowledge and connections around grazing, grassland genetics and evolution. Dick continues to contribute to this course after his 2018 retirement.

Connection with CALS Agroecology Program. CIAS was involved in the formation of the Agroecology master's degree program and maintains strong connections. Michael Bell, CIAS Director from 2012- 2019, co-founded this graduate program. CIAS provides a hub for Agroecology students to connect with multidisciplinary faculty, access mini-grants and identify community partners (for those in the public practice track). Staff also guest lecture in the Agroecology graduate seminar.

Connection with CALS Undergraduate Food Systems Certificate. Former director Michael Bell, Faculty Associate Steve Ventura, and current director Michel Wattiaux, were instrumental in establishing this program to address student interest in understanding and pursuing careers in food systems. Michel Wattiaux is teaching one of the certificate's core courses.

Connection with Students. CIAS contributes to formal and informal learning opportunities in the classroom, campus, community and office. Furthermore, CIAS provides students with meaningful mentoring, networking and faculty connections that reflect our multidisciplinary work. CIAS staff are regularly invited to guest lecture in classes, speak on panels, or bring real-world CIAS projects into the classroom for hands-on student investigation. The center frequently hosts visiting academic and professional guest speakers, organizes panel discussions, and convenes conferences on campus where student participation is welcomed and encouraged. Center staff regularly meet with prospective students and orient them to campus opportunities in sustainable agriculture and food.

In addition, we take seriously our commitment to engage students directly and meaningfully in the work of the center. In the past ten years, CIAS has supported 25 project and research assistants, offering the opportunity to contribute directly to center projects while gaining real-world professional and academic experience. We value our ability to provide assistantships that further academic learning and advance students' interest in sustainable agriculture and food system careers. Similarly, CIAS has supervised 22 student hourlies to assist with project and office work.

Total number of undergraduate, graduate, and postdoctoral students directly contributing to and/or benefitting from CIAS, 2010-2019. (FISC students not included.)

- Mini-grant recipients 70
- Graduate Research and Project Assistants 25
- Postdoctoral students 2
- Student hourlies 22
- Students enrolled in CIAS grower schools 24
- Students enrolled in Short Course courses taught by CIAS staff 24

Connection with Associated Students of Madison. The center advises F.H. King Students for Sustainable Agriculture (ASM student organization), offering guidance for their student garden, outreach, education and other functions, and includes them in our staff meetings. The center frequently connects students with faculty mentors or applied project opportunities. Our multidisciplinary work is strengthened by engaging with students across CALS and the UW-Madison campus.

Outreach and service

CIAS's approach to sustainable agriculture research includes a strong outreach component. Our farmer and citizen constituents request that we address specific problems affecting food and farming systems. We are firmly committed to returning what we've learned to them, through a variety of outreach approaches. We strategically invest resources in outreach activities and staff to strengthen our research programs through an iterative process where the development and collaborative dissemination of outreach tools informs future research, as well as individual and institutional change. CIAS shortens the feedback loop and amplifies communication between researchers and our communities. These are core functions of the Wisconsin Idea.

One way CIAS leverages institutional change in sustainable agriculture and food systems is through project partnerships with colleges and universities, farm organizations, nonprofit organizations, state and federal agencies, and other external partners. CIAS thrives on our partnerships with these organizations. We value the opportunity to build relationships in the community and strengthen leadership capacity for our partners, as well as ourselves. Over the past decade, we have worked with 256 external partners (Appendix I), as well as 57 CALS and campus departments and programs.

CIAS shares knowledge and connects individuals and institutions through collaborative, innovative and diverse outreach and public service projects. In June 2018, **CIAS hosted the joint annual** meeting of the Agriculture, Food, and Human Values Society (AFHVS) and the Association for the Study of Food and Society (ASFS). This professional conference provides a space for members and attendees to share innovative thinking and scholarship on food-related themes. CIAS has actively participated with AFHVS since our inception and hosted the 1997 conference. In 2018, 489 academics and community partners convened on the UW-Madison campus for more than 400 presentations, workshops, tours, panels and networking events. The conference provided an opportunity for CIAS to tap into our extensive networks. For instance, we worked with HoChunk Elders, campus linguists, the Native Nations Partnership and Indigenous faculty to develop a Land Acknowledgement for the conference. The conference proceedings featured 408 abstracts and have seen over 200 downloads in the last 18 months. We shared our planning experience with AFHVS and ASFS, so future conferences could build on our work.

CIAS is grateful for invitations to support **Menominee Nation** leadership efforts to strengthen Wisconsin Tribal food sovereignty, traditional food and crop production, and its farmer training programs. Over the years, the center has built strong relationships with tribal partners including the College of Menominee Nation, the Lac Courte Oreilles Ojibwe College and the Oneida

Nation of Wisconsin. CIAS planned and/or hosted three food sovereignty conferences in 2012, 2013 and 2017, with approximately 550 participants. CIAS has also contributed to professional development for tribal community members, including the 2019 “Tribal Farming and Food 101” weekend course at Menominee Nation involving more than 60 participants and featuring Tribal farmers. These relationships have been fruitful in multiple ways, including increased tribal government participation in food sovereignty programs. In partnership with CIAS, Dan Cornelius, enrolled member of the Oneida Nation of Wisconsin and lead for the Intertribal Agriculture Council—Great Lakes, sponsored a campus-wide event in 2012 entitled “Exploring American Indian Agriculture and Food Systems.” Dan joined the CAC in 2016.

In 2010, CIAS was awarded a leadership role with the **National Farm to School Network** (NFSN), growing and strengthening farm to school efforts in the six-state Great Lakes Region. Relationships with lead partners in each state led to the inaugural **Great Lakes Great Apple Crunch** outreach event celebrating National Farm to School Month in October 2014. The premise of the Crunch is simple: K-12 schools, early care and education centers, hospitals, universities and other institutions purchase local apples, crunch into them on the same day each year, and promote their photos on social media. On its face, the Crunch is an energetic public celebration of farm to school efforts. It also serves to introduce institutions to the concept of purchasing food from local farms and provide technical assistance to find and buy local apples. Program evaluation revealed the Crunch encourages institutions to purchase local apples for the first time, and to expand local purchasing to other items on the lunch tray. The Crunch has grown from about 400,000 participants in 2014 to a record 1,815,331 participants across the region in 2019. Built on the success of the Crunch, the Wisconsin Chili Lunch encourages Wisconsin institutions to serve locally sourced chili. This statewide event served over 75,000 bowls of chili in 2018, its inaugural year.

The Eco-Fruit program is one of many CIAS efforts that demonstrate our commitment to the Wisconsin Idea. Established in 2000, this program helped fruit farmers—primarily apple growers, but also berry and grape growers—reduce or eliminate pesticide risk through Integrated Pest Management (IPM) practices. Coaching, networking and access to new data management tools helped participating apple growers reduce their pesticide risk by 46 percent and increase their reliance on IPM strategies by 54 percent, as measured through project evaluation. CIAS also initiated the development of a regional pesticide reduction marketing label. We handed off this work to nonprofit and business partners in 2012, and wholesale apple growers continue to use this label to distinguish their products. In 2011, the Eco-Fruit Program was recognized with the Wisconsin Idea Award for Exemplary Partnerships. Beyond immediate impacts on pesticide reduction, the Eco-Fruit program highlighted the need for the Midwest School for Beginning Apple Growers, which has trained 166 aspiring and skilled growers since it was established in 2011 (p. 13). Our Eco-Fruit program also provided a foundation for our more recent efforts to create a robust craft apple cider industry in Wisconsin (p. 7).

CIAS grower schools have reached hundreds of beginning fruit, vegetable and flower growers, and grass- based dairy and livestock farmers, during the past decade. For details, see “Revenue Generating Activities,” page 13. Additionally, CIAS is a partner in the annual **Organic**

Grain Resource and Information Network (OGRAIN) conference, which began as a grower seminar offered through Short Course.

Other outreach activities CIAS has collaborated on with external partners include:

- **Field days and farm tours**. One example is the two water quality field days we hosted with the Uplands Watershed Group and Michael Fields Agricultural Institute in 2018-19 that reached 215 people, despite inclement weather.
- **Webinars**. An example is the Wisconsin Farm to School Webinar Series, organized by CIAS in collaboration with Community GroundWorks, which reached 243 people in FY 19.
- **Conferences.** CIAS staff present workshops, participate in panel discussions and discuss our work at conferences hosted by external partners. In FY 20, we will present and/or staff a booth at 19 such conferences.
- **Train-the-trainer events.** Our 2018 and 2019 pasture walks, co-hosted with Organic Valley, introduced Extension agents and other technical service providers to organic soil and dairy pasture management.

