

# Oral histories of three pioneers in organic agriculture research

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## Research Paper

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## Abstract

This article offers a window onto the experience of three researchers who influenced the direction of organic agriculture research from the 1980s through today. Kathleen Delate, Catherine Greene and Deborah Stinner have all contributed important work in the field, from organizing and executing research projects to analyzing the collecting hard data that provided insight into the numerous environmental and economic benefits of organic agriculture. Their stories share many similar biographical markers, from the importance of food and nature in childhood memories to trailblazing projects in the early 2000s.

## Introduction

In 1990, the Organic Food Production Act gave the USDA authority to establish standards for organic foods, which ultimately created the National Organic Program, administered by the Agricultural Marketing Service. This meant that farmers and other businesses would eventually be able to go through a government-sanctioned certification process to prove that their crops were grown and harvested organically. Much has been written by scholars about the various organic advocates whose work informed this and subsequent legislation (see, e.g., Merrigan, 1993; Gershuny, 2017; Seufert *et al.*, 2017, Mosier, 2017; Farnworth and Hutchings, 2009). Much more has been written about the philosophical, ecological and political debates that surround organic agriculture, including within this journal. Conford's *Origins of the Organic Movement* (2001) discusses the philosophies leading to the creation of organic in Europe and its eventual movement to the United States. Kuepper's (2010) article, 'A brief overview of the history and philosophy of organic agriculture', continues this discussion. The 2013 article by Youngberg and DeMuth, 'Organic agriculture in the United States: A 30-year retrospective', does an excellent job discussing the politics around evolving organic regulations and legislation from 1990 to 2010. Similarly, Heckman's (2006) 'A history of organic farming: Transitions from Sir Albert Howard's War in the Soil to USDA National Organic Program' and Reganold and Wachter's (2016) 'Organic agriculture in the twenty-first century' both provide analysis of the history of organic agriculture.

This article seeks to highlight the voices and stories of some of the women who led the charge in organic research and data analysis in the late 20th and early 21st centuries by offering the oral histories of three such scholars: Kathleen Delate, a professor of agronomy and horticulture who champions organic research at Iowa State; Catherine Greene, an economist retired from the Economic Research Service; and Deborah Stinner, a now retired research scientist in entomology, was the inaugural director of the Organic Food & Farming Education and Research (OFFER) program at The Ohio State University. These oral histories follow in the tradition of larger oral history projects focused on organic agriculture such as: 'Cultivating a Movement: An Oral History Series on Sustainable Agriculture and Organic Farming on California's Central Coast' (UC Santa Cruz); Organic and Sustainable Agriculture Collection (Wisconsin Historical Society); National Agriculture Oral History Archive (University of Minnesota); and the Oral History collection of the Northeast Organic Farmers Association (University of Massachusetts, Amherst). These scholars in this article were chosen for their lengthy careers and contributions to the field of organic agriculture research, and they are representatives of a much larger group of researchers, farmers and organizational leaders. They represent different fields and accomplishments under the larger organic agriculture research umbrella. Delate, Greene and Stinner's work have influenced the direction of social science and agroecological research, shifting the attention from the exclusively conventional agriculture focus of prior generations to make space for organic agriculture.

The experiences of these three narrators also implicitly tell the story of gender inequity in agricultural research in the late 20th and early 21st centuries (Rickson, 1997). Agriculture and higher education in America have both long been male-dominated fields. Coming of age in the late 1960s and early 1970s, these three women did benefit from second-wave feminism in terms of broader opportunities when considering career choices. They all referenced the

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progressive mindsets and encouragement of their individual families – as the interviews reveal, they all benefitted from family backgrounds in agriculture and the sciences. However, as their interviews reveal, being women in organic research meant that they were often in the minority. Working in physical and intellectual spaces dominated by men, these women helped advance the field of organic agriculture research.

Prof Kathleen Delate is the first tenured faculty member in Organic Agriculture at a land-grant university in the United States. She has received numerous academic and professional awards for her work, including the Rodale Institute's Organic Pioneer Award (2017); the American Society of Agronomy (ASA) Organic Management Systems Community award for Outstanding Achievement in Organic Research (2016) and was selected as an ASA Fellow in 2022. Dr Delate's research and work with the extension program evaluates agroecological methods for improvement of organic farming systems in Iowa. Specifically, she investigates nutrient and pest management strategies that enhance production while lowering agriculture's environmental footprint such as appropriate crop rotations, organic no-till, varietal response and integrated crop-livestock systems (see, e.g. Delate and Cambarella, 2004; Delate and Dewitt, 2004; Delate *et al.*, 2017; Silva and Delate, 2017).

