



# Technological Tensions In Urban Food Sovereignty: Insights from Detroit's Farmers

Jared Lee Katzman\*  
School of Information  
University of Michigan  
Ann Arbor, USA  
apricity@umich.edu

Aarti Israni  
School of Information  
University of Michigan  
Ann Arbor, USA  
aisrani@umich.edu

Samartha Okyne  
School of Information  
University of Michigan  
Ann Arbor, USA  
sokyne@umich.edu

Holden Winton  
University of Michigan  
Ann Arbor, USA  
hwinton@umich.edu

Tawanna R Dillahunt  
School of Information  
University of Michigan  
Ann Arbor, USA  
tdillahu@umich.edu

## Abstract

Food insecurity in Detroit reflects a long history of food apartheid which has led to systemic inequities in access to affordable, nutritious, and culturally relevant food. In response, Detroit has become a leader in the food sovereignty movement, emphasizing community autonomy, justice, and sustainability in developing a local food system. This study investigates the role of technology in supporting food sovereignty initiatives, focusing on urban farmers and growers in Detroit. Through three months of fieldwork and three participatory design workshops, we explored the opportunities and challenges farmers perceive in using technology to address the city's systemic food insecurity. Our findings highlight tensions where technology, rather than empowering communities, may inadvertently reinforce exploitative dynamics that remove a community's capacity for self-determination and autonomy. We contribute empirical insights and actionable principles for designing sustainable food systems that align with the values of the food sovereignty movement.

## CCS Concepts

• **Human-centered computing** → **Empirical studies in collaborative and social computing.**

## Keywords

sustainable HCI, food systems, urban farming, food sovereignty, food insecurity

### ACM Reference Format:

Jared Lee Katzman, Aarti Israni, Samartha Okyne, Holden Winton, and Tawanna R Dillahunt. 2025. Technological Tensions In Urban Food Sovereignty: Insights from Detroit's Farmers. In *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI EA '25)*, April 26–May 01, 2025, Yokohama, Japan. ACM, New York, NY, USA, 8 pages. <https://doi.org/10.1145/3706599.3719828>

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

CHI EA '25, Yokohama, Japan

© 2025 Copyright held by the owner/author(s).

ACM ISBN 979-8-4007-1395-8/25/04

<https://doi.org/10.1145/3706599.3719828>

## 1 Introduction

Despite being the world's wealthiest nation and leading food exporter, the United States (US) faces widespread food insecurity. Food insecurity is deeply racialized, disproportionately affecting Black and Hispanic households at more than twice the rate of white households [46]. In response, researchers and technology developers have aimed to address food insecurity by improving the logistical efficiency of food access, such as creating platforms that connect people with charitable food providers [14]. Such approaches may temporarily ease food access challenges, but they overlook deeper inequalities and cultural dimensions that underpin food insecurity, such as land dispossession, racialized disinvestment, and the corporate control over food systems [27, 41, 52]. Instead, food justice activists recommend that communities need more than food access—they need *food sovereignty*, in which a community regains autonomy over its food systems (the production, preparation, distribution, and consumption of food) [36]. As defined at the first Nyéléni Forum in 2007 (the World Forum for Food Sovereignty), "*food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems*" [42]. Food sovereignty is not just about how food is grown; it reimagines the food system itself. It calls for a shift toward a democratic economy based on social solidarity, where communities, not corporations, define how food is produced, distributed, and consumed.

Detroit presents a unique context for designing sustainable food systems that address racial inequities in food access. The city's history of food apartheid, racialized disinvestment, and systemic inequities has shaped Detroit's food system, leaving many residents without access to affordable, culturally relevant, and healthy food [8, 24, 47, 53]. Moreover, the COVID-19 pandemic further exposed the fragility of Detroit's food system, in which supply chain disruptions disproportionately impacted Black communities [25, 34]. To address these challenges, over the last few decades, Detroit has become a leader in the food sovereignty movement, where local urban farms, community gardens, at-home growers, and grassroots organizations support an urban food system focused on justice, resilience, and community autonomy [8, 51, 54]. In the face of increased demand for local, resilient food sources, we conducted a

qualitative design study to explore what role technology could play, if any, in addressing food insecurity in Detroit’s urban agriculture ecosystem. Throughout our research, we de-centered discourses that pose technology as the inevitable solution to food inequities; instead, our goal was to open up discussions about whether and how HCI researchers could support Detroit’s food sovereignty community in current efforts to address food insecurity [22]. The first author started with three months of exploratory field research, volunteering at over 12 farms across Detroit’s metropolitan area. Building on these insights, the research team then hosted three 2-hour design workshops to explore the following research questions:

- (1) **RQ1:** What opportunities and challenges do urban farmers in Detroit’s food sovereignty movement identify in using technology to address food insecurity in their communities?
- (2) **RQ2:** How can sociotechnical systems be designed to align with the values and practices of Detroit’s food sovereignty movement?