In FY 19, we reached over 3,000 people through conferences, webinars and events.
Strategic communications are critical to the success of CIAS outreach. Our communications program works with faculty, staff and students to identify primary and secondary audiences for their work and identify what those audiences will ideally understand and change as a result of our outreach efforts. We then hone in on the best means to reach those audiences, considering factors like seasonal demands on farmers' time and the limitations of rural internet access. In the current era of diminishing public resources, CIAS uses a lean, targeted approach to help faculty and departments communicate with stakeholders through a variety of media. Over the past ten years, our non-technical communications have included:

- 80 CIAS publications including reports, research briefs, case studies and other outreach tools;
- 36 publications and other outreach tools produced in collaboration with our partners;
- 22 individual videos and webinars;
- 5 conference proceedings;
- 4 posters;
- 3,634 people receive CIAS email updates and the Wisconsin Farm to School newsletter;
- CIAS hosts eight websites and maintains a social media presence on Facebook and Twitter.
- In FY 19, the CIAS website logged 127,374 page views. We currently have 5,006 followers on social media.

See Appendix B for a full list of CIAS publications, resources, and outreach tools.

Revenue generating activities

CIAS offers diverse revenue-generating activities that are core to our outreach mission. These revenue- generating activities fall into four major categories: 1) grower schools, 2) one-time events, 3) fee-for- service and 4) publication sales. The purpose of these activities is to advance our public service and scholarship, and to provide accessible, professional services in our field.

Although these activities bring income to the center, we are not a 'revenue-generating center.' Our activities contribute significantly to our public service, but not our overall funding. With the exception of fee-for-service activities, CIAS revenue-generating activities recover major costs for unique events and services, but not staff salary. We prioritize accessibility and affordability, with competitive pricing for our practitioner audiences that include beginning farmers, small businesses and food service staff.

Beginning grower schools. CIAS provides beginning farmers with research-based training on the production, business and marketing skills needed to successfully start or grow a profitable, sustainable farming operation. We offer programs on grass-based dairy and livestock, fresh market vegetables, apples and cut flowers.

Since 1995, the Wisconsin School for Beginning Dairy and Livestock Farmers (WSBDF) has offered courses through Farm and Industry Short Course (FISC). While FISC is not a revenue-generating activity for CIAS, as this program grew, CIAS added distance education and online options to attract more students and generate additional revenue. The price strategy for the online and distance education offerings was established in a previous decade, with a goal to keep prices affordable for beginning farmers and comparable to similar courses. The price is reviewed annually. We offer scholarships for Short Course participants, made possible by donors. WSBDF is attended primarily by UW students (FISC) and beginning farmers, both in Wisconsin and across the country. Course enrollment is steady, with increasing demand for enrollment in the online course. During this reporting period, the WSBDF reached 227 students through FISC, distance education and online courses. Leadership changes and the dairy crisis are current challenges and opportunities for managing this program.

CIAS schools for beginning fresh market vegetable, cut flower, apple and grape growers are intensive, multi-day courses co-taught by CIAS staff, UW faculty and experienced grower instructors. The Wisconsin School for Beginning Market Growers was first offered in 1998, followed by the Wisconsin Cut Flower Growers School in 2006 and the Midwest School for Beginning Apple Growers in 2010. The beginning grape growers' school was started in 2014 but was discontinued after the 2015 class due to low enrollment and overlap with similar events. These courses are run by CIAS and generate modest revenue. The goal of these courses is to support farmers in establishing profitable farm enterprises. Enrollment fees are established to cover course expenses including materials, honoraria for grower instructors, and meals and refreshments for participants. Similar to the WSBDF, prices are market- sensitive, calibrated to participants' ability to pay, and scholarships are offered each year. Prices are reviewed

annually. These highly specialized courses are well attended and appreciated, reaching 754 participants over the past decade.

One-time events. These include conferences and other educational offerings. Examples from the past decade include the Wisconsin Farm to School Summits (2012, 2013 and 2015), Freight Innovations to Optimize Food Resiliency (2016), the Green Lands Blue Waters Conference (2017), and the Agriculture, Food and Human Values Conference (2018). We typically host these activities with external organizations, strengthening our relationships. These one-time events advance our mission and increase our visibility. Because hosting conferences is time-intensive, we will continue to evaluate the internal impacts of major events, to inform the strategic selection of future events. As each of these activities is unique, factors influencing the pricing structure vary. Most often, the price charged for an event is based on an established overall or predetermined project or partner budget. The price charged may also depend on the event capacity, comparable rates for similar events, and what the audience can afford. As with our grower schools, it is critical that these activities remain accessible to target audiences, especially when events have public service goals.

Fee-for-service. Over the past decade, CIAS has cautiously generated revenue and advanced the work of our partners through professional fee-for-service activities including website development, publications design, and training and evaluation services. We see opportunities for CIAS to more strategically and systematically take on fee-for-service projects, specifically in the areas of project management and evaluation, that advance research and outreach in regenerative agroecosystems, food systems and farm viability. Fee-for-service rates are in line with hourly equivalencies and fringe rates for staff.

Publications. CIAS distributes most of its publications in both print and electronic form. These modes of dissemination ensure that our publications are accessible to audiences—particularly rural audiences— with limited or unreliable internet connectivity. When people order print publications, we charge a small fee for postage and handling. We don't charge for electronic publication access or print publications distributed at events. Publications are a very small part of our portfolio of revenue-generating activities.

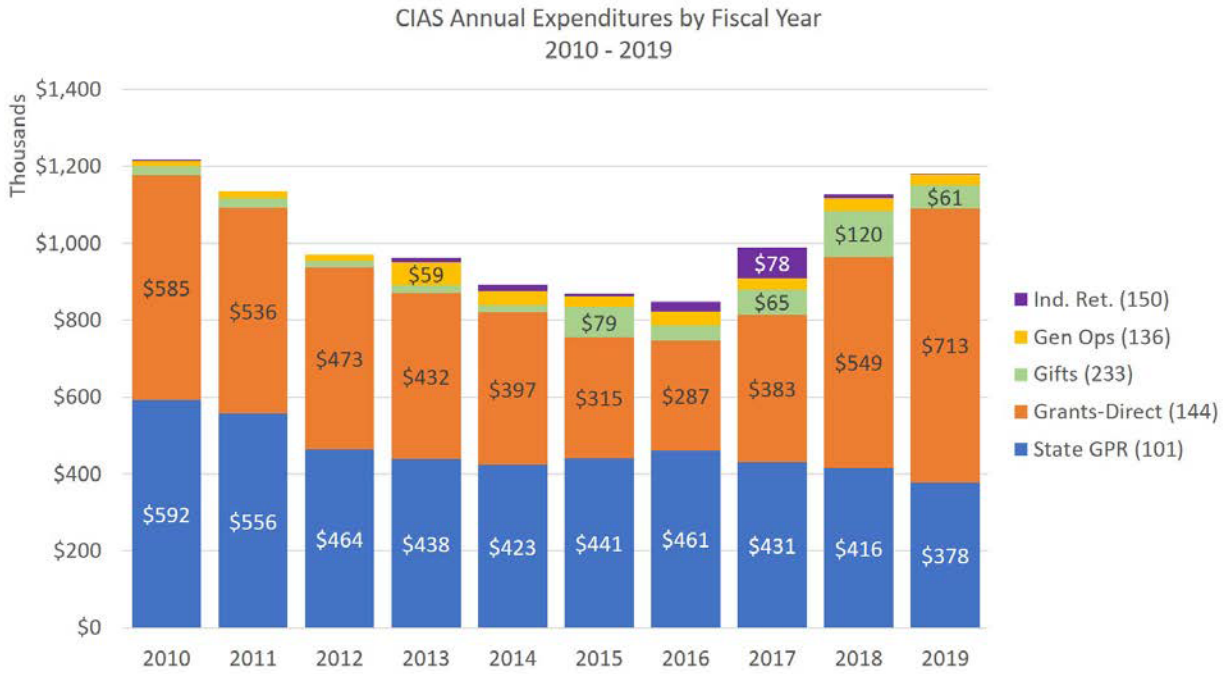
CIAS evaluates revenue-generating activities using our filters for project selection (Appendix H), while considering budget and staff capacity. For events we host, we also take demand and registration into account. With our mission focused on public service and the Wisconsin Idea, we prioritize projects that serve our target audiences or share our work more broadly at competitive, affordable rates. CIAS uses a similar process to determine if new revenue-generating activities should be added to our portfolio. Most importantly, CIAS takes on activities that are innovative and further our leadership.

