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Title:

Agroecology of Urban Food Farming: Engaging scientists, producers and educators in collaborative BIOAg research planning

Principal Investigators

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- Judith Wait, Environmental & Natural Resource Science (ENRS) Doctoral student

Key words:

agroecology, urban agriculture, local food system, small-scale farming, participatory research, community gardens

Grant Abstract

This planning phase project involved conducting a needs assessment for the previously submitted Agroecology of Urban Food Farming project designed to analyze the effectiveness of organic and biologically intensive practices on soil quality and socioeconomic resilience. Our research goals address agronomic, scientific, and social dimensions of agroecology—the BIOAg practices, the soil science, and the information delivery network. The planning process involved participant observation site visits, consultation with soil and sustainable agriculture researchers in the field and at conferences, informational interviews, and convening with stakeholders in Vancouver and Portland. Planning to secure external funding for the Urban Food Farming project included the following categories of work: a) Conducting a needs assessment, convening a research team, and preparing grant proposals (following and building on planning steps outlined by the second reviewer of the BIOAg planning proposal); b) Submitting proposals; c) Partnership-building with community groups and other academics; and d) Collaboration and networking.

Project Description

This BIOAg grant supported the planning phase for research on the Agroecology of Urban Food Farming in the Vancouver-Portland metropolitan region. The overall goal of engaging scientists, producers, and educators in collaborative research planning is to foster academic-practitioner cooperation for ongoing Urban Food Farming research that integrates with extension and education. Urban agriculture (UA), which commonly uses biologically intensive and organic (BIOAg) practices, offers many benefits, such as improved food security and access to locally grown produce (Lovell, 2010). UA initiatives could support the WSU Extension strategic goals of improving food security, community livelihoods, and science literacy. To assess the effectiveness of UA initiatives for delivering environmental and socioeconomic benefits, Urban Food Farming research considers three dimensions of Agroecology (after Wezel, 2009): the farming practices, the science informing the practices, and the social aspects for information delivery.

The purpose of this BIOAg planning grant was to conduct a research needs assessment, develop the questions that need to be addressed, assemble a research team, and leverage funds to implement participatory research. The planning process featured participant observation at a wide array of events and site visits. In order to inform the scope of future research and the definition of urban agriculture to use, an extensive review of existing reports and literature on

urban agriculture and food systems initiatives was conducted. Informational interviews with potential research collaborators were designed to prioritize among specific research questions pertinent to urban farmers, educators, community organizations, and UA supporters. Networking took place in the field and at conferences, with researchers and producers, and stakeholders in Vancouver and Portland. The intent of pursuing these methods was to recognize unmet research needs on which to focus our attention in the region, advance prospects for cooperation and funding, and identify research participants.

Outputs

The BIOAg planning grant for the Agroecology of Urban Food Farming project was awarded in August, 2012. The planning process outputs were outlined in the proposal addendum (July 2012). Specifically, we

1. Completed the review of literature, food system reports, and existing studies;
2. Identified Urban Food Farming initiatives and research in the Vancouver-Portland region;
3. Conducted participant observation at a wide array of food system, agriculture and technical events;
4. Delineated Clark County as an appropriate geographic area focus for our research;
5. Defined urban agriculture for the purposes of Urban Food Farming research as food production and distribution that is integrated with the urban environmental, social, and economic systems;
6. Conducted informational interviews with the initiative leaders and supporters, as well as potential research team members;
7. Convened with multi-stakeholder groups in order to confirm current priority needs, build trust with potential partners, and convene the project research team;
8. Narrowed down the research questions applicable to the region's urban agriculture;
9. Closely followed funding sources and specific RFPs in order to re-prioritize and target the funding sources with the best match and the greatest likelihood of success; and
10. Worked with advisors to develop grant proposals, and recruited participants and collaborators for extramural proposals.

The following section of the report summarizes Key Outcomes. Next, further details of the needs assessment and process are summarized under Work Completed, including a description of urban agriculture in our region, findings about existing information, research, and support, and highlights of the technical issue assessment.