Catherine Greene pioneered research on the US organic sector in the USDA's Economic Research Service from 1988 to 2020. She received the USDA Plow Honor Award for her work in 2011 and in 2019 was awarded the Organic Center Award of Excellence. Greene led the USDA's research on organic production, marketing and policy through organic commodity analysis and farm sector surveys (see, e.g. Greene, 2001; Hanson *et al.*, 2004; McBride and Greene, 2009; McBride *et al.*, 2015). She is currently a Senior Fellow with the Swette Center for Sustainable Food Systems at Arizona State University's Global Institute of Sustainability and Innovation.

Dr Deborah Stinner served as Director of The Ohio State University's OFFER program for 13 years, from 1998 to her retirement in 2011, and has published notable research on organic agriculture and agroecology (see, e.g. Stinner *et al.*, 1989; Paoletti, *et al.*, 1992; Stinner *et al.*, 1992; Stinner, 2007). In 2001, under Stinner's leadership, OFFER was one of four recipients of a \$1.8 million USDA grant for organic specific research. Although she is retired from active academic research, Stinner continues to impact organic agriculture research through her work on the board of directors of Organic Farming Research Foundation.

These three scholars' stories help us better understand the contemporary history of the organic agriculture research community in the United States. The oral histories highlight how their work advanced organic research in their respective fields of applied economics, horticulture, entomology and agriculture writ large. Their stories provide understanding of how their work contributed to the evolution of the scientific community that grew along with the burgeoning organic market. And, finally, they offer insight as to what motivated these scholars to pursue careers working on organic agriculture. The oral histories that follow are snapshots of their experiences, meant to frame the scholars' work in their own words.

## Methods

Delate, Greene and Stinner were contacted via email in February 2020, and initial phone conversations to explain the nature of the interviews were conducted in March–May 2020. Due to the

geographic distances between the author and the narrators, as well as the Covid-19 pandemic, all subsequent interviews and conversations were also conducted via phone and recorded as Mp3 files using the RecordiaPro service. The author conducted one oral history interview, averaging 90 min in length, with each narrator. The author transcribed each interview and shared the transcripts with the narrators, allowing them to make factual corrections where necessary before writing the article. The final transcripts were then used as the primary source material for this article. The recordings and transcripts are currently held in the private collection of the author and are available upon request and pending approval of the narrators.

## Oral histories

### *Kathleen Delate – the advocate*

Cabbage dishes figured prominently in Kathleen Delate's upbringing. Corned beef and cabbage from her mother's Irish side of the family, and stuffed cabbage from her father's Czechoslovakian side of the family. She grew up one of 11 children, in Wilmington, Delaware. Her father worked as a statistician for DuPont, and her mother was a nurse. The family spent every other summer visiting and working on an uncle's farm in Minnesota, where her mother was raised. Delate knew that her uncles and cousins were not using any chemicals to boost the plant growth or fight pests, so she classifies the produce as organic, going all the way back to her grandfather. Meals at home in Delaware were 'routine – a lot of hamburger and chicken', but also accentuated by fresh vegetables from the backyard garden in warmer months, apples from a local orchard or dairy products from Amish farmers on weekend trips to Lancaster, PA (Delate, 2020).

Delate knew at a young age that she wanted a future that involved farming, if not exactly being a farmer herself:

I just loved the lifestyle... you would put yourselves through all kinds of things - helping with the fence, feeding the animals, moving the animals - and then just come in for these enormous meals that you'd think you'd weigh 500 pounds afterwards but no, because you'd just worked your head off. Next thing you know you are sound asleep having the best rest, then boom – wake up in the morning first thing, get up, go back out to work. I don't know, it's just, I fell in love with that lifestyle. And everyone seemed happy, which was an important thing to note. Compared to my city friends that were grumpy all the time. [laughs]

Delate did 2 years of undergraduate coursework at Iowa State University, but felt isolated due to the lack of women in her agriculture program or working on local farms, so she transferred to the University of Florida and shifted her focus to agronomy. In Florida she supported the nascent union organization efforts with farmworkers in Homestead, Florida and also became actively involved in the university's organic community farm, which thrived and is still in operation over 40 years later.

