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Farm fresh food boxes: Increasing food access in rural communities and urban food deserts through new markets for farmers and retailers

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Abstract

Farm Fresh Food Boxes (F3B) is a multi-state integrated research and extension project that represents an innovative approach to addressing access to healthy, affordable food in food deserts by connecting farmers, retailers, and consumers. The extension team was responsible for recruiting farms and associated retail sites in three participating states: Vermont, Washington, and California, and promoting this innovative program to consumers in communities with limited access to fresh, local produce. The research team conducted mixed-methods research on the experience of participating F3B farmers, retailers, and consumers. Farms offered weekly boxes of fresh produce at retail sites that provide convenient access to consumers. Retail sites advertised with flyers detailing the weekly content and cost of F3B from participating area farms. Customers' pre-purchased boxes at the retail site or online on a week-to-week basis for later pick-up. Box contents and flyers change throughout the season to reflect seasonal availability and to move produce that is most abundant. Findings from mixed methods data collection include an assessment of market potential, revenue from box sales, measures of acceptability, and benefits and barriers to farmers, retailers, and consumers. F3B provides a low-risk strategy to address the complex supply, demand, and distribution challenges faced by producers and retailers of fresh local foods, while overcoming barriers that consumers face in accessing affordable, healthy food.

Keywords

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INTRODUCTION

The Farm Fresh Food Box (F3B) is a market innovation that may be characterized as an alternative food network (AFN) strategy, a concept which emerged in response to the many externalities of a globalized food system (Valchuis et al., 2015). F3B embrace elements of both the direct-to-consumer (DTC) model and short value food supply chain to achieve three goals: (1) expand producer sales, (2) stabilize rural retail businesses, and (3) improve rural food access (D. Smith et al., 2019). For consumers living in rural communities and in some urban areas designated as food deserts, there is difficulty accessing fresh, local, seasonal food (Karpyn et al., 2019). The F3B strategy aims to address the dearth of healthy foods at local stores and remove the barriers that prevent customers from participating in other DTC market channels. In the F3B model, area farms offer weekly boxes of pre-packed produce at retail locations that typically have a limited selection of produce available for sale, due to perishability, low sales volume and lack of infrastructure (Greco, 2020). In-store advertising attracts customers, who pre-purchase a F3B at the retail location or online on a week-to-week basis for later pick-up. Box contents change throughout the harvest season to move product that is seasonal, most abundant, and exceeds the quantity that can be sold through the farmers markets or community supported agriculture (CSA) enterprises (Kolodinsky et al., 2020).

REVIEW OF THE LITERATURE

A plethora of studies describe food deserts in both rural (Hendrickson, Smith, and Eikenberry 2006; Smith and Morton, 2009, Hubley, 2011) and urban settings (Whelan et al., 2002; Hendrickson, Smith, and Eikenberry, 2006), and at different geographic scales (McClintock, 2011; Raja, Ma, and Yadav, 2008; Smoyer-Tomic, Spence, and Amrhein, 2006).

Limited-income communities in urban and rural areas experience food access barriers to fresh, local produce. In a study of urban neighborhoods by Chung and Meyers (1999), non-chain supermarket stores and small independent grocers were more likely to locate in impoverished areas where choices for fresh food were typically limited, but high-calorie packaged food was abundant in variety and higher-priced (Hallett and McDermott, 2011). The spread of national supermarket chains, dollar stores, and e-commerce directly threatens retailers by undercutting prices and altering consumer shopping habits (Donahue, 2018; Rothstein, 2019). Consequently, many communities both in urban and rural areas have lost their neighborhood grocer (O'Brien, 2008). Making monthly shopping trips to a large supermarket, supplemented with smaller purchases, known as out-shopping, has been documented as a rural food access pattern that carries health risks (Hawes & Lumpkin, 1984; Mullis & Kim, 2011; Yousefian et al., 2011), as fewer trips to the grocery store might indicate lower produce consumption (Jilcott, Hurwitz, et al., 2010). Out-shopping also impacts rural small businesses as revenues shift from local to outside businesses (Pinard et al. 2016).