Key Outcomes

Through the planning process—using methods of participant observation, review of existing information, and interviews—the economic and environmental viability of Clark County farms emerged as a key area for research in this rapidly urbanizing region. To arrive at this conclusion, we engaged in participant observation that efficiently engaged a broad spectrum of stakeholders where they were already participating. For example, by attending Food System Council meetings over the entire BIOAg grant period, we heard about issues from a broad range of stakeholders, representing retail distribution, social services, public health, community gardening, nutrition education, nonprofit community development, and technical assistance. The five farmers on the Council span a diversity of perspectives, age, market tactics, and tenure in farming.

Such extensive outreach and follow up conversations helped us identify the need for a better understanding of the strategies that can successfully retain and enhance local food production capacity. Ongoing challenges to farm viability, associated with urbanization pressures, include limited land availability and loss of infrastructure. Support for agricultural food production in the policy and funding arenas is inconsistent, and there has been a reduction in assistance on technical, environmental, and production issues. This trend is in contrast to recommended solutions which are detailed in several reports cited below. Therefore, research is needed to inform future allocations of limited and reduced resources for technical and financial assistance, research, and policy program development. The current and potential areas of vulnerability for food producing farms need to be identified, so that solutions can be prioritized to address challenges that farmers face.

Participating in a wide array of technical assistance events also served multiple purposes for this needs assessment. To develop more specific research questions in the biophysical and agronomic realms of agroecology, we participated in conferences covering ecology, soils, and sustainable agriculture. At landowner and farmer sessions, we identified key collaborators among educators and found tools and approaches we could adapt for our research. We learned that approaches to farming are very diverse, individualized, and not well understood by non-farmers. By talking with urban area farmers at Farmers' Markets and farm tours, to gain a better understanding of their issues, we recruited future research participants willing to share their knowledge and practices.

This planning grant led to new funding from BIOAg to support participatory research with more than twenty cooperating farmers. Our unique contribution will be to conduct food system research at the farm level with farmers in our urban area that includes the challenge of integrating socioeconomic and environmental factors. In the course of our future on-farm research, we will identify useful indicators of environmental, economic, and social resilience for urban area food producing farms, and determine how these indicators can be systematically assessed in Clark County and similar areas.

Based on our BIOAg planning grant accomplishments—including the expanded research team, farmer participants, and key cooperators for grant applications—future funding prospects look favorable for integrated research that serves a common goal of supporting local farms' food production viability. We are now prepared to seek additional funding to support the participation of all the collaborators, integrate with education and Extension, and ensure effective outreach and dissemination. Research is needed to provide farmers, food system stakeholders, and policy-makers with guidance for addressing the specific vulnerabilities of local farms in this rapidly urbanizing county.

Work Completed

This section explains the relevant UA definition and research scope appropriate to this region. It also summarizes our findings about the current UA initiatives in the region and the research efforts existing or planned. Briefly mentioned below, we also investigated research and development efforts, such as the local food movement, urban agriculture, community gardening, food security, and family farm preservation. Finally, this section summarizes findings about the agricultural support system technical assistance, research, and environmental science issues.

Urban area agriculture in our region and research needs

Defining urban area agriculture & the scope of research needed

Defined as food production and distribution in urban settings, UA includes community gardens, personal gardens, commercial gardening, urban farms, community supported agriculture (CSA), and farmers' markets (after Goldstein et.al., 2011). Urban and peri-urban agriculture (UPA) (after van Veenhuizen & Danso, 2007) is a more inclusive definition. The Resource Centres on Urban Agriculture and Food Security (RUAF)ⁱ considers peri-urban areas part of UA, and distinguishes between "self-consumption" and "market-oriented" UA. We believe that adopting RUAF's view of urban agriculture, as being "integrated into the urban economic and ecological system," provides the best conceptual framework for this region. For research in this rapidly urbanizing Clark County context where several farms are within the enlarged Urban Growth Area (UGA) and development has expanded well beyond the UGA, including the peri-urban area is an appropriate scope. Approximately 25% of the County's commercial agricultural land is within the UGA, and 15% of identified Clark County farms were located within the 2004 city limits (Globalwise_Inc, 2007). By including the farms marketing food in the city, the research scope expands to include producers beyond the city and urban growth boundaries.