Delate graduated in 1977 with a passion for organic farming. She stayed in Florida to work for a bit then earned a masters in horticulture, doing research on Boniato sweet potatoes. Under the direction of Prof Jeff Brecht, she helped develop a non-chemical treatment to aid in the storage of the specialty crop so it would last longer on the market. Delate recalls that by virtue of being one of Brecht's first graduate students, he treated her fairly and really encouraged her work. Seeking a different environment for her doctoral program, Delate began her doctoral education with noted agroecology professor Miguel A. Altieri at UC

Berkeley. There she started an agroforest project that intercropped trees with artichokes. She earned her PhD in 1991 and got a post-doc at the University of Hawaii, where she worked in entomology and bio-control for macadamia nut farming, and with the Sustainable Agriculture Research and Education program of the USDA:

I was a co-organizer with another faculty member of basically the US-Pacific area training in sustainable agriculture. That was fantastic - we got to go to Guam and Pohnpei and Pulao and all around the South Pacific. We would train in the day then we would SCUBA, or snorkel, or go fishing afterwards. That was just fantastic.

It was through her work with SARE that Delate made the connection that led her to Iowa State. At one of the Western region trainings, in Utah, she met Prof Jerry Dewitt who encouraged her to apply for Iowa State's new tenure-track position focused on organic research. Eighteen months later, in 1997, she started the job. With this appointment, Kathleen Delate became the first faculty member in Organic Agriculture at a land-grant university in the United States. Delate knew she was settling in for an uphill battle: 'I have three things working against me: 1. I'm female, 2. I'm in organic agriculture, and 3. I speak my mind. [laughs] Because out here, all three of those can work against you. There's a lot more women now in Ag here, but when I started 23-24 years ago I think there was one other woman Ag extension agent at that time' (2020). Delate worked closely with Prof Stanley Johnson, an agricultural economist, who was head of the Extension when she started. As Delate describes it, 'he just took me under his wing'. Delate has had opportunities to get into university administration, but prefers teaching and research.

One of Delate's first research projects at Iowa State University is now one of the longest-running comparisons of organic and conventional agriculture in the United States. She started the long-term agricultural research site (LTAR) at the ISU Neely-Kinyon Research and Demonstration farm with funding from the Leopold Center for Sustainable Agriculture at Iowa State in 1998. Modeled after Rodale's long-term farming systems trial and another trial at UC Davis, the Iowa State LTAR is a 50-year project that examines the agronomic, economic and environmental performance of organic and conventional systems through a randomized, replicated comparison of corn, soybean, oats and alfalfa crops in each system. Delate maintains a rigorous, academic research model that has yielded data and analysis of the benefits and challenges of organic agriculture. It has had a wide-reaching impact:

When I wrote the proposal, I said I wanted it to be a 50-year project and I thought they would laugh, but they said 'sounds good.' So occasionally I'll pull that out when some people that are opposed to it are saying 'when's that going to end?' I'll say, 'well, you know it was accepted as a 50-year project.' That's been really exciting. You don't think about how big it is or how important it is until something like three years ago when I was invited to Italy to present the LTAR as part of a whole consortium of long-term organic research sites around the world.

Delate was the only representative from the United States in the consortium.

As a Professor in both the Department of Agronomy and the Department of Horticulture at Iowa State University, Delate is the principal faculty member working on research and teaching sustainable and organic agriculture. Outside the classroom, she has noticed an increase in farmers interested in transitioning from

conventional to organic agriculture, or at least expanding their offerings to include some organic crops: 'You definitely find more interest in organic these days. A lot of times it does mirror exactly when the prices go down for conventional corn and soybeans. I get a steady ten calls a month from people that would like to transition to organic... there's definitely been a lot more acceptance of it' (Delate, 2020). Delate has also brought her colleagues around when it comes to their perceptions of organic agriculture and proponents of it:

I remember once when I was up for my third-year review, it was early on. This one, nice faculty member, I think he had good intentions but it didn't come off so positive. He said, 'It's okay if you talk about organic, but you can't be an advocate for organic.' I said, 'Well I'm a little confused because if I have data showing that you will make 2-3 times more with organic, I have collected this data on organic corn and soybean production compared to conventional, if I put a press release out about that is that considered advocating?' That did stop him cold. In his mind it just meant you can't act like this radical hippie from California, which a lot of people thought I was going to be when I came here evidently. [laughs]

