A Needs Assessment Survey of Small Farmers in Oregon's Mid-Willamette Valley

by
Erin Wever

A THESIS

submitted to

Oregon State University

Honors College

in partial fulfillment of
the requirements for the
degree of

Honors Baccalaureate of Science in Environmental Sciences and Environmental Economics and Policy
(Honors Scholar)

Presented May 28, 2019
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AN ABSTRACT OF THE THESIS OF

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Abstract approved:_____

David Lewis

Agriculture is a key component of Oregon's economy, particularly in the mid-Willamette Valley. OSU Extension provides important educational services to members of the agricultural community. Programming options can be guided by needs assessment surveys, which are used to determine gaps in knowledge and understanding for communities. The objective of this study was to develop and execute a survey to gather information on: 1) small farm characteristics, 2) agricultural education needs and challenges, 3) small farmer research interests, and 4) communication preferences for small farmers throughout the mid-Willamette Valley. A fifth objective to evaluate methodology for determining typologies was established during data analysis. Twenty-four farmers participated: 12 in-person, 2 by phone, and 10 online. Conventional farming techniques were practiced by 16 farmers, while 8 practiced organic methods. Educational programs of interest were "soil fertility and plant nutrition", "pollinators", and "habitat for beneficial insects". Self-identified research interests included "weeds, viruses, and pests". Preferences for communication were "email" and "e-newsletter", while "OSU Publications" was the most preferred Extension resource. This information, when used by

Extension, can help better serve the needs of the small farmer community within Oregon's mid-Willamette Valley, and can serve as a method for increasing relationships with small farmers.

Key Words: small farms, Extension, needs assessment, agricultural education

Corresponding e-mail address: wevere@oregonstate.edu

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Honors Baccalaureate of Science in Environmental Sciences and Environmental Economics and Policy project of Erin Wever presented on May 28, 2019.

APPROVED:

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David Lewis, Mentor, representing Department of Applied Economics

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Javier Fernandez-Salvador, Committee Member, representing Department of Crop and Soil Sciences

_____

Mallory Rahe, Committee Member, representing Department of Applied Economics

_____

Toni Doolen, Dean, Oregon State University Honors College

I understand that my project will become part of the permanent collection of Oregon State University, Honors College. My signature below authorizes release of my project to any reader upon request.

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Erin Wever, Author

Introduction

Agriculture serves a key role in Oregon's industry, state economy, and employment, with approximately 13.2% of the state's sales being attributed to agricultural products, and an approximate 86,240 individuals hired to perform farm labor (Sorte and Rahe, 2015; USDA NASS, 2019). Top agricultural commodities, at the statewide level, include cattle and calves, nursery, and hay (USDA NASS, 2019). In addition to its statewide designation, Oregon is generally divided into eight distinct growing regions: Coastal Oregon, Southern Oregon, Central Oregon, Southeast Oregon, Northeast Oregon, Columbia Plateau, Mid-Columbia, and Willamette Valley (ODA, 2017). Within the mid-Willamette Valley region, an excess of 170 different crops are produced, resulting in a market value of regionally produced agricultural products totaling approximately $1.2 billion in 2017 (ODA, 2017; USDA NASS, 2019). The most prominent crops produced within this region are grains, hay, and grass seeds (ODA, 2017). The mid-Willamette Valley is comprised of Marion, Polk, and Yamhill counties. Currently, Marion county has the highest market value of agricultural products sold within the state (USDA NASS, 2019).

A farm is defined by the USDA as any place where $1000 or more of agricultural products are produced and sold (USDA NASS, 2019). Information on farming operations was gathered by the Census of Agriculture, which had a response rate of 73.4% within the state of Oregon (USDA NASS, 2019). Approximately 37,616 farms are located within the state, of which the average farm size is 424 acres (USDA NASS, 2019). According to the 2017 Census of Agriculture, 16% of Oregon's farming operations are located in Marion, Polk, and Yamhill counties (USDA NASS, 2019). Marion county hosts 2,761 farms, while Polk and Yamhill counties have 1,243 and 2,138 farms, respectively (USDA NASS, 2019). Generally, farms within the mid-Willamette

Valley are smaller, from an acreage standpoint, than farms on the eastern half of the state. Accordingly, the average farm size within Marion county is 105 acres, 120 acres in Polk county, and 79 acres in Yamhill county, as of 2017 (USDA NASS, 2019).

Rates of conventional and organic farming practices also differ according to regional location. As of 2019, 891 farming operations are certified organic at the statewide level, with an approximate value of organic products sold during 2017 totaling $278 million (USDA Organic Integrity Database, 2019; USDA NASS, 2019) organic products sold in 2017 was approximately $278 million (USDA NASS, 2019). The mid-Willamette Valley, comprised of Marion, Polk, and Yamhill counties, holds approximately 11.6% (103 farms) of the state's certified organic farming operations (USDA Organic Integrity Database, 2019).

Small scale farming operations are defined by the United States Department of Agriculture (USDA) as having gross cash farm income (GCFI) totaling less than $350,000 per year (USDA ERS, 2013). Gross cash farm income includes government payments, cash receipts, and other farm related income, and is measured as annual income prior to expenses (USDA ERS, 2013). However, the Census of Agriculture does not currently collect data on GCFI, but instead, on gross sales. Gross sales, unlike GCFI, exclude some sources of farm income, such as livestock grazing fees, and include the value of production that typically accrues to contractors and landlords (USDA ERS, 2013). Prior to 2013, small farms were defined by the USDA as operations that had gross sales totaling less than $250,000 (USDA ERS, 2013). On a statewide level, approximately 92.6% of Oregon's farms are characterized as small farms based upon their gross sales totaling less than $250,000 (USDA NASS, 2019). However, this characterization does not necessarily mean that these farms are operating small acreages, and does not exclude the possibility of an individual owning more than one farm. In turn, understanding the current

characteristics and needs surrounding small scale farming operations is important to furthering Oregon's agriculture industry.

In the field of agricultural education, needs assessments are commonly used to better understand the demands and desired outcomes of farmers within a specific community (Barbercheck et al., 2009; Blodgett et al., 1997; Bredikin, 2016; Dill & Beale, n.d.; Gaul et al., 2011; Goodwin & Gouldthorpe, 2013; Licht & Martin, 2007; Muhammad et al., 2009; Trede & Whitaker, 1998; University of Minnesota Extension, 2015; Vergot III et al., 2005; Santoyo Rio, 2013). Needs assessment surveys are used to determine gaps in knowledge for a group of individuals and are commonly utilized to inform future actions, such as educational services and organizational improvement, by decision-makers and program developers (Altschuld and Watkins, 2014; English and Kaufman, 1975; Witkin and Altschuld, 1995). These needs assessments, when used by organizations, provide valuable insight about program usefulness, desirability, and accessibility to community members, all the while serving as the starting point for educational design (McCrawley, 2009; Kaufman, 1977)

As a group, small farmers have a unique set of educational needs, challenges, and research priorities, primarily due to the diversity in crops produced and production characteristics within the small farmer community (Manganyi et al., 2006; Robotham & McArthur, 2001). As such, it is important for regional Extension programs to develop educational resources and programming messages that effectively address the wide range of topical areas of interest for small scale producers, while also engaging these individuals within the learning process (Kroma, 2003). It is acknowledged that individuals use multiple methods of communication and information channels, making it necessary for materials to be delivered by Extension in a manner which is preferred and well received by agricultural clientele (Rogers, 2003; Israel, 1991). In the past,

needs assessment surveys have been used by Extension organizations to gather information on preferred methods of communication for agricultural communities (Santoyo Rio, 2013; Dill and Beale, 2015; University of Minnesota Extension, 2015; Bredikin, 2016; Vergot III et al., 2005).

The objectives of this needs assessment survey are to 1) identify characteristics of small farmers within Oregon's Mid-Willamette Valley, 2) determine small farmer education needs and challenges within the field of agriculture, 3) assess and gauge interest in potential Extension research projects, and 4) evaluate small farmer communication preferences and channels.

Materials and Methods

Oregon State University (OSU) Extension was interested in determining the educational needs and priorities of small farmers in Oregon's mid-Willamette Valley to help evaluate and shape their educational, research, and communication offerings. Prior to 2016, the region did not have a formally established Small Farms program, making it difficult to measure and determine the desires of the local small farmer community. To aid with this process, a needs assessment survey comprised of twenty-three questions was developed to identify small farmer characteristics (acreage, farm location, crops produced, etc.), specific educational interests and challenges (soil fertility and management, specific crop production, certifications and regulations, and integrated pest management), research topics (irrigation and organic fertigation, and olives), and communication preferences (Extension resources used, communication channels, and importance of Extension offerings). The survey was developed by OSU Extension faculty and student researchers and was based off of a preliminary needs assessment survey conducted in 2016, in addition to the research interests and specializations of Extension faculty members. The survey

was reviewed and edited by several Extension faculty and staff members. Furthermore, farmer input regarding questions and survey evaluation as a tool was received prior to approval.