This assessment also distinguished between (A) gardening scale initiatives, primarily for personal or community provisioning, and (B) commercial operations, including those reaching consumers in urban settings via CSA and farmers' markets. Both kinds of UA, and agricultural food production more broadly, contribute to public health and healthy food access (CC_Public_Health, 2012). Clark County food system stakeholders are endeavoring to retain and increase local food production and sourcing in a region with significant food insecurity and development pressure. One challenge for both urban gardeners and small-scale farmers in this rapidly urbanizing region is producers' capacity to expand operations, that is, have access to land for growing food (CC_Ag.Preservation_Committee, 2009; Riestenberg, 2013).

(A) Gardening-scale urban agriculture in Clark County serves non-profit, educational, community development, and self-provisioning contexts aimed at increasing food security. For example, many of the community garden efforts help to improve the quality of food accessed in low income communities, such as the two farms and four gardens in Vancouver supplying the Food Bank in Clark County, and twelve faith-based projects. Some community garden programs have members grow an extra row of crops for charity in exchange for their membership. Clark County WSU Extension is co-located at the 80-acre Heritage Farmⁱⁱ within the Vancouver UGA, hosting Master Gardeners,' youth, and veteran program gardens, along with a community garden and 10-acre food bank garden. The Growing Groceries program, sponsored by the Clark County Public Health Department, Master Gardeners, and WSU Extension, trains mentors who in turn help backyard gardeners and residents of low-income and senior housing complexes grow food. These UA projects are a sample of the 82 community gardens in Clark County, comprising an additional 10-15 acres altogether.ⁱⁱⁱ

While these diverse and expanding community gardening initiatives would provide ample grounds for research, no particular problems for fundable agroecological inquiry emerged over the course of this needs assessment. Funding for technical assistance and education has been reduced in Clark County, however (see also Technical assistance, page 8 below). Even considering the environmental challenges for UA in the United States, recent research confirms

the inadequate levels of funding for multi-disciplinary research on UA, farmer education programs, and UA sector initiative expansion (Wortman & Lovell, 2013).

In addition, this planning process confirmed the gap in research attention on the Southwest Washington part of the metropolitan region. In contrast, current Portland State University (PSU) research encompasses all of the UA organizations and models in Portland.^{iv} Portland UA also benefits from significant research attention from other institutions (such as case studies comparing Portland to British Columbia's Vancouver in Canada: Mendes, Balmer, Kaethler, & Rhoads, 2008; Newman, 2008).

Portland's numerous and diverse UA initiatives also benefit from significant institutional and policy support (Multnomah County, 2010), demonstrated by the annual Food Justice Summit (2012, 2013). While the long term commercial viability of agricultural lands in the Metro region faces urbanization pressures, the Oregon municipalities' policies (Oregon Dept of Agriculture, 2007) seem relatively more balanced toward farmland protection.

(B) Urban and peri-urban agriculture in Clark County, on the other hand, is threatened by more rapid development and greater sprawl (Williams-Derry, 2012), along with other barriers to food production capacity (Clark County Agricultural Preservation Committee, 2009; Rural Lands Task Force, 2010). Clark County's government has a pro-development reputation among food system stakeholders. Even as consumer demand for accessible, sustainably raised local foods is growing, the rapid loss of economically viable farms and productive farmland continues across Washington (Ostrom & Donovan, 2013). Clark County is one of the most rapidly urbanizing Counties in the State (Born & Martin, 2011). In response to increased demand for local food, 14% of the farms in Washington participate in direct sales (IAW, January 2012). Clark County had the highest number of farm operations conducting direct marketing activity in Washington in 2007 (Ostrom, 2010). According to the 2007 Census of Agriculture, the number of farms in Clark County grew by 32% between 2002 and 2007, while the average size decreased by 16%, and the market value per farm dropped by 26%.^v More than 90% of the farms have less than \$25,000 sales value.^{vi} Vegetable production is one of the losing agricultural sectors, but data are limited, and many of the current farms are diversified, with a mixture of crops that often varies each year. By the 2002 Census of Agriculture, Clark County was down to 46 farms on 622 acres, whereas a decade earlier there were "larger farms and several hundred acres devoted to selected vegetable crops" (Globalwise_Inc, 2007). Clark County is still experiencing the transition from larger scale commercial commodity agriculture to smaller scale operations with diversified crop, product, and market profiles (Berk_Consulting, 2012).