Delate also trains USDA agents in the Extension program to educate and answer questions about organic agriculture. This is another contact point that reveals her inclusive, hands-on role in spreading organic practices in the traditionally conservative farming circles. She is doing work that would traditionally be expected of extension agents:

I'll constantly get stuff from extension agents I trained twenty years ago, asking me 'what would you recommend for this rotation for this farm that's interested in going organic?' And I don't mind it, of course, I answer them right away and then I copy them and try to loop them into the conversation. But I would have thought that at this point there would be a lot more interest from the county agents. I'm just not seeing that much.

However, whenever Delate feels herself getting frustrated, she goes to visit local organic farmers who 'are fantastic, they are just so supportive'. Her work has also been recognized by peers and the wider organic public. In 2017, Delate earned three significant awards that highlight her commitment to organic agriculture research: the Rodale Institute's Organic Pioneers award; the Iowa State University College of Agriculture & Life Sciences' Ag On-Line Teacher of the Year award; and the ASA Fellow award, which is the first time it has been awarded to an organic professor. Delate continues her research and teaching at Iowa State, where she still has a mere 27 more years left on the LTAR project.

### *Catherine Greene - the economist*

Catherine Greene's career in food research began at her grandmother's table:

I grew up in a 9<sup>th</sup> generation Appalachian family and my grandmother was the best cook and food grower [laughs] and food guru ever. Every meal that I have cooked in my entire life has been trying to recreate those magical meals at my grandmother's farmhouse. Getting fresh stuff from the garden which she grew, and getting cupboard stuff that she had on hand, including using cornmeal that she had ground herself. She'd also use ingredients her friends brought her from 'the country,' and mind you, the farm was in the country. To grow up in a food culture like that, most Americans don't have that now. Even in the Sixties when I was growing up it was unusual. It was farm to table, or literally garden to table, food preparation.

Greene points to this positive relationship with food and her family's deep roots in the Appalachian farming landscape as key influences on her desire to pursue a career in organic agriculture research later on. Both her parents worked full-time jobs, her mother as a social worker and her father taught high school math and physics as well as ran the family farm and orchard in the Hurricane area of Wise County in western Virginia.

Greene's academic path to organic agriculture research was not a direct one. She was intellectually curious and a hard worker, encouraged by her parents to pursue higher education. She attended nearby Virginia Tech, majoring in sociology and enjoying her classes but without plans for any further academic pursuits. Reading Wendell Berry's *The Unsettling of America* brought the agriculture that she had been surrounded by her whole life into focus in a new and exciting way. After her sociology degree, Greene earned a master's degree in agricultural economics at Virginia Tech under the direction of Prof Wayne Purcell. Upon graduation in 1984, she accepted a position with the USDA's Economic Research Service (ERS) in the Natural Resource and Economics division of the Land Economics branch. One of her big projects was research on urban fringe agriculture and farming, which led directly to work on organic agriculture in the fruit and vegetable production for cities.

Greene moved to the Markets and Trade division in 1987, where she began finding and writing about data on exotic fruits and vegetables. She asked to include organically grown produce as well, which ERS was happy to cover. There was stakeholder interest in this information, and Greene routinely published a price series on organic price premiums for certain fruits and vegetables. Her project grew as consumer and producer interest in organic produce grew:

I did a bigger article, collaborated on some articles on organic pest management and on organic retailing with some outside researchers for our Vegetable Market Report, in addition to the routine price reporting. Then I got data from California's certified organic farmers to look at the change in farm size for a five-year period, it might have been between 1985 and 1990. I looked at the change in certified acreage over that period of entities certified by CCOF. Basically, it was just a straight line up! Even in the eighties. Farm size was growing for certified organic production. I published that article in our flagship publication at the time, *Agricultural Outlook* magazine, and a year or two later I became the economics editor of the *Agricultural Outlook* magazine.

Greene describes her editorial tenure at *Agricultural Outlook* as some of the most rewarding, and exhausting, work of her career. Over the course of several years, she expanded the content focus to include organic agriculture, the intersection of natural resources and agriculture, and the rural economy.