Our research contributes to a body of HCI literature that examines the tensions between technology, food systems, sustainability, and economic equality. The overlapping fields of food- and sustainable-HCI have highlighted the importance of centering food sovereignty to address the underlying social inequities that lead to unsustainability when designing food systems [13, 41]. However, previous work has demonstrated that current design approaches are in tension with many of the sustainability practices and values of local food growers [3, 15, 16, 30, 37, 40]. To contribute to discussions on technology’s role in designing sustainable food systems, we adopt a grounded theory approach to center the voices and experiences of food producers in Detroit’s food sovereignty movement. Our findings show that farmers in Detroit would be open to digital technologies that help them improve their growing operations and increase multi-stakeholder collaboration within the food system. However, participants highlighted that technology developers must be careful not to reproduce the systemic exploitation of capitalism that food sovereignty aims to address [27]. From our preliminary analysis, we highlight such issues as enabling competition among farmers, limiting self-determination through economic dependency, and minimizing community autonomy in decision-making. We provide evidence of the nuanced challenges faced by urban farmers in Detroit who balance ecological and social sustainability with the needs for economic growth [6]. In future work, we plan to build on theories of post-growth [48] and decolonial design [29] to highlight pathways for how HCI can realign their efforts to support the autonomy and self-determination of marginalized communities in creating more sustainable, food sovereignty systems that address the systemic power imbalances that create food insecurity and racial inequities in the first place.

## 2 Background on Detroit’s Growing Food Sovereignty Movement

The COVID-19 pandemic demonstrated the fragility of Detroit’s food system. According to a 2020 survey, almost 50% of Detroiters lost their jobs, making it challenging for families to afford household food budgets [12]. School closures left 50,000 students without access to affordable school meals [25]. The food crisis was so bad that the Michigan National Guard was called to help deliver food

[4]. When grocery store shelves lay barren for weeks, people saw how easily food chains could become disrupted [18]. In response, many Michiganders attempted to regain control over their food systems by connecting with local farmers and planting home gardens [34]. Many Detroiters got connected to the city’s long history of using urban agriculture to address food insecurity crises [10, 43]. However, focusing on individual approaches to food resiliency was insufficient. Since food inequities are deeply tied to political and economic power structures, food activists in Detroit began advocating that the industrial approach to food production must itself be transformed [34]. As a result, the pandemic spurred a shift from short-term food security efforts toward food sovereignty, emphasizing community control over food systems rather than reliance on conventional food access programs.

This trend follows from movements in the environmental and food justice space. For instance, The United States Department of Agriculture (USDA) defines whether a household is food secure according to how well they can consistently access (e.g., find, buy, and consume) adequate food [45]. Food security programs often emphasize access and outcomes over systemic change—if people are fed, then the program is deemed successful. However, food justice advocates across the globe have moved to frameworks that stress the importance of “food sovereignty” as a long-term solution in which people have a right to healthy and culturally appropriate food that is also “produced through ecologically sound and sustainable methods” [42]. Because food holds deep cultural and spiritual significance, communities must have the autonomy to shape their food systems based on local knowledge and values. Within food sovereignty, access to food is considered a human right. Food sovereignty calls for decommodifying food systems, ensuring that profit-driven models do not leave people hungry. This implies a shift in which people develop and govern their own food systems in ways that are culturally, socially, nutritionally, and politically appropriate.

Detroit has emerged as a leader in the food sovereignty movement, propped by grassroots organizations and non-profits that build on a legacy of urban agriculture and Black political organizing around food, land, and economic justice [8, 43]. Detroit’s urban agriculture ecosystem encompasses diverse efforts to combat food insecurity. Some are at-home gardeners who supplement their diets with fresh vegetables [31], while others manage community gardens that provide food to neighbors and schools [55]. Non-profit farms and gardens that cultivate and share tons of free produce manually [1, 21], and production-level farms offer affordable payment options for those in need [9].

Given its growth, Detroit’s urban agriculture movement has become a symbol of Detroit’s potential for economic revitalization [28, 49]. For instance, Detroit Future City’s 2021 report on implementing Detroit’s Strategic Plan suggested that the city become a leader in food production by “taking advantage of Detroit’s resident urban farming movement” to become a leader in the “design and production of urban farming tools” [11, p.73, p.80]. Reflecting this vision, Detroit’s growing start-up scene has introduced technical innovations across Detroit’s urban food lifecycle, such as vertical farming for food production [33], the use of drones and electrical vehicles for food distribution [2, 19], and the use of automated robots to collect food waste to turn into compost [20]. These initiatives

align with a broader "digital revolution" in agriculture, where developers promote data-driven farming as a solution to global food crises [17, 50]. However, corporate visions of sustainable urban agriculture often diverge from those of local, urban food growers, who remain largely excluded from shaping the future of farming technology [23], and local community activists have begun to push back. Understanding how Detroit's food sovereignty movement views technology is thus crucial for centering small-scale food producers in the design of sustainable sociotechnical food systems [26].

### 3 Methodology

Our study comprised of two phases: three months of exploratory field research, including 24 informal stakeholder interviews, followed by three participatory design workshops with 25 urban farmers and growers in the food sovereignty movement. We began our field research by mapping out Detroit's food ecosystem to identify organizations and initiatives that could help guide our research questions related to how technology could support equitable food distribution. Initial findings suggested strong local interest in supporting local, community-based food sources. To explore this further, the first author visited farms to understand how they were using technology, if at all, in addressing food insecurity and to identify potential areas of support. This brought us to Detroit's flourishing food sovereignty movement, in which many key organizations are addressing food insecurity in Detroit's majority Black population. As our understanding of Detroit's food history deepened, we prioritized working with farmers in the food sovereignty movement, recognizing that the current food system disproportionately marginalizes and exploits farmers, particularly Black farmers [5, 22].