These diversified farm operators need the support of research and extension to help improve their viability to supply food, along with their environmental, social, and cultural contributions to local communities (Ostrom & Donovan, 2013). To help guide the retention and expansion of food production capacity, a better understanding of these small-scale farms is needed. Information about the current and potential areas of vulnerability for the food producing farms could inform future research, technical assistance, and policy development.

In their efforts to support a strong local food system, the multi-stakeholder policy-informing Food System Council (2012) is proposing that the County's Growth Management Plan update (now underway) incorporate their recommendations. Council goals include developing "tools and strategies to encourage conservation of designated agricultural land, support

for...agricultural crops and products; increasing locally grown food access and food production opportunities; and creating local incentives.”

The Council’s (2013) analysis showed that “Clark County has about 80,000 acres that comprise the best farming land.” However, the tools “appropriate for our community,” which are needed to “maintain or expand” food production capacity, have yet to be developed, assessed, or recommended. This gap in knowledge about what tools would be appropriate for the farming community provides further impetus to conduct research on the environmental, economic, and social attributes of small-scale farms. By documenting the farmers’ needs and farm vulnerabilities, recommendations could be prioritized based on empirical data.

This research needs assessment identified gaps in support. While existing information from Clark County and State-wide reports reveal challenges faced by the agricultural community, along with recommended solutions, few of the strategies have been implemented. The analyses relied on agricultural census data, surveys or input from multi-stakeholder groups including up to seven farmers (CC_Ag.Preservation_Committee, 2009; Gilroy, 2008; Rural_Lands_Task_Force, 2010), or interviews with up to fourteen agricultural operators (Globalwise_Inc, 2007). The Future of Farming report, based on input from 2000 agriculture sector representatives from across Washington (WSDA, 2009), echoes the barriers and solutions of the local reports. The Washington State Food Systems Roundtable principles also follow on previous work, but many of the programs designed to address farm viability, marketing, and fresh food access were defunded by the State (IAW, January 2012).

Given that commercial agricultural policy, food security, and local marketing initiatives depend on local farms being viable, research involving more of the southwest Washington farmers is warranted. Research that can inform the prioritization and implementation of technical, educational, and policy solutions is needed.

Urban Area Food System research and development

To confirm the contextual importance of the revised research focus, we perused articles providing recommendations for food systems research priorities for the next five years, and found alignment with our emerging plans (for example, Clancy, 2012; Oberholtzer, Clancy, & Esseks, 2010; Rasmussen, Clary, Kurki, & Daines, 2013). We also tracked the sources of funding for such research, but did not find anything new or promising. We confirmed that funders prioritize support for larger collaborative projects, such as USDA and members of the Funders Network (Hodgson, Campbell, & Bailkey, 2011).

Local UA investigations are nested within larger surveys addressing UA and UPA across North America (McClintock, 2013; Oberholtzer, 2013). Survey research is intended to address contextual aspects of the local food system work, such as characterizing urban agriculture organizations and identifying needs of community garden coordinators. Results are aimed at influencing food policy on a national level. Such UA and food systems surveys inform our research and interview questions, as does policy-informing research combining survey and case study methodologies (Scherb, Palmer, Frattaroli, & Pollack, 2012). By accessing surveys from these researchers, we learned how we might harmonize with their approach, especially given that we had a pending proposal to facilitate and organize research on Alternative Food Systems Initiatives in Washington (Ostrom et al, November 2012; not funded).