A combination of multi-option, ranking (Likert-type), and open-ended questions were asked, allowing participants to also provide feedback and insight to topical areas that both were and were not specifically included within the survey itself. Likert-scale questions are generally focused on a specific theme but include four or more sub-questions related to specific topical areas (Boone and Boone, 2012; Clason and Dormody, 1994). The scores and rankings from each of these sub-questions are then combined to calculate a composite score for the Likert-scale question set (Boone and Boone, 2012; Clason and Dormody, 1994). Unlike Likert-scale questions, Likert-type questions do not result in a composite score for the question set, instead allowing each subtopic to be scored and assessed individually (Clason and Dormody, 1994). For the purposes of this study, a Likert-type scale with five choices was used to evaluate farmer interest in specific educational and communication areas, with 1 corresponding to low interest, 2 to medium-low interest, 3 to medium interest, 4 to medium-high interest, and 5 to high interest. Participating farmers were also provided with the opportunity to provide their own ideas for potential Extension research.

The Institutional Review Board at Oregon State University requires research projects to gain institutional approval prior to engaging in research with human subjects. During the approval process, consent guidelines and research techniques were discussed in order to protect the rights and confidentiality of participating individuals. The survey was approved in August of 2017, after which three individuals were trained on interviewing and data collection techniques by the primary investigator.

Purposive sampling techniques were used to select small farmers for participation in the needs assessment survey. A form of non-random sampling, purposive sampling allows researchers to identify and select individuals for participation that can provide information of interest (Bernard, 2017; Cresswell and Plano Clark, 2011). For the purposes of this survey, the population of interest was comprised of mid-valley small farmers that had previously consumed Extension resources. The purposive sampling method is typically used throughout qualitative research (Patton, 2002).

In 2016, a food hub survey, developed jointly by OSU Extension Service and ECONorthwest, was administered throughout the mid-Willamette Valley. A contact list of potential survey participants was compiled into a database of small farmers, relying on Marion County Tax Assessor data and previously developed Extension contact lists (Smith, 2018). OSU Extension recruited needs assessment survey participants from this small farmer database, as these individuals were located within the mid-Willamette Valley and were likely to be familiar with the work and current course offerings of the mid-Valley Small Farms Program. Three individuals sent recruitment emails and administered recruitment phone calls to approximately 250 individuals (approximately 4% of estimated mid-Valley farmers). In addition, online survey participants were recruited through announcements placed in the mid-Valley Small Farms e-newsletter. As a result, many participating individuals were familiar with or had previously been in contact with OSU Extension prior to participation in the needs assessment survey. While participants located directly within the mid-Willamette Valley (Marion, Polk, and Yamhill counties) were the primary audience, individuals were not excluded from participating if they had additional farming locations throughout neighboring counties. Furthermore, some individuals participating online had farms exclusively located in counties outside of the mid-

Willamette Valley. While their responses were used throughout data analysis, a discussion of the validity of their inclusion in future research is provided.

Twenty-four small farmers participated in the needs assessment survey between November 2017 and March 2018. Twelve individuals participated in-person, ten online, and two by phone. In-person surveys were completed at the farmer's property and were recorded for future reference.

Data from all 24 participating small farmers were first analyzed without grouping farmers by shared characteristics. For Likert-type questions, the mean of provided responses for each subtopic within the question sets was used for analysis purposes. Data was then divided into categories, including: farming practice, years of experience, acreage, farm location, and crops produced. The data within these categories were then compared to one another using two-way tables, providing additional information on the specific characteristics, needs, and desires of subsets of the survey participants.

For the purposes of this study, two groups of farmer typologies were determined: farming practices (organic and conventional) and acreages ("small" sized, "medium" sized, and "large" sized). Individuals grouped into the "conventional" typology included those that employed traditional conventional practices, in addition to those that practiced other farming techniques, such as healthy soil building. The "organic" typology included individuals that were certified organic, transitioning to organic, or exempt (less than $5,000 in gross sales from organic products). "Small" acreage sized farms were characterized as having less than 15 acres of land in agricultural production, "medium" sized as having between 15.1 and 50 acres of land in production, and "large" sized as having more than 50.1 acres of land in agricultural production. The typologies corresponding to production acreage were developed in order to assess

similarities and differences between “small”, “medium”, and “large” acreage farms. However, this development also served as an opportunity to evaluate an indirect, fifth objective aimed at assessing the methodology for selecting farmer typologies.

Qualitative groups were also created to describe the farmer provided responses to free response questions. Responses were analyzed to determine similarities, and then coded into specific categories. Examples of this coding, with specific reference to Extension resources used by participating farmers, include “workshops, classes, and seminars”, “phone calls and Extension agent contact”, “OSU publications and information”, “small farms conference”, and “small farms school”.

At times, percentages corresponding to categorical breakdowns within questions do not add to 100%. This is because farmers were allowed to indicate their participation or interest in more than one topic within specific questions.

Analysis shall first be provided for a grouping of all survey participants and then presented according to typology.

See Appendix 1 for the survey questionnaire used during in person and phone interviews and also made available to online participants.

Results

Farming Operation Characteristics

All Participant Analysis

On a survey-wide basis, participants were located throughout six counties: Marion (58.3% of total participants), Polk (29.2%), Yamhill (8.3%), Washington (8.3%), Clackamas (4.2%), and

Benton (4.2%). These individuals reported varying degrees of farming experience (Table 1), however, half (12) of the participants reported having 11 or more years of farming tenure. The majority of survey participants (58%) farmed between 0 and 15 acres of land (Figure 1).

Years of Farming Experience				
Less than 1	**1 to 3**	**4 to 10**	**11 to 19**	**More than 20**
2	3	7	3	9

Table 1: Years of farming experience for participating farmers

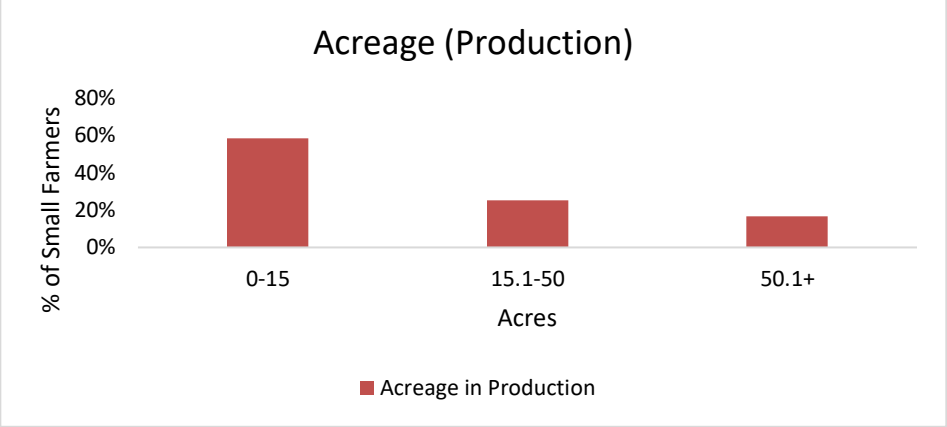

Figure 1: Percentage of participating farmers with categorized production acreage

Eighteen small farmers reported using conventional farming practices, while six practiced organic farming methods (organic, transitioning, and exempt). A breakdown of crops produced by all participating farmers is provided in Figure 2. Crops produced were broken into the following categories: vegetables; orchard crops; berries, small fruits, and wine grapes; meats; eggs; dairy and cheese; grains; pasture; flowers; herbs; starts; value added products; and other.

