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**Performance of Political Agroecological Principles at University Farms:
Site Assessment of the Horticulture Research and Education Center**

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University of Vermont Honors College Thesis

April 27, 2022

Abstract: Within the framework of the fifteen principles of agroecology generated by CIDSE (2018), this work evaluates the performance of the political dimension of agroecology by the University of Vermont (UVM) Horticulture Research and Education Center (HREC) in South Burlington, Vermont. It analyzes the strengths and key barriers to HREC's performance of the four political principles of agroecology, notably discussing the farm's status as a university farm as a key variable to that performance. It also analyzes the relationship between HREC and UVM and themes that emerged from participants around strengths and gaps in that relationship. To assess the viability of these results amongst other university farms, this work also analyzes the performance of the political dimension of agroecology at three other university farms and compares the relationship between these farms and their partner universities to the relationship between HREC and UVM. This work highlights university farms as key stakeholders for education, farming communities, and the communities surrounding these farms, and assesses dynamics around investments into these farms from their partner universities.

Keywords: agroecology, political transformation, university farms, university administration, transformative agroecology

Introduction

One movement gaining international attention as an alternative to our currently unsustainable and inequitable methods of food production and distribution is agroecology. Agroecology includes the scientific study of agricultural practices and the political structure of food systems, the use of specific agricultural and values-based practices, and a network of social movements centered around a systemic transformation of power in agricultural decision making (Migliorini & Wezel, 2017). Agroecology is a principles-based alternative to industrial agriculture, meaning that these principles guide decision making and optimal behavior rather than being prescriptive (Caswell et al., 2021). While there are different sets of principles generated by different stakeholders, this work utilizes the agroecological principles generated by CIDSE (2018), a consortium of Catholic organizations that engage in activism addressing agriculture and social justice. These principles have been divided into four dimensions, encompassing the different areas which impact and are impacted by our food system: economic, political, environmental, and socio-cultural. This work focuses on the political dimension of agroecology.

Table 1

Political Principles of Agroecology

Resource Sovereignty	Aims to put control of seeds, land, and territories in the hands of people
Participatory Governance	Encourages new forms of decentralized, collective, participatory governance of food systems
Supportive Policies and Investments	Requires supportive public policies and investments
Producers and Consumers in Decision Making	Encourages stronger participation of food producers/consumers in decision making

(CIDSE, 2018)

It can be argued that the political dimension of agroecology is what sets agroecology apart from other alternative agricultural movements (Anderson et al., 2019). The political dimension of agroecology is critical to what many refer to as a “transformative agroecology” (Kapgen & Roudart, 2020), which seeks to shift the operation of our entire food system, “from farm to table,” critiquing current policy and market structures that uphold our current food system (Méndez et al., 2013). The political dimension of agroecology is what links the scientific approach to agroecology to the social movement of agroecology (Kapgen & Roudart, 2020). A transformative agroecology is key to changing how power is held in the food system, transitioning to collective, place-based, bottom-up modes of power (Anderson et al., 2019).

While agroecology has roots in rural contexts, a growing body of literature is assessing how agroecology can be present in urban and peri-urban contexts. Urban and peri-urban agroecology (UPAE) applies agroecology principles to urban areas and considers how the process of urbanization uniquely influences urban agriculture and food consumption patterns in urban areas (Tornaghi & Dehaene, 2020). Given the increasing population in urban areas and the impacts of food transportation on greenhouse gas emissions, urban agriculture is a sector that is gaining attention in many circles (Gomez Villarino et al., 2021); applying agroecology to urban contexts is thus essential to create sustainable and just methods of food production in urban areas.

This project is a continuation of an ongoing evaluation of urban and peri-urban agroecology (UPAE) across the Burlington, Vermont area. The intent of this broader UPAE project is to assess how agroecology is present in Burlington, to cement relationships with key actors in the Burlington agricultural community and see how urban/peri-urban agroecology can contribute to sustainable development, even in a rural state like Vermont (Caswell et al., 2021). While work has been conducted at a variety of sites in the Burlington area, this work is focused on the University of Vermont (UVM) Horticulture Research and Education Center (HREC), a 97-acre property that is utilized for research, experiential learning, and outreach in food production by the College of Agriculture and Life Sciences and UVM Extension (UVM HREC, n.d.). The farm is home to many different community operations and farming plots such as the Catamount Educational Farm, research project plots, and plots allocated to partnerships with community organizations. The Catamount Educational Farm hosts UVM's Farmer Training Program, which offers an intensive hands-on program on all aspects of farm management for students from a variety of backgrounds. HREC also engages with community-based organizations including the Friends of the Horticulture Farm, a grassroots organization which aims to support the longevity of HREC, and Branch Out Burlington, an organization that starts trees at HREC to be re-planted in other parts of Burlington, Vermont.

The purpose of the broader UPAE project is to assess agroecology at HREC and how it is perceived and implemented by farmers and community members. It ponders how agroecology could provide a series of benefits to both environmental and human health in urban and peri-urban settings and evaluates how the principles of agroecology are applied and utilized at HREC (Caswell et al., 2021). This work utilizes the broader methodology of this project and focuses on the political principles of agroecology, in particular assessing how they are impacted by the

HREC's status as a university farm. This work also analyzes the emergent theme of the relationship between HREC and the University of Vermont, and also includes data collected from three other university farms in the United States to assess whether patterns evident at HREC in the presence of the political principles and the relationship between the farm and the university emerge at other university farms. This work provides an important contribution to the discussion of the political principles of agroecology in literature as an analysis of the political principles at a given site, the presence of agroecology at a university farm, and the relationship between university farms and their university administrations.