While we might collaborate with PSU and others, and our part of the region has much to learn from Portland, our unique role in the regional context, and in Washington, is to focus on Clark County. Collaborating and/or tracking research in Oregon could provide a regional perspective on the southwest Washington foodshed, and foster information and training exchange. We participated in the Food System Research Symposium at PSU^{vii} to advance potential collaboration and share our research plans. (See also Collaborator Proposals in the Additional Funding section).

We anticipate our focus on the viability of local farm enterprises will lead to more favorable research funding opportunities, help generate support for southwest Washington farmers, and fill a gap in food system research attention in our region.

Technical assistance about farming practices and environmental science

By participating in seven landowner-oriented workshops, eight farm tours, and eight urban agriculture site visits, we found that farmer technical assistance program topics and venues cover a broad spectrum of issues. Locally, information about growing practices for gardeners and farmers is apparently available and accessible, through voluntary non-profit, conservation agency, and Extension services.^{viii} In addition, for gardeners, farmers, and local food system proponents, there are many on-line information sources and courses, and a wide variety of webinar events. Farm tours and field days organized by Tilth Producers of Washington and WSU Extension are popular as well. Clark County Environmental Services' Clean Water Program^{ix} supports several educational programs, some of which directly serve the County's clean water permit requirements (Clark_County, 2012). In partnership with WSU Clark County Extension, the County supports the Small Acreage Program,^x including the "Living on the Land" 12-week educational workshops for landowners covering the whole range of issues on soil, water, permits, regulations, and responsibilities of owning rural and/or farm land.

While the workshop offerings may seem abundant, "insufficient level of technical support available to local farmers" was listed as a barrier to preserving farms in Clark County, associated with the reduced size of the farming community (CC_Ag.Preservation_Committee, 2009). The report made recommendations on ways to increase research, education and technical assistance to benefit farmers. Most of the strategies to address the seven top barriers remain to be implemented. The Clark County food system assessment also recommended ongoing support for education, mentoring, and marketing—and noted the need for better information about farms to support farmland protection (Gilroy, 2008).

Counter to recommendations aimed at supporting the "future of farming" (including those of WSDA, 2009), Clark County recently eliminated the Watershed Stewards^{xi} program funding, and cut part of the funding for the Master Gardeners coordinator's position. Both programs feature train-the-trainer programs and hundreds of volunteers. Trained volunteers help with gardening, technical assistance, and mentoring, or with landowner education and restoration projects mitigating land use impacts. At the same time, programs and funding may be significantly cut in the (still pending) 2012 Farm Bill—programs that support Extension-led nutrition education positions, Clark Conservation District education, Natural Resource Conservation District (NRCS) land owner cost share grants, local food systems projects, and other key natural resources programs.

These adverse trends make partnership-building research strategies all the more important. We will integrate research and education in project proposals planned. Our revised research to

identify the specific needs and practices of the farmers can be used to inform Clark County, WSU Extension, Clark Conservation District, and other organizations. This planning grant has advanced the potential partnerships with these institutions, such that together, we might leverage external funding to provide technical services for priorities that enhance farming viability.

Technical and environmental science research topics considered

We attended twelve conferences—for soil scientists, urban ecologists, and sustainable agriculture researchers, educators, producers, and/or practitioners. While participating in technical sessions and farm tours, we considered a range of biophysical and agronomic research questions, including questions pertaining to water quality and conservation practices, as well as to soil management issues per our original research proposal. However, no one biophysical or agronomic topic emerged as crucial to local food system stakeholders. Since we don't know much about the practices or technical needs of urban area farmers, as diverse as they are, we decided to be more open about the revised research inquiry. We need to find out a lot more about farming practices through on-farm interviews and available farm data. As for the utility of the research, both soil and water quality are directly linked to natural resources and planning policy. Furthermore, farmers' conservation practices, at times co-funded by USDA, serve to benefit soil health, water resources, and biodiversity.

