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Assessing the Community Partnerships Present at The University of Vermont's Horticulture Research and Education Center

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Abstract: Agroecology can be defined as a countermovement against unsustainable practices in our current food system. It is a globally recognized approach to sustainable food systems that is being institutionalized through policies in multiple countries and global spaces, such as the FAO. Although significant efforts are being made to implement agroecological principles into concrete policy, there is limited and insufficient support for these movements. Through a close look at the University of Vermont's Horticulture Research and Education Center (HREC), this project aimed to show the influence that the farm has on the individuals that interact with the space, the institution it's connected to, and the greater Burlington community. Questions are posed about how the farm relates to agroecology and how an agroecological-minded farm could have potential benefits to its surrounding community, in terms of food security, innovation, and quality of life. Additionally, an ArcGIS Story Map was created for HREC, outlining the community connections and impacts that the farm holds. Hopefully, the Story Map will then be used to promote further conversations with the community partners of HREC to assess the strength and direction of HREC's interactions with the local Burlington community in the future.

Background

Agroecology is comprised of scientific studies of the ecological benefits of different agricultural practices, the usage of such practices, and a social movement centered around empowering agricultural producers and systemic transformation of power in agricultural decision-making (Migliorini & Wezel, 2017). Agroecology is based on and described through a set of principles that guide decision-making and optimal behavior away from industrial agricultural practices. The principles are meant to be interpreted based on context rather than being a prescriptive- one size fits all- method (Caswell et al., 2021). For the purpose of this work, I focused on and pulled ideas from the principles generated by CIDSE (2018). These principles have been divided into four dimensions: economic, political, environmental, and socio-cultural. The diversity of these dimensions highlights how agroecology aims to transform the way in which agriculture fits into our society as a whole, altering how we relate to food, sell food, and produce food. Additionally, it shows how agricultural practices affect many different aspects of our daily lives. The movement of Agroecology works well with a research method known as Participatory Action Research (PAR), which is a framework that emphasizes joint ownership of projects and leveling out the playing field between researchers and participants. PAR was relied upon heavily throughout the project to ensure that everyone involved was being heard and had an equal say.

During the summer of 2021, I was accepted to the Agroecology Extension (AX) fellowship, which consisted of a cohort of students engaged in experiential learning around applied agroecology. It was through this program that I was able to join onto a research project, along with another AX fellow Avi Bauer, led by Martha Caswell and Nell Carpenter, which was conducted over the summer and fall of 2021, at the University of Vermont's Horticulture Research and Education Center (HREC). Established in1952, this 97-acre property is located in

South Burlington tucked behind a cluster of car dealerships right off of route 7 and is the primary location for many research projects, applied education, and outreach activities. The current farm directors and program coordinators, including Terence Bradshaw, Rachel Stievater, Jay Hardesty, Brian Vaughn, and Tanamá Veras oversee the programs on the farm. As a part of the Plant and Biological Facilities (PABF) Department, HREC reports directly to the College of Agriculture and Life Sciences (CALS) dean's office for funding, staffing, programming, etc.

This work was part of a larger research initiative exploring the existence/relevance of urban and peri-urban agroecology in an around Burlington, Vermont. The team was following a methodology first used in 2019 at the Intervale Center by a doctoral student from York University, María Alicia Juncos-Gautier (the methodology is discussed later in the literature review section). The goal of the project conducted by Martha Caswell, Nell Carpenter, Avi Bauer, and me at HREC was to interview farmers, and community members at HREC to explore the ways in which individuals and systems interact with the space and determine whether those interactions/relationships were representative of agroecology. The research is grounded in agroecological principles to gain a better understanding of how urban agroecosystems can be designed to support urban farms and gardens. Farmers and community members closely associated with the farm were asked to identify which agroecological principles they saw put into practice on the farm, and where, to assess the potential benefits of these agroecological principles to both human and ecological health. The broader project sought to examine similar experiences with five organizations in Burlington to get a well-rounded perspective on agroecology in and around the city.

After all of the interviews were conducted, responses showed an absence of almost every principle within the political dimension, including *Aims to put control of seeds, land and*

territories in the hands of people; Encourages new forms of decentralized, collective, participatory governance of food systems; requires supportive public policies and investments; and, *Encourages stronger participation of food producers/consumers in decision making*. Participants mentioned the lack of funding and restrictions by the university administration as possible causes for the gap in the political dimension. In the spring of 2022, Avi Bauer published an undergraduate thesis that explored this gap in the political dimension at HREC. The thesis analyses HREC's performance within the political dimension and explores how the farm's connection to a university institution could impact this dimension specifically (Bauer, 2022)

Building off the work Avi and I conducted together and the work that Avi did individually during his thesis, I wanted to dive deeper into the community engagement aspect of the farm, which is equally impacted by politics, but interacts with a wider range of the agroecological principles as well. As a University farm that is not primarily acting for its own profit, there is much opportunity for HREC to experiment, educate, and interact with the greater Burlington community. The results from the interviews prove that HREC already does impact the community in so many unique ways; however, the reality is that the farm feels constricted by finances, resources, and time, making them unable to further participate in partnerships, unique research projects, political activities, etc. My goal in this thesis was to explore this "grey area," and analyze current partnerships at HREC, current challenges, and pose questions to hopefully start a conversation around this topic. I wanted to explore how all the agroecological principles and dimensions were reflected in HREC's community connections and how the values of the movement could potentially benefit those connections in the future. Do farmers and community partners of the farm feel that the CIDSE agroecological principles are reflected in the ways in which HREC interacts with the Burlington Community? What are some strengths of the farm in

terms of community interactions? What are some areas that need more support? Community engagement and activism are such important parts of the agroecological movement, so if HREC and the University of Vermont are ever to further their engagement with the movement, more steps must be taken to reach out.

In this project, I also aimed to create a network map, using the ArcGIS Story Map software, and identifying actors that are currently influencing HREC, and are being influenced by HREC. The map shows how HREC connects with the Burlington community by specifying community partnerships that the farm maintains. The map serves as a visual tool to communicate things the farm is doing well, while also highlighting aspects of the farm that could be better supported by the administration. The Story Map also aligns with the goals of the PAR framework by providing a useful product to the farm that will help them with website development and possible advertising to the community in the future.

This study did not only create a comprehensive map of influencers and resources for directors at HREC but is also a concrete piece of evidence to show how the university can further support the farm. Supporting the HREC and its community, in turn, supports the broader Burlington community. The Story Map provides the farm itself with tangible results from their work that they can then add to their websites to promote agroecology or utilize to teach their farmers and community members about their sustainable practices.

Literature review

Sustainable agricultural movements are gaining attention as many individuals and communities search for alternatives to our current modern industrial agricultural system that have a lesser ecological impact. One movement that has gained particular international attention is agroecology. Agroecology includes the scientific study of the ecological benefits of agricultural practices, the use of specific practices, and a social movement centered around empowering agricultural producers and a systemic transformation of power in agricultural decision-making (Migliorini & Wezel, 2017). Agroecology is based on and described through a set of principles that guide decision-making and direction, as an alternative to industrial agricultural practices (Caswell et al., 2021). For the purposes of this work, I will be focusing on and pulling ideas from the principles generated by CIDSE (2018). The principles in their four dimensions highlight the holistic perspective that agroecology, as a movement, takes. The diversity in the principles reflects the diversity in agricultural needs, practices, and communities alike.