We tailor review processes to our different revenue-generating activities. The beginning grower schools consider course demand, outcomes revealed through student evaluations, and emerging or competing educational opportunities. Changes are made based on these reviews. To this end, the Wisconsin School for Beginning Market Growers is taking a year off to better

identify target audiences and meet their needs through revitalized course content and structure. The Wisconsin School for Beginning Dairy and Livestock Farmers is evaluating demand for, and marketing of, the online course option. One-time events are evaluated individually, often in collaboration with partner organizations. These events, and our fee-for-service activities, are reviewed in the context of alignment to our mission, budget and staff capacity. CIAS has realized that we need to exercise caution in taking on fee-for-service work that may not be aligned with our goals and capacity, as this could dilute our overall impact. Creating a strategic review process for revenue-generating activities is a next step for CIAS. Better evaluating and utilizing these activities will become part of our long-term plan emerging from this review process.

Resources, funding and sustainability

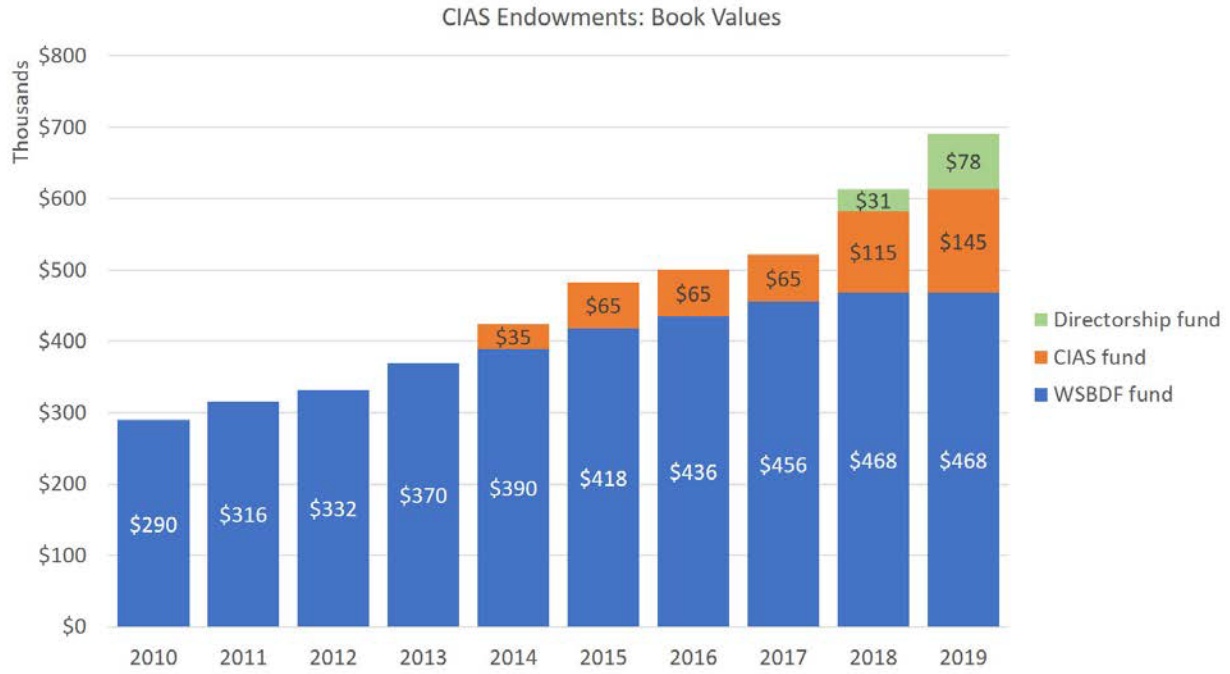
Figure 2



CIAS is primarily funded by government and foundation grants, with 60 percent of our expenditures going toward grant-funded research and projects. State GPR (101) as a percent of our overall budget has declined over the past decade. In FY 10, state GPR 101 funds constituted nearly half of our overall expenditures. In FY 19, 32 percent of our expenditures were from 101 funds. CIAS mainly supports staff salaries and students with state funding. Five percent of our expenditures come from gifts. This funding supports staff salary, our graduate student mini-grant program, scholarships for our beginning grower schools, and targeted projects such as our support for Wisconsin's organic farms and businesses. Smaller amounts of spending come from revenue generating activities (136, shown as "Gen Ops" in Figure 2) and indirect returns (150). Our total expenditures in FY 19 were just under $1.18 million. Due to multiple staff transitions in FY19, GPR expenditures did not reflect our budget and will increase slightly in FY 20.

Overall CIAS expenditures declined over the first seven years of the last decade, but rebounded during the last three years (Figure 2). This rebound was largely due to our success in securing more external funding for our work.

Figure 3



Assessing outcomes

CIAS uses a variety of indicators to assess how well the center is meeting its overall and project-specific objectives. Project assessment includes both process and outcome evaluation. We value both quantitative and qualitative assessment to determine the impact of our work for our stakeholders. We publish annual reports sharing our work and impacts with the college. Key indicators include:

Learning opportunities: We capture the number of beginning farmer schools we teach each year, along with metrics for events, conferences, workshops and presentations we offer annually. We track research and outreach products created, including publications, reports and other hands-on resources for our audiences. Lastly, we track the number and types of outreach projects in which CIAS is active.

Utilization and reach: We track how widely our outreach offerings are utilized, and how far our project deliverables travel. CIAS regularly monitors the number of people registered for and/or attending our grower schools, special events, classes, workshops and conference presentations. Beyond the number of products developed, we also track dissemination metrics for some of the products we create such as online tools where we have analytics on page views or downloads. Additionally, we monitor web and social media analytics to track reach of CIAS

and its deliverables online.

Collaboration: As a center focused on community responsiveness and participatory research, indicators of collaboration are extremely valuable. On campus, we monitor the number of departments, faculty, and UW programs we collaborate with, and the breadth of these partnerships over time. We also track the number and diversity of our community partners across the state and country.

Fundraising: We track the center's productivity and success in grant writing, research dollars generated through grants and contracts, and the health of donor relationships and UW Foundation funds.

Feedback: Formally and informally, CIAS collects feedback from stakeholders, CAC members, and CALS and campus partners. This includes participant evaluation of our schools, CAC meetings and other events, feedback from annual center director's meetings with CALS, and annual evaluations of the CIAS director by the Governance Committee.

Because CIAS has a wide range of audiences and projects, we tailor metrics to different project and program areas. To the best of our ability, we monitor qualitative and quantitative metrics including:

- Number of people, farms, or businesses adopting a specific practice advanced by CIAS;
- Changes in knowledge, attitude, behavior, self-efficacy or other measures collected through pre/post or post-event evaluations, or longer term evaluation;
- Changes to administrative or legislative policy based on CIAS research or education;
- State or municipal actions or advancement from CIAS collaborations.

Beyond the key performance indicators listed above, CIAS determines success through the following metrics:

- **CALS and campus engagement:** How we work with and maintain relationships with CALS and campus departments, centers and programs over time, including key qualitative and quantitative measures like number of Faculty Associates, faculty with students applying for mini- grants, and collaborative grant proposals. We seek to better understand how we can serve CALS departments and campus partners, and answer questions including: Who is reaching out to CIAS? How are these relationships valuable to our partners and CALS? How can we better collaborate to support our collective missions?
- **Media**: The ability of CIAS to amplify research and resources in the public sphere through earned and owned media, and by serving as expert commentators;
- **Advancement of CIAS work areas**: As an incubator of emerging work areas, we track fundraising success in new project areas, as well as our work being mainstreamed by CALS departments, state agencies or external partners.

Appendix A: Journal articles and book chapters

2019

Jackson, R.D, B. Isidore, R.L. Cates. 2019. “Are plant-soil dynamics different in pastures under organic management? A review.” Agriculture, Ecosystems and Environment 279:53-57.

Leslie, I.S., J. Wypler and M. M. Bell. 2019. “Relational Agriculture: Gender, Sexuality, and Sustainability in U.S. Farming,” Society and Natural Resources 32(8):853-874.

Szymanski, L.M., G.R. Sanford, K.A. Heckman, R.D. Jackson and E. Marin-Spiotta. 2019. “Conversion to bioenergy crops alters the amount and age of microbially-respired soil carbon.” Soil Biol. Biochem. 128: 35-44.

2018

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Ong, R.G., S. Shinde, I.D. Sousa, and G.R. Sanford. 2018. “Pre-senescence harvest of switchgrass inhibits xylose utilization by engineered yeast.” Frontiers Energy Res. 6. doi: 10.3389/fenrg.2018.00052

Zhang, YP, L.G. Oates, J. Serate, D. Xie, E. Pohlmann, Y.V. Bukhman, S.D. Karlen, M.K. Young, A. Higbee, D. Eilert, G.R. Sanford, J.S. Piotrowski, D. Cavalier, J. Ralph, J.J. Coon, T.K. Sato and R.G. Ong. 2018. “Diverse lignocellulosic feedstocks can achieve high field-scale ethanol yields while providing flexibility for the biorefinery and landscape-level environmental benefits.” Global Change Biol. 10: 825-840.