In the early 1990s, ERS went through an agency-wide re-organization and Greene moved to the Vegetable Analysis branch in the Specialty Crops division within Commodities Economics. She deeply enjoyed this work, laughing as she recalled that 'it was a fun job, it was where I started tracking organic production and prices with the flimsiest of data!' (Greene, 2020). One of the primary sources for her articles in *The Vegetables and Specialties Outlook* Report was data from a project at the Los Angeles Terminal Market. This USDA-funded project began in the 1980s on a very rudimentary level: '(I)t was sustainable agriculture research, an education grant that funded a woman who was working from home part-time to go to the L.A. Terminal Market. I think she just went once a week and collected data on

several hundred fruits and vegetables and herbs. The L.A. Terminal Market had organic and conventional products on offer' (Greene, 2020).

Noting the importance of sustained, reliable data collection on organic agriculture markets, Greene then pitched a project to her new boss to start a new project with a broader focus. She argued that 'even if the ERS decides not to publish this data in the next few years, this is going to be our only national data on what the production sector looks like. This is clutch analysis... the regulatory agency is going to want it' (Greene, 2020). Her boss said yes, greenlighting what Greene considers one of her most important career projects:

I had decided to start this primary data collection project on organic acreage and livestock. I started that project in '97, I guess, I started it right about the same time that USDA published the first proposed rule. I called every certifier in the country to explain the project, that I was not part of the National Organic Program. I wasn't part of the rule that had just gone out, I was trying to do the same thing that they were doing, to support organic farming. Certifiers were very cooperative. Not all the certifiers were equally enthusiastic about pulling together these super-detailed data sets I was asking for, but I was able to get the support from my agency to do maximum hand holding. The National Ag Statistical Service in USDA, I would call up state statisticians and they would help me out, in some cases coming themselves and in other cases having certifiers meet me at certifier's offices to collect data in places where they didn't have the staff to put together the data themselves. The data that they had collected, they couldn't get it into an electronic format, so we had a lot of data recording from written records, non-electronic records. That, I think, is still our longest data set on the organic production sector looks like, or looked like at the time. What the adoption levels were starting at that point and what the adoption levels were in different parts of the country and different states, different commodity sectors.

The data on farms and acreage by state, collected over time, have been used by businesses across the country and as a result, Greene notes that 'we've seen a lot of investment in the organic production sector' (2020). For many years, this was the only source of data covering organic production in the US (USDA, 2013).

Greene collaborated with NASS for the duration of her ERS career, expanding the Agricultural Resource Management Survey (ARMS) to both include and oversample organic producers. She and Bill McBride, now retired from ERS, analyzed the ARMS data which captured both organic and non-organic agricultural production costs. They published side-by-side estimates of production costs and returns of all the crop and livestock specialties that the section has the oversamples for, and in 2015 published a report noting that, for the most part, the price premiums farmers receive make organic production more profitable than conventional production (McBride *et al.*, 2015).

Greene also credits her colleagues at ERS with helping highlight and institutionalize the importance of organic research and data collection. She referred to Carolyn Dimitri's work creating a huge research node on the marketing side of organic agriculture, as essential but also languishing after Dimitri's departure in 2010 and the agency's uncertain future under different administrations and fiscal austerity measures. Greene herself retired from ERS on 29 September 2019 after the Trump administration announced that the majority of economists in the ERS would be relocated to Kansas City. She worked part-time for an additional 2 years in an attempt to salvage the organic projects. Greene is currently a freelance consultant and, since March 2021, Senior Fellow

with the Swette Center for Sustainable Food Systems at Arizona State University.

### Deborah Stinner – the agroecologist

Deborah Hall Stinner loves to turn over rocks. She spent her childhood first in Ames, Iowa and then in suburban Knoxville, Tennessee, and enjoyed escaping to nearby woods to explore nature. Her father, Dr O. Glenn Hall, taught and eventually served as Dean of Agriculture at the University of Tennessee, and her mother was an active member of several civic and religious groups. In conjunction with intellectual conversations around the dinner table every night, her parents encouraged Stinner's early love of the natural world. Over the course of several summers, Stinner's paternal grandmother taught her all about gardening and weeding in the hills of Kentucky. Her maternal grandfather was a farmer, who shifted from market vegetables into greenhouse and open-air flower production when she was a young child. As she recalls, 'It was very beautiful, but I can remember the week or so I spent one summer with Mamaw and Papaw, and helping Papaw in the greenhouse – the biggest memory I have is the smell of pesticides' (Stinner, 2020).