Diving deeper into agroecology and its history, I learned that one common misperception is that it is solely an ecologically and environmentally minded practice. Although those two ideas are essential to the movement, agroecology focuses on many more aspects of food production, such as the economics of producing and consuming food, the politics of food production, and the community effects of farming. Additionally, as food production becomes increasingly political in this day and age, the practices of agroecology "move from understanding the role of nature in agricultural production…to also achieving an equitable distribution of resources, dismantling asymmetrical power relations and building food democracy" (Simon-Rojo, 2019, p.1).

At its roots, the movement of agroecology began as a primarily ecologically focused approach. However, eventually, agroecologists came to understand that, to apply to many different communities around the world, principles and practices needed to be flexible and adaptable (Caswell, 2021). In 2015, the Nyéléni declaration was formed, transforming the definition of agroecology into a more politicized movement that emphasized small farms, social movements, cooperation of rural and urban populations, and responsible production and consumption (Caswell, 2021). The Nyéléni declaration was an important step in moving agroecology out of a solely scientific conversation and into a broader conversation about the impact of global food systems. Following the declaration, and based on an extensive literature review, in 2018 a catholic social justice organization called CIDSE published a set of fifteen principles outlining the concept of agroecology and serving as a guide for further action within the movement. Additionally, also in 2018, the Food & Agriculture Organization of the United Nations (FAO) developed a definition that stated: "agroecology is an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food systems" (FAO, 2018). Combining all of these different interpretations, definitions, and principles, we end up with a holistic movement aiming for equity within farming and food production, food access, and environmental impacts. For the purpose of this project, the values and goals of the agroecological movement are clearly reflected within the CIDSE principles.

The Coopération Internationale pour le développement et la Solidarité, also known as CIDSE, is an international network made up of primarily Catholic social justice organizations that are "working for transformational change to end poverty and inequalities, challenging systemic injustice, inequity, destruction of nature and promoting just and environmentally

sustainable alternatives" (CIDSE). The organization is comprised of eighteen member organizations across Europe and North America but is active and applicable worldwide. Although religiously aligned with Catholicism, CIDSE does not aim to spread the influence of religion around the world and the religious tie is not the most important and impactful part of the organization. Religion aside, CIDSE's goals and mission play a strong role in the advancement of the agroecological movement. Their focus on catalyzing reforms with "transformative potential" shows the radical side of the organization aiming to create a completely new system. Some of the reforms identified in their mission include: "to move away from fossil fuels and extractives, to limit global temperature rise below 1.5 degrees, to promote the right to food and agroecology, to regulate business to enforce human rights, to secure sustainable finance and fair wealth distribution, to support local communities to speak for themselves, to confront gender inequalities, and to enable sustainable ways of living" (CIDSE). CIDSE reflects the values of the agroecological movement and is working to meet the same ends. In 2018 the organization created a set of fifteen principles to serve as a guide for agroecological work (*Figure 1*). The principles are divided into four dimensions, *economic; political; environmental;* and *socio-cultural*. Although the effectiveness of these principles, and principles frameworks in general, has not been significantly tested in the past, they serve as a launching point for discussions surrounding agroecology.

Figure 1. CIDSE agroecological principles divided into four categories.

Agroecological research often goes hand in hand with a process known as Participatory Action Research (PAR), which can be defined as an "[a]pproach to collaborative inquiry in which researcher and non-researcher partners (e.g. farmers or community organizations) engage in an iterative process of research, reflection and action, with the goal of addressing mutually

identified issues of interest" (Caswell et al., 2021). The framework values joint ownership of projects, clear communication, collective action, humility, trust, and accountability (Méndez et al., 2018). PAR aims to reject historical power dynamics within research, democratize the process and foster collaboration among people in the research community (Caswell et al., 2021; Méndez et al., 2018). PAR is so often used within the context of agroecological work because of their shared values including those of different types of knowledge systems, paying attention to local contexts, and acting at multiple spatial and socio-political scales (Méndez et al., 2018). Additionally, since agroecology itself is grounded in a participatory approach, the movement calls for participation in all aspects of life between rural and urban, producer and consumer, human and nature, farmer to farmer, and community members in general.

While agroecology has roots in rural contexts, a growing body of literature is assessing how agroecology can be present in urban contexts. One of the challenges to agroecology currently is the large distance that exists between producers and consumers. This is also reflected in the distinction between urban and rural environments (Tornaghi & Dehaene, 2020). Urban environments have often been seen as a place of extraction, capitalism, and opportunity, although lacking natural environments and agricultural production. On the other hand, rural environments have historically been viewed as spaces filled with an abundance of green spaces, while also facing problems of passivity, poverty, and underdevelopment (Tornaghi & Dehaene, 2020). These distinctions have contributed to divide the two environments and prevented communication and cooperation. Agroecology emphasizes looking at food systems from a holistic point of view, including both urban and rural food systems. It is expected that Agroecology principles will apply to both rural and urban environments. Additionally, agroecology could help to encourage urban farmers and growers to "think beyond their garden

plots and consider broader issues such as citizens' access to food within urban municipalities and the governance of food systems" (Siegner, 2019, p.581). Further integrating agroecology into urban environments could aid in bridging the gap between urban and rural production of food products and could help to make our food systems more cohesive and cooperative.

Urban and peri-urban agroecology (UPAE), the name of the UVM project that I collaborated with, examines the application of agroecological principles to urban areas where farming and gardening are present, and considers how agroecology can support these urban environments to transition to ecologically sound and social just food systems (Tornaghi & Dehaene, 2020). Given the increasing population in urban areas and the impacts of food transportation on greenhouse gas emissions, urban agriculture is an important growing sector that is gaining attention in many circles (Gomez Villarino et al., 2021). As urban agriculture grows, the application of agroecology to urban contexts is essential to create sustainable and just methods of food production and distribution in urban areas.

Urban agroecology is present in many communities across the world, as evidenced in the many case studies that have been published within the past couple of decades. These case studies exemplify how having an urban context influences how agroecology is present in a particular area and how agroecological principles can be applied to these communities. For example, Carvalho and Bógus (2020) discuss how gender impacts the success of agroecological producers in São Paulo, Brazil. while Kesselman et al. (2021) highlight how dietary norms can affect the impact of agroecological production with a focus on the diets and racial and political history of South Africa; Nemes (2019) provides a more generalized assessment of urban agroecology in Campo Grande, Brazil; Siegner et al.'s (2019) analysis of 35 farms in the East Bay area of California highlights the differences between urban agriculture and urban agroecology and

highlight the barriers to urban agroecology that exist in that region; Simon-Rojo (2019) uses design principles to assess how resources can be connected to the areas of most need in Bellas Vistas, Madrid, Spain and connects agroecology to both food sovereignty and urban planning. Each of these case studies provides a rich description of agroecology in the areas that they are considering and engages with multiple theoretical frameworks that are being used by those studying agroecology.