#### 3.1 Participatory Design Workshops

We hosted three separate 2-hour Zoom workshops, each attended by a different group of Detroit farmers. Each participant attended only one workshop. We paid participants \$100 (via virtual gift card or check) for attending the workshop and compensated them an additional \$50 if they filled out a pre-workshop packet. Compensation was set based on farmers' recommendations, acknowledging that the workshops occurred during the demanding harvest season. The workshops examined the role of technology in advancing food sovereignty, identifying both opportunities and challenges. We collected participant workbooks, recorded audio and video from each session, and used an AI transcription service (Rev.com) for professional transcription. Following each session, the facilitation team debriefed, refining research questions and workshop design to enhance data collection.

We recruited farmers through word of mouth, our university community engagement network, and farmer emailing lists. In total, 51 individuals completed our recruitment survey, but due to budget and timing constraints, we invited the first 27 who identified as either a farmer, a grower, and/or a food producer, and who mentioned explicit involvement in Detroit's food sovereignty movement. We hosted three workshops on Zoom with a total of 25 participants (1 participant did not provide demographic data). Overall, 68% (N=17) of participants identified as Black or African American, with participants also identifying as Native American (N=2), Middle Eastern

(N=1), Hispanic (N=2), and White (N=3). Half of our participants identified as women (N = 12), 5 participants identified as men, and more than a quarter (N=7) identified as non-binary, agender, genderqueer, or two-spirit. We had participants with diverse farming backgrounds, including those managing or organizing for-profit and non-profit farms, tending neighborhood community gardens, or cultivating personal plots of land. In terms of experience, about 12% (N=3) had 20+ years of experience farming, about 25% (N=6) had 10-20 years, about 40% (N=10) had 5-10 years, and about 20% (N=5) had less than 5 years of experience. Nearly half of the participants farmed on less than one acre, while the largest farm—Detroit's largest—spanned approximately 7 acres. About 80% of our participants grew vegetables (N=20), about half grew fruit (N=13), and others also grew flowers (N=9), herbs (N=8), native plants (N=3), nuts (N=2), and medicinal plants (N=1). We provide the breakdown of participants according to their pseudonyms in the Appendix A.

**3.1.1 Workshop Packets.** We created workshop packets with three activities designed to elicit feedback on whether technology could support food sovereignty in Detroit and help farmers feed more people in their communities. First, we asked participants to describe what food sovereignty looks like to them. Second, they read through two technical scenarios and answered six questions about each scenario. Each scenario included questions on participants' current technology use, potential benefits, and the possible impacts of proposed technological platforms for food sovereignty. For example, participants reflected on their use (or non-use) of technology in harvest planning, yield prediction, tracking harvested crops, food distribution, and resource management (e.g., water usage and waste production). Finally, participants engaged with scenarios designed to prompt reflection on the broader societal implications of technological interventions. These scenarios were informed by concerns raised by farmers during our fieldwork discussions on technology.

**3.1.2 Facilitated Discussion Groups.** Each workshop followed a three-part structure aligned with the workbook: (1) defining food sovereignty, (2) evaluating how technical scenarios align with food sovereignty values, and (3) addressing potential impacts of technology on food sovereignty. First, participants reviewed synthesized themes from collected workbook responses, confirming or refining them to better reflect their understanding of food sovereignty. In the second part, participants discussed their views on technical scenarios inspired by our fieldwork findings. These scenarios included: (1) a speculative digital platform for cooperative produce aggregation and distribution, (2) a speculative data dashboard for the City of Detroit to track urban farming sustainability metrics, (3) a real-world electric vehicle pilot for a mobile food market, (4) a real-world autonomous vehicle pilot providing free rides for elderly and disabled residents to food markets, and (5) a real-world autonomous robot system for composting food waste. Participants selected which pilot to discuss based on their interests, and in breakout groups, they analyzed whether each scenario aligned with food sovereignty principles and proposed modifications. In the final segment, participants examined potential negative impacts of technology on food sovereignty and strategized ways to mitigate them. We facilitated discussion on harm prevention strategies and mechanisms for holding technology developers accountable for potential negative impacts.

### 3.2 Analysis

We analyzed our field notes, workbook responses, and workshop transcripts using a grounded-theoretical approach. We sought to understand how urban farmers perceive and interact with technology across Detroit's food system. We also aimed to amplify community voices, which are frequently left out of conversations about technology development. As outsiders to Detroit's urban farming community, we prioritized co-creating insights with participants, respecting their cultural values and elevating their expertise in technology design and food systems.

We developed an initial codebook from an iterative thematic analysis of field notes and workbook responses. To generate broader insights, we examined how shared values around food sovereignty shaped farmers' perspectives on different technology applications. Our analysis distilled the data into three high-level themes: (1) food sovereignty values, (2) opportunities for technical systems, including challenges and community assets; and (3) implications for technology design, such as concerns, tensions, risks, and recommendations.

Over four weeks, we refined our codebook through iterative team coding exercises, analyzing both workshop transcripts and workbook responses. We segmented the 18 workshop transcripts, along with Zoom chat logs, facilitator notes, and poll results, based on the three workshop activities. Within the same activity, breakout groups were coded separately from group-wide discussions. We then coded each of the 20 workbooks (containing 6 sections) as a single unit. The five authors were randomly assigned workshop activities and workbooks, excluding breakout rooms they facilitated to enhance analysis reliability. This process generated new in vivo codes, which largely aligned with our existing themes. Moreover, most thematic codes were corroborated across both workshop transcripts and workbook responses.