The challenges faced by rural grocers have resulted in variable food access in rural communities, making it harder for consumers to buy fresh, healthy produce (Blanchard & Lyson, 2006; Kaufman, 1998; Liese et al., 2007; Morton et al., 2005; Smith & Morton, 2009). As more small retailers go out of business, rural residents find themselves with diminished access to a diverse array of healthy foods, and consequently consume fewer fruits and vegetables (Andreyeva et al., 2010; Hanson et al., 2019; Rose & Richards, 2004; Timperio et al., 2008; Zenk et al., 2009).

The F3B aims to shift consumer buying patterns by making fresh, local produce available for purchase in their community, in a convenient retail location. In partnership with the local grocer, the farmer offers a box of weekly harvest. The produce items are listed so that the customer is knowledgeable of what is in the box before they make the purchase. This is unlike a CSA, which is offered on a subscription and consumers do not know from week to week what they will be receiving. The farmer is able to include produce that may be in excess of what they can sell through other DTC venues, such as a farmer market or food stand. The local grocer serves as the 'middleman', posting the list of the upcoming weeks' box contents, accepting payment that he then passes to the farmer and receiving the boxes. The retailer is motivated to participate in F3B through an increase in foot traffic, increasing 'inventory' without the concern of perishable items, and providing a community service.

MATERIALS AND METHODS

The F3B pilot project was a collaborative effort between extension faculty from Washington state, California and Vermont extension and researchers from University of Vermont and The Evergreen State College. In Spring of 2017, WSU Skagit County, WA Extension and University of Vermont extension partners engaged at least three farmer-retailer pairs to trial a full-season F3B pilot project. A total of 3 farms and 3 retailers were recruited in the Northeast and 3 farms and 4 retailers in the West Coast. In 2018, extension professionals were responsible for re-matching retail outlets to each farm, considering retail outlet proximity to farm and previous availability of fresh produce. Extension professionals also facilitated project logistics between farm

and store partners, providing tailored marketing materials, and technical support throughout the season.

Figure 1 shows the potential benefits of F3B for farmer, retailer, and consumers. We used a mixed methods approach to evaluate implementation of the model, which included an assessment of market potential, revenue from box sales, and measures of acceptability, and benefits and barriers to farmers, retailers, and consumers.



Figure 1. Benefits of F3B for farmer, retailer, and shoppers.

We provided a self-administered survey for each F3B purchaser to complete, to capture their attitudes and experiences with F3B. We conducted post-season interviews with farmers and grocers, to learn about their motivations for trying F3B, and their successes and challenges with F3B implementation. Research instruments were developed by extension and research teams collaboratively, and included surveys, tracking spreadsheets, and semi-structured qualitative interviews.

F3B Purchaser survey

In 2017 and 2018, completed purchaser surveys could be returned to the store in person. In 2018 a mail-in option was added, with each box containing a stamped, self-addressed envelope.

The purchaser survey included categorical, short answer, Likert scale, and open-ended questions. Topics included demographics, purchase location, previous F3Bs purchased, perceived accessibility of locally grown foods, and changes in behavior. In this paper, we focus on findings previously reported by van Vlaanderen et al. (2021) on purchasers' perceptions regarding F3B.

In 2017 and 2018, 643 F3Bs were sold, and 58 surveys returned (9.0% response rate). Sixteen surveys were returned in 2017, (7.2% response rate) and 42 surveys in 2018, (9.9% response rate). Forty-three percent of survey respondents were repeat consumers of two or more boxes. Since we cannot calculate an exact response rate, we characterize this study as descriptive, but not representative.

Farmer and Grocers interviews

In addition to data on box sales collected using tracking sheets, post-season telephone interviews were conducted in 2017 and 2018 with participating F3B farmers (n=9) and retailers (n=12). Interview topics included motivations for participation, perceptions regarding the commercial environment for local foods, and perceived benefits and challenges of implementing the F3B model. Interviews were conducted by research team members, and audio recorded. Recordings were transcribed by a third-party contractor, and the de-identified transcripts were structurally coded in NVivo for analysis. In this paper we share findings previously reported by

Greco et al. (2020) and Sitaker et al. (2020) on farmers' and retailers' perceptions regarding the benefits and challenges of F3B.