Taking a closer look at the urban agriculture scene of São Paulo, Brazil, one can recognize the role agroecology has played and continues to play in fighting, for not only food sovereignty and environmental justice, but also in fighting for diversity within the field and gender equality within agriculture. São Paulo is home to about 12.5 million inhabitants, making it the fourth largest city in the world. However, it is also one of the most inequitable cities in terms of income, quality of living, and gender equality. A case study conducted by Carvalho and Bógus from 2018-2020 dives deep into the lives of women in the area, who have been leading and fighting for an agroecological movement within the city. The researchers worked mainly with a group named “Women and Agroecology”, which aimed to reach women from the outer regions of São Paulo that are “inhabited by the lowest socioeconomic status members of the city, lack public services, and face high levels of violence and social exclusion—particularly experienced by women of color” (Carvalho and Bógus. 2020). Through workshops guided by the agroecological principles, the research team was able to work with the group and its members to foster discussion about the needs, wants, and challenges of the women who are leading the urban agriculture movement in São Paulo.

One of the most important pieces of information cited by this study is the application of feminism to agroecology because the two movements combined go “beyond the instrumental

view of food production, as it proposes practices and reflections that contribute to women's struggles for rights, autonomy, and emancipation from cultural and historical oppression" (Carvalho and Bógus. 2020). This agroecological initiative in São Paulo has provided many women with new working opportunities, improved access to produce and fresh foods, and an overall sense of autonomy over their lives. Agroecology has created and continues to create respect and safety for women through the creation of strong communities surrounding agriculture and food access. Additionally, "since many participants were survivors of violence of all kinds, their participation in the workshops enabled the enunciation of an agroecological popular feminist identity, which is fostered by a sense of belonging to a reference group, and the recognition of their work in urban agriculture as a means of emancipation from oppressive and excluding social structures" (Carvalho and Bógus. 2020). Challenges of political backing and funding aside, urban agroecology is empowering to many communities that have historically been disempowered.

Kesselman et al., conducted research in Johannesburg, South Africa during the spring of 2021, a message is presented of how agroecological benefits can be enhanced by examining food consumption patterns and adjusting production and distribution accordingly. A common assumption made in the agriculture field is that if we change what we produce and sell, then people will automatically change what they purchase and consume. However, for urban populations, that assumption is false and comes from a place of extreme privilege. Historically, many populations, especially communities of color, have been separated from the land, which has changed food traditions and eating habits, and has made fresh foods and produce less accessible to those populations. Kesselman cites this phenomenon as the "nutrition transition," a situation occurring mostly in the global south in which "urban populations shift from more

traditional rural diets, which are often labor-intensive, to faster, processed foods that fit into busy urban lifestyles" (Kesselman et al. 2021). This lifestyle not only leads to hunger and nutritionally related illnesses, but dietary habits in urban areas also have a large impact on the implication of agroecology itself, including: "low levels of vegetable consumption; limited diversity of vegetables (known and consumed); and lack of interest in indigenous vegetables. All three translate into limited interest in, and markets for, the types of produce grown in agroecological systems" (Kesselman et al. 2021). Additionally, some ecological practices are even affected by diet habits, such as "the potential for companion planting—which is important for soil health and natural pest control" (Kesselman et al. 2021). The study showed that the diet habits in Johannesburg affected companion cropping by limiting its potential due to the lack of interest in diverse vegetables and herbs. Additionally, "as a result of the repetitive planting of the same few crops, the soil health was depleted, leading to increased vulnerability of the crops to pests and diseases" (Kesselman et al. 2021). This work is important because it emphasizes that Agroecology cannot be molded into a prescriptive one-size-fits-all movement. Situations must be assessed on a case-by-case basis to create the best solutions that ameliorate food security while also meeting the needs of the farmers, the community members, and the land equally. The work also shows the importance of differentiating urban versus rural agricultural environments, as the two spaces have very different strengths and weaknesses when it comes to food systems, taking the "nutrition transition" as a purely urban phenomenon.

Agroecology, in general, is not a new movement; however, it is gaining traction at a rapid speed today, especially in urban and peri-urban environments. As the climate crisis worsens, the need for alternative ways of producing and consuming food is evident and the agroecological movement provides a sustainable and equitable alternative. Looking at Vermont in particular,

there is an interesting dynamic and connection between Vermonters and farming that goes back many centuries. This attachment may have hindered sustainable agricultural policy in the past, but Vermonters' passion for farming culture could also be used to push farming forward and create something new that we never would have expected- something that is both good for people and our environment.

Moving to a case study closer to home in Burlington, Vermont, the Intervale Center (IC) is a unique and vital component of the Burlington food system. Established in 1988, the IC is a non-profit public trust of 340 acres of farmland, trails, and open space along the Winooski River. These cultivated areas include eight farms that are currently leasing land from the Intervale: Intervale Community Farm (ICF); Pitchfork Farm; Digger's Mirth Collective Farm; Half Pint Farm; Hallow Herbs Farm; June Farm; Sugarsnap Farm; and Franklin Heyburn's Bees (hives sprinkled throughout the property's cultivated farms). These farming operations provide around 60 full-time, part-time, and seasonal jobs in Burlington throughout the year (Intervale, n.d.-j, n.d.-I). The other cultivated fields are managed under different programs of the Intervale Center, notably People's Garden and People's Farm (for the Gleaning and Food Rescue program), the New American's field (under a collaborative agreement with New Farms for New Americans), and the Abenaki Heritage Garden (managed by the Intervale to honor the original inhabitants of the land by cultivating and producing Indigenous heirloom varieties of crops and seeds, and to educate visitors). The IC lives into its tagline of 'Food, Land & People' through a commitment to "…enhance[ing] the viability of farming…promot[ing] the sustainable use and stewardship of agricultural lands…and ensur[ing] community engagement in the food systems" (Juncos, 2021. p.41).

One of the largest misconceptions about the IC is that it is one single farm. Instead, the IC is home to many farms and programs. “In 2020 alone, the Intervale provided support to 110 local farms (including 52 farm start-ups), restored the equivalent of 188 football fields of forest, and offered 57,000 lbs of produce gleaned for hunger relief” (Juncos, 2021. p.41). Farms currently leasing land from the IC include Intervale Community Farm (ICF); Pitchfork Farm ; Digger’s’ Mirth Collective Farm ; Hallow Herbs Farm ; June Farm ; Sugarsnap Farm , and Franklin Heyburn’s Bees (Juncos, p.58). The other fields at the IC are homes to various programs including the People’s Garden and People’s Farm (for the Gleaning and Food Rescue program), the New American’s field (under a collaborative agreement with New Farms for New Americans), and the Abenaki Heritage Garden (Juncos, 2021. p.58).