2017

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Day Farnsworth, L. 2017. “Distribution: Supplying good food to cities,” in Good Food, Strong Communities, S. Ventura and M.Bailkey, eds. Iowa City, IA: University of Iowa Press.

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Sanford, G.R., et. al. 2017. “Predicting gross nitrogen mineralization and potentially mineralizable N using soil organic matter properties.” Soil Sci Soc of America Journal. (October 2017)

Sharara, M., A. Sampat, L. W. Good, A. S. Smith, P. Porter, V. M. Zavala, R. Larson and T. Runge. 2017. “Spatially explicit methodology for coordinated manure management in shared watersheds,” Journal of Environmental Management, Volume 192, pp. 48-56

2016

Ashwood, L. and M. M. Bell. 2016. “Affect and Taste: Bourdieu, Traditional Music, and the Performance of Possibilities.” Sociolgia Ruralis. Early view published online July 2, DOI: 10.1111/soru.12135.

Ashwood, L. and M. M. Bell. 2016. “The Rural-Agriculture Power Play,” pp. 650-660 in International Handbook of Rural Studies, Lynda Cheshire, Mark Shucksmith and David L. Brown, eds. New York and London: Routledge.

Bell, M. M. 2016. “In Your Face: Why Food Is Politics and Why We Are Finally Starting to Admit It,” pp. 189-195 in Biological Economics: Experimentation and the Politics of Agri-Food Frontiers, Richard Le Heron, Hugh Campbell, Nick Lewis and Michael Carolan, eds. London and New York: Routledge and Earthscan.

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Day Farnsworth, L. 2016. “More than the Sum of Their Parts: An Exploration of the Connective and Facilitative Functions of Food Policy Councils,” in Cities of Farmers: Problems, Possibilities and Processes of Producing Food in Cities, J. Dawson, J. and A. Morales, eds. Iowa City, IA: University of Iowa Press.

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Miller, M. and J. Solin. 2015. “The power of story for adaptive response – marshaling individual and collective initiative to create more resilient food systems.” Journal of Environmental Studies and Sciences. DOI 10/1007/s13412-015-0332-y

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Alber, N., G. Brink, and R. Jackson. 2014. “Temperate Grass Response to Extent and Timing of Grazing.” Canadian Journal of Plant Science. 94(5):827-833

Ashwood, L., N. Harden, M. M. Bell and W. Bland. 2014. “Linked and Situated: Grounded Knowledge.” Rural Sociology. 79(4): 427–452.

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2011

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348-349.

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Lyon, A., M.M. Bell, C. Gratton and R.D. Jackson. 2011. “Farming without a recipe: Wisconsin graziers and new directions for agricultural science.” Journal of Rural Studies 27(4): 384-393.

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Special issues of professional journals

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Appendix B: Non-technical publications

2019

Conference proceedings

National Academies of Sciences, Engineering, and Medicine. 2019. Innovations in the Food System: Exploring the Future of Food: Proceedings of a Workshop—in Brief. Washington, DC: The National Academies Press. https://doi.org/10.17226/25645 (Michelle Miller contributing author.)

Posters

“Lab measures as a proxy for sensory testing hard cider.” 2019. At the US Cider Makers Association annual meeting, Chicago, IL, January 2019.

Publications

Dawson, J., M. Miller, M. Raboin, E. Voigt, C. Carusi and R. McNair. November 2019. “Comparing Apples to Apples: Single Varietal Hard Apple Cider Testing.”
Hendrickson, J. and C. Strader. May 2019. “Cover Crops on the Intensive Market Farm.”

Frye-Levine, L., M. Miller and S. Ugoretz. July 2019. “Milk with Dignity: Worker-Centered Organizing for Social Responsibility.”

Isidore, B., R. Cates and R. Jackson. August 2019. “How does organic pasture management on dairy farms affect pastures and soils?”

Reinemann, D., H. Aguirre-Villegas, V. Cabrera, R. Larson, T. Passos-Fonseca and D. Mayerfeld. April 2019. “Comparing Greenhouse Gas Emissions of Dairy Systems.” CIAS Research Brief #101.

Publications with partners

CIAS. 2019. Crunch Guides (including Early Care and Education, K-12 education, non-school, and Family Child Care sites) for IL, IN, MI, MN, OH and WI. Annual Apple Crunch education and promotion guides.

Dietmann, P. July 2019. “Turning Grain into Dough: Farm Financial Management for Organic Grain and Crop Rotation.” (CIAS laid out report)

2018

Publications

CIAS. January 2018. “Wisconsin Farm to School Toolkit for School Nutrition Programs” (Updated).

CIAS. 2018. Crunch Guides (including Early Care and Education, K-12 education, non-school, and Family Child Care sites) for IL, IN, MI, MN, OH and WI. Annual Apple Crunch education and promotion guides.

Community GroundWorks. September 2018. “Results of the 2018 Wisconsin Farm to Early Care and Education Provider Survey.” (Evaluation and writing by CIAS staff Vanessa Herald.)

Community GroundWorks. September 2018. “Results of the 2018 Wisconsin Farm to Early Care and Education Support Organization Survey.” (Evaluation and writing by CIAS staff Vanessa Herald.)

Silva, E., E. Bietila, J. Colquohoun, A. Pfeiffer, R. McNair. September 2018. “Fall-Sown Cover Crops and Weed Suppression in Organic Small-Scale Vegetable Production.” CIAS Research Brief #99.

Silva, E., J. Colquohoun, A. Pfeiffer, R. McNair. September 2018. “Living Mulch Suppresses Weeds and Yields in Organic Vegetable Plots.” CIAS Research Brief #100.

Videos/Webinars
CIAS. Organic Dairy Pasture Management and Soil Health training videos. Sept. 6, 2018 (3 videos) and October 4, 2018 (6 videos).

CIAS. Wisconsin Farm to School Webinar Series , including “Making the Most of F2S Month”; “Connecting with Local Farmers”; “Gardens in Your F2S Program”; “Crunch, Chili Lunch & Farm to School Month!” Publications with partners

Google Refresh – Food + Tech. “From Soil to Supper.” 2018. (CIAS staff Michelle Miller invited contributor, and part of an on-going collaborative workshop process.)

2017

Posters
“Critical Thresholds for Food Flow in the Chicago Region: optimizing efficiency and diversity for resilience.” 2017. Transportation Research Forum, April 2017, Chicago, IL.

Publications
Bauer, L., C. Carusi, A. Gurda, R., McNair and E. Silva. February 2017. “Organic Agriculture in Wisconsin: 2017 Status Report.”

Braun, L., R. McNair and B. Paul. February 2017. “Options for Weed Control in Hazelnut Plantings.” CIAS Research Brief #98.

CIAS. December 2017. “Wisconsin Workers Rights Reference Card.” (English and Spanish versions).

CIAS and DATCP. 2017. “The potential for a hazelnut industry in the Upper Midwest.” https://widatcp.maps.arcgis.com/apps/Cascade/index.html?appid=37079828db074592a2526262c1d955a7 (ESRI story map)

Raboin, M. July 2017. “Hard Cider in the North Central Region.”

Videos

CIAS. January 2017. “Growing Farm to School-Partnership for Proteins.” Videos available at http://www.youtube.com/UWMadisonCIAS

CIAS. July 2017. “Growing Farm to School-Growing New Farmers.” Videos available at http://www.youtube.com/UWMadisonCIAS

Publications with partners

CIAS. 2017. Crunch Guides (including Early Care and Education, K-12 education and non-school sites) for IL, IN, MI, MN, OH and WI. Annual Apple Crunch education and promotion guides.

Good, L. W. and P. Porter. December 2017. “Analysis of Water Quality Impact of Windrow Composting.” (Clean Lakes Alliance report)

Miller. M. 2017. “Fighting Fire Blight.” A Decision Case Study in Principles for Transitioning to Organic Farming: e-Learning Materials and Decision Case Studies for Educators. K. Moncada, C. Sheaffer, G. DiGiacomo, and N. Tautges, eds. St. Paul, MN: University of Minnesota.

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Wisconsin DATCP. February 2017. “Wisconsin Farm to School Success Story brief: Plymouth High School: Food Science and Agriculture Center.” (CIAS staff Vanessa Herald is a contributing author, with layout and design by CIAS.)

Wisconsin DATCP. February 2017. “Wisconsin Farm to School Success Story brief: Sheboygan Falls Farm to High School.” (CIAS staff Vanessa Herald is a contributing author, with layout and design by CIAS.)

2016

Posters

University of Minnesota, University of Wisconsin-Madison Center for Integrated Agricultural Systems, Midwest Organic and Sustainable Education Service (MOSES) and eOrganic. 2016. "Principles for Transitioning to Organic Farming: e-Learning Materials and Decision Case Studies for Educators." Poster presented at the Eco-Farm Conference in Asilomar, CA, January 20-23,2016.