## 4 Opportunities and Challenges for Technology to Address Food Insecurity in Detroit (RQ1)

### 4.1 Augment Traditional Growing Practices, Don't Replace Them

Across the workshops and workbooks, participants highlighted ways technology could help farmers produce more food, use fewer resources, and support local food-insecure communities. Participants varied in their use of technology for farming. Many use pen and paper to record harvest yields, while the majority of participants use digital spreadsheets. A few participants used advanced farm management software, such as Tend or Veggie Compass. Still, in the workbooks, most participants saw potential in leveraging data on growing conditions and environmental patterns to scale production, enhance sustainability, and minimize food waste. For example, as a participant, Kaden, put it in their workbook, *"technology's role...is to help us function with more ease and allow better production...without becoming overly efficient, thus creating more waste and over-usage."* Discussions in the first workshop emphasized the value of physical farming tools in enhancing farmers' work. Across multiple sessions, participants expressed enthusiasm for technologies, such as robotic assistants, that could ease the more labor-intensive aspects of farming.

Despite recognizing potential benefits, most participants remained skeptical about new technologies, citing concerns over their impact on farming practices. They assessed new technologies on whether they enhanced or displaced traditional and cultural farming practices. In one workshop, Samir distinguished between technology and automation, questioning whether a tool enhances a farmer's abilities or simply automates a *"well-paying job that someone could support their family with."* Across multiple workshops, participants expressed concerns that new technologies could undermine the cultural and economic sustainability of other farmers who opt for traditional methods. Andre emphasized this concern in one workshop stating:

*Farming is a farmers' identity, and everyone is used to cultivating traditionally. Food tech...can lead to different types of practices and traditions being cast aside, impacting cultural heritage...Farmers will have an advantage over the those that implore traditional means.*

Farming, and agroecological methods specifically, are about reconnecting people to the land and their surrounding communities [3]. Because technology shapes what practices a farmer can use to make a living, participants remained wary of tools that risk alienating farmers from nature and their communities.

### 4.2 Support Collaboration and Address Individualism Across Detroit's Food System

A key strength of the food sovereignty movement is its capacity to foster collaboration among food producers, distributors, and consumers to combat food insecurity. When we asked participants in the workbooks what kind of data they would find useful, participants discussed how a platform could facilitate farmer coordination and collaboration. A data platform for growers could enable *"each farmer [to] communicate with each other to see what is grown, not grown, and what is needed. This also includes listening to the community about what they would like to buy"* (Latrice, Workbook). Several participants emphasized that understanding food demand could help farmers *"tailor outreach efforts, enhance collaboration among food providers, and implement data-driven strategies to improve food equity throughout the city"* (Khalil, Workbook).

However, participants cautioned that systemic barriers often discourage economic collaboration, making cooperative efforts challenging. They noted that Western cultural individualism, reinforced by both technology developers and farmers, can push food systems toward competition rather than cooperation. Participants warned that if a cooperative farm platform ranks farms based on factors like quality or reliability, farmers might *"skew their numbers"* to gain a competitive edge (Desiree, Workbook). To navigate these challenges, participants underscored the need for *"decolonized education...before we all get together and start to do what we think is good for the people. Do we even understand the worldviews that we're operating in or the tools which we're operating in or just the concepts that we use?"* (Quincy, Workshop). Decolonial education fosters trust and shared values, emphasizing *"collaboration vs. competition and hospitality vs. selfishness"* (Quincy, Workshop). They saw personal and community-level decolonial practices as essential to addressing systemic inequities in food system design.

## 5 Aligning Sociotechnical Design with Values of The Food Sovereignty Movement (RQ2)

### 5.1 Maintain A Community's Ability for Self-Determination

Participants emphasized that systems should support economic self-determination, rather than make communities dependent on technical interventions. They discussed self-determination primarily in terms of empowering communities with the knowledge and resources to develop, direct, and maintain their own food system programs. For example, during a workshop discussion on using autonomous vehicles to provide free grocery store rides to disadvantaged residents, James explained that a program would better align with food sovereignty if:

*[developers] were teaching... Detroiters how to build their own autonomous vehicle that can then deliver food through the neighborhood, and [Detroiters] were also able to work in order to get that food out there... and maybe even expand the program and direct the program.*

However, if a community must engage with proprietary systems, where James noted—*"how the technology works..is being kept from the individuals who are being affected by the program"*—there should be a plan to transfer control to the community should the developers discontinue support, whether due to funding shortages or shifting priorities. This would protect a community from becoming too economically dependent on developers who may not be in solidarity with their interests.

### 5.2 Support Autonomy of Individual Farmers

Participants stressed that for a sociotechnical system to support food sovereignty, it must also uphold farmers' autonomy. Some participants expressed concerns that large-scale platforms could infringe on individual sovereignty when a platform's needs conflict with those of a single farmer. As Andre noted in their workbook, if a grower's cooperative platform prioritizes efficiency over local needs:

*Tensions might emerge if farmers feel their practices or values are compromised, or if the cooperative's policies do not align with the unique approaches of individual farms. Balancing collective goals with respect for individual farm practices is crucial to avoid these conflicts.*

Several participants warned against designing platforms that could exert control over farmers without their consent. This includes concerns about how such platforms might define productivity metrics (e.g., produce quality and quantity) and how the platform uses those metrics to dictate farming decisions, potentially overriding farmers' autonomy in managing their own growing spaces.