Methods

This research utilized semi-structured interviews to evaluate the performance of all agroecological principles at HREC. The research partners at HREC compiled a list of n=27 participants who all interact with HREC in different ways. A total of n=15 participants responded to requests to participate in these interviews. These participants included staff members of HREC, current and former researchers who conducted trials at HREC, UVM staff members whose positions included interacting with HREC in a significant way, and members of community partner organizations including the Friends of the Horticulture Farm and Branch Out Burlington. The first ten interviews were conducted in-person at HREC while the final five interviews were conducted virtually on Zoom and Microsoft Teams to accommodate for participants' schedules and complications around the COVID-19 pandemic.

The questions and methodology for the semi-structured interviews were adapted from previous UPAGE projects that were also conducted in the Burlington area (Caswell et al., 2021). This research follows the guidance of Patton's "Principles-Focused Evaluation" which utilizes evaluative practices to discover emergent data related to a specific set of principles (Patton, 2017), in this case the fifteen principles of agroecology generated by CIDSE. Participants were presented with two key materials: a graphic of the fifteen agroecology principles generated by CIDSE and a map of HREC (see Graphics 1 and 2 in Appendix). The interview began with an open question about participants' familiarity with the word 'agroecology.' After a brief review of the CIDSE infographic, participants were given a numbered version of that graphic and were asked to identify which agroecological principles they believed to be present at HREC and describe the way(s) in which they were present. For the second portion of the interview,

participants were asked to locate where they see the principles put into action at HREC, including marking specific places they associate with expression of the principles on the map of HREC. The final question related to challenges and opportunities they see for the increased use of these principles in the future. Participants in the virtual interviews (over Zoom or Microsoft Teams) verbally gave their responses to the mapping question in lieu of physically marking the map. The interviewers invited feedback from participants during the process, related to both the materials and the interview process; one piece of feedback that was consistent over the first ten interviews was that the language of the CIDSE principles was difficult to process within the timeframe of the interview, when the materials were not provided ahead of time. In response to this feedback, participants in the final five virtual interviews were emailed the two graphics prior to the interview.

Following the initial n=15 interviews with participants at HREC, a second round of n=3 interviews were conducted with representatives of other university farms to assess whether patterns in the presence of the political agroecological principles were evident at other university farms and to incorporate lessons learned from other university farms into feedback returned to the HREC staff. These three participants were representatives of the North Carolina State University (NCSU) Agroecology Education Farm, Tufts University's New Entry Sustainable Farming Project, and the University of California Santa Cruz (UCSC) Center for Agroecology. These peer institutions were selected due to the similarity of their programs to HREC's programs and the similarity of their universities to the University of Vermont. These three interviews included an adapted version of the original interview guide, where participants were only asked to check off the political principles. These participants were also asked questions to assess challenges and opportunities to the increased use of these principles on their farms as well as challenges and supports they received from the relationship their farms had with their universities.

All interviews were transcribed either manually or through automated programs. These transcriptions were coded using NVivo utilizing a hybrid approach. Deductive coding was conducted with fifteen codes, one for each of the fifteen CIDSE agroecology principles, with these codes determined a priori. All significant references to these principles were coded to the principles using in vivo coding to assess the frequency of each of the principles in interview responses and to assess what themes emerged in the references to each of the principles

(Manning, 2017). Inductive coding was also conducted with an additional code, referred to as “University/Farm Relationship,” created to assess the emergent theme of the relationship between HREC and UVM and the other university farms to their partner institutions across all agroecological principles. All meaningful references to the relationship between the university and its associated farm were coded using in vivo coding to the University/Farm Relationship code.

Following coding, emergent themes for the fifteen agroecological principles codes were isolated and the frequency of mentions for each of the principles in the HREC data set were compiled. These results were shared with the HREC participants in a participatory results workshop hosted at HREC. This allowed all participants to be informed of the findings, to reflect on and provide feedback on the research process, and to discuss how these findings can inform their operations and the future of HREC. The frequency of mentions of each of the principles was also compiled for the data from other university farms. Emergent themes in the University/Farm Relationship code were isolated for both the HREC data and the data from other university farms.

Results

Presence of Political Principles of Agroecology at HREC

To evaluate the presence of the political principles of agroecology at HREC, the frequency of the mentions of the political principles was collected. Additionally, emergent themes in the discussion of the political principles were isolated to assess what participants believed were strengths in HREC’s performance of the political principles and what barriers were present to the performance of the political principles. See Table 1 for a list of the political principles as written by CIDSE (2018).

Frequency of Political Principles

The political principles were mentioned by nearly every participant as they checked off which principles were present at HREC. A higher frequency of mentions indicates that participants discussed the political principles in greater depth or in other parts of the interview, notably in the discussion of challenges and opportunities. In the HREC data set, the resource sovereignty principle was mentioned 30 times, the participatory governance principle 31 times, the supportive policies and investments principle 53 times, and the producers and consumers in

decision making principle 30 times. From these frequencies, it is evident that the supportive policies and investments principles was discussed in greater depth and frequency than the other political principles.