RESULTS AND DISCUSSION

Purchasers

Figure 2 shows purchasers' experience with F3B, based on their Likert-scale agreement with various statements. Most purchasers agreed or strongly agreed that it was easy to try F3B, and that they could afford to buy it. A majority found it to be compatible with their usual eating and meal planning habits. More than three-quarters agreed that the F3B box provided foods they knew how to prepare, and that their families liked. It should be noted that while nearly all said they could afford to purchase F3B, only 42% of purchasers felt F3B was less expensive than produce in other stores. Overall, purchasers were satisfied with F3B, with 83% saying they hoped the store would continue to offer the program next year.

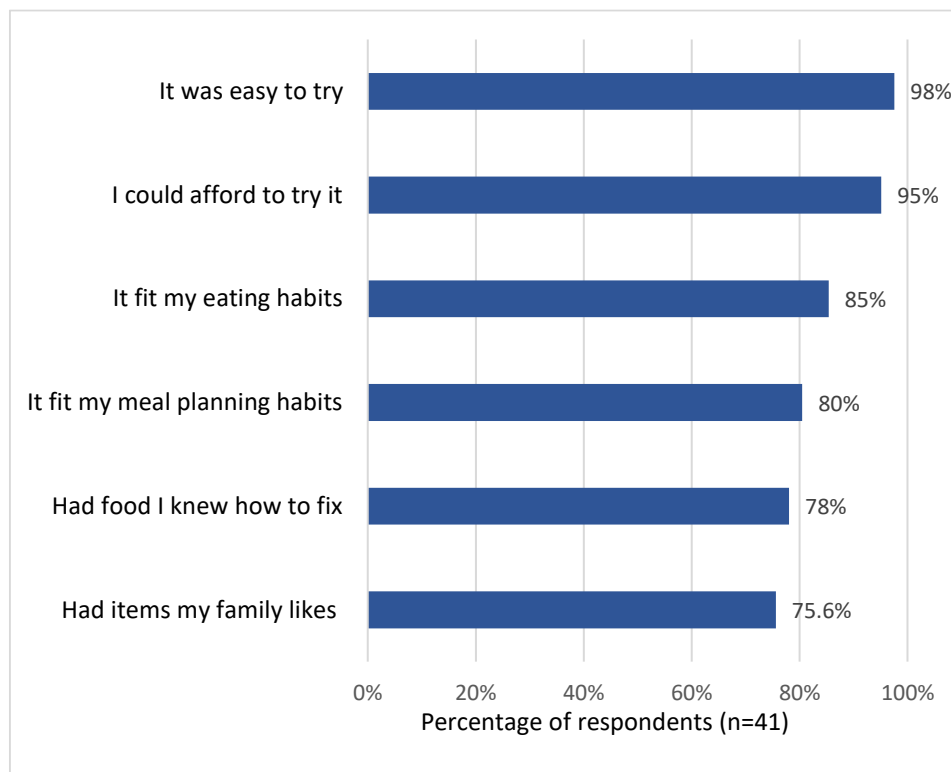


Figure 2. Purchasers who agree/strongly agree with statements about F3B.

When asked what they liked most about F3B, the quality of the produce was what purchasers mentioned most frequently. Here, "quality" was interpreted subjectively, and included the perceived freshness, taste, and appearance of the produce. For example, one respondent said they appreciated, "all the beautiful and delicious vegetables", while another noted the "top quality, clean produce".

Purchasers also liked the variety offered in the weekly box. They mentioned items they liked most ("Fresh carrots!", "Cantaloupe!"), as well as specific items they disliked ("Peppers! I can't eat them so I have to give them away", "Eggplant (sad face)"). There was a mixed response when new or unfamiliar vegetables were offered. As one consumer said: "I rose to the challenge of eating everything received," and another said it was "Fun to see what was in the box". However, several respondents wanted more information about "surprise" vegetables. As one succinctly stated: "I would of [sic] loved to have seen a list of the veggies that I received. I wasn't sure what one thing

was.”