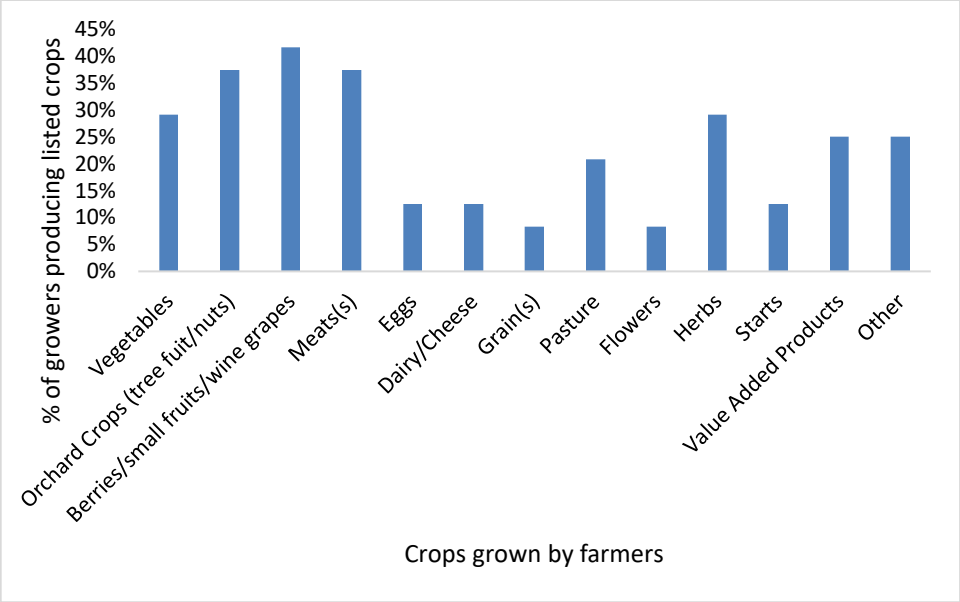

Figure 2: Percentage of participating farmers producing each crop

Participating farmers were also asked to provide information on their business and marketing challenges. The most frequently self-identified challenges were related to market expansion and advertising (Figure 3).

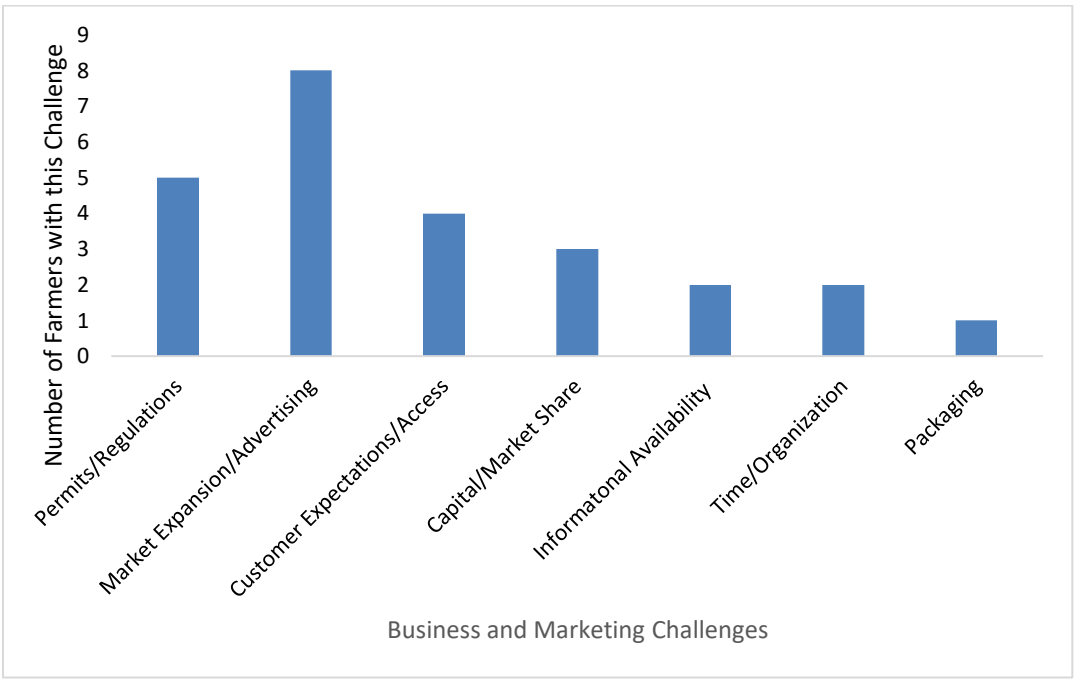

Figure 3: Business and marketing challenges for participating farmers

Organic and Conventional Growers

The organic and conventional typologies were grouped to compare years of farming experience for participating farmers. On average, participating growers from both the organic and conventional categories had four or more years of farming experience (62.5% and 87.5%, respectively) (Table 2).

Farming Practice	**Years of Farming Experience**				
	Less than 1	**1 to 3**	**4 to 10**	**11 to 19**	**More than 20**
Organic	0	3	1	1	3
Conventional	2	0	6	2	6

Table 2: Years of farming experience for participating organic and conventional farmers

Products commonly produced by conventional growers included meats (50% of participating conventional growers); orchard crops (38%); berries, small fruits, and wine grapes (38%); and value-added products (31%). For organic growers, the most commonly produced crops were berries, small fruits and wine grapes (50% of participating organic growers); herbs (50%); vegetables (38%); and orchard crops (38%). See Figure 4 for a categorization of crops produced by participating conventional and organic growers.

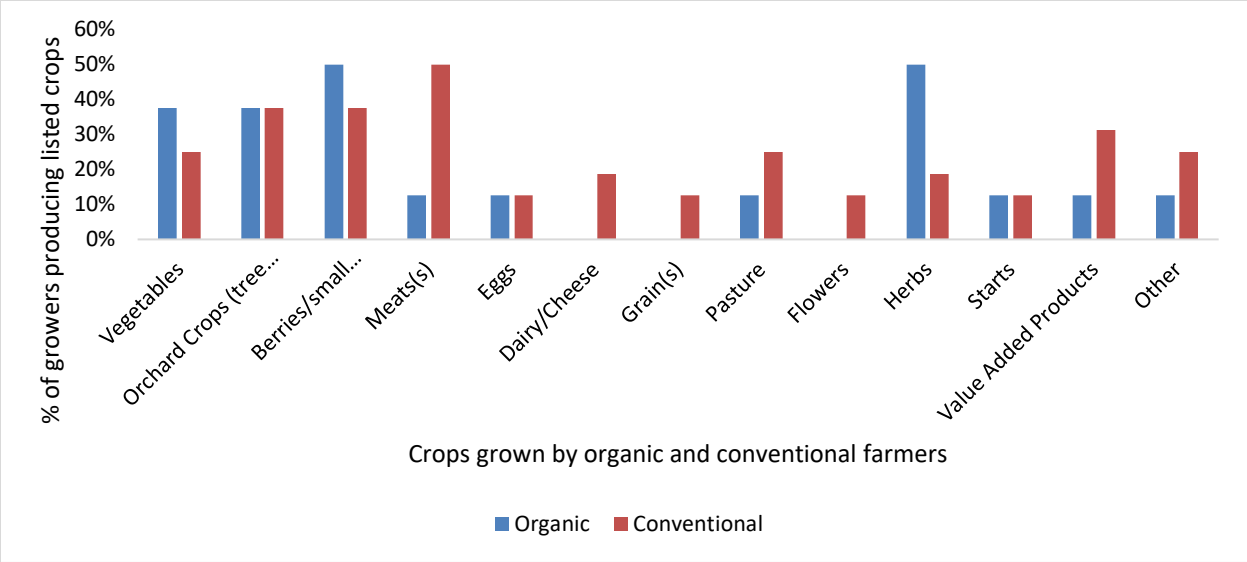

Figure 4: Percentage of participating organic and conventional farmers producing each crop

On average, organic producers had lower gross sales on agricultural products than conventional growers. Five participating organic growers had gross sales less than $9,000 in the previous year, while only 8 (50%) of conventional growers grossed less than $9,000.

Both organic and conventional growers reported on-farm sales and farmers markets as sources of product sales, and these two channels were the most commonly indicated market channels by participating growers.

Small, Medium, and Large Growers

An additional typological grouping corresponding to production acreage was chosen for analysis purposes. Fourteen farms fell within the “small” production acreage category, while six were characterized as “medium”, and four as “large”.

Production acreage was compared to the years of farming experience held by participating individuals. Half of the “small”, “medium”, and “large” sized farmers had eleven or more years

of farming experience. Of the individuals with "large" production acreage (50.1+ acres), zero participants had less than 4 years of farming experience. However, 50% (two) of these farmers were still characterized as new and beginning farmers (Figure 5).