It is important to note differences between the different dimensions both in the implementation of the interviews and in the participants' answers. Compared to the environmental and socio-cultural dimensions, participants frequently had questions around the meaning of the economic and political principles, and frequently stated that they felt that the economic and political principles were irrelevant to the mission of HREC. As one participant stated: "I'm not sure about the... political part, because of course it's a farm, you know, it's a research facility... I don't think it applies to what's happening up at the [Horticulture] farm... I don't think politics has anything to do with the [Horticulture] farm aside from funding" (I10, 2022). Another participant also identified a gap in the political principles, attributing it to its university farm status: "Because it's embedded within the university, there's not a lot of leverage to be political" (I1, 2022). Discomfort around the meaning of the political principles as well as perceived institutional barriers to their presence at HREC both led to a significant gap between the frequency of the political principles and the environmental and socio-cultural principles. For instance, the environmental principles of resilience to climate change, nourishing biodiversity and soils, reducing use of and dependence on agrochemicals, and enhancing integration of elements of agroecosystems had frequencies ranging from 55 to 90 mentions each.

Emergent Themes

Beyond the frequency of mentions of the political principles, it is also essential to note what themes emerged in how the participants described their presence at HREC. These ranged from ways that the participants believed HREC does well in relation to these principles to barriers to the presence of these principles at HREC.

Resource Sovereignty

The resource sovereignty principle represents how an organization promotes land, seed, and food sovereignty within the broader food system. The most frequently mentioned theme in discussions of this principle was how the land was owned by the University of Vermont and how the institutional background of the farm impacts its performance of this principle. Seven of the fifteen HREC participants mentioned this theme as significant to the performance of this principle to HREC. To some participants, the land being owned by UVM, as well as the

institutional mission of the farm, made it impossible for this principle to be present at HREC. As one participant simply stated: “it’s not applicable here” (I6, 2022). Another participant said: “I mean we’re an institutional farm.... So we don’t, so period. Like we are not aiming to put things in the hand[s] of the people... Because let’s face it at the end of the day campus planning... own this place” (I8, 2022).

Despite this barrier, many participants identified ways that HREC was promoting the use of this principle even within this institutional framework. One participant identified that while returning ownership of the land to Indigenous peoples was not possible immediately given that the land is owned by the university, they are “doing the best we can... as a you know government institution or a university institution like is that possible how could we... help that happen. So, in the meantime trying to be of service to Abenaki communities whose land we are on and helping them grow food in any way we can” (I3, 2022). Partnerships with the Abenaki community were frequently mentioned in relation to this principle and included lending parts of the land for the Abenaki to use on the farm, growing culturally significant crops for the Abenaki and New Americans in the Burlington community, assisting in seed saving efforts, and providing food to reduce food insecurity in the Abenaki community. As that participant stated: “We started a bunch of seeds for them in our greenhouse and we have space in our field dedicated to—we have about like six or seven beds dedicated to specifically distribute to Abenaki community members like based on foods that they want” (I3, 2022). Another participant identified the educational mission of the farm as an important way in which they perform this principle despite being limited by the university status of the farm: “Maybe in an indirect way just being an educational farm... so to leave here with the knowledge and confidence that they can make an impact in the food system... even some of our students move on to get involved with more policy work that they’re having an impact through what they’ve learned here” (I2, 2022).

While many participants identified efforts to have the land used by HREC be of use to others, other participants identified concerns with retaining the land for HREC to use amidst threats from the university to sell the land. One important group in this conversation was the Friends of the Horticulture Farm, an organization that multiple participants stated found its origins 25 years ago when the university considered selling the property. One participant told of how the Friends of the Horticulture Farm kept the university from selling the property: “Neighbors got together... they fought the university and went saying, you should hold onto it.

It's a jewel. You'll be sorry if you let it go... so they did back down from selling it" (I11, 2022). Despite this success, this participant stated that the threat of the university selling the land has not disappeared. As another participant stated:

You're constantly looking over your shoulder... knowing how much that land is worth and how easy it would be for the university to justify selling it off from a financial standpoint. So, you're like the gold goose to some degree but you're the golden goose at the back of the pack limping... you're gonna be the first one that's gonna be taken out and devoured. (I1, 2022)

Participatory Governance

The participatory governance principle refers to broader governance of the food system, emphasizing more decentralized and collective methods of decision making. Many participants identified the broader influences on how the farm is governed, particularly how the farm is embedded within a university framework, while also discussing the different ways that decisions are made on the farm.

Overall, many participants believed that governance on the farm was a very collective process. This included decisions made between the staff of HREC as well as farm management decisions that often included students in the Farmer Training Program. Staff members of HREC identified their decision-making process as very collaborative. As one participant said: "I do feel like our approach is incredibly collaborative, that we lean on each other to make... all of this happen" (I2, 2022). Another participant stated that while the overall fate of the farm lay in the hands of the administrators, the day to day or even year to year decisions were often made in a decentralized manner amongst HREC staff, with collaboration with university researchers and students. The Farmer Training Program students were identified as key members of the decision-making process, particularly in the decisions of how the food would be grown on the farm. One participant stated: "As an educational farm like if we can encourage students who are learning how to farm to like make management decisions that's kind of like the whole point and being like okay what do you believe in... and what's more important to you and then letting them face the consequences either way" (I3, 2022). Another participant echoed the emphasis of student autonomy on the farm and also stated that because there is a new cohort of students on the farm every year, there is an inherently "more fluid way of approaching this place" (I7, 2022).