## 6 Discussion

Current debates in sustainable HCI question whether modern technology practices can meaningfully support community activists in growing sustainable economic systems around food [16, 38, 39]. Our findings contribute a nuanced perspective by examining technology's role, if any, in addressing food insecurity within Detroit's food

sovereignty movement. While urban farmers were open to using technology to augment traditional practices and foster economic collaboration, they were deeply skeptical of technical solutions that failed to address systemic inequities within local and global food systems. Consistent with prior work, our findings demonstrate that technology systems designed without considering community values risk perpetuating exploitation [23, 41, 44]. Participants raised concerns about platforms that prioritize scalability over solidarity, profit over equity, and efficiency over autonomy, warning that such systems could undermine the core principles of food sovereignty. If technology developers cannot address these concerns, then they should reconsider whether designing a new technical system is the right approach. Highlighting a shift in fundamental values and purpose of technology, these findings underscore the need for HCI efforts that redefine design through non-capitalist imaginaries [48].

Furthermore, our findings highlighted a critical tension in the design of sustainable food systems: how to encourage economic collaboration between farmers and stakeholders without compromising individual autonomy. Previous research has shown how solidarity between consumers and farms sustains local agriculture projects [15, 37]. However, participants in our study emphasized that systemic pressures, such as individualism and market competition, challenge social solidarity within urban agriculture networks [6]. These findings align with recent theoretical developments in sustainable HCI, which call for moving beyond individual sustainability approaches toward tackling systemic inequities [35, 41, 48]. For example, while participants acknowledged that data-sharing platforms could improve coordination farmer coordination, they also feared that such systems might impose rigid metrics or operational requirements that conflict with farmers' values. Participants also warned against integrating automation in ways that extract profit at the expense of someone's livelihood. They wanted to avoid replicating the same capitalist and colonial logics that had contributed to the existing inequities in food systems.

As our participants suggest, addressing these concerns requires rethinking how technology developments, and their surrounding political economies, affect a community's capacity for self-determination. For instance, when designing technology products to support local food systems, developers must ensure that communities have the agency to identify their own challenges and solutions. Rather than fostering dependence on external technology platforms, researchers and designers should co-develop solutions with communities from the onset, ensuring that residents are trained to build, manage, and maintain these systems autonomously. Many of these systems may not be conventionally "technical" but may instead focus on strengthening existing social infrastructures, such as providing technical training to preexisting food sovereignty programs.

## 7 Next Steps & Conclusion

This study contributes to the growing body of research in sustainable HCI and food sovereignty by centering the experiences of Detroit's urban farmers. Through a grounded theory analysis of three months of fieldwork and participatory design workshops, we uncover critical tensions between values of the food sovereignty movement and the development of new technology systems. Our

findings highlight the importance of economic solidarity, community autonomy, and social justice in designing sociotechnical food systems. By integrating the perspectives of urban farmers, this research highlights HCI's potential to address systemic inequities in food systems, as long as design practices uphold equity, resilience, and sustainability—core values of the food sovereignty movement. Future work will explore emerging themes around alternative models for developing sociotechnical systems, particularly those that emphasize cooperative governance structures. We aim to apply our findings to post-growth HCI frameworks [48], for instance by using the concept of conviviality to explore how sociotechnical systems can foster cooperation without reducing autonomy [7, 32]. This approach enables HCI to support local solutions while contributing to global solidarity movements that promote just and sustainable technological ecologies. Ultimately, HCI can contribute to transformative change by developing technologies that honor the social, cultural, and ecological dimensions of food sovereignty.

## Acknowledgments

This work was supported by the Agriculture and Food Research Initiative (grant no. 2021-67022-33447, project accession no.1024822) from the United States Department of Agriculture National Institute of Food and Agriculture. We thank members of the Social Innovation Team for providing early feedback, the FINS Notre Dame team for providing feedback on initial pilot workshops, and our reviewers for their feedback on this work. We thank the Edward Ginsberg Center at the University of Michigan, Dr. shakara tyler, and Rosie DeSantis for feedback and support with recruitment. Lastly, we thank all of the workshop participants, as well as all the farmers, growers, and Detroit residents from our initial fieldwork who shaped this research and taught us about the history of Detroit's farming community and the healing power of the land.