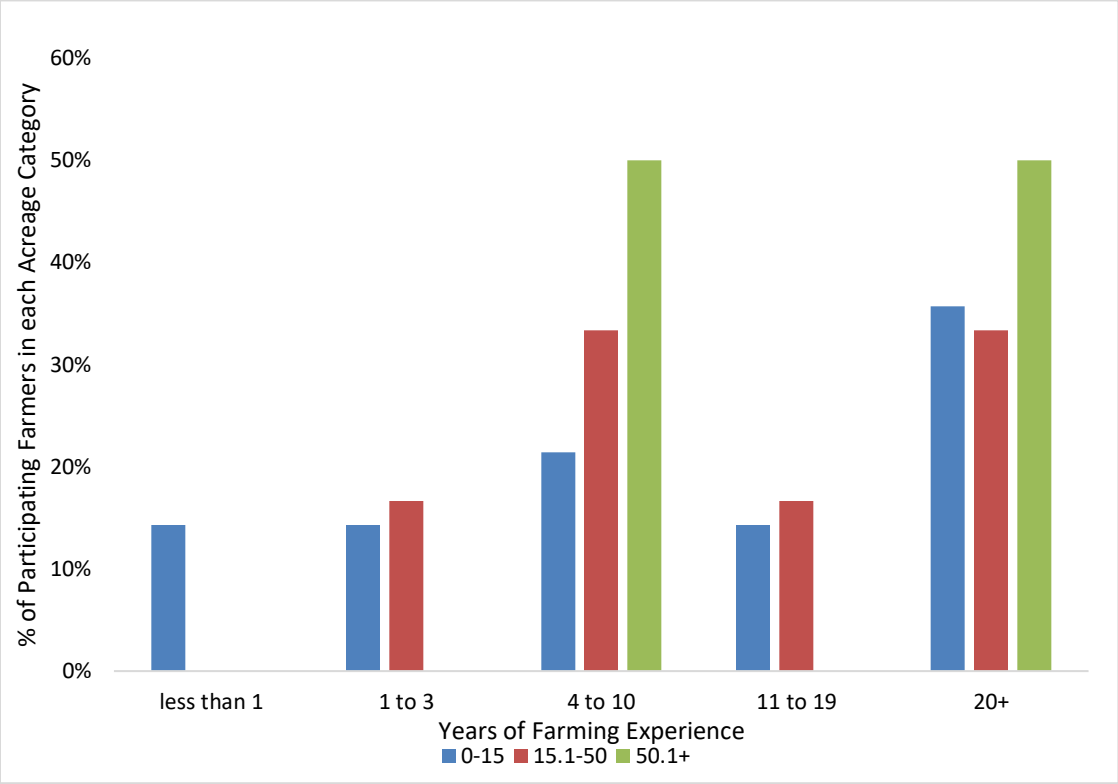

Figure 5: Percentage of participating farmers in each acreage category ("small", "medium", "large") by years of farming experience

Farming techniques, conventional or organic, were determined for the different production acreage groupings. Nine individuals with the "small" sized typology practiced conventional farming techniques, while five employed organic farming methods. Within the "medium" sized typology, three participating individuals practiced conventional farming methods, while the other three individuals were organic farmers. 100% of participants (4) with more than 50 acres of land in production practiced conventional farming practices.

The crops most commonly grown by “small” sized producers included “berries, small fruits, and wine grapes” (43%), “orchard crops” (29%), “meats” (29%), and “herbs” (29%). “Medium” sized producers commonly produced “vegetables” (67%), “orchard crops” (67%), and “berries, small fruits, and wine grapes” (67%). The crops most commonly grown by “large” sized producers included “meats” (75%), “grains” (50%), and “pasture” (50%). See Figure 6 for a complete distribution of crops produced by “small”, “medium”, and “large” producers.

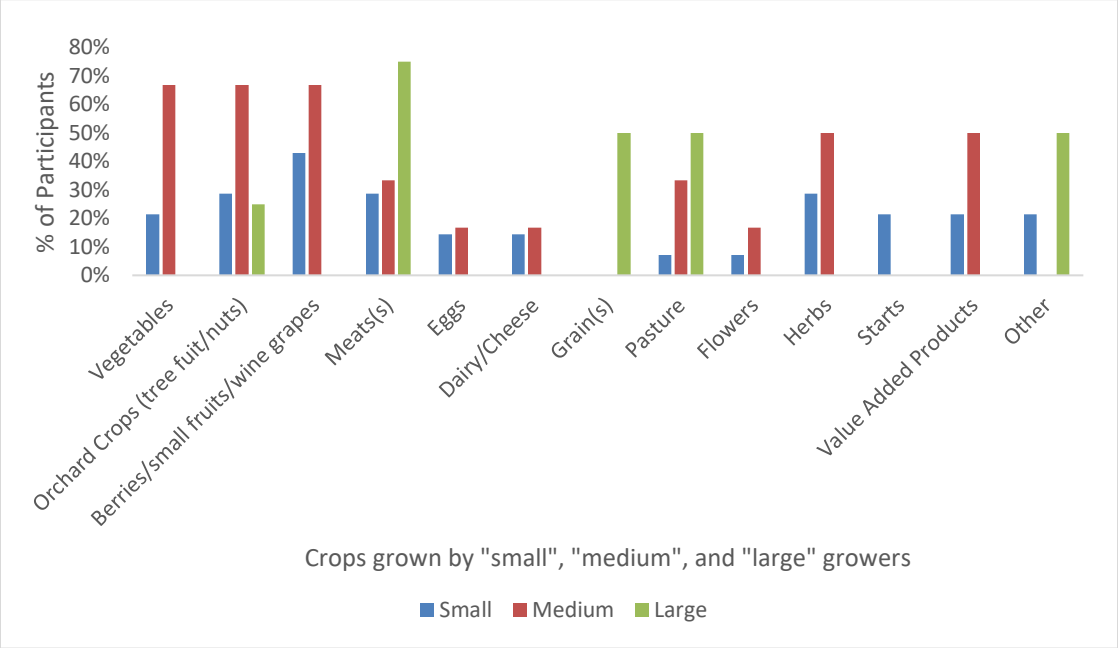

Figure 6: Percentage of participating “small”, “medium”, and “large” growers producing each crop

Gross sales on agricultural products were also measured for “small”, “medium”, and “large” sized producers. Ten “small” producers had gross sales totaling less than $9,000, while four “medium” sized producers grossed over $10,000 in the previous fiscal year. Furthermore, three “large” producers grossed more than $50,000 on agricultural products in the previous year.

The most prevalent market channels for “small” producers were “on-farm sales” (86% of farmers utilized this market channel) and “farmers markets” (43%). For “medium” producers, “on-farm sales” (67%), “farmers markets” (50%), “community supported agriculture (CSA)” (50%), “restaurant” (50%), and “wholesale” (50%) were the most commonly used. The most prevalent market channels for “large” producers were “on-farm sales” (50%) and “wholesale” (50%).

Educational Programming

Survey-wide Analysis

Programs of interest for participating small farmers included: “soil fertility and plant nutrition”, “pollinators”, and “habitat for beneficial insects”. Likert scale ratings for these educational topic areas were 4.5, 4.2, and 3.9 out of 5, on average, for a grouping of all participating small farmers.

Organic and Conventional Growers

Participating conventional growers were most interested in educational programming related to the topics of “soil fertility and plant nutrition”, “pollinators”, “habitat for beneficial insects”, and “pH management, liming, and acidification”. Likert scale ratings on these educational topic areas, on a scale of 1 to 5, were 4.60, 4.20, 3.87, and 3.87, respectively, on average, for conventional farmers that were interviewed as a part of this needs assessment survey.

Participating organic farmers were most interested in educational programming related to the topics of “habitat for beneficial insects”, “pollinators”, “soil fertility and plant nutrition”, and “cultural, physical, and biological control options for Integrated Pest Management”. Likert scale ratings for these educational topic areas, on a scale of 1 to 5, were 4.14, 4.14, 4.14, and 3.71, respectively, on average, for organic growers that were interviewed.

Small, Medium, and Large Growers

"Small" sized growers were most interested in educational programming related to "soil fertility and plant nutrition", "pollinators", and "habitat for beneficial insects", with reported interest levels of 4.35, 4.20, and 4.0 out of 5, on average, respectively.

"Medium" sized growers were most interested in educational programming related to "soil fertility and plant nutrition", "berries", "orchard crops", "pH management, liming, and acidification", and "pollinators". Indicated interest levels for these topical areas were 5.0, 4.5, 4.0, 4.0, and 4.0 out of 5, on average, respectively.

"Large" sized growers were most highly interested in educational programming related to "slugs", "specialty grains", and "pollinators", with reported interest levels of 4.5, 4.3, and 4.25 out of 5, on average, respectively.

Research Interests

Survey-wide Analysis

When broken down by the aforementioned typologies, the interviewed farmers reported mixed interest in research on "olives" and "irrigation and organic fertigation", with 55% and 48%, respectively, of participating individuals indicating interest.

On a survey-wide basis, research on "pests, viruses, and weeds", was the most prominent self-identified research interest (33% of individuals who proposed research topics did so on a related topic).