Despite this collaborative decision-making process, multiple participants identified the university hierarchy as a barrier to true decentralized governance of the farm. As one participant stated: “It feels like a collective process as a member of the staff here on the farm but like on paper within... how the university sees us I do think that there’s a hierarchy there and yeah there are staff that have more power and more access to administrators just because of where they lie positionally within the university” (I2, 2022). While many participants discussed collective farming as an exciting model that ultimately wasn’t possible due to the university framework within which HREC is embedded, one participant highlighted the university hierarchy as beneficial to the long-term goals of the farm: “At the end of the day... this is a land grant facility, so we need to—and it’s a university facility, it’s not just a collective. At the end of the day someone needs to look at this for the long haul and manage beyond just the fields that they work in regularly” (I8, 2022).

Supportive Policies and Investments

The supportive policies and investments principle refers to broader agricultural policy supports and funding for agroecological practices. At HREC, however, the participants discussed this principle in the context of what policies and investments support the farm’s operations and mission. The most frequent theme in relation to this principle was how HREC is funded by the university, a theme which ten of the fifteen HREC participants discussed. Some participants highlighted how having public funding for the farm was ultimately an advantage as it provided HREC with more flexibility in their practices as their livelihoods were not reliant on their sales. One participant discussed how this funding structure was both a challenge and opportunity for HREC:

Maybe there’s a certain amount of red tape or restrictions to what we may be able to do or experiment with within the university context... the flip side of that is that in being an educational institution there’s a lot of room for experimentation and for like perhaps trying out some of these principles more fully without the crushing forces of the market that might like encourage us otherwise. (I7, 2022)

Other participants identified that many of the research projects on the farm were ultimately dependent on grant funding and which projects would be able to receive funding.

Despite the opportunities present due to being university funded, a lack of funding was frequently identified as one of the greatest challenges HREC faces. One participant, when asked

about which challenges were present for the use of agroecological practices on the farm, said: “Here? Funding, period, that’s it... running this place on a shoestring... And the funding includes staffing” (I8, 2022). Another participant echoed this, saying: “I think if we had more support from the university, we would be able to increase the amount of agroecological principles we could practice here, or not necessarily the amount but practice them better” (I3, 2022). Multiple participants identified a lack of willingness from UVM to provide great amounts of funding to HREC, with one participant saying, “I often say... the only reason we’re still here is because we’re so cheap” (I8, 2022), and another saying, “we always seem to be last over there” (I10, 2022). Another participant identified that both university and federal funds were key to the operations at HREC and argued that the farm was a “good investment,” as putting more funding into the farm would improve its presence at the university and bring more farmers to the farm.

Another recurring theme mentioned in discussions around this principle was the facilities of the farm itself. Five of the fifteen HREC participants mentioned that the facilities were old and did not match up with the needs of HREC. One participant identified the facilities as a barrier to the visibility of the farm, saying: “they have to come in and use the bathroom and they’re just embarrassed that it’s from the 1950s... so it’s not leaving the best impression on people when they come to the farm” (I13, 2022). Another identified investment into the facilities as a way to invest in the visibility of the farm and improving its programs, saying that new facilities could help the farm to host more workshops and bring more people to the farm.

In relation to the visibility of the farm, many participants stated that a lack of visibility and knowledge of the farm prevented it from receiving the necessary investments. One participant stated, “When we were first redoing the website, I had to go over to the web team all the time. And we were working on the [Horticulture] Farm website, and they had no idea that it existed” (I11, 2022). This participant also stated that many administrators simply viewed the farm under its monetary value, leading to the viewpoint that the farm could simply be sold, yet argued that there were other forms of value present on the farm that need to be recognized. This lack of visibility and knowledge of the farm also was identified as a barrier to in-kind investment in the farm from administrators. Five of the participants identified a lack of in-kind investment in the farm from the university, saying that if administrators did not know about or appreciate the value of the farm it made it less likely to receive the necessary funding or support. One

participant stated: “We want this place to be more recognized by the university, but it can’t all be within. We... need more hands and feet on the ground beyond the staff that’s just here. So it’s an opportunity for more involvement but I think it needs to encompass more than just the current staff” (I2, 2022).

Producers and Consumers in Decision Making

The producers and consumers in decision making principle refers to broader involvement of food producers and consumers in how decisions are made in the realm of agricultural policy. At HREC, this was interpreted by participants as how the producers and consumers of the food at HREC were involved in decision making on the farm. Once again, a collaborative environment was emphasized. In particular, the incorporating of feedback was essential for this principle. This included feedback from CSA members, Farmer Training Program students, and undergraduate students. One participant stated that while HREC had well-established feedback collection from Farmer Training Program students, “there’s a little bit of disconnect I think with the undergrad loop... most of you know tenure track faculty have other incentives right publish or perish... they don’t really have the incentive to find what the students want” (I8, 2022). Farmer Training Program students were also mentioned in reference to empowering students through the program so that they as future producers of food would be more likely to be involved in policymaking after leaving the program.

With regard to the consumers of the food, one participant highlighted: “we ask for feedback at the end of every CSA like about what people liked what they want, they didn’t want, what they want more of” (I3, 2022). This participant also stated that HREC regularly receives feedback from UVM Dining in terms of what food they would like to receive from their wholesale accounts. A final important group mentioned in relation to this principle was the farmers that are connected to research on the farm. Multiple participants mentioned that incorporating farmer feedback into participatory research and seeing what farmers would like more information on was key to the research efforts that happen on the farm. One participant stated: “Everything runs on money, on grant money... You have to prove that it’s relevant and that... you have the support of the industry... you can have growers on advisory panels... or you develop a project with different growers too” (I6, 2022).