Publications

Hendrickson, J., E. Bietila, E. Silva, P. Mitchell, J. Munsch and R. McNair. August 2016. "Veggie Compass Helps Growers Make Data-Driven Decisions." CIAS Research Brief #97.
Miller, M., B. Williams, C. Carusi and R. McNair. August 2016. "Growing Midwestern Tree Nut Businesses: Five case studies."

Videos

CIAS. October 2016. "Growing Farm to School-Partnering with a Distributor." Videos available at http://www.youtube.com/UWMadisonCIAS

Publications with partners

CIAS. 2016. Crunch Guides (including K-12 education and non-school sites) for IL, IN, MI, MN, OH and WI. Annual Apple Crunch education and promotion guides.

Larson, R., M. Sharara, L. Good, P. Porter, T. Runge, V. Zavala, A. Sampat and A. Smith. 2016. "Evaluation of Manure Storage Capital Projects in the Yahara River Watershed." Publication Number: BSE 001-16. Madison: University of Wisconsin-Extension and UW-Madison College of Agricultural and Life Sciences, Biological Systems Engineering. (CIAS staff member Pam Porter was a co-author.)

Miller, M., W. Holloway, E. Perry, B. Zietlow, S. Kokjohn, P. Lukszys, N. Chachula, A. Reynolds and A. Morales. October 2016. "Regional Food Freight: Lessons from the Chicago Region."http://www.driftless.wisc.edu/regional-food-freight/ (Government report. CIAS staff member Michelle Miller was primary author and organized the group of contributing authors.)

School Food Focus. 2016. "Ingredient Guide for Better School Food Purchasing." (CIAS staff member Vanessa Herald involved in content development.)

Wisconsin Department of Public Instruction. 2016. "Chop! Chop! Resource Guide." (CIAS staff member Vanessa Herald involved in content development.)

2015

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"Creating a framework to assess climate change impacts on agriculture and transportation in the Upper Mississippi River Valley." 2015. USDA Transitioning Cereal Systems To Adapt to Climate Change: Building a Global Network for Semiarid Cereal Systems. November 13, 2015.
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Carusi, C., A. Gurda, R. McNair, A.Pfeiffer, E. Silva. February 2015. "Organic Agriculture in Wisconsin: 2015 Status Report."

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CIAS. 2015. "Chop! Chop! Culinary skills for Wisconsin-grown produce in school meals." Videos available at http://www.cias.wisc.edu/chopchop/

Publications with partners

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Wisconsin DATCP. July 2015. "Wisconsin Farm to School Success Story brief: Madison Metropolitan School District: Garden bars." (CIAS staff Vanessa Herald is a contributing author, with layout and design by CIAS.)

Wisconsin DATCP. December 2015. “Wisconsin Farm to School Success Story brief: Manitowoc County: Ensuring meaningful farmer participation in farm to school.” (CIAS staff Vanessa Herald is a contributing author, with layout and design by CIAS.)

Wisconsin DATCP. June 2015.” Wisconsin Farm to School Success Story brief: Wausau: Thomas Jefferson Elementary School Garden.” (CIAS staff Vanessa Herald is a contributing author, with layout and design by CIAS.)

2014

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Day Farnsworth, L, and M. Miller. 2014. “Networking across the supply chain: Transportation Innovations in Local and Regional Supply Chains.” US Department of Agriculture.

Miller, M. 2014. “Resilient regional supply chains for sustainably-grown food.” Proceedings of the Center for Logistics, Transportation and Trade Symposium, Gulfport, MS.

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Silva, E., L. Bauer and L. Paine. February 2014. “Organic Agriculture in Wisconsin: 2014 UW-Madison Research Report.”

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Wisconsin DATCP. October 2014. “Wisconsin Farm to School Success Story brief: Vernon County: Youth Get Active With School Lunch.” Farm to School Success Stories series. (CIAS staff Sara Tedeschi is a contributing author, with layout and design by CIAS.)

2013

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Cates, R.; J. Taylor and T. Cadwallader. January 2013. “Farm business principles for success.”

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CIAS. June 2013. “Values-based food supply chain: Country Natural Beef.” CIAS Research Brief #79.

CIAS. October 2013. “Values-based food supply chain case study: Full Circle.” CIAS Research Brief #92.

CIAS. May 2013. “Values-based food supply chain: Good Earth Farms.” CIAS Research Brief #88.

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CIAS. March 2013. “Values-based food supply chain: Organic Valley.” CIAS Research Brief #80.

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Clancy, K. June 2013. “Values-based food supply chains: Program participation and policy

challenges."

Hemstead, K., N. Alber and R. Cates. April 2013. "Wisconsin Grazing Activities Resource List."

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Lev, L., G. Stevenson. April 2013. "Values-based food supply chains: Shepherd's Grain."

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Stevenson, G. May 2013. "Values-based food supply chains: Good Earth Farms."

Stevenson, G. September 2013. "Values-based food supply chains: Home Grown Wisconsin."

Stevenson, G. April 2013. "Values-based food supply chains: Idaho's Bounty."

Stevenson, G. April 2013. "Values-based food supply chains: Organic Valley."

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Nelson, D., M. Miller, A. Morales and B. Zeitlow. June 2013. "Achieving scale strategically: understanding freight flows in regional food supply chains." National Center for Freight and Infrastructure Research and Education (CFIRE) Publication 05-17. (CIAS staff Michelle Miller co-author.)

2012

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Hendrickson, J. 2012. “Tractor Primer for the Market Farm.” Wisconsin School for Beginning Market Growers publication.

Mayerfeld, D. and C. Anderson. January 2012. “Cover Crops Case Studies: Gary Sommers Farm.” UW-Extension/CIAS publication #CIAS003.

Paine, L., E. Silva, M. Barnidge, C. Carusi, R. McNair. February 2012. “Organic Agriculture in Wisconsin: 2012 Status Report.”

Thomforde, S., M. Heitman and L. Wells. January 2012. “Public and Private Funding Opportunities for Wisconsin Managed Grazing Projects.”

Publications with partners

American Farmland Trust. 2012. “With a little help from my friends: Wisconsin’s Eco-fruit program connects growers with other growers to find IPM solutions.” The Power of Nature: Integrated Pest Management Helps Great Lakes Farms Protect Their Crops, the Environment, and the Food Supply. Retrieved from https://www.cias.wisc.edu/wp-content/uploads/2012/09/AFT_IPM_CIAS.pdf (CIAS staff members Michelle Miller and Regina Hirsch worked with AFT on the article about the Eco Fruit program.)

Foster, S.; V. Herald; N. Smith. 2012. “Wisconsin Farm to School Whitepaper. An Investigation of State Level Farm to School Programs.” Internal Report for DATCP. (CIAS staff Vanessa Herald and CIAS Graduate Assistants co-authored)

Hendrickson, J. and J. Stute. 2012. “Cover Crops for the Home Garden.” University of Wisconsin-Extension publication #A3933-02. (CIAS staff John Hendrickson co-author)

Neary, S and L. Paine. 2012. “Wisconsin Grazing Initiative 2012 Annual Report. Grazing Lands Conservation Initiative.” (This report was jointly published by DATCP and CIAS.)

2011

Conference proceedings

Day Farnsworth, L., A. Bruner-Zimmerman and J. Daniel. 2011. “Making Good Food Work: Conference Proceedings Report.” C.S. Mott Group for Sustainable Food Systems at Michigan State University and Wallace Center at Winrock International.

Publications

Brown, C. 2011. “Value Chains Teaching Materials for a Course in Agricultural Marketing.”

CIAS. 2011. Price Tags, Cost Tags: Apple, chicken, strawberries, dairy, eggs.

CIAS. January, 2011. “Fall grazing management affects burdock populations in pastures.” CIAS Research Brief #84.

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CIAS, DHS, DATCP, DPI. 2011. “Wisconsin Farm to School Toolkit for School Nutrition Directors.”

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Mayerfeld, D.and C. Anderson. November, 2011. “Cover Crops Case Studies: JenEhr Family Farm.” UW-Extension/CIAS Publication #CIAS001.

Pullman, M. and Zhaohui Wu. 2011. “Teaching Case for Sustainable Supply Chain Management.”

Publications with partners

Bittner, J., L. Day Farnsworth, M. Miller, R. Kozub and B. Gollnik. September 2011. “Maximizing Freight Movements in Local Food Markets.” National Center for Freight and Infrastructure Research and Education (CFIRE) Publication 04-23. (CIAS staff Michelle Miller and Lindsey Day Farnsworth co-authors)

LaRowe, T., A.B. Bontrager Yoder, A.Knitter, A. Meinen, J. Liebhart and D. Schoeller. 2011. “Wisconsin farm to school: One year evaluation report. Wisconsin Prevention of Obesity and Diabetes, University of Wisconsin-Madison.” (CIAS staff Sara Tedeschi, Camilla Vargas and Doug Wubben helped develop the evaluation, collect data and visit sites.)

