What Makes a Small Farm Successful? A Review of Success Factors, Needs, and Challenges

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What Makes a Small Farm Successful? A Review of Success Factors, Needs, and Challenges

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Abstract. Small-scale farmers face unique challenges. In this review, we conceptualize small farm success by aggregating and categorizing results from recent (post-2000) literature on small farm success factors and producer needs assessments. Our findings suggest that small farm success is multifaceted and not limited to profitability. We find that small farms have a diverse range of needs, though little has been done to rank their importance. We conclude that future research would benefit from increased methodological transparency and a systematic approach to needs evaluation. We consider the role of Extension professionals regarding the continued success of small farms.

INTRODUCTION

U.S. agricultural production changed markedly throughout the early 20th century, from small, diversified family farms to larger, mechanized farms (Dimitri, Effland, & Conklin, 2005; Hoppe, MacDonald, & Korb, 2010; Sumner, 2014). The number of farms in the United States peaked at 6.8 million in 1935, declined rapidly in the 1940s and 1950s, and continued declining to approximately 2 million farms in 1990, where it has approximately remained (Gardner, 2002; Hoppe & Banker, 2010). As total farm numbers declined over the 20th century, agricultural output increased by nearly seven times and the average size of a U.S. farm increased by 67% (Dimitri et al., 2005; Gardner, 2002). Indeed, farms are now larger, more specialized, and more productive (MacDonald & Hoppe, 2018).

Larger, more specialized farms are generally more viable businesses than smaller farms (Hoppe & Banker, 2010). Large farms may access greater economies of scale or possess increased managerial capacity (Dimitri et al., 2005; Sumner, 2014), while small farm operators are often willing to take economic losses or devalue their labor to achieve goals beyond production, such as maintaining a rural lifestyle and passing the farm onto the next generation (Hoppe et al., 2010). Although small farms vastly outnumber large farms in the United States, their share of total agricultural productivity is meager in comparison (Sumner, 2014). Large farms with gross annual sales of over $1 million contribute the bulk of agricultural production in the 21st century (Burns & MacDonald, 2018).

To proponents of industrialization, the decreased number of small farms translates into increased efficiency and output for the agricultural sector with less labor needed to maintain productivity (Dimitri et al., 2005; Sumner, 2014). For instance, the proportion of the U.S. population engaged in agriculture dropped from 41% to just under 2% from 1900 to 2002 (Dimitri et al., 2005).

On the other hand, detractors view U.S. agriculture as increasingly divided between very small and very large commercial farms, signaling trouble for small to mid-sized producers and the rural communities in which they live and operate (Hamilton, 2011; Johnson & Endres, 2011; Kirschenmann, Stevenson, Buttel, Lyson, & Duffy, 2008). The decline of small and mid-sized farms and rural population loss are linked: as farms go out of business, they take complementary businesses with them (Johnson & Endres, 2011). Especially in farming-dependent communities, those losses can spur closures of community facilities such as schools and hospitals (Baker & Baker, 2019; Johnson & Endres, 2011). In this article, we explore the literature on small farm success factors, needs, and challenges. We see this review as a critical first step in unraveling the complex socioeconomic issues facing small-scale agriculture in the United States.
DEFINING SMALL FARMS

The United States Department of Agriculture (USDA) classifies a farm as any place that produces and sells, or would have normally produced and sold, $1,000 in agricultural products in a year (Hoppe & MacDonald, 2013; Hoppe et al., 2010). The USDA defines small farms as those with gross cash farm income (GCFI) under $350,000 (Hoppe & MacDonald, 2013). GCFI is a measure of gross farm revenue, which includes revenue from crop and livestock sales, farm-related income, government payments, and fees from production contracts (Burns & MacDonald, 2018).

Small family farms dominate the national landscape, accounting for approximately 89% of total farms, using 51.9% of agricultural land, and contributing 25.8% of agricultural production in 2017 (Burns & MacDonald, 2018). A further distinction can be made between small non-commercial and small commercial farms. In 2010, 60% of small farms had GCFI of less than $10,000 and 22% had GCFI of less than $1,000 (Hoppe et al., 2010). Hoppe et al. (2010) defined small non-commercial and small commercial farms as follows:

- Small non-commercial farms as those with GCFI less than $10,000.
- Small commercial farms as those with GCFI from $10,000 to the upper limit of the small farm category ($249,999 at time of this publication).