Organic and Conventional Growers

Conventional growers varied in their interest in “olive” related research (53% interested, 47% not interested). This distribution of interest was also similar for interest in irrigation and organic fertigation research (43% interested, 57% not interested). The most prevalent self-identified research interests for conventional growers were “pests, viruses, and weeds” (33% of participating conventional growers) and “crop specific topics” (25%).

Participating organic growers expressed interest in “olive” related research (71% interested, 29% not interested). However, interest in research on “irrigation and organic fertigation” was less prevalent (57% interested, 43% not interested). The most common self-identified research interests for participating organic growers was “pests, viruses, and weeds” (25% of participating individuals self-identified this research topic).

Small, Medium, and Large Growers

“Small” sized growers expressed mixed interest in “olive oil” and “irrigation and organic fertigation” related research (seven interested, seven not interested; and six interested, eight not interested, respectively).

“Medium” sized growers expressed interest in “olive oil” related research (three interested, one not interested). Four participating “medium” sized growers were interested in research on “irrigation and organic fertigation”.

“Large” sized growers expressed mixed interest in “olive” related research (two interested, two not interested). Furthermore, zero participating “large” growers were interested in “irrigation and organic fertigation” research.

Communication Preferences

On a survey-wide basis, “email” was the most preferred channel for communication (81.8% of participating individuals) between the OSU mid-Valley Small Farms program and the small farmer community within the mid-Willamette Valley. “E-newsletter”, delivered by email, was the second most preferred method (40.9%). Survey participants were also asked to rank the importance of Extension and education services, using a Likert-type scale method. “OSU Extension publications” and “on-farm research” were of the highest interest to participating individuals, with ratings of 4.22 and 4.20, out of 5, on average, respectively.

Participating farmers also provided information on the OSU Extension resources that they had accessed in the past (Figure 7). “Workshops, classes, and seminars”, “phone calls and Extension agent contact”, and “OSU publications and information” were the most frequently used.

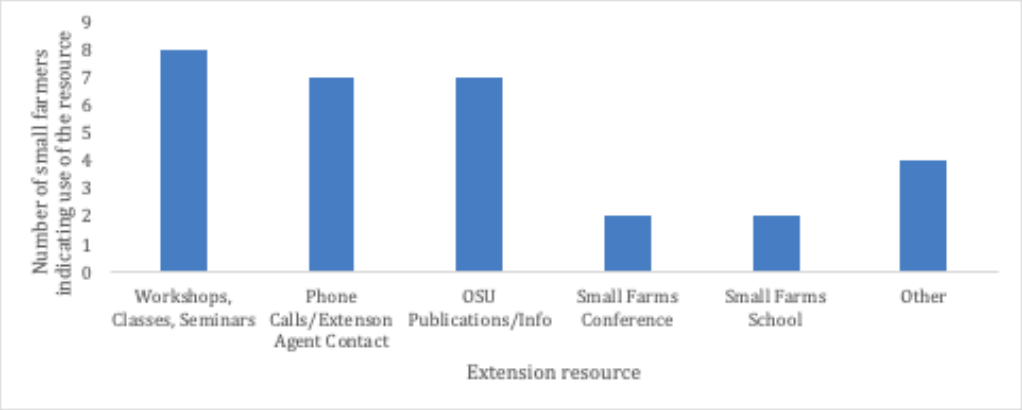

Figure 7: Extension resources used by participating small farmers

Organic and Conventional Growers

Participating conventional growers expressed a preference for “email” communication (80%), followed by “e-newsletter” (47%). In terms of the importance of Extension and education services, “OSU Extension Publications” (4.46 out of 5, on average), “on-farm research” (4.21 out of 5, on average), and “workshops” (4.13 out of 5, on average) were the most highly ranked.

Participating organic farmers also indicated a preference for “email” communication (86%). For the importance of Extension and education services, “on-farm research” (4.16 out of 5, on average), “workshops” (4.14 out of 5, on average), and “websites and e-newsletter” (4.0 out of 5, on average) were ranked the highest by interviewed organic growers.

Small, Medium, and Large Growers

“Small” sized farmers expressed the largest preference level for communication with OSU Extension via “email” (twelve individuals preferred this resource) and “e-newsletter” (five individuals) For the importance of Extension and education services, “OSU Extension Publications” and “workshops” were ranked as the most important (4.07 and 4.0 out of 5, on average).

“Medium” sized farmers expressed a preference for communication with OSU Extension via “email” (three individuals) “postal service” (one individual)“Facebook” (one individual) “Instagram” (one individual) and “e-newsletter”. For the importance of Extension and education services to members of the agricultural community, “on-farm research”, “farm visits from extension agents”, and “OSU Extension Publications” were of the most importance (5.0, 4.75, and 4.75 out of 5, on average, respectively).

“Large” sized farmers expressed the largest preference level for communication with OSU Extension via “email” (three individuals) and “e-newsletter” (three individuals) “On-farm research”, “farm visits from Extension agents”, and “workshops” were the most important Extension services provided to participating “large” sized farmers (5.0, 4.75, and 4.75 out of 5, on average, respectively).

In-person and Online Survey Participation

Although counts for in-person and online survey participation were similar (14 and 10 participants, respectively), online survey participants answered fewer questions than their in-person counterparts. Online survey participation could not be monitored and did not require survey completion. Because of this, responses to the online questionnaire were limited to those provided by participants. Accordingly, not all participants answered every question posed on the online survey platform.

Discussion

Farming Operation Characteristics

Years of Farming Experience

Half of participating small farmers had eleven or more years of farming experience. At the statewide level, the 2017 Census of Agriculture gathered responses regarding years of farming experience for 67,595 individuals (USDA NASS, 2019). Of these individuals, 19,193 (28.4%) had between zero and ten years of farming experience, while 71.6% of producers had eleven or more years of farming tenure (USDA NASS, 2019). Within Marion county, 72.3% of producers had eleven or more years of farming experience, while producers in Polk, Yamhill, Clackamas, Benton, and Washington counties had 73.9%, 70.2%, 70.2%, 74.8%, and 69.4% of producers with eleven or more years of experience, respectively (USDA NASS, 2019). This data may indicate that the farmers who participated in the small farms needs assessment survey had, on average, less farming tenure than those at the state or county level.

This discrepancy in farming tenure between participating individuals and averages for the state and relevant counties may in part be explained by the learning needs of survey participants. New and beginning farmers may require more support from agricultural education programs, such as

Extension, than their more experienced counterparts. Given that the mid-Valley Small Farms Program was not established until 2016, farmers with higher farming tenure may have become accustomed to acquiring farming resources from other areas, and as a result, opted to not participate in the needs assessment survey. This finding is similar to Crawford (2015), who found that beginning farmers were more interested in gaining information from organizations than experienced farmers were.

Farm Size

17% of farmers who participated in the needs assessment survey had more than 50 acres of land in agricultural production. According to the 2017 Census of Agriculture, 24.3% of farms at the statewide level have more than 50 acres of land in agricultural production (USDA NASS, 2019). At the county level, Marion, Polk, Yamhill, Benton, Clackamas, and Washington counties have 25.3%, 20.2%, 14.9%, 13.2%, 8.9%, and 14.6% of farms with more than 50 acres harvested, respectively (USDA NASS, 2019). This data may indicate that farmers who participated in the small farms needs assessment survey had relatively similar production acreages as those at the state and countywide levels. However, a larger sample size is necessary to gain a better reflectance of farm size within the greater mid-Willamette Valley, as the typological grouping based on production acreage was limiting from an analysis standpoint.

On a statewide level, approximately 73% of new or beginning farmers, characterized as those that had ten or fewer years of farming experience, had farms sized less than 50 acres (USDA NASS, 2019). This was expected, as beginning farmers typically manage smaller plots of land than individuals with more experience (Ahear and Newton, 2009). Furthermore, participating "large" sized farms generated higher gross sales than "small" or "medium" sized farms. This

could in part be due to higher start-up costs charged to beginning farmers, or the difficulty of gaining access to affordable land (Ahear and Newton, 2009).

Production Method

For participating small farmers within the mid-Willamette Valley, organic farmers tended to have lower gross sales than participating conventional farmers. Organic farmers face many challenges that their conventional counterparts do not, which could serve as one of the primary reasons organic farming is less prevalent. These challenges include increased costs associated with transitioning to an organic system, the potential for decreased yields, and the possibility of not being able to achieve the necessary price points on crops sold (Duram, 1999; Lloyd, 2016; Farmer et al., 2013). Currently, there are 224 total certified organic farming operations within Marion, Polk, Yamhill, Benton, Clackamas, and Washington counties (USDA Organic Integrity Database, 2019).