Thinking about the IC as an ecosystem consisting of all these components lends itself to considering how it embodies agroecology. Recent research assessed the ways in which the IC expresses the agroecological principles in all four dimensions: economic, political, environmental, and sociocultural. The work conducted by María Juncos-Gautier from 2018-2021 highlights examples of how the entities that make up the IC interact with these principles and employ agroecological approaches, even if they do not all self-identify as agroecological. Her research methods included a community mapping activity, where the interviewees identified agroecological principles they recognized as being part of the Intervale Center system. They then located where those principles were expressed within the landscape and were asked to take photos that represented the principles in action. Juncos’ work was the catalyst for the work that follows in this thesis, inspiring a new methodology to assess the efficacy of the agroecological principles at farms in and around Burlington, Vermont. At the Intervale, Juncos’ work provided strong evidence of the presence of the agroecological principles and of the principles starting a

larger conversation about agroecology among farmers and community members. One of the most important takeaways from the study was the creation of a common language surrounding agroecology, which allowed better communication between farmers, community partners, and community members.

Methods

The project conducted at HREC used a principle-based analysis to assess if and how the agroecological principles were present on the farm. First, materials for the interviews were gathered by the team, which included two graphics: a printed, numbered copy of the fifteen agroecological principles from CIDSE and a sheet with both a satellite image of the farm and a more detailed map (pictured below) of the farm created through the ArcGIS mapping software with the help of team members Avi Bauer, Nell Carpenter and research associate Gabriela Bucini.

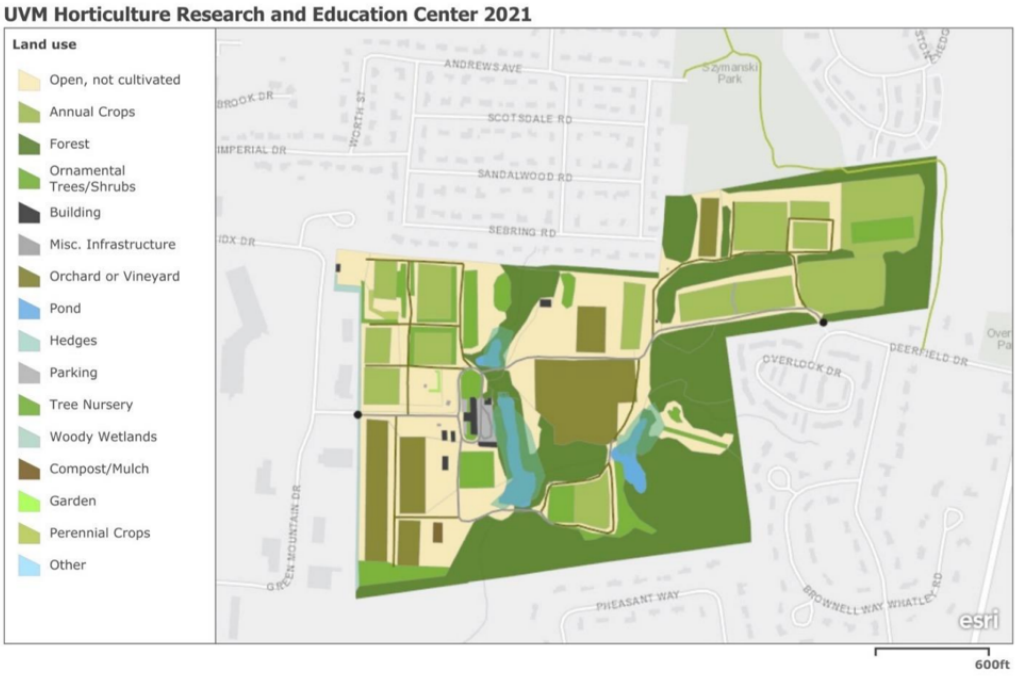

Figure 2. ArcGIS Map of HREC

Participant Selection

A group of fifteen participants was carefully selected by the team of researchers. We aimed to get a group that represented farm directors, farm program coordinators, community partners and organization leaders, and other people who interact frequently with the farm such as university researchers and program participants. Once the ideal participants were identified, they

were contacted through an email asking if they would be willing to be interviewed for this project, accompanied by a brief description of the project and our team members.

Interview Process

Semi-structured interviews were then conducted with a participant group of fifteen people, comprised of HREC staff members, community partners, and UVM staff and faculty who regularly interact with the farm. Some community partners included Friends of the Hort Farm, University of Vermont researchers, and Branch Out Burlington. A semi-structured interview is an exchange, a conversation, between the researcher and the participants during which the researcher tries to draw information from the participants through questions. Although the researcher comes prepared with a list of questions, they are allowed to ask follow-up questions and go off script for the sake of the conversation, hence the title "semi-structured" (Longhurst, 2003). This format has many benefits because it creates a comfortable space for the participants and allows room for participants to bring up issues or topics that they feel are important to the project.

Interviews were conducted mostly in person, except for the last five interviews which were conducted remotely over Zoom due to COVID-19 precautions and for the sake of working around participants' schedules. During the interviews, a series of questions related to the CIDSE agroecological principles (2018) was posed to participants, inquiring about which principles they felt were present on the farm, how they are present, and where they are present. The questions were drawn from previous versions of this project, notably the version conducted at the Intervale Center by Maria Juncos-Gautier and were altered to fit the specific situation at HREC. The participants were presented with an infographic of the fifteen principles during their interviews

and were asked to mark up the sheet however they liked to show which principles they felt they had seen put into practice on the farm. After the participant worked through the sheet, they were given the opportunity to explain why they chose the principles they did as being present at the farm and to give examples of what they have seen as representing these principles. The participants were also asked to identify which principles they felt were the most important for the farm moving forward. Lastly, they were given the opportunity to add a principle that reflected a value that they felt was missing from CIDSE's list of principles. An example of a marked-up principles worksheet can be seen below:

Figure 3. Participant Copy of the Principles Worksheet

Following the principles infographic, the participants were then asked to look over a map of HREC and locate where specifically they saw each principle put into action on the farm, whether that be a specific field, building, program, or the whole farm in general. An example of a marked-up map can be seen below:

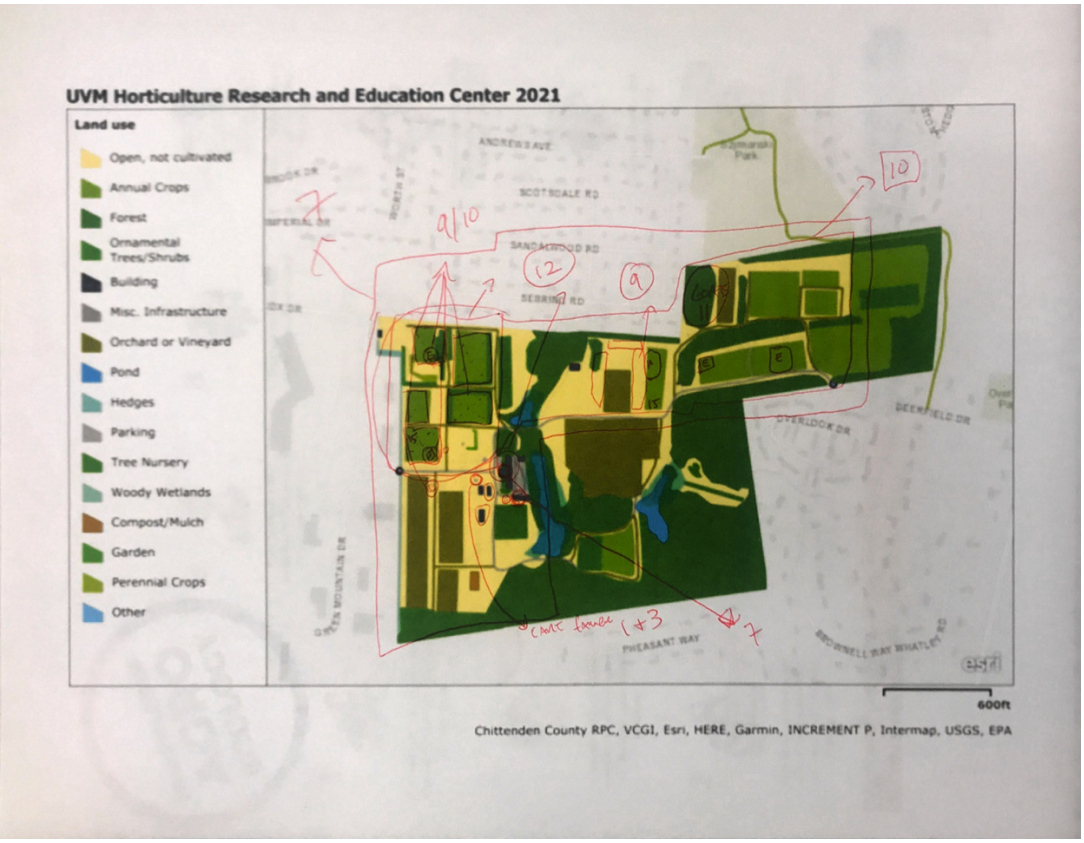

Figure 4. Participant Copy of the ArcGIS Map of HREC

Data Collection, Coding, and Analysis

Interviews were recorded and transcribed either manually or through automated programs provided by Microsoft Teams and Zoom. Interviews were coded on the NVivo software, using deductive coding methods. Fifteen codes were created for each of the fifteen agroecological principles. As team members went through the interviews, excerpts and passages were put into the codes to track the frequencies of the principles mentioned in the conversations and to track the content associated with each principle. Each interview conducted was coded by at least two,

often by three, team members to ensure that biases were avoided as much as possible, given that the nature of the coding was subjective.

While analyzing the data collected for this thesis, I went back through each of the codes and focused on excerpts and quotes pulled from the interviews that were directed towards how HREC interacts with the Burlington Community. Pulling examples of community connected from each code allowed me to see which principles connected more heavily to the theme of community partnerships. Additionally, it allowed me to see which programs and community connections were most often cited by the participants and to therefore see which programs are more successful and which may need more support, depending on the tone of the comments made by participants.

Results

One of the biggest takeaways from this project was that although HREC does not self-identify as an agroecological farm, all principles were cited as being present on the farm at least one time throughout the interview process. Some "top priority" principles cited by participants when posed with the question "could you choose one or two principles that you consider to be the most important at HREC moving forward?", include the following: 1) principle eight, *Supports resilience and adaptation to climate change*; 2) principle 9, *nourishes biodiversity and soils*; 3) principle 10, *gradual outphasing of and dependence on agrochemicals*; and 4) principle 13, *strengthens food producers, local communities, culture, knowledge and spirituality*.

Additionally, agroecology "hot spots" on the farm were identified as being the Blasberg building, which is the main office building on-site at HREC, the Farmer Training Program (FTP) fields, and the apple orchards. The Blasberg building has frequent strong links and references to the socio-cultural principles and as being a space for ample knowledge sharing and idea generation. The FTP fields were strongly associated with almost all of the principles, highlighting the program's work with biodiversity, soils, the reduction of agrochemical usage, and also its progress in agricultural education and diversity on the farm. The orchards were associated mostly with the environmental dimension, noting the continued discussion surrounding the usage of agrochemicals and environmental practices. Although the orchards are not completely agrochemical free, a strong argument was made by farmers for why that is, which brought forth a conversation about the importance of adjusting practices on a case-by-case basis.

As both a farm and a community, HREC has a vast influence on many people in and around Burlington. The results of the interviews showed ample evidence of community partnerships, individual connections to the farm, and opportunities for growth and education for young people. In this next section, results will be highlighted and categorized by agroecological dimension,

which reference community partnerships that are active on the farm or that were active on the farm during the period that the interviews were conducted.

Economic Dimension

Looking at the economic dimension of the agroecological principles, the importance of community connections and partnerships is evident in the way that HREC both provides for and receives from the surrounding community. One community program that was highlighted many times within conversations surrounding the economic dimension was the Old North End farmers market. The economic benefit of this program does not completely serve the farm by generating income, rather it serves the community by providing comparatively cheaper produce than other markets or grocery stores in and around Burlington. The market also accepts payment in the form of several government-run programs including EBT, Farm to Family, and Crop Cash. Cooperation with these programs opens the market up to a wider range of people and allows the farm to sell more produce to community members at a much lower price. According to one participant in the study:

> "…the whole point of that market is to offer our produce for cheaper than any other market - so cheaper than they can get at the grocery store, cheaper than they can get at…the Burlington Farmer's Market, so…it's really – aside from…giving it away, which I also like doing, it is the best price and deal for produce I think for like organic farm produce in the area" (participant I_03).

On the topic of making food more accessible, HREC makes a lot of donations to food shelves around Burlington and communities that have been historically more at risk for food insecurity. The farm donated many of its products to the UVM community through its participation with the

campus food shelf Rally Cat Cupboard. Additionally, they are in collaboration with the UVM staff council "who has identified staff who are food insecure and [HREC has put] together weekly donation boxes that [they] deliver to the staff council who then distributes them among staff" (participant I_02). The farm also donates to Burlington's food shelf and works frequently with Chief Don Stevens, chief of the Abenaki community, making weekly donations to that group.

Lastly, the CSA at HREC is a large player in the economics of the farm. However, again, the CSA does not only provide financial benefits to the farm. According to one participant:

> "….the idea with CSAs is that you get not only literal buy in from the from your customers but just like an attachment to the farm through the relationship…and we want the CSA members to think of this place as their farm while they're participating in it" (participant I_02).

The economic scope of HREC is much wider than just financial means. Economics is all about costs and benefits but is not limited to finances. Therefore, benefits such as providing services to others, gaining a connection to the land are equally important to the functioning of the farm.

Political Dimension

Turning to the political dimension of the agroecological principles, the farm has and continues to connect with the surrounding community in a political sense when performing its daily functions. HREC is constantly seeking feedback from participants of the farm and from folks who closely associate with the farm in the form of surveys and advisory panels. Part of the CSA program at the farm is taking into account what worked for participants and what hasn't

worked, in terms of logistics, produce that was grown and distributed, and more, and tweaking the program accordingly.