By considering a range of options, the assessment trajectory was beneficial in several ways. For example, by talking with watershed and water quality program staff and attending related workshops, we explored the relationships between water quality permits required of the County, agricultural production practices, water quality data, and the agencies involved. We looked at available data, reports, and maps, and reviewed literature. Through the Salmon Creek Watershed Council, we discovered ongoing PSU-led research addressing water quality related to urban area land use changes and riparian restoration (Grabowski & Janjua, 2013). There is also a plan for research on the effects of agriculture land conservation measures. Future collaboration could include complementary research on farming practices, in addition to partnering with the Clark Conservation District on funding proposals.

Regarding soils, our original research was designed to investigate when and where information about practices is applied by growers, and how effective the practices are toward goals such as crop production and soil stewardship. This question regarding the application of the technical information by the farmers, and the outcomes for the farms, still warrants future research. Adapting a farmer-friendly, participatory assessment tool such as the Visual Soil Assessment (Shepherd, 2009), which we learned about at the Soil Quality Network 2013 conference, is one approach that could be adapted to help answer the question about on-farm outcomes.

The assumption is that having access to applicable agricultural knowledge, and using such information to inform decisions about practices, will lead farmers to use practices which are effective in meeting production, social, and environmental goals. However, there may be limits to the applicability of the technical information to the farmers' situation. For example, organic farming systems research is just now progressing to work with low-till equipment, cover cropping, diversified vegetable crop rotations, and integrating animals (Collins et al., 2010; and continuing research). Emerging research on low tillage practices in Organic cropping systems may not be reaching southwest Washington yet. For very small, highly diversified CSA farms, how are reduced tillage principles and practices considered? Urban farmers may need better access to information about cover cropping as well (Wortman & Lovell, 2013). Presently, there

is little information on what practices local farmers are using, even among the few that are certified Organic, so we do not know what additional information, research, or support is needed.

Outreach & Education Activities

Our outreach introduced people in the region to the research interests of Agroecology & Urban Ecosystems Lab of WSU Vancouver. Invitations to collaborate on proposals resulted from our networking and event participation. We were contacted by WSU Clark County Extension, the local nonprofit Urban Abundance, and other food system researchers, for project scoping and/or proposal development. (See also the list of proposals under the Additional Funding sections Collaborator Proposals and Supported or Considered.)

Impacts

Short-term impacts (knowledge gained and shared)

Based on the needs assessment process, we gained necessary knowledge about the food system at the local County-level as well as the regional and State contexts. In turn, we share our research and assessment findings with the Food System Council and others, including help with citations from our literature database.

The researchers' access to information, proximity to the target community, and participation in regional and national networks, has resulted in the research serving a referral function as well. For example, when a key stakeholder expressed interest in farmer-incubation programs, several references to farmer training programs and initiatives were relayed. Becoming a research hub through the needs assessment process, we were also invited to share knowledge and expertise on the local food system at community forums such as the upcoming Vancouver Watersheds Alliance event.

Intermediate-term impacts (current and expected change in behaviors)

Interaction with local food system participants builds capacity for participatory research which includes behavioral changes toward more collaboration. The formation of a research team to secure funding is an impact of this planning project. The participants in this research network are expected to continue to work together to create new research and educational programs to serve the local food system.

By focusing on producers, planned participatory work with stakeholders will enhance impacts. Research documenting the vulnerabilities and needs of urban area farms could inform educational programs, land use planning and technical assistance resource allocation decisions, as well as policy instruments. By documenting key environmental, economic, and social attributes of small-scale farms, farmers' recommendations can be prioritized. Learning more about the supplier side of the food system will inform other researchers' proposals to assess market feasibility in the region, and could serve several existing and proposed market channels. More favorable marketing in support of local agriculture could yield multiple benefits in addition to supply. For example, a year-round farmers' market and growing site in Vancouver also aims to improve food literacy and food security through nutritional cooking classes.

Long-term impact (potential change in economic/ environmental/ social situations)

An important long-term impact expected is for future research findings to lead to more relevant and targeted agricultural support programs. Policies that improve farm viability can thereby lead to retaining and enhancing the numbers of commercially viable farms in this urban region.