Relationship Between HREC and UVM

As with the political principles codes, all data coded to the University/Farm Relationship code in the HREC data was aggregated and emergent themes from these data were isolated. The participants identified many different interactions between HREC and UVM, including hosting undergraduate and graduate students at the farm for various educational opportunities, providing space for research faculty to conduct trials, as well as selling food to UVM Dining through wholesale accounts. HREC staff also identified multiple ways that they tried to give back to the UVM community by helping to relieve food insecurity both amongst students and staff, for instance by donating to Rally Cat's Cupboard, the campus food pantry, and by "putting together weekly donation boxes that we deliver to the staff council who then distributes them among staff" (I2, 2022) who are experiencing food insecurity.

Many themes emerged amongst the University/Farm Relationship data that overlapped with the emergent themes in the political principles codes. Some participants emphasized the opportunities that emerge from being associated with a university, including more economic flexibility from the university funding as well as being able to provide dedicated space for research. In particular, multiple participants emphasized that the land for research provided for HREC was key to UVM's land grant mission. One participant stated that: "as a land grant... institution what makes us different... there's a different level of knowledge you can generate when you have... all the stuff that UVM has, and this is something that we can really expand" (I8, 2022). Another participant argued that this land grant mission provided another justification for more university investment into HREC: "We should be the star or one of the stars... in terms of supporting the teaching, research, and extending that knowledge and information to the state of Vermont and the region and the world... The university has in my opinion has to realize the importance" (I6, 2022). A final participant identified that the resources associated with HREC could help benefit farming communities, as the investment structures and learning spaces embedded into HREC would promote the knowledge generation that farmers need from a land grant university. Many participants also stated that a key aspect of HREC being a university farm was that it actively commits to avoiding competition for struggling growers, meaning that they would rely more on university support to ensure they're not taking customers away from other farms.

Another common theme evident in the University/Farm Relationship data was a lack of support for HREC from the university, including gaps in staffing, funding, and facilities. As one participant said, “what the university wants from HREC gets harder every year because it’s an awesome and special place and we’re limited by resources like human resources... the more research that happens here is awesome... and also it’s like four of us trying to manage all of the things that are going on in this entire property which is a lot” (I3, 2022). Beyond more staff, funding, and improved facilities, in-kind support was another gap identified in these data. One participant stated that “more communication about what happens there, why we’re doing what we’re doing, into the broader community” (I13, 2022) would help amplify the farm’s mission. In general, multiple participants emphasized that many people at the university don’t know that HREC exists, including university staff members and students. As one participant said: “There’s a little bit of disconnect I think with the undergrad loop, like just that four miles can be 400 some days” (I8, 2022). Another participant agreed, stating: “A lot of it was kind of getting the word out that the farm existed. It’s right there in the middle of Burlington, but a lot of people don’t know it’s there” (I13, 2022). However, several of the participants who brought up the disconnect between HREC and the university emphasized that they want increased investment from the university into HREC. As one participant said: “It’s a really beautiful, valuable space. And I just really would like to see it protected. However, whatever form that has to come in, I just really would like to figure out a way to make the university recognize that it’s not an expendable little pile of cash that they can just rely on” (I11, 2022).

Political Principles at Other University Farms

The University of California Santa Cruz (UCSC) Center for Agroecology, the North Carolina State University (NCSU) Agroecology Education Farm, and Tufts’ University’s New Entry Program were evaluated on their performance of the political principles and to see if similar themes emerged within the relationship between the farms and their partner universities. These university farms were selected due to similarities between their university farm programs and HREC and the similarities between their universities and UVM. This smaller sample included a university that conducts agroecological research, a land grant institution, and a farm that focuses on farmer training and incubation, respectively.

Frequency of Political Principles

As with the HREC data, all references to the political principles were coded using in vivo coding and frequencies for all principles were compiled. Among the three interviews, there were five mentions of the resource sovereignty principle, six mentions of the participatory governance principle, seventeen mentions of the supportive policies and investments principle, and three mentions of the producers and consumers in decision making principle. This demonstrates that within this grouping the supportive policies and investments principle was also discussed more frequently than the rest of the political principles.

Emergent Themes

Emergent themes in the discussion of all four political principles were isolated to highlight which challenges these university farms faced in their performance of these principles and what aspects of these principles they believed their farms did well.

Resource Sovereignty

A major theme that emerged in the conversations with UCSC and NCSU around the resource sovereignty principle was that their farms are on land that is owned by their universities. Both of the respondents from these farms stated that this prohibited them from providing land access to students or Indigenous populations. As stated by the UCSC participant: “we’ll have discussions about, you know, reparations... making land available... to kind of put control of our particular property into the hands of other people, but you know, at some level like, we don’t own the land, the land is owned by the University of California... so... we are constrained” (I18, 2022). The participant from NCSU stated that similar conversations had emerged amongst their students but that they were unable to give plots of land for student or community use due to the land being owned by the university.