Hoppe et al. (2010, p. iv) further suggested that small non-commercial farms exist “independently of the farm economy,” largely due to their reliance on off-farm income. Contrastingly, small commercial farms had a total economic contribution of $65 billion in 2007, greater than all farms in the Corn Belt states of Iowa, Illinois, Indiana, Missouri, and Ohio combined (Hoppe et al., 2010). Small commercial farms made up 40% of small farms and contributed all but 1% of total agricultural productivity associated with small farms in 2007 (Hoppe et al., 2010). In other words, about 800,000 out of two million small farms produced nearly all agricultural output attributed to small farms in 2007 (Hoppe et al., 2010). This trend has persisted, with small non-commercial farms contributing 0.8% of agricultural production compared to 23.9% for small commercial farms in 2017 (MacDonald & Hoppe, 2018). Small commercial farms are the type of farm disappearing at the fastest rate (while retirement or “hobby” farms are generally increasing) and will likely continue to dwindle due to economies of scale generated by larger operations (Burns & MacDonald, 2018; Hoppe et al., 2010).

It may be worth noting that several publications, including those by Ahearn and Newton (2009), Hoppe et al. (2010), Hoppe and MacDonald (2013), and Burns and MacDonald (2018) suggest that USDA farm typologies, for example the definitions of “small,” “beginning,” and “family” farms, are overly broad and can mask true differences among categories. Nonetheless, we consider discussions of typology useful in presenting the structural characteristics of U.S. agriculture and small farms.

VALUE OF SMALL FARMS

Researchers and small farm advocates regularly cite concerns around small farm profitability (Harper & Eastman, 1980; Hoppe et al., 2010; Pool, 2014). Between 52.6% and 76.3% of small family farms have operating profit margins of less than 10%, an economic indicator of future financial problems (Burns & MacDonald, 2018). Measurement of operating profit is especially important for small farms where labor is often provided by operators, family members, and household members for low to no cost (Hoppe et al., 2010).

Most small family farms are reliant on off-farm income to meet their financial needs (Burns & MacDonald, 2018; Hoppe et al., 2010). Although this trend raises the median household income (i.e., GCFI and off-farm income combined) of farmer households, reliance on off-farm income also indicates a lack of profit from farming. Farming does not usually contribute positively to household income until GCFI reaches $50,000, and farms with GCFI of $100,000–$249,999 still often rely on off-farm income for half their total household earnings (Hoppe et al., 2010). In 2019, average farm income remained below the cost of production with more than half of farming households losing money from farming (Baker & Baker, 2019).

Small farms have public value (USDA National Commission on Small Farms, 1998). Although several federal programs have been created or expanded to benefit small-scale producers, programmatic favoritism toward large agribusinesses remain common grievances among small-scale producers, programmatic favoritism toward large agribusinesses remain common grievances among small farm and local food advocates (Johnson & Endres, 2011; Vogt & Kaiser, 2008).

SMALL FARM SUCCESS FACTORS, NEEDS, AND CHALLENGES

SUCCESS FACTORS ON SMALL FARMS

Farm success has traditionally been defined by financial measurements such as positive net income and profitability. More recently, researchers have addressed small farm success in terms of utility maximization, an economic concept which incorporates non-financial elements of success like quality of life and level of satisfaction (Ajwa, 1991; Nanhou, 2001). A wealth of literature on farm success factors exists prior to 1990; Fox, Bergen, and Dickson (1993) conducted a review of the literature on farm success factors, summarizing 20 different studies ranging from 1900 to the late 1980’s. Economic factors such as farm size and assets, net income, and returns on equity or investment defined their evaluated success factors (Fox et al., 1993). We decided not to incorporate these studies in our review due to major structural shifts in U.S. agriculture and the underrepresentation of small farms or small producers as...
Apart from Pool (2014, p. 69), who used qualitative methods to define “multiple dimensions of success” rather than specific factors, the other five studies yielded 28 success factors. As Table 1 demonstrates, no single model exists for conducting a study of small farm success factors; survey instruments, methods, and analyses varied considerably. Given the multi-faceted nature of small farm success, the four dimensions from Pool (2014)—operational, financial, quality of life, and social—created a conceptual framework in which we could further categorize and interpret the 28 small farm success factors gleaned from the literature (Table 2).