Market channels for participating organic and conventional growers also varied, however, on-farm sales and farmer's markets were the most commonly used sales outlets. A survey investigating the suitability of a food hub for the mid-Willamette Valley conveyed similar results, indicating that on-farm sales and farmer's markets were among the most prevalent market channels used by mid-valley small farmers (Smith, 2018).

Educational Programming

Soil Fertility and Plant Nutrition and pH Management, Liming, and Acidification

"Soil fertility and plant nutrition" was of high interest to conventional, organic, "small" sized, and "medium" sized farmers that participated in the needs assessment survey. Furthermore, 50%

of the participating “small” and “medium” sized farmers had less than 10 years of farming experience. Needs assessment surveys on beginning farmer education found that soil fertility and tillage practices were important educational topics for beginning farmers (Trede and Whitaker, 1998; Barbercheck et al., 2009).

In addition, although plant nutrient requirements are considered the same for both conventional and organic systems, regardless of farm size, current guidelines on organic nutrient management are general, leading to a lack of information regarding specific management techniques (Wander et al., 2017). The interest by the conventional and organic farmers (4.60 and 4.14 out of 5, on average, respectively**)** within the mid-Willamette Valley could indicate that additional resources pertaining to soil fertility and plant nutrition are needed on a widespread basis.

pH management, liming, and acidification were also of interest to participating conventional and “medium” sized farmers. The pH of soil has a direct effect on nutrient availability and soil fertility and can cause reduced growth in crops (Hart et al., 2013). As such, it is critical that farmers understand how to effectively measure, understand, and regulate soil pH on their land. Currently, literature exists to provide western Oregon farmers with information about the pH levels necessary for the production of specific crops (Anderson et al., 2013). However, soil acidity is one of the least understood agricultural topics within western Oregon (Hart et al., 2013). This may indicate a lack in knowledge by mid-Valley small farmers regarding pH, and as a result, its impact on crop growth.

In order for Extension to effectively address the educational concerns of participating individuals, it is important that information regarding pH management and liming practices are provided to farmers within the mid-Willamette Valley.

Pollinators, Habitat for Beneficial Insects, and Integrated Pest Management

There has been an increased interest in pollinators from the general public, primarily due to colony collapse (Williams et al., 2010). Within the mid-Willamette Valley, many small farmers that participated in the needs assessment survey indicated an interest in educational programs on pollinators. This high level of interest may indicate a lack in knowledge of pollinators and could signify interest in developing and implementing pollinator friendly practices throughout the mid-Willamette Valley.

Insect pollinators are estimated to be responsible for approximately $26.9 billion worth of crop production in the United States (Calderone, 2012). In 2005, it was estimated that the disappearance of insect pollinators, on a global scale, would decrease the value of food production by 153 billion euros (Gallai et al., 2009). It has also been suggested that the value of insect pollinators to crop production will increase throughout the future (Lautenbach et al., 2012). As a result, research on insect pollinators, and especially bees, has increased by a factor of 20 over the course of the past 50 years (Wilson et al., 2017).

While scholarly work related to pollinators has increased, public knowledge and education has been less extensively developed (Wilson et. al, 2017). Although the importance of pollinators has generally been marked as important by the public, the specifics of pollinator conservation are not as well-known. According to Nabhan, this has been the case throughout many non-pollinator focused conservation scenarios (Nabhan, 1995). This lack of understanding may in part be due to the fact that media attention over the course of the past several years has been focused primarily on honeybee health, largely ignoring native bee populations (Wilson et al., 2017). As such, many

"pollinator friendly" management practices have failed to address wild bee populations (Wood et al, 2015).

Citizen science programs, especially those focused on birds, have gained success in previous years (Silvertown, 2009; Dickinson et al., 2010). Several organizations, including The Xerxes Society and the USGS, have made efforts to develop resources for citizen science programs that are specifically focused on identifying and better understanding bees (Ascher and Pickering, 2016; Bug Guide, 2017; The Xerces Society, 2017; USGS Bee Inventory and Monitoring Lab, 2017). Given the expressed interest in pollinators, providing resources that aid with pollinator identification may be useful for better understanding native pollinators and pollinator friendly practices (Wilson et al, 2017). Furthermore, within the field of agricultural education, agricultural learning communities may provide opportunities for researchers and farmers to work together and facilitate learning through the exchange of information. The development of similar resources by OSU Extension, and their dissemination through learning communities, may prove valuable to mid-Valley small farmers given the widespread interest in pollinator education.

Educational programs on habitat for beneficial insects were of high interest to conventional, organic, and "small" sized farmers. A needs assessment survey based in Southern Oregon also found a need for educational services related to beneficial insects, potentially indicating that the development of resources pertaining to beneficial insects may be useful for various agricultural regions throughout the state (Bredikin, 2016).

Research has also shown that increasing habitat for pollinators can help attract and protect other beneficial insects (Wratten et al, 2012). In addition to providing pollination services, beneficial insects may prey upon pests. For many, integrated pest management techniques which promote

the presence of beneficial insects may prove helpful and useful to pest control and crop production.

Participating organic growers also indicated a mid-level interest in cultural, physical and biological control options for integrated pest management. This interest, which was higher than the interest expressed by conventional farmers, could in part be because conventional farmers generally rely on synthetic chemicals for management purposes, while organic farmers focus more heavily upon cultural and biological pest management techniques (Barbercheck et al., 2010).

Crop Specific Production

Participating conventional growers were also interested in additional research on crop specific production by OSU Extension. “Medium” sized growers expressed interest in educational programing on “berries” and “orchard crops”, while “large” sized growers indicated interest in “specialty grains”.

Within the state of Oregon, berry production acreage increased by 10% from 2012 to 2017, resulting in berry acreage rising from 24,573 acres in 2012 to 27,034 acres in 2017 (USDA NASS, 2019). Furthermore, land in orchard production has increased by approximately 36% from 98,211 acres in 2012 to 133,377 acres in 2017 (USDA NASS, 2019). For “medium” sized farmers (those with 15-50 acres of land in agricultural production), berry acreage increased by approximately 2%, and orchard acreage increased by approximately 17% (USDA NASS, 2019). The increased production of these crops may indicate a more developed interest in educational services related to crop specific production.

Unfortunately, acreages associated with specialty grains were not gathered by the most recent Census of Agriculture. However, producers who grow specialty grains typically do so on larger farms, corresponding to the interest expressed by participating "large" sized farmers (Fulton et al., 2003).

Challenges

Eight participating small farmers indicated that advertising and market expansion were of concern within the realm of business and marketing challenges. Other needs assessment surveys also investigated marketing challenges, finding that advertising and market development were primary concerns for the respective farmer populations (Goodwin and Gouldthorpe, 2013; Bredikin, 2016).

In the past, the Mid-Valley Small Farms program has focused on providing educational resources specifically focused on agricultural production. However, given the challenges expressed by participating farmers, integrating resources related to business and marketing may prove beneficial. However, additional research should be conducted to determine what business and marketing challenges are most prevalent for farmers within the greater mid-Willamette Valley.

Research Interests

Olives

As a whole, participating organic and "medium" sized growers were interested in research on olives and olive oil.

The production of olives provides an opportunity for small farmers to diversify their crops and serves as a potential method for generating alternative income ("Olive Research in Oregon",

2019). Within the state of Oregon, current climate modeling suggests that summers may be warmer, longer, and drier, while winters are also expected to be warmer (Dalton et. al, 2017). This increased temperature, especially in the winter months, may cause current crops to no longer be well-suited to the region. As a result, the production of olives, which are well suited to Mediterranean climates, could have the ability to serve as a viable option for farmers looking to plan their long-term production.

The growth of olives for olive oil production may also provide an economic opportunity to mid-valley farmers. As of 2011, it was estimated that the mid-Willamette Valley produced 0% of the dietary oils necessary to support the region (Giombolini, et al., 2011). The production of olives could help to fulfill this dietary requirement, in addition to filling gaps within the current market.

Currently, the OSU Extension Mid-Valley Small Farms Program is researching olive propagation, cold-hardiness, and up-potting techniques ("Olive Research for Oregon", 2019). The objectives of this research are to determine if olive production within Oregon is both economically feasible and well-suited for the changing climate. In the future, similar research related to climate adaptation may become more prevalent within Extension programming, especially as public knowledge of climate change increases.

According to the most recent Census of Agriculture, 23 farms within the state of Oregon currently grow olives (USDA NASS, 2019). However, information regarding these farms' production acreage and farming techniques was lacking. Furthermore, little information could be found on similar studies inquiring about interest in olives within regional communities. However, the expressed interest in olive production by organic and "medium" sized growers may

indicate that mid-Valley growers are interested in expanding their production methods and branching into new crop markets as the climate changes.