However, all farms listed various ways that they were able to promote the principle of resource sovereignty despite these constraints. The participant from NCSU stated that the educational mission of the farm allowed them to have conversations with students about this principle so that they could consider these questions despite not being able to act on the topic of land sovereignty. The participant from UCSC highlighted their programs that focus on seed sovereignty:

One of our staff members... is very interested in seed sovereignty and has been doing a lot of seed saving and planting out of rare heirloom varieties... we have also put together

short courses... and also have done workshops that are open to the public where people can come and learn about seed sovereignty and the utility of people having control of their own seeds and saving them and propagating and waterways to... store seeds for longevity, etc. (I18, 2022)

The participant from Tufts also highlighted their programs that improve access to culturally significant foods, including that many of the farmers that their incubation program works with sell “other kind of leafy Asian greens that... their communities aren’t able to find in other places” (I17, 2022). Additionally, their program has a particular influence in working with socially disadvantaged farmers that have greater access to land and markets in which they can grow food that they wouldn’t be able to access without the New Entry Program.

Participatory Governance

Within discussions around the participatory governance principle, collaborative decision making was a common theme between the NCSU and UCSC respondents. The NCSU participant shared that their governance was “about as decentralized as it gets,” with student input and desires being the primary influence on how the program is run. Similarly, the UCSC respondent highlighted how they were working on integrating more student input into their decision making, including inviting students into staff meeting. They shared that there are some elements of hierarchy involved in their organization as it is embedded in the university, with “a lot of mysticism between... what kind of power does the director have and what did they decide” (I18, 2022), but that their focus was on creating committees within their organization to allow for more collective decision making and transparency.

The participant from Tufts did not address participatory governance within their farm yet instead interpreted this principle for their contributions to participatory governance within the broader food system. One aspect of this that they highlighted was that as of 2022 they have their first cooperative farm as a part of their farm incubator program, a form of collective governance they hope to learn more about through this process. Additionally, this participant shared that New Entry collaborates frequently with other university farms across the country “[in] an attempt to build a community of practice around some specific forms of farmer training that I think are instrumental in building a foundation for the future of food systems” (I17, 2022), in this way promoting networks that can lead to more participatory governance in the broader food system in the future.

Supportive Policies and Investments

All three participants from the other university farms stated that their farms do not participate in advocacy for policy in relation to the broader food system. The participants from UCSC and NCSU both stated that this was due to their being embedded in a university. As the UCSC participant said: “the University of California policy dictates that we’re not really allowed to sign on as an organization. And we could always sign on as individuals. So, I feel that that is something that’s like constraining our organizational capacity to do things there” (I18, 2022). The NCSU respondent echoed this, stating that as an educational facility their greater focus is on empowering students as future farmers or food system leaders to potentially make policy change in the future. The respondent from Tufts also had a focus on farmer empowerment, in their case by working with the farmers in their incubator program to hopefully get involved with the policy process to represent small farmers’ policy needs.

In regard to investments in the farms themselves, funding for the three university farms was a key subject. The participant from UCSC stated that only twelve to fifteen percent of their funding comes from the university, with the rest coming from grants, endowments, donations, and tuition for their educational programs. They stated that: “overall, that’s our biggest challenge,” as it requires a significant amount of work annually to raise the half of their budget that is consistently insecure. The Tufts New Entry program is almost entirely reliant on grant funding, while the NCSU Agroecology Education Farm is primarily reliant on the university for its funding. That participant shared that it is difficult to navigate the bureaucracy of the university system, including finding different departments from which they can seek funding. In particular, funding for staffing was one of their key challenges, in that they had to negotiate with the university administration and their dining services to get financial support to pay for their farm manager.

Producers and Consumers in Decision Making

As producers of food and education, each of the other university farms had established methods of collecting feedback to involve consumers of their products in their decision making. NCSU’s participant shared that their strongest feedback comes from their dining programs, with whom they regularly communicate to ensure that the food that they are providing for their dining programs meets students’ dietary needs and preferences. Participants from both UCSC and Tufts shared that they collect feedback regularly from their CSA members. UCSC’s program also

incorporates feedback from the consumers of their educational programs into their decision making: “as a response to demand from people who are interested in particular educational areas, so people who are growing food... so what are the things that... organic farmers and gardeners [want] to learn about, then their desires for educational programs is often driving our decision making” (I18, 2022).

In relation to their educational programs, the respondents from Tufts and NCSU shared that they hoped the participants in their programs would become empowered to use their voices in decision making in the broader food system. The participant from NCSU shared:

We’re trying to encourage more just awareness of our local agriculture and then food challenges. So, being able to talk about food insecurity, why we have a pantry... do we need [that] food pantry on campus? I think is helping them make decisions as our students become or are consumers and then future consumers... to come. (I16, 2022)

Similarly, at Tufts, they incorporated a focus on encouraging the farmers that participate in their incubator program to become involved in the policy process to allow for more producers of food to be involved in decision making. They shared:

One of our recent graduates lobbied the city of Lincoln to be able to kind of farm on some open space that was held by that city... and also working with those kind of officials, I think, in a variety of contexts, whether it’s access to land or new markets... puts them in the position of becoming... a leader in the food system... where they’re not just producing food, right, they’re becoming part of a community. (I17, 2022)

Relationship Between Other University Farms and Partner Institutions

Each of the university farms interacted with their partner universities in different ways. The other land grant institution, NCSU, also emphasized that their land grant mission played a role in their farm, providing assets to be used for research and extension. Each of the farms provided educational opportunities for their undergraduate students. NCSU’s Agroecology Education Farm provides a space for students to learn about agroecology as a part of their undergraduate education, and also provides space for students in clubs to host events, even mentioning that this outdoor space was critical during the COVID-19 pandemic to allow students to connect with each other safely. Tufts’ New Entry Program provides internship opportunities for undergraduate students, particularly emphasizing that as the program is primarily grant-funded, it provides an opportunity for students to learn about non-profit management. UCSC’s

Center for Agroecology provides a scaffold of different levels of engagement for undergraduate students to take advantage of, from one-day tours of the farm to student employment at the café on the farm where students can work up to 20 hours a week.