REAP Food Group. April, 2011. “Southern Wisconsin Farm Fresh Atlas.” (CIAS staff did copy editing and proofreading)

2010

Publications

Blazek, K., E. Silva, L. Paine and T. Atwell. February 2010. “Organic Agriculture in Wisconsin: 2009 Status Report.”

CIAS. June 2010. “Perceptions of raw milk’s risks and benefits.” CIAS Research Brief #83.

CIAS. August 2010. “The Driftless Region Farm and Food Project.”

CIAS. August 2010. “Tiers of the Food System.”

Videos

Greenberg, L. (2010) Video: At the Core: Apple Growers of the Upper Mississippi. UW-Center for Integrated Agricultural Systems and Cultural Landscapes, LLC. CIAS produced, edited and commissioned this video. https://www.youtube.com/watch?v=jJDNBn1g6k4&t=2s

Publications with partners

Mahr, D., Whitaker, P., Ridgway, N. 2010. Biological Control of Insects and Mites, 2010. UW Extension Publication no. A3842. (CIAS secured funding for this publication and managed the writing process.)

2009

Publications

CIAS. January 2009. “Tradeoffs in ecosystem services using warm season grasses in managed pastures.” CIAS Research Brief 78.

Day Farnsworth, L., B. McCown, M. Miller, A. Pfeiffer. December 2009. “Scaling up: Meeting the demand for local food.”

Publications with partners

Paine, L. August 2009. “Grass-based dairy products: Challenges and opportunities.” (CIAS staff did layout).

Miller, M. 2009. “Birthing terroir in the land of sky blue waters” in Place-based Foods at Risk in the Great Lakes, published by Slow Food USA, Renewing America’s Food Traditions (RAFT) http://www.raftalliance.org. (CIAS staff Michelle Miller was an invited contributor to this publication.)

Appendix C: Participatory Action Research

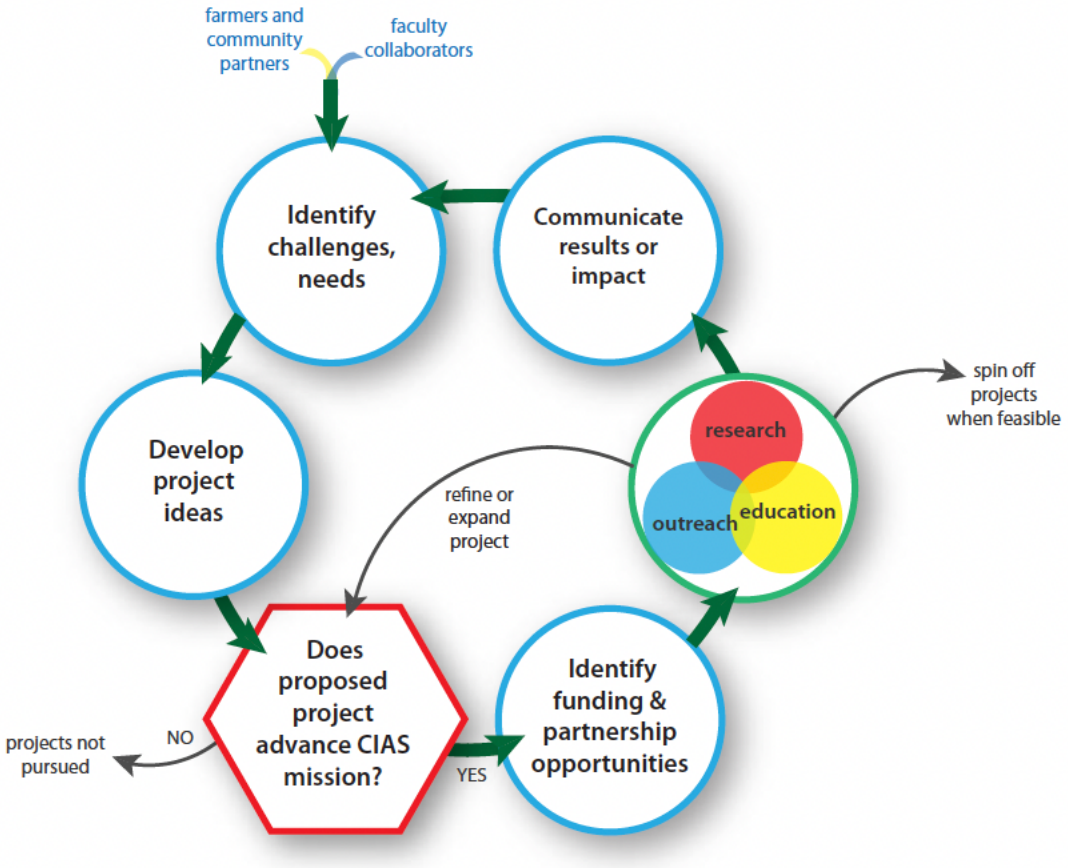
Participatory Action Research (PAR) is a model of inquiry that grounds research in community needs and integrates it with outreach and public service. PAR emphasizes collaboration among academic researchers, citizens, communities and organizations who work together to identify, understand and change a problematic situation. This practice has been in use since the 1940s.

in order for PAR to be effective, research teams should include individuals who are directly affected by the identified challenges, people positioned to implement change, and academic research partners. CIAS research teams may involve UW-Madison faculty and staff, farmers, Extension specialists, food system practitioners, nonprofit organizations and others. Each team member has a say in setting goals for the entire team and setting the research agenda. In this way, the research produces knowledge directly relevant to the stakeholder community and balances power in the research process among all members of the team.

PAR is not intended to solely contribute to theoretical knowledge, but also to create responsive change through research, action and reflection. Furthermore, this collaborative research approach fosters ownership of research results and future action by the people most affected.

This method is used widely in the medical and social sciences and was detailed by CALS faculty and staff in the book Needs Assessment: Theory and Methods,(1987), ed. Donald Johnson, Larry Meiller, Lorna Clancy Miller, Gene Summers. Iowa University Press.

Appendix D: CIAS project development process



Appendix E: Key Personnel

Nadia Alber is Director of the Wisconsin School for Beginning Dairy and Livestock Farmers. She teaches and facilitates classes, promotes the school and raises funds. She and her husband run a small organic, grass-based farm.

Cris Carusi, Associate Director of Communications, oversees communications strategy, publications, events and media. She also manages the CIAS budget and mini-grant program, serves on the administrative team and supports donor fundraising.

Dick Cates is an emeritus CIAS staff member. He continues to support our development efforts.

Sadie Dougherty is a junior from Bayfield majoring in Soil Science who assists on a variety of projects.

Jacob Grace works on managed grazing and perennial agriculture. He also works part time as outreach coordinator for the Savanna Institute, a Midwest nonprofit for agroforestry. Jacob is a graduate of the UW-Madison Agroecology Master's Program.

John Hendrickson coordinates research and training programs in organic and sustainable specialty crop production, marketing and profitability. His work focuses on the economics and profitability of fresh market vegetable farming.

Vanessa Herald is Senior Farm to Institution Outreach Specialist at CIAS and leads statewide and regional efforts to connect growers, supply chain partners and institutional buyers.

Diane Mayerfeld is Wisconsin coordinator for the USDA Sustainable Agriculture Research and Education Program. She supports professional development in sustainable agriculture and serves as a liaison between CIAS and Extension.

Kelly Maynard works on food system issues including market access, farm labor and food safety. She works at both CIAS and the UW Center for Cooperatives.