Stinner's academic and career path was not a straight line. Her father encouraged her to consider a degree and career in the burgeoning field of food science, but she wasn't interested. As an undergraduate at the University of Tennessee, she completed a biology B.A. in 3 years so she could join her hiking buddies as a summer ranger and tour guide in McKinley National Park (now Denali National Park). Upon her return from Alaska, she began graduate studies in the world-renowned ecology program at the University of Georgia. It was at the University of Georgia that she began working closely with a fellow graduate student: her future husband and professional partner, Ben Stinner.

Stinner believes that 'I can't tell my story without sharing his story' (2020). Ben earned his degree in the emerging subfield of agroecology in 1982, and had a background in entomology and soil ecology. Deb knew that their shared interests would unite them no matter the location:

There's wonderful areas of ecology and many different fields but I was definitely drawn towards the ecosystem way of thinking. Ben was too and that was one of our connections. The strongest connection we had was the love of nature and the land. Our brains too, we were systems thinkers. Intellectually we had a very exciting and fertile kind of intellectual relationship.

With a PhD in hand, and her husband starting an academic career at the Ohio Agriculture Research and Development Center (OARDC), Deb wanted to find a path forward that would allow her to pursue her own intellectual interests and care for their young family. She co-authored grants and assisted with his research and efforts to get National Science Foundation money in support of systems-focused agricultural projects.

When Ben got tenure in the late 1980s, Deb recalls a dramatic shift in their work: 'Once he got tenure, we basically busted loose! We started working in the arena of sustainable agriculture. We started making connections with farmers, particularly through our local nonprofit organization, the Ohio Ecological Food and Farming Association (OEFFA)' (2020). The Stinners felt that they could now advance the sustainable and agroecological research that had drawn them together in the first place. When grant funding for Low Input Sustainable Agriculture (LISA)

became available, the Stinners successfully applied. Deb views that grant as the beginning of their core research and long-term professional relationships with two OEFFA farmers:

One of them was Rex Spray who was nationally known, he's no longer with us, he's won national awards. He and his brother Glenn had a farm that is still going, I believe it's about 400 acres in Knox County, just south of us. They were certified organic. We worked with a couple of other farmers, Harold Hartsler and his son right here in Wayne County, who were not certified organic but which Kathleen [Delate] calls the "PNO Farmers" - Pretty Near Organic. Basically following the practices but not going through the hassle. They were dairy farmers. We really connected with these people, these men and their families. That was a real turning point for us.

It was through this experiment that the Stinners realized the best plan would be to 'let the farmers do the farming' and then observe the site rather than try to have academic researchers apply treatments. As Deb recalled, they were 'looking at whole farms, how these farms function ecologically and economically. We got very interested in that even though we weren't economists' (2020). Deb Stinner still became very hands-on with all data collection, from soil samples and manure estimations to the management and economic information. The LISA program rebranded as Sustainable Agriculture Research and Education (SARE), and the Stinner team received another grant to continue their work.

In 1996, the then OARDC Director, Dr Tom Payne, established SEEDS: The Research Enhancement Competitive program at OSU, supported by an appropriation from the Ohio General Assembly. The new programs had a specific focus on the agroecology and organic work that the Stinners had long supported. Deb Stinner recalls the discussion when Payne announced the new programs:

He set up three interdisciplinary programs with \$50,000 a year for five years. One of them was on agroecosystems. One was organic. The other one was on composting. There was a lot of argument about "why does it have to be organic? Can't it just be sustainable?" At that point sustainable was okay, but organic was a bridge too far. [laughs] I can still remember the meeting where Tom said no, it has to be organic. Without him standing that ground, it wouldn't have happened.

Of these three programs, the agroecology grant led to the establishment of an Agroecology Management Program in 1999, of which Ben Stinner was named the first W.K. Kellogg Foundation-endowed Chair. Dean Payne appointed Deb Stinner to lead the program on organic agriculture, and she spent the next 2 years coordinating statewide meetings with organic farmers and the OEFFA team to determine what they thought the most essential first project would be. The answer was clear: 'We needed a transition experiment. That's what farmers wanted us to do, they wanted Ohio State to establish something. We needed land that we could certify, research land on the station, and a transition experiment' (Stinner, 2020). Ohio State allocated 40 acres on the back half of the research station land, and in 1998 Stinner assumed the position of Director of the OFFER program.