Pursuing the revised research questions will directly help inform local and state-wide policy and education priorities. For example, the challenge of supporting local food-production agriculture is playing out in the context of the update of the county's 2007 Comprehensive Growth Plan, currently underway.

Another goal is for long term impacts to align with the Washington Food Systems Roundtable principles. The principles were informed by the response report to Governor Executive order # 10-02 (Inter Agency Working group: IAW, January 2012), wherein the focus areas are Hunger and Food Security, Health and Nutrition, Promotion of Washington Products, Farms and Farmland Protection, and Food Systems Infrastructure. Roundtable guiding principles include protecting the environment, promoting agriculture that uses best management practices, supporting economically viable food production infrastructure, enabling direct marketing networks, and "ensuring that farmers have access to the necessary resources including land, soil, water, and labor."

Additional Funding Applied for / Secured

In summary, the "Agroecological Assessment of Farming in the Rural-Urban Interface: Building Resilience in Regional Food Systems" application secured first year funding from BIOAg. Four funding sources remain likely opportunities for collaborative proposals with WSU Extension, Clark County Conservation, and local producer cooperators, listed below under Planned. As we plan more external funding proposals, we continue to track funding sources and related food system initiatives. Based on the new BIOAg grant, we will continue to engage cooperators, producers, and advisors in enhancing the participatory aspects of our research.

Two proposals applied for were denied. Four of the possibilities listed in our Planning Proposal Addendum (July 2012) were deemed inapplicable last year.

Collaborative Proposals for research projects led by other institutions may dovetail with our work and provide additional support. Listed below under Supported or Considered, we were also invited to participate in three marketing feasibility studies which would all benefit from our research with producers, and an urban garden research project similar to our original research proposal.

Secured:

1. Ostrom, Marcia, PI; Carpenter-Boggs, Lynne, Chappell, M. Jahi, Goldberger, Jessica; and Wait, Judith, Co-PIs. Dec. 2012. "Agroecological Assessment of Farming in the Rural-Urban Interface: Building Resilience in Regional Food Systems" WSU BIOAg \$13,975 approved; Year two \$25,824 pending.

Rejected:

2. Ostrom, M., Goldberger, J., Chappell, M.J., and Wait, J.. November 2012. Enhancing the Understanding and Effectiveness of Alternative Food Systems Initiatives in Washington through forming Participatory Research and Education Partnerships." Request for \$48,913 submitted to WSU Extension.
3. Chappell, M.J. and Wait, J.. May, 2012. Agroecology of Urban Food Farming. Submitted to Western Sustainable Agriculture Research & Education (SARE). Graduate student proposal for \$25,000.

Planned

1. The Western Center for Risk Management Education's Extension Risk Management Education (RME); proposal due early December, 2014.
2. Western Sustainable Agriculture Research and Education (SARE); proposal due June 2014.
3. Conservation Innovation Grants (CIG) (March 2014); funded through Natural Resource Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP), to "promote the development and adoption of innovative approaches."
4. USDA NIFA AFRI Competitive Grants Program (May 2014) for "improving small and medium-sized farm viability."^{xii}

Collaborator Proposals:

By considering farming on the urban fringe, our research overlaps with the following efforts.

1. Newman, L., Dale, A., Ling, C., Wittman, H. Bose, P., Chappell, M.J., Keil, R. 2012. Understanding agriburbia: conflict and innovation on the rural/urban fringe. \$214,850 awarded by Research Council of Canada. Agriburban Research Centre established to enable future funding to support U.S. partners.
2. McLain, R., Chambers, K.J. and Chappell, M.J.. 2013. Promoting Socio-ecological Resilience in the Rural-Urban Interface. Tabled for re-consideration in Spring, 2014.

Supported or Considered:

Upon invitations to participate in collaborative proposals, we investigated several related projects with potential partners. Our future role could be to provide supply-side information about local farms to the market feasibility studies.