The four dimensions of success can be defined using selected indicators from Pool (2014, p. 70):

- **Operational**: Product quality, production efficiency, and marketplace satisfaction.
- **Financial**: Solvency (i.e., making a living, growth in net farm income and/or production).
- **Quality of life**: Achieving work-life balance, feelings of satisfaction and accomplishment.
- **Social**: Farming for a belief or cause, for example, environmentalism, or feeding one’s community.

In Table 2, we categorized all but three success factors into one dimension. We interpreted accurate information, use of outside services, and less perceived competition to span two dimensions, and we added an additional (external) dimension. Arguably, financial and operational dimensions overlap. For example, low debt load is certainly a financial concern, but operational decisions directly affect the amount of debt a farm operator takes on. In this regard, we gave the financial dimension priority when categorizing success factors, and we considered operation analogous to management attributes and production decisions. Table 2 illustrates the importance of operational/management decisions to small farm success, which we think is indicative of farmers’ entrepreneurial tendencies. Table 2 also highlights the importance of access to external resources, information, and governmental support, and reflects moderate concern for financial solvency as a factor of success. Although quality of life and social dimensions appear relatively unimportant, it might be noted that qualitative assessments placed more weight on their influence (Pool, 2014). Indeed, New York small-scale farmers reported that a desirable lifestyle and good family life were two of the most important reasons they consider themselves successful, though they cited different factors for measuring success (Cuykendall et al., 2002). Lack of small farm success factors in the social dimension suggests that intrinsic motivations (e.g., environmental or community concerns that sometimes prompt farming endeavors) are not typically considered indicators of success. We think this
### Table 1. Summary of Small Farm Success Factor Studies

<table>
<thead>
<tr>
<th>Authors</th>
<th>Location</th>
<th>Methods (analysis)</th>
<th># Producers (n)</th>
<th>Types of success considered</th>
<th>Self-perceived success factors identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuykendall et al. (2002)</td>
<td>New York</td>
<td>Survey (descriptive data only)</td>
<td>76</td>
<td>Self-assessment only</td>
<td>Cash flow; net worth (equity); contentment or satisfaction; net income; good rates of production; other factors with &lt;10% response</td>
</tr>
<tr>
<td>Muhammad et al. (2004)</td>
<td>Tennessee</td>
<td>Survey (chi-square analysis)</td>
<td>74</td>
<td>Self-assessment only</td>
<td>Attention to detail; timing; government policies</td>
</tr>
<tr>
<td>Nanhou (2001)</td>
<td>Iowa</td>
<td>Survey (t-tests; regression models)</td>
<td>73</td>
<td>Profitability only</td>
<td>Timing; hard work; attention to detail; accurate information; effective decision-making; luck; government policies; formal education and training; off-farm employment</td>
</tr>
<tr>
<td>Pool (2014)</td>
<td>Oregon</td>
<td>Semi-structured interviews; focus groups</td>
<td>53</td>
<td>Self-assessment only</td>
<td>Multiple dimensions of success: social; operational; quality of life; financial</td>
</tr>
<tr>
<td>Shepherd (2014)</td>
<td>Utah, Idaho, Nevada, Colorado, and Wyoming</td>
<td>Survey (logit models)</td>
<td>86</td>
<td>Profitability and self-assessment</td>
<td>Profitability; low debt load; CSA marketing; planning; more years of experience; use of outside services; perceived competition; personality type; other factors that differed between short and long models</td>
</tr>
<tr>
<td>Yeboah et al. (2009)</td>
<td>North Carolina</td>
<td>Survey (descriptive data only)</td>
<td>28</td>
<td>Mentioned profitability, but mainly used self-assessment</td>
<td>Love of farming; manageable debt; workshop participation</td>
</tr>
</tbody>
</table>

*“Effective decision-making” is our rephrasing.
*CSA stands for community-supported agriculture.