One of the challenges that Stinner notes from the early years of the transition project is that OFFER did not have the funding to support a full-time Farm Manager. Although she was Director of the Center, she was never appointed as full-time faculty, but instead as a Research Scientist. So although she wrote grants to request funding for graduate students, farm management support and technical support, it was never consistent. Stinner often

stepped up herself when seasonal, time-sensitive tasks needed to be done:

I remember, it was time to plant. We had to get this experiment underway. I remember waking up early one morning thinking, 'What am I going to do? What am I going to do?' Because I wasn't able to get somebody to help, and I remember thinking, by golly – I'm going to learn how to drive a tractor! [laughs] And so I went to one of the farm management guys that worked for a different department and I said, 'Paul, can you teach me?' And he said, 'By golly Deb, I will!' And so I did it... We have pictures of those days with me on the tractor. I absolutely sucked at plowing, but I got to be pretty good at discing

Before her retirement in 2011, Stinner convinced the university administration to fully fund a farm manager for OFFER.

Stinner describes her style as 'networking leadership', and from the beginning, the young faculty and students working at OFFER understood the importance of collaboration. She applied for large grants in partnership with other schools starting serious organic research programs. Working together, OFFER, Iowa State, North Carolina State and Tufts were all awarded \$1.8 million in 2001, the first big federal grant for organic specific research by the USDA Initiative for Future Agriculture and Food Systems. Stinner took lead and credits the network of partners and supporters that she had already established through OFFER for the huge success of their research:

OFRF [Organic Farming Research Foundation] was our nonprofit partner. We were all involved, Kathleen [Delate], Nancy [Creamer], then there were other researchers at Ohio State in plant pathology that we involved. There were horticultural scientists from Ohio State that had money for projects, the soil crop transition projects I was leading at Ohio State, that was all part of this huge grant. That was the kickoff! This is just as the federal organic standards were being established across the land. Everything was happening, it was so exciting – it was just like finally, finally! Our time in the sun. Of course there was still backlash, but what can people say? Thanks to the OFRF and other organizations, the organic research extension initiative, OREI, and the organic transitions program, federal granting programs were established.

Stinner continued to lead the soil crop transition experiment at OFFER, while also networking and promoting organic research across educational and nonprofit platforms, trying to bring in new researchers from more traditional backgrounds and open minds to Ohio State. As she notes, 'I had a dual role as leader of the program. I really saw my responsibility to help bring others in to build our knowledge base. That was my whole thing – bringing scientific understanding and knowledge to organic farming' (Stinner, 2020).

Stinner blazed this path and widened the networks of organic research for many years, continuing in her role as OFFER Director after Ben's tragic death in a car accident in 2004. She retired from Ohio State in 2011, but remains active in organic agriculture professional organizations. She is currently on the board of directors of OFRF and the Ben Stinner Endowment Advisory Committee at Ohio State.

## Conclusion

Kathleen Delate, Catherine Greene and Deborah Stinner have all made major contributions to organic agriculture research. Descended from farmers, they have applied academic rigor and expanded our broader academic, political and consumer perspectives on the viability of organic agriculture. While it is a critical

piece of legislation, the 1990 Organic Food Production Act, and subsequent National Organic Program, does not exist in a vacuum. The organic movement existed for decades before our narrators were born, and it is their work, along with that of other dedicated, intellectual and hard-working scientists, researchers, farmers and advocates, that helped make a place for organics alongside conventional agriculture everywhere from the fields to the supermarket shelves. As women, they faced additional hurdles and bias throughout their academic and professional careers. Agriculture and academia in mid-late 20th century America both exemplified the constructs of patriarchy: men held power and excluded women from it. Delate, Greene and Stinner all faced discrimination based on gender at different points in their studies and careers. However, they all persisted and moved organic agriculture research forward. They helped create a more robust and diverse community, and provided the quantitative data that proves the viability and vitality of the organic agriculture practices. Their stories attest to their strength of character and intellect, as well as their belief in the importance of studying, promoting and preserving organic agriculture.

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