One main connection that the farm holds is with the University of Vermont. The farm is a unit of the University, and many farmers noted that this connection both empowers, but more often holds back, the farm and its goals. As a university unit, HREC has the privilege of the freedom to conduct research projects and outreach because they do not have to rely solely on income from production to stay afloat. However, many participants in the project stated that the university has frequently kept them from conducting certain projects or programs that they have felt very strongly about. One participant noted that the farm directors, farmers, and growers have,

> "a certain amount of control over what goes on here, but we're limited by certain things because we're under a university, and there are things like money – there are like lots of loopholes we have to jump through to do something like have chickens here, you know – so we are limited by university policy and politics" (participant I_03).

Many farmers at HREC feel as though the university administration is simply not aware of the activity that goes on at the farm and only sees it as another source of income. One participant displayed this sentiment by saying:

> "I think that that's often the mindset at the upper levels too…like when you get into Waterman and get to the upper levels, they just see value[as] monetary value. So we need [to] make sure that we have lots of other value going on here that we can point to. That's the only thing that's gonna save us" (participant I_11).

One group that has emerged due to the university-farm relationship is The Friends of the Hort Farm (FHF). The main purpose of this group when it was formed back in the 1990s was to "protect the land [that HREC resides on] from being sold by the University of Vermont"

(participant I_14). FHF feels strongly that HREC is a “living laboratory” that has historically been essential for environmental and agricultural research. Since their formation, they have established an impressive collection of lilacs at the farm, which is used for teaching and research purposes as well as for beautifying the property. Their existence both highlights the tensions that often exist between HREC and the university, and also demonstrates community support and love for the farm itself.

Environmental Dimension

Although highly important in its own right to the farm, the environmental dimension displays less evidence of the community connections that the farm holds. However, the connection that HREC has with Branch Out Burlington is an important example of a community partner that is working to ameliorate the environment around the city of Burlington. HREC is home to the Branch Out Burlington tree nursery where trees are grown from saplings into specimens that are ready to plant and are installed throughout the city. Having this space and land accessible to the nursery is highly important for the physical and mental health of the Burlington community which relies on green spaces, trees, shrubbery, and parks as relief from typical city infrastructure.

Sociocultural Dimension

Lastly, the sociocultural dimension of the agroecological principles displays ample examples of the community connections held by HREC and how they benefit both the farm and the greater Burlington area. What makes HREC so unique is its ability to bring people and communities into

the space, allowing for community interaction, sharing of knowledge, and food access. Participants in the project often noted how welcoming the farm is and how it feels almost like an oasis when they enter through the front grates coming off Route 7. Participants said that it is often hard for many people to significantly connect to the land in today's society, but at HREC people are entering the space who are:

> "wanting to feel connected to a place and questioning what that looks like and what it takes to feel connected to a place and, for some of us that have been here for a while, that does make me feel connected to a place, and so I feel like that's sort of like when it comes to knowledge, knowing when our garlic comes up or when our tomatoes are ready or when the birds are flying through" (participant I_03).

Moreover, HREC is home to several essential food access programs and projects that aim to serve historically disadvantaged communities both in Burlington and around the state of Vermont in general. The first group that HREC has been working with for many years is the Vermont Abenaki community. The farm directors have been in conversation with Chief Don Stevens and Fred Wiseman of the Abenaki community to address certain food access needs of the community and assess how they can best help. According to one participant, HREC is "not only helping to provide food but [they are] also making land available to grow culturally significant crops for both food and seed for the Abenaki community, so that's a community partnership that is both helpful in terms of awareness and education and it provides land base for that community" (participant I_02). Secondly, HREC is connected to a group called Huertas, an organization that connects migrant dairy farmers with seedlings or transplants to help them grow culturally significant crops on the dairy farms they work at since dairy farms are often sites of high food insecurity. According to one participant, HREC works "with Huertas and mostly at the

beginning of the season they give [HREC] seeds based on what their farmers want to eat and grow and [the farmers at HREC] start those seeds in the greenhouse for them" (participant I_03). In a similar vein, HREC has been connected with participants in the New Farms for New Americans program in the past to provide them with land to grow culturally significant crops. One participant gave an example of this by saying:

> "We're also working with New Farms for New Americans, and we have a woman who's growing a variety of eggplant that is culturally significant…[she] had been working on the New Farms for New Americans site but needed more growing space and so they reached out to us, asked if we had space that she could grow some of her eggplant crop and…so that's a crop that we don't otherwise grow so it's a way for us to learn about a different crop that's culturally significant for a local community member" (participant I_02).

HREC is home to a diverse range of activities that not only serve the farm and the university, but heavily benefit its surrounding community in terms of food access and security, community building, and connection to the land.

Discussion

Looking altogether at the results from the interviews conducted for this project, three themes emerge in terms of community connections and partnerships at HREC: food access/food security; connection to the land and finding community; and education, youth empowerment, and knowledge sharing. These themes equally reflect the presence of certain agroecological principles including principle 1: *promotes fair, short, distribution webs, producers and consumer working together*; principle 3: *aims to enhance the power of local markets and build on a social solidarity economy vision*; principle 12: *promotes farmer to farmer exchanges for sharing knowledge*; principle 13: *strengthens food producers, local communities, culture, knowledge, spirituality*; and principle 15: *encourages diversity and solidarity among peoples, encourages women and youth empowerment.*

Food Access and Food Security

HREC takes on a unique and important role in supporting UVM students, staff and faculty who are struggling with food security. Because of its affiliation with the university, HREC is able to make frequent donations to the Rally Cat Cupboard, UVM's food shelf run primarily by students and for students, and is able to work with the university's administration to create programs such as donation boxes of produce to staff and faculty facing food insecurity. The existence of programs such as these is highly important for the well-being of the university's community of students, staff, and faculty, especially for setting students up for success in their futures by making food access one of the last things they have to worry about on a daily basis.

Additionally, HREC collaborates heavily with the Abenaki community to ensure that they have access to land to grow culturally significant crops. Native communities have historically faced food insecurity due to many systemically racist government programs and through the

complete displacement from their land. HREC acknowledges that the land they inhabit was stolen and, in this way, attempts to grant more land access to those communities. The farm works with Chief Don Stevens of the Abenaki community to make weekly food donations, arrange seed-saving events, and more to ensure that they are doing their part and using their privilege as a university-run farming operation in ameliorating food security within historically disadvantaged communities.

Lastly, HREC's participation in the Old North End (ONE) farmers market is another way in which the farm is promoting food security within Burlington. Since the farm does not rely solely on profit from production to stay in business, it has the opportunity to run programs and participate in markets such as the ONE market, which aims to sell reduced-price and more affordable produce to the neighborhood. The ONE has historically had higher levels of food insecurity than the rest of Burlington and is home to many disadvantaged communities, most notably home to many refugee families. HREC's stand at the ONE farmers market sells the farm's produce at reduced prices, enabling more people to be able to afford fresh and healthy produce.