### Table 2. Producers’ Self-Perceived Success Factors Based on Dimensions of Success

<table>
<thead>
<tr>
<th>Study</th>
<th>Operational</th>
<th>Financial</th>
<th>Quality of life</th>
<th>Social</th>
<th>Other (external)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuykendall et al. (2002)</td>
<td>Good rates of production</td>
<td>Cash flow; net worth (equity); net income</td>
<td>Contentment or satisfaction</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Muhammad et al. (2004)</td>
<td>Attention to detail; timing</td>
<td></td>
<td></td>
<td></td>
<td>Government policies</td>
</tr>
<tr>
<td></td>
<td>Timing; hard work; attention to detail; accurate information; effective decision-making; luck</td>
<td></td>
<td></td>
<td></td>
<td>Accurate information; luck; government policies; formal education and training; off-farm employment</td>
</tr>
<tr>
<td>Nanhou (2001)</td>
<td>CSA marketing; planning; use of outside services; less perceived competition</td>
<td>Profitability; Low debt load</td>
<td>—</td>
<td>—</td>
<td>More years of experience; use of outside services; personality type</td>
</tr>
<tr>
<td>Shepherd (2014)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Workshop participation</td>
</tr>
</tbody>
</table>

*We only used the primary self-perceived success factors identified by Yeboah et al. (2009).*

Factor Count: 12, 6, 2, 0, 10
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could be due to the complexity of measuring social objectives at farm-scale and/or indicative that farm success factors are conceptually independent of farming motivators. Overall, Table 2 demonstrates that profitability is often an integral component of small farm success but fails to entirely define success from the perspective of small-scale producers.

NEEDS AND CHALLENGES ON SMALL FARMS

A needs assessment is a systematic procedure to identify and describe the gaps between an existing state (what is) and a more desirable state (what should be) in a specific context and to establish priorities and criteria for solutions (Witkin & Altschuld, 1995). Producer needs assessments have been conducted in several parts of the country, though approaches to and findings from these assessments vary considerably. Table 3 summarizes seven producer needs assessments. Producer needs assessments are often a form of agricultural extension; five of seven needs assessments were performed by Extension professionals, government employees, or agricultural service providers.

Like studies on small farm success factors, producer needs assessments did not have a standard model; questionnaire language, methodology, and analysis varied along with results. Three of seven producer needs assessments featured quantitative methods (survey only) and four of seven featured qualitative methods such as focus groups and interviews. Inconsistency makes our interpretation of results challenging. Should differences in top five needs be attributed

Table 3. Summary of Producer Needs Assessments

<table>
<thead>
<tr>
<th>Authors</th>
<th>Location</th>
<th>Methods</th>
<th># Producers (n)</th>
<th>Producer scope</th>
<th>Top five producer-identified needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bramwell et al. (2016)</td>
<td>South Puget Sound, Washington</td>
<td>Nominal group technique; key informant interviews</td>
<td>92</td>
<td>All producer types and sizes</td>
<td>Removal of physical barriers to high value markets; removal of social barriers to high value market; access to land; access to water; regulatory support and education on existing regulations</td>
</tr>
<tr>
<td>Goodwin &amp; Gouldthorpe (2016)a</td>
<td>Florida</td>
<td>Focus groups with short demographic survey</td>
<td>59</td>
<td>Small-scale farmers &lt;$250,000</td>
<td>Information and resources; improved and accessible training; Extension involvement and knowledge</td>
</tr>
<tr>
<td>King (2016)</td>
<td>Delmarva peninsula (Delaware, Maryland, and Virginia)</td>
<td>Key informant interviews</td>
<td>~11</td>
<td>Small-scale African American farmers</td>
<td>Access to affordable and/or debt-free capital, infrastructure, and labor; increased market access; transportation/distribution assistance; municipal and government allies</td>
</tr>
<tr>
<td>Sullivan (2011)b</td>
<td>Cheshire County, New Hampshire</td>
<td>Focus groups and one-on-one interviews</td>
<td>62</td>
<td>All producer types and sizes</td>
<td>Ability to pay health insurance, worker's compensation insurance, and salaries to laborers; more equipment rental; more storage capacity; transportation/distribution assistance</td>
</tr>
<tr>
<td>Suvedi et al. (2010)</td>
<td>Michigan</td>
<td>Survey</td>
<td>~928</td>
<td>All producer types and sizes</td>
<td>Education in business, bookkeeping, and marketing; sustainable farming; management and care of livestock and animals; chemicals and fertilizer use; pests and disease management</td>
</tr>
<tr>
<td>University of Maryland Extension (2015)</td>
<td>Eastern Maryland</td>
<td>Survey</td>
<td>295</td>
<td>All producer types and sizes</td>
<td>Education in crop production; profit maximization and financial management; computer/financial software; farm business management; farm succession planning and communication</td>
</tr>
<tr>
<td>University of Maryland Extension (2017)</td>
<td>Northern and western Maryland</td>
<td>Survey</td>
<td>172</td>
<td>All producer types and sizes</td>
<td>Education in crop production; farm succession planning and communication; food safety regulations; record keeping and financial management; livestock production</td>
</tr>
</tbody>
</table>