## References

- [1] Biba Adams. 2019. In Detroit, A New Type of Agricultural Neighborhood Has Emerged.
- [2] Alyssa Strickland. 2023. Michigan Central, MDOT Launch Advanced Aerial Innovation Region in Detroit to Accelerate Commercial Drone Development. <https://www.michigan.gov/mdot/news-outreach/pressreleases/2023/10/25/mi-central-mdot-launch-advanced-aerial-innovation-region-in-det-to-accelerate-commercial-drone-dev>.
- [3] Heidi Biggs, Tejaswini Joshi, Ries Murphy, Jeffrey Bardzell, and Shaowen Bardzell. 2021. Alternatives to Agrilogistics: Designing for Ecological Thinking. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW2 (Oct. 2021), 413:1–413:31. <https://doi.org/10.1145/3479557>
- [4] Ryan Boldrey. 2020. Michigan National Guard Expands Food Bank Assistance amid Coronavirus Crisis. *mlive* (April 2020).
- [5] Sasha Costanza-Chock. [n. d.]. *Design Justice: Community-Led Practices to Build the Worlds We Need*. MIT Press. [googlebooks:m4LPDwAAQBAJ](https://books.google.com/books?id=m4LPDwAAQBAJ)
- [6] Sarita Daftary-Steel, Hank Herrera, and Christine Porter. 2015. The Unattainable Trifecta of Urban Agriculture. *Journal of Agriculture, Food Systems, and Community Development* 6 (Dec. 2015), 19–32. <https://doi.org/10.5304/jafscd.2015.061.014>
- [7] Giacomo D'Alisa, Federico Demaria, and Giorgos Kallis (Eds.). 2015. *Degrowth: A Vocabulary for a New Era*. Routledge, Abingdon, Oxon New York, N.Y. <https://doi.org/10.4324/9780203796146>
- [8] Alexander de Rege. 2024. *Shrinking City, Growing City: Food Sovereignty in Shrinking Cities*. M.S. Pratt Institute, United States – New York.
- [9] Detroit Black Community Food Sovereignty Network (DBCFSN). [n. d.]. D-Town Farm. <https://www.dbcfsn.org/dtownfarm>.
- [10] Detroit Food & Fitness Collaborative. 2014. *Economic Analysis of Detroit's Food System*. Technical Report.
- [11] Detroit Future City. 2021. *Detroit Future City: Detroit Strategic Framework Plan*. Technical Report.
- [12] Detroit Metropolitan Area Community Survey (DMAACS). 2020. *COVID Survey 2, Wave 8*. Technical Report.
- [13] Olivia Doggett, Kelly Bronson, and Robert Soden. 2023. HCI Research on Agriculture: Competing Sociotechnical Imaginaries, Definitions, and Opportunities. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. ACM, Hamburg Germany, 1–24. <https://doi.org/10.1145/3544548.3581081>
- [14] Lynn Dombrowski, Jed R. Brubaker, Sen H. Hirano, Melissa Mazmanian, and Gillian R. Hayes. 2013. It Takes a Network to Get Dinner: Designing Location-Based Systems to Address Local Food Needs. In *Proceedings of the 2013 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp '13)*. Association for Computing Machinery, New York, NY, USA, 519–528. <https://doi.org/10.1145/2493432.2493493>
- [15] Philip Engelbutzeder, Yannick Bollmann, Katie Berns, Marvin Landwehr, Franka Schäfer, Dave Randall, and Volker Wulf. 2023. (Re-)Distributional Food Justice: Negotiating Conflicting Views of Fairness within a Local Grassroots Community. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. ACM, Hamburg Germany, 1–16. <https://doi.org/10.1145/3544548.3581527>
- [16] Arturo Escobar. 2018. *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press.
- [17] EY Global. 2021. Digital Agriculture: Enough to Feed a Rapidly Growing World? [https://www.ey.com/en\\_gl/insights/digital/digital-agriculture-data-solutions](https://www.ey.com/en_gl/insights/digital/digital-agriculture-data-solutions).
- [18] Federal Trade Commission. 2024. *Feeding America in a Time of Crisis*. Technical Report. Federal Trade Commission.
- [19] Anna Fifelski. 2023. Detroit Startup Brings Fresh Produce to Low-Income Housing Complex. <https://www.detroitnews.com/story/business/2023/08/07/detroit-startup-brings-fresh-produce-to-low-income-housing-complex/70541881007/>.
- [20] MJ Galbraith. 2024. Pilot Program to Test Autonomous Robots' Potential for Picking up Food Waste for Compost in Corktown. <https://www.modeldmedia.com/devnews/Food-waste-pilot.aspx>.
- [21] Greta Guest. 2022. From Garden to Growth: This Urban Garden Cultivates Young Leaders. <https://news.umich.edu/from-garden-to-growth-this-urban-garden-cultivates-young-leaders/>.
- [22] Christina Harrington, Sheena Erete, and Anne Marie Piper. 2019. Deconstructing Community-Based Collaborative Design: Towards More Equitable Participatory Design Engagements. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (Nov. 2019), 1–25. <https://doi.org/10.1145/3359318>
- [23] Sara Heitlinger, Rachel Clarke, Adrian K. Clear, Simran Chopra, and Özge Dilaver. 2019. Co-Creating "Smart" Sustainable Food Futures with Urban Food Growers. In *Proceedings of the 9th International Conference on Communities & Technologies - Transforming Communities*. ACM, Vienna Austria, 114–120. <https://doi.org/10.1145/3328320.3328399>
- [24] Alex B. Hill. 2017. Critical Inquiry into Detroit's "Food Desert" Metaphor. *Food and Foodways* 25, 3 (July 2017), 228–246. <https://doi.org/10.1080/07409710.2017.1348112>
- [25] Alex B. Hill and Amy Kuras. 2022. *Detroit Food Metrics Report 2020 (with 2021 Update)*. Technical Report. Detroit Food Policy Council.
- [26] Tad Hirsch, Phoebe Sengers, Eli Blevis, Richard Beckwith, and Tapan Parikh. 2010. Making Food, Producing Sustainability. In *CHI '10 Extended Abstracts on Human Factors in Computing Systems*. ACM, Atlanta Georgia USA, 3147–3150. <https://doi.org/10.1145/1753846.1753939>
- [27] Eric Holt-Giménez. 2017. *A Foodie's Guide to Capitalism*. NYU Press.
- [28] P. J. Huffstutter. 2009. Investors See Farms as Way to Grow Detroit. <https://www.latimes.com/archives/la-xpm-2009-dec-27-la-na-detroit-farms27-2009dec27-story.html>.
- [29] Lilly Irani, Janet Vertesi, Paul Dourish, Kavita Philip, and Rebecca E. Grinter. 2010. Postcolonial Computing: A Lens on Design and Development. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*. Association for Computing Machinery, New York, NY, USA, 1311–1320. <https://doi.org/10.1145/1753326.1753522>
- [30] Keesa V Johnson and Ron Eglash. 2021. Redesigning On-line Food Consumption to Enhance Racial and Social Inclusion Through Generative Production Networks. *New Design Ideas* 5, Special Issue on Generative Justice in Design (2021).
- [31] Keep Growing Detroit. 2023. *2023 Annual Report*. Technical Report. Keep Growing Detroit.
- [32] Christian Kerschner, Petra Wächter, Linda Nierling, and Melf-Hinrich Ehlers. 2018. Degrowth and Technology: Towards Feasible, Viable, Appropriate and Convivial Imaginaries. *Journal of Cleaner Production* 197 (Oct. 2018), 1619–1636. <https://doi.org/10.1016/j.jclepro.2018.07.147>
- [33] R. J. King. 2023. Bedrock Explores Development of Vertical Farming Operation in Detroit.
- [34] Sarah King, Amy McFarland, and Jody Vogelzang. 2022. Food Sovereignty and Sustainability Mid-Pandemic: How Michigan's Experience of Covid-19 Highlights Chasms in the Food System. *Agriculture and Human Values* 39, 2 (June 2022), 827–838. <https://doi.org/10.1007/s10460-021-10270-6>
- [35] Bran Knowles, Oliver Bates, and Maria Håkansson. 2018. This Changes Sustainable HCI. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, Montreal QC Canada, 1–12. <https://doi.org/10.1145/3173574.3174045>
- [36] La Via Campesina. 2003. Food Sovereignty | Explained. <https://viacampesina.org/en/2003/01/food-sovereignty/>.