Connecting to the Land and Creating Community

HREC has many programs that are designed to get people onto the farm and get their hands in the earth. The CSA program at HREC, for example, is designed not only to distribute produce on a local level but to invite people onto the farm during pick-up hours and through the creation of the pick-your-own aspect of the CSA. One participant in the study stated:

"I mean the whole point of a you know CSA is to kind of introduce the people who are participating in your CSA to the farm they become really tied to your farm because they're

receiving food…from that specific farm…on a weekly basis throughout the growing season so I think … the idea with CSAs is that you get not only literal buy in from the from your customers but just like an attachment to the farm through the relationship…and we want the CSA members to think of this place as their farm while they're participating in it" (participant I_02).

Families and individuals alike take advantage of the pick-your-own program at HREC, lingering on the farm on CSA pickup days to run through the fields picking cherry tomatoes, peas, beans, and more and interacting with the land from which they are getting their food. Additionally, apple season is a very popular time for people to interact with the farm as apple-picking events are hosted yearly. During fall seasons in the past, students have been bused in from UVM's campus to come to visit the farm, pick apples, and learn about everything HREC has to offer. Connecting with the land in this way is highly important in today's society, as many people feel like they are lacking that connection to where they live and where they get their food in their day-to-day life. However, many participants noted how challenging it can be to get students to the farm since it is distanced physically from the university's campus. Consequently, many students, staff, and faculty alike are unaware of HREC's existence and activities. This is one aspect that the farm would like to ameliorate in the future since student involvement is such a large part of their mission as a farm and education institution.

Education and Youth Empowerment

Being a university and research institution, HREC prioritizes agricultural education and research above all else. The Farmer Training Program, for example, is one of the most essential programs at HREC, managing many of the fields and producing much of the produce that goes to markets and CSA shares. The goal of the program is to teach organic agricultural practices but to

also give power to the students who are ultimately given the decision-making power about how the fields are managed at the end of the day. Along with FTP, undergraduate students from UVM participate heavily with the farm through research initiatives and new fellowships, such as the Agroecology Extension fellowship. Ultimately, HREC is a space for many different communities, cultures, and backgrounds to collide, interact, share knowledge, and share practices.

Future Actions

When thinking about how HREC might deepen their connection with the Burlington community, develop more partnerships, and become a stronger farm in general, a few suggestions come to mind that farmers and community partners identified as wanting during their interviews.

Farm Leadership

One of the biggest challenges to the potential community building and community partnerships that people would love to see happening on the farm is the lack of time and staff that exists currently. HREC currently has a team of two directors, spreading these people very thin with all the responsibilities they hold in managing the farm. Many people felt that there is a balance that is being held at HREC, between trying to involve itself in the community and make an impact in that way while also not putting unnecessary pressure on the small number of staff on the farm. One participant stated, for example:

> “we’re pretty small staff and are really maxed out in what we can provide and I feel like the staff here does a lot both in terms of running a farm and teaching people as we’re doing it and to try to teach and offer consistency is challenging. And then also to be

> thinking about all of our community partnerships which feeds into the education but is also a lot to manage all the pieces and to keep track of all the details and all the logistics. And, so, it enriches the place and it also I do think it's a lot for the staff to keep track of" (I_02).

Additionally, people feel that the community partnerships and educational programs truly make the farm what it is, so the question remains how can we promote these partnerships and the new interest it brings to the farm while also not over taxing the little staff that exists there?

One idea presented by a participant was to create a board of directors in order to have more people organizing activities on the farm, each person specializing in a different realm. For example, there could be people on the board from "NOFA and that board put someone like from rural Vermont on that board put someone from NFNA some farmers on the board…" (I_01). This would allow tasks to be delegated instead of putting them onto just one person. More effort would be able to be put into certain programs, allowing them to function at their highest potential. Community connections would also be able to become more thoughtfully fostered, more personal, and richer in general. Additionally, a board of directors would bring more diversity of thought and opinion into how the far is managed and the programs that are taking place there.

Facilities

Another challenge that people noted on the farm was the lack of classroom space available on the farm to host speakers, conferences, and class lectures. When the farm was established back in the 1950s, it was not an educational farm, and, therefore, it did not need an advanced classroom building. However, today the educational component of the farm is one of its most important aspects. In order to attract more people to the farm and foster a good learning

environment on site, updates must be made to the facilities that currently exist there. During the interviews, the Blasberg building was identified as being a "principles hotspot," meaning a single location on the farm where the most principles were associated with.

Student Involvement

Another challenge that was identified during the interviews was the fact that scholarships are not granted for the Farmer Training Program on the farm. One participant expressed their feelings on the subject by saying, "our university does not give any scholarships to the farmer training program which is wack um and so we are reliant on people to make donations so that we can help people pay them to come here" (I_03). The absence of scholarships for this agricultural educational program eliminates many groups of people from participating on the farm and in the agricultural world. When equity and diversity is talked about on the farm and at the university in general, many people note that it is lacking. Scholarships are one of the many ways the university could help promote diversity of background, income, gender, race and ethnicity in all of its sectors, especially the agricultural sector which is currently not a diverse field here at UVM.

Additionally, undergraduate students who want to engage with the farm during the summer for course credit must pay the summer university tuition, which deters and prevents many students from participating on the farm during its most essential season. According to one participant:

> "…[I] increasingly we hear [students say] 'I want my hands in the soil I want to like do stuff and then come down and do it.' And then when I operate in that world which is like plant and soil science faculty meetings, I can do all I can to build programs that people want to come to and then we run into the institutional barriers of this stupid

> summer semesters and having to pay $7,000 to work on my farm which is what my students have to pay if they're out of state for 6 credits" (I_08)

Again, many students are not able to afford this tuition to be able to work on the farm and engage with its programs. This not only creates equity concerns about what kinds of people can afford to be on the farm during the summer, it also lowers the chances of student involvement on the farm in general. Therefore, more scholarships and fellowships dedicated to the farm's summer educational and research programs, perhaps ones that prioritize diversified backgrounds, would help raise involvement and diversity on the farm, in all sense of the terms.

University Support

At the end of the day, most of the suggestions for future action on the farm require sufficient support from the university. The question why invest in this university farm can easily be answered by the simple fact that UVM is a land grant institution, which establishes UVM's duty of responsible land stewardship and agricultural education that reaches a broad audience and is then used to spread knowledge to other farms and farmers around the state. HREC already does so much of this work, as seen throughout this paper, however, to truly live up to this standard more effort must be put into programs that reach out to students, Burlington community members, and Vermonters interested in agricultural advancement. Many participants have a lot of hope for what HREC could be and have so many ideas for its future that just need to be tapped into and supported by administrators. Support includes not only funding projects, but also funding staffing and students to give equal opportunities for participation on the farm and to ensure that the farm is functioning to its highest potential.

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Appendix A
Interview guide pages

Questions guide **for the semi-structured interviews**
Case study and fieldwork
HREC

Hypothesis and main questions to be answered for the whole exercise:

Hypothesis/statement: HREC is a mixed landscape, with a diversity of land uses and operations, that already represents agroecological principles in practice and, under these principles, fulfills multiple sustainability goals both for communities within Burlington and the University of Vermont.

Questions:
- Which of the agroecological principles (CIDSE, 2018) are present in each land use class and operation at HREC?
- How are they being manifested or applied?
- What are the challenges and opportunities of the application of these principles?
- Where can HREC improve and what are the priorities?