These university farms also had differing levels of engagement with faculty from their universities. UCSC's Center for Agroecology frequently hosts research on the farm, from observational projects to field-based trials. At NCSU's Agroecology Education Farm, faculty have the opportunity to do research on the farm but primarily engage by being part of the farm's advisory board. The representative from Tufts' New Entry Program stated that faculty engagement with the farm is "pretty much non-existent" but that they are open to having faculty use the farm for research opportunities. The university with the strongest relationship with their dining services was NCSU, whose Agroecology Education Farm sells all of its food to NCSU Dining. This relationship is one of the primary forms of engagement between the farm and the university as NCSU Dining provides funding and other resources to the farm and the farm communicates regularly with their dining services to assess what the campus's food needs are.

There were several emergent themes amongst the other university farms' data. Visibility amongst the campus community was mentioned by all farm representatives. The participant from Tufts stated: "I would love for more of the administrators and various colleges [to] be aware of our existence, because I think we've been largely under the radar for most folks across the university" (I17, 2022). This lack of visibility was partially attributed to the farm being more than 35 minutes away from the university. Visibility was also important to the participant from NCSU, who stated that the site for the farm was intentionally selected to be close to the main campus. Additionally, they stated that communicating impact via social media and hosting events on the farm for both students and administrators was a priority: "It felt like I was always justifying my existence... and so communicating impact from me was a way to keep them remembering how important this is and that it is a highlight for the university" (I16, 2022). Visibility was something that the participant from UCSC stated they benefitted from and received in-kind support from their administration with: "Our farm is very photogenic of course... so our campus farm shows up on a lot of brochures and a lot of... marketing materials that the university uses" (I18, 2022).

In-kind support was also a theme between all the other university farms. The participant from UCSC stated that while only about twelve to fifteen percent of their financial needs were

met by their university, other forms of support were the most substantial forms of support they received from their administration:

They love coming to the farm, they bring visitors to the farm, they send people here... they're very happy to help with grant proposals... to make sure that people are aware of the activities that we're doing... there's a lot of that kind of support that does not necessarily come in a dollar sign, but is very important for, like, keeping the organization going. (I18, 2022)

When asked what role this in-kind support plays for their farm, the participant stated:

It feels really good to know that people in leadership positions on their campus value what is going on in your unit or at your farm... so I think those benefits are really tangible because you know, if you're in an organization and you feel like your campus doesn't value you... it's hard to measure.... But... it's like a real value when you're like teaching a workshop and you know the chancellor showed up to learn about apple pruning... and also I think that having the expertise... if the campus is willing to pitch in their staff time to help us design like new logos... that's really valuable because otherwise we'd have to like contract out to do that kind of thing. (I18, 2022)

In comparison, the participant from Tufts stated that beyond covering some administrative costs the university did not provide other strong support to the New Entry Program, including financial as that program is largely grant-funded. The participant from NCSU listed financial support from their dining programs as well as some administrative support from certain departments to acquire essentials like farm equipment but stated that much of the work of advocating for the farm fell on the farm staff.

The participants from NCSU and UCSC both stated that staffing was a constraint they faced. The participant from UCSC said that while they felt their staffing needs were met currently, they would need more staff in order to expand their programming to more community-centered initiatives. The participant from NCSU highlighted staffing as one of the critical constraints in the initial establishment of the Agroecology Education Farm: "Everybody wants it. Nobody wants to pay for it... People will put in funds for like a student intern... but you need somebody that is like able to teach the production... Faculty are great, but being out there in a consistent way and seeing something from seed to plate is really important" (I16, 2022). They also described how even after they were able to hire someone to fill a farm manager position, it

took three years for that farm manager to be paid a “fair” rate. Both of these farms also highlighted land access as a key relationship between their farm and the university, with the land being owned by their respective universities and granted to the farms for their use.

Discussion

This work provides an essential analysis of the presence of the political principles of agroecology at a given site, particularly on university farms. It highlights the role that university farms can play in current and future farming communities as well as some key factors in the relationships between these farms and their universities, demonstrating potential areas for improvement in those relationships. This work adds to the literature on agroecology at urban and peri-urban sites, adding university farms as potential key stakeholders in the promotion of urban and peri-urban agroecology, and deepens the literature on the political dimension of agroecology by considering how transformative and political agroecology can operate even within apolitical institutional frameworks.

In all, the four political principles of agroecology were present at all university farms that were interviewed, yet all were impacted in some way by the university status of these farms. The university status of these farms was seen as a barrier to their ability to participate in resource sovereignty initiatives and broader food system policy initiatives. However, the educational missions of these farms often allowed for these farms to promote these principles while respecting their institutional missions. Each farm highlighted their role in the future of the food system by empowering their students as future consumers and producers of food. In addition to teaching students and future farmers about the importance of these principles, these farms focused on maximizing their impacts on the broader community and practicing these principles within their organizations. Partnerships with populations who are particularly invested in resource sovereignty, including Indigenous populations, were present at multiple farms. Each farm incorporated collective management practices in their daily operations even within a university framework that promotes hierarchies. This included providing frameworks for incorporating consumer feedback into their decision making from students, farmers, CSA members, and dining halls.