- [37] Marvin Landwehr, Philip Engelbutzeder, and Volker Wulf. 2021. Community Supported Agriculture: The Concept of Solidarity in Mitigating Between Harvests and Needs. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. Association for Computing Machinery, New York, NY, USA, 1–13. <https://doi.org/10.1145/3411764.3445268>
- [38] Bonnie Nardi. 2019. Design in the Age of Climate Change. *She Ji: The Journal of Design, Economics, and Innovation* 5, 1 (March 2019), 5–14. <https://doi.org/10.1016/j.sheji.2019.01.001>
- [39] Bonnie Nardi, Bill Tomlinson, Donald J. Patterson, Jay Chen, Daniel Pargman, Barath Raghavan, and Birgit Penzenstadler. 2018. Computing within Limits. *Commun. ACM* 61, 10 (Sept. 2018), 86–93. <https://doi.org/10.1145/3183582>
- [40] Juliet Norton, Birgit Penzenstadler, and Bill Tomlinson. 2019. Implications of Grassroots Sustainable Agriculture Community Values on the Design of Information Systems. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (Nov. 2019), 1–22. <https://doi.org/10.1145/3359136>
- [41] Juliet Norton, Ankita Raturi, Bonnie Nardi, Sebastian Prost, Samantha McDonald, Daniel Pargman, Oliver Bates, Maria Normark, Bill Tomlinson, Nico Herbig, and Lynn Dombrowski. 2017. A Grand Challenge for HCI: Food + Sustainability. *Interactions* 24, 6 (Oct. 2017), 50–55. <https://doi.org/10.1145/3137095>
- [42] Nyéléni. 27 February 2007. *Declaration of Nyéléni*. Technical Report.
- [43] Kameshwari Pothukuchi. 2015. Five Decades of Community Food Planning in Detroit: City and Grassroots, Growth and Equity. *Journal of Planning Education and Research* 35, 4 (Dec. 2015), 419–434. <https://doi.org/10.1177/0739456X15586630>
- [44] Sebastian Prost, Vasilis Vlachokyriakos, Jane Midgley, Graeme Heron, Kahina Meziant, and Clara Crivellaro. 2019. Infrastructuring Food Democracy: The Formation of a Local Food Hub in the Context of Socio-Economic Deprivation. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (Nov. 2019), 1–27. <https://doi.org/10.1145/3359159>
- [45] Matthew P. Rabbitt, Laura J. Hales, and Madeline Reed-Jones. 2025. Food Security in the U.S. - Definitions of Food Security. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security/>
- [46] Matthew P Rabbitt, Madeline Reed-Jones, Laura J Hales, and Michael P. Burke. 2024. *Household Food Security in the United States in 2023*. Technical Report ERR-337. U.S. Department of Agriculture, Economic Research Service.
- [47] Sammy Schuck. 2022. Detroit's Status as 'Food Desert' Challenged as More Produce Options Emerge. <https://news.jrn.msu.edu/2022/01/detroits-status-as-food-desert-challenged-as-more-produce-options-emerge/>.
- [48] Vishal Sharma, Neha Kumar, and Bonnie Nardi. 2024. Post-Growth Human-Computer Interaction. *ACM Transactions on Computer-Human Interaction* 31, 1 (Feb. 2024), 1–37. <https://doi.org/10.1145/3624981>
- [49] Simon Wilson. 2010. Can Farming Save Detroit? <https://moneyweek.com/18286/can-farming-save-detroit-47302>.
- [50] Rosemary Steup, Lynn Dombrowski, and Norman Makoto Su. 2019. Feeding the World with Data: Visions of Data-Driven Farming. In *Proceedings of the 2019 on Designing Interactive Systems Conference (DIS '19)*. Association for Computing Machinery, New York, NY, USA, 1503–1515. <https://doi.org/10.1145/3322276.3322382>
- [51] James Tolleson. 2015. The Revolution Will Be Community Grown: Food Justice in the Urban Agriculture Movement of Detroit. *Southern Anthropological Society Proceedings* 43, 1 (2015), 45–84. <https://doi.org/10.56702/MPMC7908/saspro4301.3>
- [52] shakara tyler. 2021. History of Black Agrarianism in Detroit and Beyond.
- [53] Calley Wang. 2022. Is Detroit a Food Desert?
- [54] Monica M. White. 2011. Environmental Reviews & Case Studies: D-Town Farm: African American Resistance to Food Insecurity and the Transformation of Detroit. *Environmental Practice* 13, 4 (Dec. 2011), 406–417. <https://doi.org/10.1017/S1466046611000408>
- [55] Richard Wooten. 2013. Detroit's New Urban Agriculture Is a Good Start: Part I. [https://www.canr.msu.edu/news/detroits\\_new\\_urban\\_agriculture\\_is\\_a\\_good\\_start\\_part\\_i](https://www.canr.msu.edu/news/detroits_new_urban_agriculture_is_a_good_start_part_i).