1. Brun, C.A., Krebill-Prather, R., Bowman, E., and the HDPM Board of Directors. Proposal for the new Hazel Dell Public Market (HDPM) feasibility study. Submitted to Meyer Memorial Trust, May, 2013. Rejected. HDPM directors seek funding from other sources.
2. Brun, C.A. and others. 2013. Food hub development feasibility. Currently in scoping phase.
3. Urban Abundance, Clark County Food Bank, and Harvest Against Hunger partnership. August 2012. The feasibility of accessing a USDA Community Food Security grant was considered, but the USDA program was discontinued.
4. Weddell, B.J.. 2012. Conceptual Framework for a Proposal on "Nourishing Healthy Soil Ecosystems in Community Gardens in Washington." Deferred.

Graduate students funded

Judith Wait, Research Assistant, Environmental and Natural Resource Science (ENRS) Doctoral student, WSU Vancouver

Recommendations for future research

The overall Urban Food Farming research goal is to document successful strategies and key challenges for urban agriculture initiatives in order to advance the environmental, economic and social sustainability of local food production agriculture. The original research proposal (Dec. 2011) was to examine the effectiveness of biologically-intensive and organic (BIOAg) practices on soil quality and socioeconomic resilience in Vancouver, Washington and Portland, Oregon.

However, based on this BIOAg planning grant needs assessment, we have refocused our research on the small commercial farms engaged in marketing food directly to consumers. Our motivations include the multiple roles these farms play in the local food system and the need for research and evaluation of their agronomic, socioeconomic, and environmental sustainability. These farms are vital components of the local food system, and are receiving increasing citizen and agency support. The retention of agricultural production capacity and farmland aligns with several goals of new Washington State Food System Roundtable (IAW, January 2012), and is a timely local policy goal (Clark_County_Food_System_Council, 2013).

By participating in a broad spectrum of farm and food system activities for this BIOAg planning grant, we identified farm viability as needing research attention. Our key research questions for the investigation are: 1) What are the current and potential areas of vulnerability for food producing farms? 2) What will be needed to retain and enhance the food production capacity in this rapidly urbanizing region? 3) What are useful indicators of environmental, economic, and social resilience for RUI food producing farms and how can these indicators be systematically assessed in Clark County and similar areas? The revised plan for future research puts farms and farmers at the center, and serves to inform policy, education, Extension programs, and future research. Information about the supply side of the food system will also contribute to market feasibility studies.

Based on research to identify farm vulnerabilities, we will find out what will be needed to support retention and enhancement of food production capacity. By documenting key environmental, economic, and social attributes of small-scale farms, the farmers' recommendations can be prioritized, and their needs addressed.

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ⁱ RUAF Foundation <http://www.ruaf.org/node/512>

ⁱⁱ Clark County 78th Street Heritage Farm: <http://www.clark.wa.gov/farm/>

ⁱⁱⁱ Community Grown Website Map of Community Gardens: <http://communitygrown.org/map-of-clark-county-gardens/>

^{iv} Nathan McClintock, Assistant Professor of Urban Studies and Planning, Portland State University. <http://www.pdx.edu/usp/profile/meet-assistant-professor-nathan-mcclintock>

^v USDA. 2009a. *2007 Census of Agriculture: United States Summary and State Data*. USDA. http://www.agcensus.usda.gov/Publications/2007/Full_Report/usv1.pdf.

^{vi} USDA. 2009. *2007 Census of Agriculture: Small Farms*. <http://www.agcensus.usda.gov>.

^{vii} Regional Food Systems Research Symposium. <http://www.pdx.edu/sustainability/solutions-blog/food-systems-symposium-draws-researchers-from-across-the-region>

^{viii} WSU Clark County Extension (<http://clark.wsu.edu/>);

^{ix} Clark County Environmental Services' Clean Water Program (<http://www.clark.wa.gov/water-resources/index.html>),

^x Clark County WSU Extension Small Acreage Program: <http://clark.wsu.edu/horticulture/smallAcreageProgram.html>

^{xi} Watershed Stewards website: <http://clark.wsu.edu/volunteer/ws/index.html>; Clark County Watershed Stewards Facebook page: <https://www.facebook.com/ClarkCoWatershedStewards>

^{xii} <http://www.nifa.usda.gov/funding/rfas/afri.html>