Irrigation and Organic Fertigation

All participating "medium" sized growers expressed interest in research pertaining to irrigation and organic fertigation. Additionally, 50% of these individuals practiced organic farming techniques. While not directly inquiring about farmer interest in irrigation and organic fertigation research, an online needs assessment survey in Southern Oregon found a need for educational programming related to irrigation topics (Bredikin, 2016). Statewide, 43.3% of farms employ the use of irrigation, making it important for Extension to provide resources to the agricultural community (USDA NASS, 2019).

Fertigation is the injection of fertilizers directly into the irrigation system (Hagin and Lowengart, 1996). This method of fertilization can decrease costs and generally allows for a more efficient fertilizer application (Ebrahimian et al., 2014). However, correct practices for fertigation require an understanding of plant growth and soil chemistry that individuals within the mid-Willamette Valley may be lacking (Sureshkumar et al, 2017). Given that organic farmers expressed interest in this research topic, providing information to farmers regarding both irrigation and its organic counterpart may prove useful from an educational standpoint.

Weeds, Viruses, and Pests

Weeds, viruses, and pests remain a primary concern for mid-Valley small farmers, as the topical area was the most commonly identified research interest (33% of participants self-identified interest) by participating individuals. Due to the low number of participants, there was not a large degree of overlap for specific research topics within this category. Although not

specifically listed as a research interest, other needs assessment surveys have also found a need for small farmer education on the control of pests and diseases (Santoyo Rio, 2013; Bredikin, 2016; Goodwin and Gouldthorpe, 2013). An interest in integrated pest management practices as an educational programming topic identified by participating organic farmers (3.71 out of 5, on average), further promotes the idea that the mid-Valley small farmer community may be better served by providing educational and research services regarding these topics.

Historically, the infestation and biological adaptation of pests has been a primary threat to agricultural production (Ruttan, 2005). Despite this theme, preferences for pest management practices can vary according to personal beliefs and perceptions, ultimately developing the potential to affect an individual's adoption of specific techniques (Hashemi & Damalas, 2010). As such, it can be difficult for Extension organizations to effectively address the management and research concerns of all individuals within the regional agricultural community. However, pest specific needs assessments may provide valuable and more focused information to Extension organizations, all the while enabling them to develop a more extensive relationship with their clientele (Blodgett et al., 1997). In order to better serve the clientele, it may be necessary to conduct a more in-depth survey regarding pest, weed, and virus concerns throughout the mid-Willamette Valley.

Communication Preferences and Use of Extension Resources

Email and E-newsletter

Email was the preferred method for communication between OSU Extension and participating small farmers during analysis by both farm size and production method. Similarly, the use of an E-newsletter, delivered via email, was the second most preferred communication channel. Given

the locational spread of farmers throughout the mid-Willamette Valley, forms of mass communication that cater to a non-centrally located audience, such as email, may be useful for Extension to employ (Nehiley, 2001). This finding is similar to the communication preferences of other small farmers, as determined by additional needs assessment surveys, where email was consistently ranked as the preferred communication channel (University of Minnesota Extension, 2015; Bredikin, 2016).

Currently, the mid-Valley Small Farms Program relies heavily on email to deliver information about upcoming workshops and to provide program updates. Given the expressed preferences of mid-Valley small farmers, it may be useful for OSU Extension to continue to deliver its information to small farmers via online sources such as email and E-newsletter. In the future, it may be helpful to conduct additional research on farmer demographics, such as age, and their relationship to communication preferences.

However, information presented within several studies indicates that while online and web-based information is a valid and preferred method of communication between Extension and the agricultural community, many individuals still find in-person consultations and other forms of interpersonal communication to be beneficial (Vergot III et. al, 2005; Dill and Beale, 2015.). This has also been expressed via other needs assessment surveys pertaining to farmers (Barbercheck et al., 2009; Gaul et al., 2007; Santoyo Rio, 2013; Muhammad et al., 2009). While in-person interactions are a strength of Extension programming, the availability of online resources may cater to individuals who cannot attend workshops or field-days in person (Bredikin, 2016).

<u>On-Farm Research, Visits from Extension Agents, and Workshops</u>

Interpersonal resources, such as on-farm research, visits from Extension agents, and workshops were highly preferred, on average, by participating small farmers. Other needs assessment surveys indicated a similar interest and preference for on-farm demonstrations, visits from Extension agents, and workshops by Extension organizations (Barbercheck et al., 2009; Dill and Beale, 2015.; Gaul et al., 2007; Santoyo Rio, 2013; Muhammad et al., 2009; Bredikin, 2016). This preference for on-farm and in-person services may serve as an indication that interpersonal communication and in-person approaches to learning and information transfer play an important role within the agricultural community.

OSU Extension Publications

On a survey wide level, participants ranked "OSU Extension Publications" as the most highly preferred Extension resource. Similarly, this resource was preferred by participating conventional, "small" sized, and "medium" sized growers. In the future, it is important that Extension continue to make publications available to the mid-Valley small farmer community, especially due to the large degree of interest expressed by participating individuals. However, it is possible that "OSU Extension Publications" were rated as the most highly preferred Extension resource because the surveyed individuals had familiarity with Extension. Furthermore, additional research should be conducted to investigate the relationship between characteristics such as age and the preference for written materials.

However, other needs assessment studies indicate that written materials were not as widely used by participating individuals, ranking fifth in the Training Needs Assessment for the Project for Agricultural Development and Economic Empowerment and ninth in the University of Maryland Beginning Farmer Needs Assessment (Santoyo Rio, 2013; Dill and Beale, 2015). Both of these

surveys found that in-person resources were more valued by the agricultural community than written materials (Santoyo Rio, 2013; Dill and Beale, 2015). This difference in preference may in part be due to the survey methods employed and the characteristics of the communities surveyed. The survey conducted by the University of Maryland was distributed online, whereas the needs assessment survey conducted within the mid-Willamette Valley was comprised of responses from in-person, phone, and online survey participation (Dill and Beale, 2015). Furthermore, although conducted in person, the survey by Santoyo Rio was based in the developing country of Colombia, where the ability to access educational resources may be more limited (Santoyo Rio, 2013).

Limitations and Future Research

Limitations were discovered throughout data analysis, including methodology, sample size, and sampling methods.

Once data was collected, an indirect, fifth objective focused on determining appropriate methods for developing farmer typologies was identified. During data analysis, several different farmer typologies were assessed: farming practice, size of production acreage, years of farming experience, and county location. However, for the purposes of this study, farming practice and size of production acreage were of the most interest to researchers as a means of typology development. While production acreage was used to categorize and complete data analysis, the ways in which data were sliced resulted in a low number of participants within each grouping. As such, determined interests and preferences, while providing information about the participating individuals, cannot be used to make generalizations about the wider mid-Valley

small farmer community. In the future, other typologies should be investigated as a means of assisting data analysis.

Sample size also served as a limiting factor throughout typology development and data analysis. With a total of 24 participants, typologies through which data could be analyzed for similarities and differences were limited. The inclusion of additional participants could have allowed for more meaningful comparisons to be drawn between groups.

The method by which individuals were recruited for participation may also have influenced survey results. While the purposive sampling method allowed participants familiar with Extension to be contacted for participation, the provided responses failed to provide information about the education, research, and communication preferences of mid-Valley small farmers who had not previously used Extension resources. It is likely that the individuals that participated found value in Extension as an agricultural resource and were thus interested in learning about or influencing future programming options. As a result, response bias is likely, as only a subset of the larger mid-Valley small farmer community were considered for participation. In the future, random sampling of the greater mid-Willamette Valley should be used to gather survey responses.

Farmers that were located in neighboring counties were also permitted to participate in the needs assessment survey. Although several participating individuals had farming locations in more than one county, responses for all participants were included within data analysis regardless of county location. In the future, responses from individuals with farming locations solely located outside of Marion, Polk, or Yamhill counties should be excluded from analysis to provide a better representation of the needs of small farmers located within the mid-Willamette Valley.

Furthermore, future research should consider both the understanding and interest levels of small farmers in relation to outlined educational topic areas. While Likert-type questions were used to evaluate small farmer interest regarding specific educational topics, the question format did not allow information related to farmer understanding of the topic to be collected. Although farmer interest is important for assessing which topics and programming may be well-received and attended by mid-valley small farmers, it does little to indicate the skill or comprehension level to which programming should be tailored. To address this concern, considering Likert-type ratings for both topical understanding and interest should be considered for use in follow-up surveys.