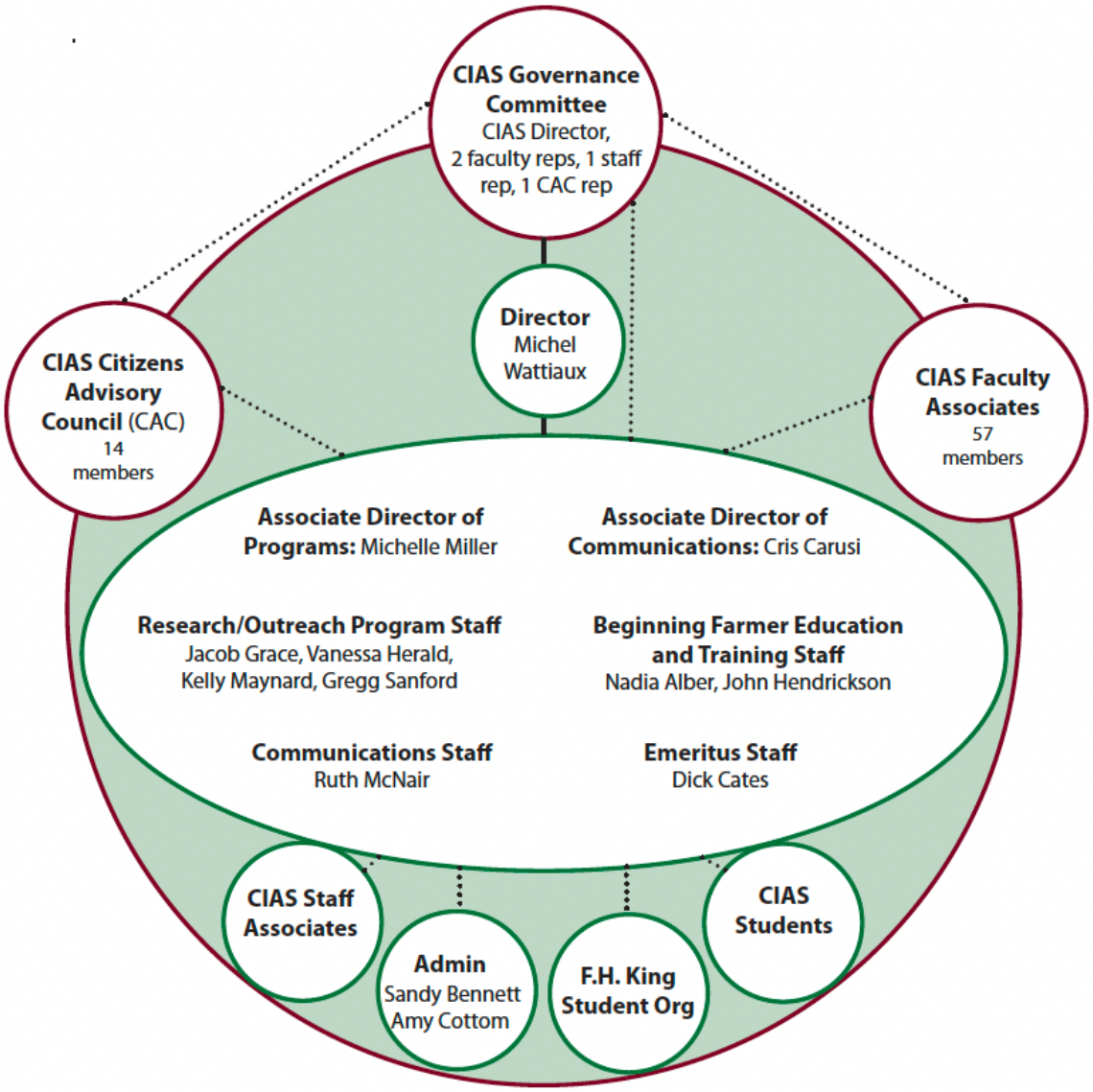
Ruth McNair writes, edits, designs and facilitates the review process for CIAS publications. She assists with donor communications and participates on perennial agriculture project teams.

Michelle Miller, Associate Director of Programs, initiates research teams and writes grant proposals. She is a project and program manager, principal investigator, part of the Center's administrative team, and overall troubleshooter.

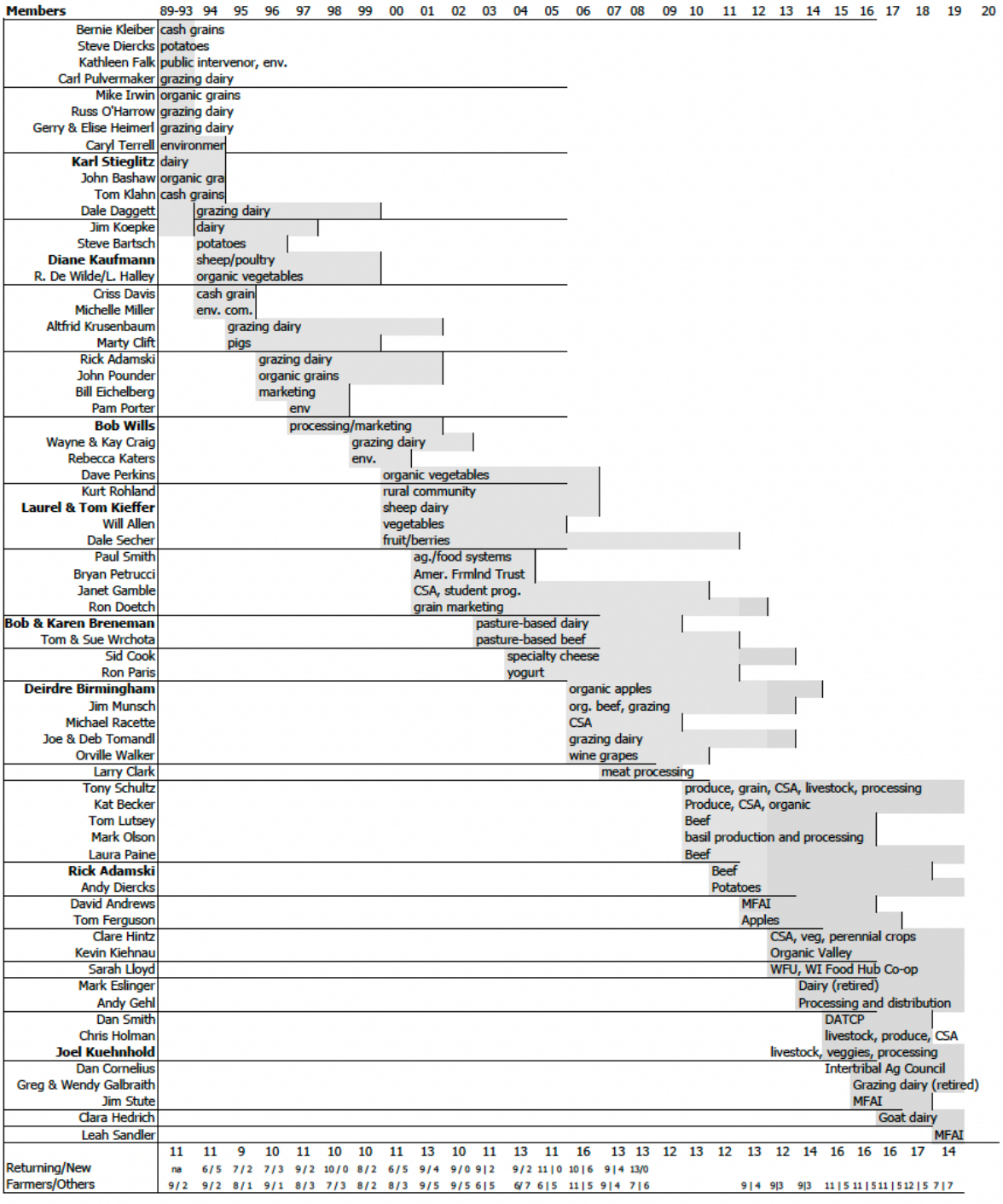
Gregg Sanford serves as staff agroecologist. He manages the long term (28 year) WICST cropping system trial. He also works with the Cover Crops Research and Outreach Project.

Michel Wattiaux, CIAS Director, is a professor of dairy science. His research and teaching focus on the environmental, social and economic soundness of dairy production systems.

Appendix F: CIAS Organizational Chart



Appendix G: CIAS Citizens Advisory Council Members, Terms and Composition



Note: Chairs are designated in bold print.

Appendix H: Filters to guide CIAS project selection

The following filters are meant not only to assist CIAS with internal decision making, but also to develop a strong, coherent identity and activity portfolio within CALS and UW-Madison.

Description of collaborative opportunity:

_____

(Collaborations can involve a wide variety of short-term or longer-term endeavors. A few examples: a CIAS Research Brief or other publication, a joint training or outreach event, a web site or outreach through social media, citizen connections for on-farm or participatory research, funding for a Project Assistant, or a major research grant.)