personal demographics. We had 24 out of the 25 participants fill out the form.

## A Participant Demographics

We recruited farmers through word of mouth, connecting with our university's community engagement center and asking farmers to share our call with others in their networks. Interested individuals were asked to fill out a Google Form to determine whether fit any of our selection criteria of: (a) being a farmer, grower, or gardener in Detroit; (b) having a mission related to food sovereignty; or (c) have participated in previous technology pilots. After the workshop, participants then filled out a Google survey to provide feedback on the workshop, details about their farming background, and other

**Table 1: Participant Information**

ID	Pseudonym	Age	Gender	Race	Experience	Farm Size	What is Grown
P1	Aaliyah	39	Woman	Black	<5 years	<1 acre	Vegetables, herbs, flowers
P2	Andre	28	Man	Black	5-10 years	1-2 acres	Vegetables, fruit
P3	Avery	49	Agender	Black	20+ years	<1 acre	Vegetables and fruits
P4	Bria	50	Woman	Black	20+ years	<1 acre	Vegetables, nuts, berries, herbs
P5	Chante	41	Woman	Black	10-20 years	1-2 acres	Vegetables
P6	Charmaine	42	Woman	Black	<5 years	<1 acre	Herbs
P7	Cameron	31	Non-binary	Black	<5 years	<1 acre	Flowers, textiles, herbs, veggies
P8	Desiree	35	Woman	Black	5-10 years	1-2 acres	Vegetables, herbs, fruit, nuts
P9	Erica	42	Woman	Black	5-10 years	<1 acre	Native plants, flowers, veggies
P10	James	34	Man	White	10-20 years	<1 acre	Vegetables
P11	Julian	32	Man, Non-binary, Transgender	White	<5 years	<1 acre	Vegetables, fruit, flowers
P12	Kaden	25	Gender non-conforming	Black	5-10 years	2-4 acres	Vegetables, herbs, fruit
P13	Kaya	31	Non-binary, Two-Spirit	Native American	10-20 years	<1 acre	Native food, medicinal crops
P14	Khalil	28	Man	Black	5-10 years	5+ acres	Vegetables, fruit
P15	Latrice	33	Woman	Black	5-10 years	<1 acre	Vegetables, herbs
P16	Maya	56	Woman	Black, Native American	20+ years	<1 acre	Vegetables, fruit
P17	Nia	52	Woman	Black	5-10 years	<1 acre	Vegetables
P18	Paloma	43	Genderqueer	Latinx	10-20 years	1-2 acres	Vegetables, herbs, cut flowers
P19	Parker	34	Non-binary, Transgender	White	5-10 years	<1 acre	Fruits, veggies, herbs, flowers
P20	Pilar	44	Woman	White, Latinx	5-10 years	1-2 acres	Vegetables and some fruit
P21	Quincy	-	-	-	-	5+ acres	Vegetables, fruits
P22	Rochelle	50	Woman	Black	<5 years	<1 acre	Vegetables, herbs, flowers
P23	Samir	30	Man	Middle Eastern	10-20 years	2-4 acres	Flowers
P24	Tiana	62	Woman	Black	10-20 years	<1 acre	Fruit, Flowers
P25	Tariq	38	Man	Black	5-10 years	<1 acre	Vegetables, fruit