Introduction (notes for the researcher)

- What, why, how, when (the general overview of the research). Briefly explain: Identification and application of agroecological principles in urban/peri-urban settings, in this case exploring the HREC as a case study.
- Also, the **participatory action research (PAR) approach**. This means that members of HREC that participate in the study are also important actors in the research and the decision-making processes.
- Methods for this first meeting: Using a land use map, identification of the principles on the map (first impression).
- Time: Two key meetings (June-July) and the possibility of a participatory results workshop during the Fall (September/October) to discuss preliminary findings.
- Read/give consent form for documenting the interview: voice recording and photos. Also, for field observation (field notes) and photo documenting in the field during the summer (non-obtrusive).

Figure A1.

About agroecology and its principles (to use and discuss with interviewees).

Please tell me a little about what you know/or have heard or read about agroecology. It's ok if it's completely new to you.

Our definition of agroecology:

Agroecology has been defined in different ways by a diversity of stakeholders. Based on these definitions, for us agroecology is a multidimensional countermovement against current unsustainable aspects of our food system. It integrates indigenous knowledge with ecological science and progressive economic and sociopolitical theories for sustainable development. It is grounded in the acknowledgment and respect of native natural, social, and cultural contexts, and the uniqueness of human and non-human communities. Agroecology is often described through PRINCIPLES, and it expresses itself as a science, practice, and social movement, aligning to achieve food justice, food security, and food sovereignty, as well as sustainable livelihoods.

Instead of being prescriptive, agroecology is based on a set of PRINCIPLES. These PRINCIPLES serve as guidelines to direct desired behaviors and actions, and help evaluate choices. They are based on different sustainability-oriented norms and values, on past experiences, and a diversity of knowledges.

While there are several interpretations of the agroecological principles, we are using the following, based on CIDSE (2018). The CIDSE infographic (handouts). Leave some time for the participant to review the principles and ask questions.

Figure A2.

Open-ended questions for interviewees (using the CIDSE's infographic).

- What is your position at HREC? (employees) What is your relationship with HREC? (other stakeholders)
- What do you do at HREC? What is your role or what are your responsibilities? (employees) How you use the property? (other stakeholders)
- Ask them to identify on the map their operating/working area.
- Ask them what year they last interacted with the farm in a significant way.
- Which of these principles are part of your day-to-day interaction with the space, or are things you associate with HREC? Check the ones that resonate.
    - Invite them to **explain**, especially which ones and **how.**
- Now, show us on the map where they show up.
    - **Let them mark with circles or checks and be creative on the map, making sure that when they make an indication about a link between place and principle, they label it so we can go back later and look for patterns around which principles show up more where...**
    - What comments do you have about the principles you didn't identify as connected to your work?
- Could you choose one or two principles that you consider to be the most important at HREC moving forward?
- From this list, are we missing any principle that might be important for this farming community or that is being applied in a different way here at the HREC, based on your own experience?
- What challenges and opportunities come to mind when you think about increasing the use of these principles/this framework in your area of operation or work?

That concludes the structured portion of the interview. If you have additional questions or comments, we welcome them now.

Thank you for your time.

We will be back in touch about the participatory results workshop when it has been scheduled.

Figure A3.

Appendix B

Link to HREC Story Map

https://storymaps.arcgis.com/stories/bea61222b5cb4c9bbc246f9981a7a04f

References

Bauer, Avi H., “Performance of Political Agroecological Principles at University Farms: Site Assessment of the Horticulture Research and Education Center” (2022). UVM Honors College Senior Theses. 447. http://scholarworks.uvm.edu/hcoltheses/447

Carvalho, L. M. d., & Bógus, C. M. (2020). Gender and social justice in urban agriculture: The network of agroecological and peripheral female urban farmers from São Paulo. *Social sciences (Basel), 9*(8), 127. https://doi.org/10.3390/socsci9080127

Caswell, M., Méndez, V. E., Juncos-Gautier, M. A., Hurley, S. E., Gould, R. K., Sánchez, D. M., & Lewis, S. (2021). Agroecological transformations in urban contexts: Transdisciplinary research frameworks and participatory approaches in Burlington, Vermont. In M. Egerer & H. Cohen (Eds.), *Urban agroecology: Interdisciplinary research and future directions* (pp. 299-319). CRC Press.

CIDSE. (2018). The Principles of Agroecology. In *The Principles of Agroecology - CIDSE*. Retrieved from https://agroecologyprinciple.cidse.org/

Doane, John, "State-based Climate Legislation: A Policy Analysis of Carbon Tax Proposals in Vermont, New York, and Massachusetts" (2018). Environmental Studies Electronic Thesis Collection. 52. https://scholarworks.uvm.edu/envstheses/52

Gomez Villarino, M. T., urquijo, J., Gómez Villarino, M., & García, A. I. (2021). Key insights of urban agriculture for sustainable urban development. *Agroecology and Sustainable Food Systems*, 1-29. https://doi.org/10.1080/21683565.2021.1917471

Juncos-Gautier, María Alicia. (2021, Dec). Assessing Agroecological Principles at the Intervale in Burlington, Vermont: A Case Study and Multimethod Research with a Participatory Approach in a Peri-Urban Socioecological System. York University. Toronto, Ontario.

Kesselman, B., Ngcoya, M., & Casale, D. (2021, Apr). The challenge posed by urban dietary norms to the practice of urban agroecology [Article]. *Agroecology and Sustainable Food Systems, 45*(4), 480-498. https://doi.org/10.1080/21683565.2020.1816593

Méndez, V. E., Caswell, M., Gliessman, S. R., & Cohen, R. (2018, July 2018). Integrating agroecology and participatory action research (PAR): Principles and characteristics. *Cadadernos de Agroecologia, 13*.

Migliorini, P., & Wezel, A. (2017). Converging and diverging principles and practices of organic agriculture regulations and agroecology. A review. *Agronomy for Sustainable Development, 37*(6), 1-18. https://doi.org/10.1007/s13593-017-0472-4

Nemes, C. P. (2019). Urban agroecology in Campo Grande, Brazil. *Analele Universităţii din Oradea. Seria Geografie, 29*(1), 19-29. https://doi.org/10.30892/auog.291103-794

Siegner, A. B., Acey, C., & Sowerwine, J. (2019). Producing urban agroecology in the East Bay: from soil health to community empowerment. *Agroecology and Sustainable Food Systems, 44*, 566-593. https://doi.org/https://doi.org/10.1080/21683565.2019.1690615

Simon-Rojo, M. (2019). Agroecology to fight food poverty in Madrid's deprived neighbourhoods. *Urban design international (London, England), 24*(2), 94-107. https://doi.org/10.1057/s41289-019-00088-4

Tornaghi, C., & Dehaene, M. (2020, May). The prefigurative power of urban political agroecology: Rethinking the urbanisms of agroecological transitions for food system transformation [Article]. *Agroecology and Sustainable Food Systems, 44*(5), 594-610. https://doi.org/10.1080/21683565.2019.1680593