F3B purchasers seemed to like being able to conveniently order a F3B on a week-to-week basis. As one consumer said, “I liked being able to continue supporting [the farm], since I had previously been a CSA member but couldn't travel to the farm this year to get the food.” For this person, F3B allowed them to continue consuming local food despite barriers to CSA participation. Another said they most liked that F3B gave them “all the veggies I want, 0 wasted ‘weird’ CSA veggies”.

Grocers and Farmers

In post-session interviews, farmers said their primary motive for implementing F3B was to address DTC market saturation and expand their customer base. Vermont farmers also said they were curious about how customers would respond to a box of fresh, locally grown food offered in that setting. F3B also seemed to be a good way to transition to a value-based supply chain at a scale that suited their farm. For many farmers, F3B required no additional labor or expense. Most said they simply added F3B to the pack-out/distribution process already in place for their CSA. However, F3B required extra record keeping and driving to the delivery site, which added to the farmer's busy schedule.

For the most part, grocers chose to implement F3B in hopes of expanding their customer base and to distinguish themselves from competitors by having “something a little bit different that we can offer our customers” in offering locally grown items. Most retailers reported that F3B had little impact on store profit; five retailers described the financial benefit to their store business as negligible. Most stores sold only a few boxes per week and therefore made only a small amount from the 10% transaction fee and reimbursement of the credit card fees that the study provided. Introducing F3B, with its specific ordering and pickup protocols, was yet another procedure that required staff training and monitoring. If the retailer had high staff turnover, this was even more challenging because the owner had to take time to train new staff on the procedures for accurate accounting, tally orders for the week, and notify the farmer of the weekly box totals.

Despite low initial profitability, retailers and farmers found F3B to be a worthwhile endeavor, enhancing their brand and increasing the visibility of their businesses, and felt it had potential. An important consideration for partners initiating this model include the start-up costs and investment of both time and labor in a business innovation that may not see a return until the product “takes off” and a solid customer base is established. Participating F3B farmers and retailers expressed a belief in F3B's potential and seemed willing to give it time to take hold. Though sales were modest, those who did purchase it voiced satisfaction with F3B, and the majority hoped it would be offered in the following year.

The current environment presents both opportunities and challenges for the F3B model. F3B's appeal is now enhanced by the fact that its contents are both traceable and safer, with fewer hands touching the produce in the box. Showcasing those virtues depend on the ability of the retailer to convey the farm's brand, to increase trust in the farmer and the food they produce, as well as build confidence that this short value chain food supply can be counted on to deliver healthy foods if the conventional food system supply chains falter. Overcoming barriers to purchase—such as inability to accept SNAP/EBT, or limited online ordering system, limited sizes and product

offerings—must be resolved in order for the model to be more competitive with traditional supermarkets that offer those amenities.

CONCLUSION

This project offers useful information on the market potential of an AFN that combines elements of the direct-to-consumer (DTC) and short value chain food supply models. This innovation design shows promise to expand markets for CSA farmers, provide a low-risk way for retailers to offer locally grown foods to their customers, and increase access to fresh produce for urban communities in food deserts and rural consumers with limited shopping options. During a time of pandemic, F3B offers customers a way to purchase healthy food to pick up, from farmers they trust, without the need for a long-term commitment. It also represents a nimble and responsive supplementary market channel for farmers and an opportunity for vendors to actively support the health of their communities.

Future research should focus on investigating the attitudes and needs of consumers in urban and rural areas with limited access to fresh produce, and their interest and desire for local foods, as well as which advertising strategies are most appealing and result in sales. As urban farming becomes more mainstream, the logistics of serving food deserts may be a viable market for urban farmers. As the F3B model is more widely established it will be possible to conduct economic studies on the financial benefits to local economies and to farm and rural retail businesses, as well as estimate the degree to which F3B addresses lack of food access and food security in rural areas. While each implementation site tailored the model to suit local conditions, its appeal might have been less than expected due to the need to visit the store twice to order and purchase at one visit and return to pick up the box on a second visit, and inability to accept SNAP benefits. Farmers and retailers intending to adopt the F3B model will need to find ways to address those issues; the F3B Short Course and Toolkit <https://www.uvm.edu/crs/f3b/webinar-and-short-course-workshops> provide evidence-and practice-based guidance on how to get started.

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