Orienting filters: These reflect the historic mission, goals and orienting principles of CIAS. Center-related projects should engage:	**Score** (circle) (2=good, 1=ok, 0=does not pass)
Systems approaches. These approaches engage both bio-physical and socio-economic dimensions, involve multi-disciplinary investigation and frame questions in holistic ways.	2 1 0
Scientific knowledge and practitioner knowledge *(participatory research)*. Ideally, projects will draw on both kinds of knowledge throughout their conception, management and evaluation.	2 1 0
Project multi-functionality. Projects should engage UW-Madison's strengths in research, teaching and outreach/extension.	2 1 0
Diversified farm and food systems. CIAS encourages projects that contribute to Wisconsin's diversity of farmers, farming systems, farm size and marketing strategies, as well as increase the diversity of other sectors of the food system.	2 1 0
Unmet needs. Historically, CIAS has identified, framed and engaged needs in the state's agri-food sector that are not sufficiently addressed elsewhere in CALS or the university.	2 1 0
Relevance to Wisconsin. CIAS initiatives should generate information and results that are useful for the citizens of Wisconsin. This does not preclude looking nationally and internationally for projects relevant to Wisconsin.	2 1 0

Programmatic filters: These filters reflect CIAS's organizational capacity and balance:	**Score** (circle) (2=good, 1=ok, 0=does not pass)
Faculty and staff interest and capacity. Are there UW faculty and CIAS staff who can serve as project leaders and partners?	2 1 0
CAC-identified issues. Is the project responsive to concerns and needs identified by the CAC?	2 1 0
Potential impact and importance. What is the potential scale and impact of project outputs and outcomes?	2 1 0
Innovativeness. Does the project offer innovation in its conception, approach or application?	2 1 0
Resources. Does the proposed area assist CIAS in developing a resource base that sustains staff and builds faculty and citizen commitment to the center's work?	2 1 0
Project portfolio. CIAS will seek both focus and diversity in terms of project content and approaches to research, education and outreach. CIAS will ensure that it has a balanced portfolio of emerging, transitioning and mature projects.	2 1 0

Appendix I: Community Partners

16th Street Community Health Center
Agroecology Research Consortium
Aldo Leopold Foundation
Alsum Produce
American Antitrust Institute
American Farmland Trust
American Transmission Company
Angelic Organics Learning Center
Appalachian Foodshed Project
Association of Specialty Cut Flower Growers
Author, Jerry Apps
Badgerland Financial
Beloit College
Bloomingfoods Natural Foods Cooperative
Bolzano Artisan Meats
Bon Appetit Food Service Management Company
Breakthrough Fuel
Cedar Grove Cheese
Center for a Liveable Future, Johns Hopkins University
Center for Agricultural Partnerships
Center for Regional Food Systems, Michigan State University
Center for Resilient Cities
CenUSA Bioenergy
Ceres Trust
CESA Nutrition Purchasing
Chartwells-Thompson Hospitality
Chicago Local Foods
Chicago Metro Area Planning
Chicago Public Schools
Chicago State University
City of Chicago Department of Planning and Economic Development, Sustainability and Open Space Division
City of Madison, Mayor's Office
City of Madison, Common Council
Cleveland Metropolitan School District, Child Nutrition Services
Cleveland Metropolitan School District, School Garden Initiative
Co-op Partners Warehouse
Coalition of Immokalee Workers
Coloma Farms
Community Action Coalition for South Central Wisconsin, Inc
Community GroundWorks
Compeer Financial
Crossroads Resource Center
Cultivating Resilience
Culver's Restaurants
Dairy Grazing Apprenticeship
Damon S. Bourne Foundation
Dane County Farmers' Market
Dane County Food Council
Deer Run Farm
Des Moines Public Schools
Detroit Black Community Food Security Network
Detroit City Planning Commission
Detroit Public Schools Community District
Domestic Fair Trade Association
Driftless Organics
Earthworks Urban Farm
Eastern Market Corporation
Edible Madison
EPIC Systems
Equal Exchange
FairShare CSA Coalition
Family Dairies USA
Farm Beginnings Program, Illinois
Farm Beginnings Program, Minnesota
Farm Commons
Farm First Dairy Cooperative
FARM Illinois
FarmLogix
Fifth Season Cooperative
Fondy Food Center
Food System Economic Partnership
Fox Valley Technical College
Fresh Taste

Genex
Google Food + Tech
GrassWorks, Inc
Graze Restaurant
Green and Healthy Schools Wisconsin
Groundswell Communications
Growing Power
Health First Wisconsin
healthTIDE
Healthy Schools Campaign
Idaho's Bounty
Illinois Farm Bureau
Indiana Department of Agriculture
Indiana Department of Education
Indiana Department of Health
Institute for Agriculture and Trade Policy
Institutional Food Marketing Coalition
Inter-Institutional Network on Food and Agriculture Sustainability (INFAS)
Intertribal Agriculture Council
Intertribal Agriculture Council—Great Lakes
Iowa Nut Growers Association
IPM Institute of North America
Irv and Shelly's Fresh Picks
Just Local Foods
Keewaydin Farms
Kickapoo Valley Reserve
Kids Forward (formerly Wisconsin Council on Children and Families)
Labor Network for Sustainability
Lac Courte Oreilles Ojibwe College
Land Stewardship Project
Lawrence College
Leopold Center for Sustainable Agriculture, Iowa State University
Lighthouse Leadership
Linda and Gene Farley Center for Peace, Justice & Sustainability
Local Matters
Madison Food Policy Council
Madison Magazine
Madison Metropolitan School District
Madison Regional Economic Partnership
Mandaamin Institute
Marathon County Land Conservation Department
Maures Development Group
Michael Fields Agricultural Institute
Michigan Land Use Institute
Michigan State University, Department of Entomology
Mid-America Freight Coalition
Midwest Foods
Midwest Organic and Sustainable Education Services
Milwaukee 7 Food Industry Council
Milwaukee Food Council
Minneapolis Public School District
National Farm to School Network
Natural Direct
North American Council for Freight Efficiency
North Central Region IPM Center
Northeast Sustainable Agriculture Working Group
Northeast Wisconsin Technical College
Northern Nut Growers Association
Northern Plains Sustainable Agriculture Society
Northland College
OFARM
Ohio State University Extension
Ohio University
Omaha Public Schools
Oneida Nation of Wisconsin
Organic Farming Research Foundation
Organic Logistics
Organic Processing Institute
Organic Seed Alliance
Organic Valley
Pasturelands Cooperative
People's Coop
Portland State University
Potato King
Professional Dairy Producers of Wisconsin
Purple Pitchfork
Real Food Challenge
REAP Food Group

Red Tomato
Renaissance Farm
Rodale Institute
Rural Advantage
Schneider National
School Food Focus
School Nutrition Association
Seed to Kitchen Collaborative
Seven Generations Ahead
SHARE
Slaby's Veterinary Services
Small Farms Center, Washington State University
Smart Way Program, United States Environmental Protection Agency
Sno Pac
Solutions in the Land LLC
Southern Sustainable Agriculture Working Group
St. Paul Public School District
Standard Process
Sugarsnap LLC
Sustainable Development Institute, College of Menominee Nation
Testa Produce
The Eleven Federally Recognized Tribes of Wisconsin
The Food Trust
The Land Connection
The Minnesota Hazelnut Foundation
The Nature Conservancy
The Ohio State University
The Organic Center
The Parenting Place
The Savanna Institute
The Xerces Society for Invertebrate Conservation
Threshold IPM Services
Town and Country Electric
Town and Country Resource Conservation and Development, Inc
Transform Wisconsin
Transportation Research Board
Trout Unlimited
Troy Gardens
United States Department of Health & Human Services
United States Environmental Protection Agency
United States Fish and Wildlife Service
University of Minnesota, Applied Economics
University of Wisconsin - Stevens Point
University of Wisconsin - Milwaukee
Uplands Cheese Company
Upper Midwest Hazelnut Development Initiative
Urban Ecology Center
USDA, Agricultural Marketing Service
USDA, Farm Services Agency
USDA, Food and Nutrition Services
USDA, Food and Nutrition Services
USDA, National Institute of Food and Agriculture
USDA, Natural Resources Conservation Service
USDA, NRCS, Grazing Lands Conservation Initiative
USDA, Office of Community Food Systems
USDA, Sustainable Agriculture Research and Education
USDA, Sustainable Agriculture Research and Education, North Central Region
USDA, U.S. Dairy Forage Research Center
Valley Stewardship Network
Walnut Way Conservation Corp
Wayne State University
We Energies
Wescott Agri Products
West Virginia University
Whitetails Unlimited
Willy Street Co-op
Windborne Media
Wisconsin Academy of Sciences, Arts, and Letters
Wisconsin Apple Growers Association
Wisconsin Association of Agricultural Educators
Wisconsin Berry Growers Association

Wisconsin Cattlemen's Association
Wisconsin Center for Environmental Education, University of Wisconsin-Stevens Point
Wisconsin Department of Agriculture, Trade, and Consumer Protection
Wisconsin Department of Health Services
Wisconsin Department of Natural Resources
Wisconsin Department of Public Instruction
Wisconsin Farm Bureau Federation
Wisconsin Farmers Union
Wisconsin Food Hub Cooperative
Wisconsin Fresh Market Growers Association
Wisconsin Grape Growers Association
Wisconsin Jaycees
Wisconsin Local Food Network
Wisconsin Milk Marketing Board
Wisconsin Organic Marketing Association
Wisconsin Potato and Vegetable Growers Association
Wisconsin Resource Development and Conservation Councils
Wisconsin School Garden Network
Wisconsin School Nutrition Association
Wisconsin School Nutrition Purchasing Cooperative
Wisconsin Technical College System

In addition, CIAS partnered with at least 67 individual farmers in the past ten years.