The use of a follow-up needs assessment survey may also provide information to the mid-Valley Small Farms Program, especially in regard to the evolution of small farmer interests, needs, and preferences. The development and implementation of such a survey could help to address and evaluate these changes within the mid-Valley, all the while allowing researchers to implement changes to sampling methods and typological groupings.

Conclusions

The mid-Willamette Valley is an agricultural region with a diverse population of small farmers, marked by expansive variety in crop production, farm sizes, and farming methods. Despite this diversity, evaluations of similarities and differences between mid-Valley small farmers can provide valuable information to Extension, specifically in regard to the development of educational, research, and communication offerings.

Similarities in educational interests between conventional, organic, “small”, “medium”, and “large” production acreage farmers may provide insight to the topical areas that are of the highest priority to farmers utilizing Extension resources within the mid-Willamette Valley. These

high interest topics, such as “pollinators” and “soil fertility and plant nutrition” may cater to a larger population of small farmers within the mid-Willamette Valley, and as a result, may be more readily implemented by Extension. Furthermore, differences in preferences and interests, specifically for conventional and organic farmers, may provide insight to programming areas that Extension may need to cater to specific audiences.

In its entirety, this survey allowed Extension to gain valuable information about the small farmers that interact with OSU Extension. While additional research is needed to better understand the larger population of farmers throughout the mid-Willamette Valley, these preliminary results may be used to inform short-term programming and communication offerings provided by the mid-Valley Small Farms Program prior to future needs assessment survey creation and implementation.

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Appendix

Extension Needs Assessment Survey
General Farm Information

1. In what county or counties is/are your farm(s)/fields located?

[Symbol] Marion [Symbol] Polk [Symbol] Yamhill [Symbol] Other_____

2. How many years of farming experience do you have?

_____ Years of farming experience

3. What is your total acreage and farmed acreage?

____Total Acres; _____Farmed Acres (in production)

4. What was your approximate gross sales on agricultural products in the previous year?

· $0-$9,000
· $10,000 - $49,000
· $50,000-$99,000
· $100,000-$199,000
· $200,000-$299,000
· Over $300,000

Specific figure: _____

5. Please indicate your farming practices and certifications, if any:

· Conventional
· Certified Organic
· Transitioning to Certified Organic
· Exempt from organic certification (selling as organic but not certified- gross under $5000/year)
· Biodynamic
· Other _____

6. What crops and/or products do you farm and sell?

· Vegetables
· Main Types:_____

[Symbol] Herbs:_____

· Orchard crops (tree fruit, nuts): _____
· Berries/small fruits/wine grapes: _____
· Meat (dead or alive): _____
· Eggs: _____

- Dairy/Cheese: _____
- Grain(s): _____
- Row/Agronomic crops:_____
- Hay/Silage (Pasture): _____
- Flowers:_____
- Starts:_____
- Value-Added Products: _____
- Other:_____

7. Where do you sell your products? Give the outlet where you sell most of your products a 1, the second most a 2, and so on.

On-Farm Sales: _____
Farmers Market: _____
Community Supported Agriculture (CSA): _____
Restaurant: _____
Grocery Store/Retail: _____
Institutions (schools, hospitals, etc.): _____
Wholesale (bulk sales): _____
Website/Online Sales: _____
Other (please specify): _____

8. Are you interested in expanding any of your current markets/sales outlets or getting into new markets/sales outlets? Please describe and rank up to three outlets:

Outlet 1): _____
Outlet 2): _____
Outlet 3): _____

9. Do you offer any of the following agritourism activities on your farm?

- Educational workshops, field trips, or demonstrations
- Culinary entertainment (such as farm-to-table dinners)
- Heritage entertainment (such as corn mazes, games, crafts, festivals)
- Outdoor recreation, working with animals, or hunting
- A venue for gatherings or celebrations
- Overnight stays – lodging/hospitality

Other _____

10. In regards to the following categories, what are your primary farming challenges? Please list your challenges in order of importance to you.

Production/Farming:

1. _____
2. _____

3. _____

Business/Marketing:

1. _____
2. _____
3. _____

Other:

1. _____
2. _____
3. _____

Directions to be given to interviewee:

The next questions each cover one broad topic and, under those, a variety of sub-topics. I'm going to ask you to rate the topics according to their importance to you on a scale of 1 to 5 (where 1= not important and 5 = very important). Please use 3 to indicate average interest and reserve 4's and 5's for topics that are especially interesting or important to you.

11. **Soil Fertility and Management**

Soil fertility and plant nutrition.....5 4 3 2 1
Manure management.....5 4 3 2 1
Crop rotations.....5 4 3 2 1
Cover crops.....5 4 3 2 1
pH management, liming, and acidification.....5 4 3 2 1
Soil and tissue testing.....5 4 3 2 1
Water requirements and irrigation scheduling.....5 4 3 2 1
Other (please specify): _____.....5 4 3 2 1

If any of the choices above were marked as a 5, please describe your interests as related to the topic: _____

12. **Integrated Pest Management (IPM) and Pollinators**

Habitat for beneficial insects 5 4 3 2 1
Cultural/physical/biological control options for IPM.....5 4 3 2 1
Organic pesticides.....5 4 3 2 1
Specific insects:
Spotted Wing Drosophila.....5 4 3 2 1
Brown Marmorated Stink Bug.....5 4 3 2 1
Slugs.....5 4 3 2 1
Pollinators.....5 4 3 2 1

If any of the choices above were marked as a 5, please describe your interests as related to the topic:_____

13. Please list your major pest challenges in order of importance to your farm:

Pest 1) _____ Crop(s)_____

Pest 2) _____ Crop(s)_____

Pest 3) _____ Crop(s)_____

14. **Certification and Regulations**

FSMA/Food Safety (ex: GGAP)……..……...….5 4 3 2 1

Organic certification/transitional certification…….5 4 3 2 1

Biodynamic certification……..5 4 3 2 1

Other (please specify): _____ ….....5 4 3 2 1

If any of the choices above were marked as a 5, please describe your interests as related to the topic:_____

15. **Specific crop production**

Berries (blueberries, blackberries, strawberries, table grapes)…….…….5 4 3 2 1

Orchard Crops (cherries, cider apples)……..5 4 3 2 1

Annual vegetables, which?_____.....…….…….....5 4 3 2 1

Olives…….5 4 3 2 1

Pasture……...5 4 3 2 1

Specialty grains…….5 4 3 2 1

Crop production structures/greenhouses.....5 4 3 2 1

If any of the choices above were marked as a 5, please describe your interests as related to the topic:_____

Research

16. Our program is beginning a research project in fall 2017 about growing olives for olive oil in Oregon to determine which varieties are best adapted to our region. Is this a research topic that is of interest to you? [Symbol] Yes [Symbol] No If yes, please explain:_____

17. Our program is planning a research project on irrigation and organic fertigation for perennial cropping systems. Is this a topic that is of interest to you? [Symbol] Yes [Symbol] No If yes, please explain:_____

18. If you were to choose a research topic for the Small Farms program to conduct, what would it be? List up to 3 topics, in order of importance and be as specific as possible:

a. _____

b. _____

c. _____

Communication Preferences

19. How do you prefer to receive information from our OSU Small Farms team?

[Symbol] Email
[Symbol] E-newsletters (via email)
[Symbol] Social Media
· Facebook
· Instagram
· Other
· Postal Service (snail mail)
[Symbol] Other (please specify): _____

20. Have you used any of the available resources from OSU-Extension (http://extension.oregonstate.edu/) to help with your farm production challenges?

[Symbol] Yes, which? _____
[Symbol] No

21. How important are the following extension and education services to you? (where 5= Very Important, 1 = Not Important)

Workshops on specific production topics……..... 5 4 3 2 1
Fact sheets on farming practices..... 5 4 3 2 1
OSU Extension publications……..5 4 3 2 1
Information available on websites or by e-newsletter..... 5 4 3 2 1
Online videos and webinars…….. 5 4 3 2 1
Radio/Podcasts……..5 4 3 2 1
Field tours of production or demonstration sites..... 5 4 3 2 1
Field days (Olive Field Day and Hispanic Field Day)……..5 4 3 2 1
Conferences …….....5 4 3 2 1
Farm visits from an extension agent.…….....5 4 3 2 1
Field trials (at a research center like NWREC)…….5 4 3 2 1
On-farm research……...5 4 3 2 1
Other (please specify):_____ ……..5 4 3 2 1

22. What ideas do you have for OSU Mid-Valley Small Farms team to support farmers in our region?

a. _____
b. _____
c. _____

23. Do you have any additional comments to share regarding the survey or project we are conducting? _____