aGoodwin & Gouldthorpe (2016) assessed programming needs.
bSullivan (2011) assessed labor and equipment needs.
to producer characteristics and geographic differences or in the way questions were written and presented by researchers?

Two studies examined specific types of needs. Goodwin and Gouldthorpe (2016) assessed educational needs of small-scale farmers in Florida from the perspective of Extension programming, which skewed results toward training and informational resources over other needs identified in focus groups, including access to funding, time management, pest control, and advertising assistance. Sullivan (2011) specifically assessed labor and equipment needs in Cheshire County, New Hampshire, creating targeted yet narrower results for our comparison purposes. Some overlap appears among producer identified needs. For example, removal of physical barriers to high value markets from Bramwell et al. (2016) and access to affordable and/or debt-free capital, infrastructure, and labor from King (2016) both address the issue of market barriers.

We categorized producer identified needs from Table 3 to familiarize ourselves with the types of needs small-scale producers face (Figure 1). To categorize producer-identified needs into challenges, we used a thematic analysis similar to Goodwin and Gouldthorpe (2016). Goodwin and Gouldthorpe (2016) grouped qualitative data from their focus groups and identified several themes for different types of challenges: personal challenges, economic challenges, natural challenges, marketing challenges, and agricultural knowledge challenges. By presenting this categorization, we attempt to create a framework that future researchers and Extension professionals can use when designing their quantitative and/or qualitative analysis of small-scale producers. Further, given the variance of small-scale producer needs, we hope our categorization inspires future ranking exercises where researchers report on not only the variety of small-scale producer needs, but also their importance.

**DISCUSSION**

Recent literature on small farm success factors and the needs and challenges of small-scale producers is surprisingly limited. Studies varied considerably in their methods, analysis, and results. The number of studies we reviewed and the breadth of their results points to the need for a more comprehensive model(s) and/or more descriptive explanations of researchers’ methodology. We found that many of the studies lacked explanation of how researchers developed their survey instruments and/or question guides. Some questions that remain are:

- Can our aggregated findings lead to a higher-level understanding of small-scale producer needs, one that actively influences agricultural service providers or policy makers?
- What solutions are available to address the needs and challenges faced by small-scale producers in the United States?
- What role does Extension play in better understanding and addressing the needs and challenges of small-scale producers?

![Figure 1. Categorizing producer-identified needs into thematic challenges.](image)
Our findings clarify that small-scale producers perceive success in multiple dimensions and face diverse challenges influenced by their experience, education, age, market opportunities, and other factors. Due to the diversity of small farm operators and their individual perceptions, it is likely impossible to include every factor that affects small farm success in future studies. However, we think that with increased methodological transparency as well as use (and improvement) of our initial thematic framework, researchers and Extension professionals have a great deal of knowledge to gain about a largely overlooked population.

Success of small farms has important implications for the trajectory of U.S. agriculture. As the average age of U.S. farmers continues to rise, the need to nurture the next generation is evident. Small-scale production tends to be the entry point for beginning and historically underserved producers. Therefore, understanding and addressing the success factors, needs, and challenges of small-scale producers is important to encourage the next generation of farmers. We think that Extension professionals are well poised to identify bottom-up solutions to small farm issues by conducting their own systematic studies on small farm success factors, needs, and challenges. We believe that by doing so, researchers and Extension professionals can help advance new farmers, revitalize rural communities, strengthen the agricultural economy, and solidify long-term investments in agricultural extension activities, which are ultimately predicated on the continuation of small, diversified, family farms.

REFERENCES