As the status of these farms as university farms was a key variable to their performance of the political principles of agroecology, it is essential to consider how the relationship between

these farms and their universities is present and impacts the performance of these principles. Each farm valued their role as a university farm as an asset to promoting and practicing different agricultural practices that commercial farms may not have access to without the funding structure and institutional support of a university. In particular, the dual focus on education and community impact were less impacted by economic viability due to their not being commercial farms. However, the magnitude and efficacy of these initiatives varied depending on the level of institutional support each farm received. In particular, staffing, funding, and land access greatly impacted each farms' ability to accomplish their institutional mission. In-kind investments in the farms were also revealed to be key, as they were viewed as important to the farms being able to access additional resources and feel supported amongst their university frameworks. In-kind investment and farm visibility amongst the university community were revealed to be essential to these farms' ability to contribute to their universities.

Despite the barriers and challenges the participants listed as important to these farms, the participants emphasized that these farms provide significant value both to their universities and their broader communities. They highlighted these farms as assets to student and farmer education, the viability of farming communities and farmer innovation, equity for marginalized communities, community food access, and, in the case of NCSU and UVM, the land grant mission of the universities. While investment in these farms was a frequently cited challenge, participants often emphasized that these farms would provide a positive return on investment as educational assets. They also emphasized that, despite facing institutional barriers, these farms were already succeeding at fulfilling their missions, and that more investment in these farms would only improve their performance. In all, the sentiments of these participants demonstrated the contribution university farms can make through innovation, empowerment, and education to current and future farming communities, and that increased investment in these farms would be beneficial to all benefactors of their essential work. These findings are important for stakeholders who interact with university farms as well as those invested in a transformative agroecology to consider university farms as an asset to their work.

Acknowledgements

This work would not be possible without the ardent support and participation of the staff members of HREC and the other members of the UVM UPAE research team: Martha Caswell, Claire Golder, and Nell Carpenter. Other key support was received by my faculty advisor, Victor Izzo, and other UVM faculty including my academic advisor Kelly Hamshaw, Scott Lewins, and thesis review committee members David Conner and Jane Kolodinsky. Last but not least, I would like to thank my family, friends, the Slade Ecological Cooperative, and Chrissy for their support through this process.

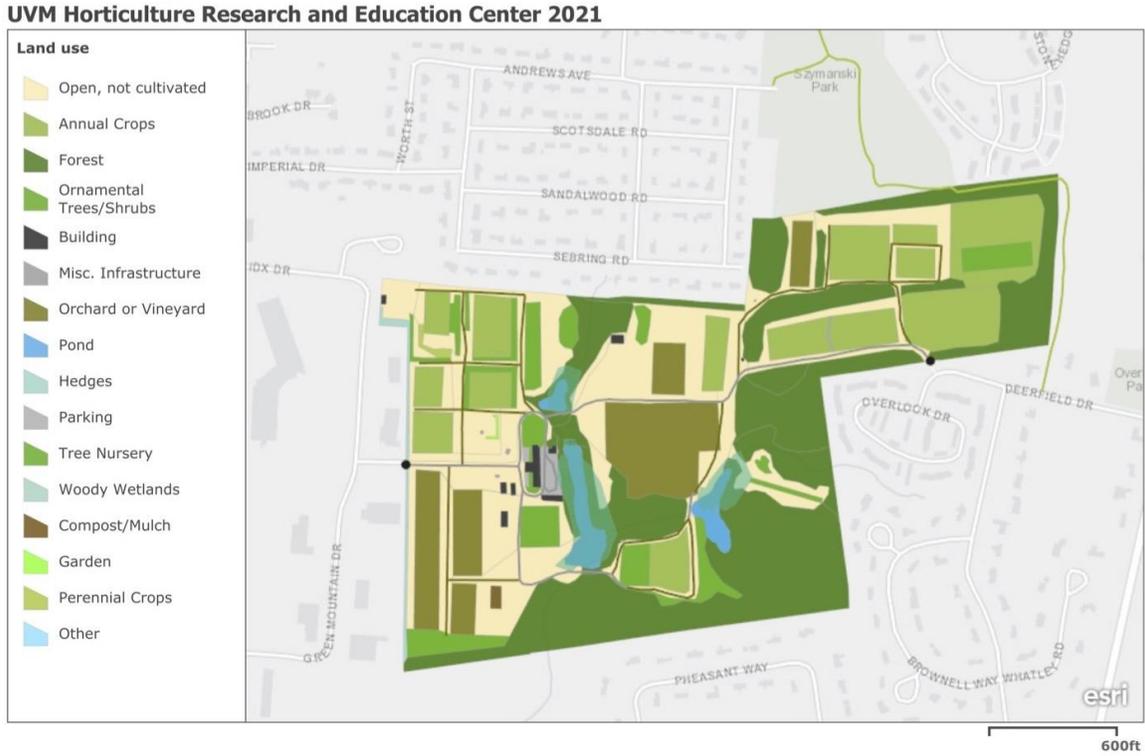
Declaration of Interest Statement: The author of this work is a student at the University of Vermont. The author has no other conflicting interests to declare on this work's material.

Appendix

Graphic 1: CIDSE (2018) Principles of Agroecology



Graphic 2: Map of HREC



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