

## FSMIP Final Report

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**An outline of the issue or problem. Provide enough background information for the reader to understand the importance of the project. This section may draw from the background and justification contained in the approved project proposal.**

The principal goal of this project is to test whether consumers are willing to pay a premium for food produced by preserved farms, creating a new marketing opportunity while helping farmers facing challenges from development pressure. This project arises from the insight that the agricultural land preservation movement could complement local food goals in a novel way through product labeling. Many state governments strive to preserve farmland and have programs for the purchase of agricultural conservation easements (PACE), also known as development rights, to pay farm owners to restrict nonagricultural land uses in perpetuity. Consumers, though, are not always aware of these programs or whether foods they purchase come from preserved farms.

This project thus tests for a potential new market by seeing if there exists an untapped demand for food labeled as from a “preserved farm” or “local from a preserved farm.” Part of this work involved the design of an original food product label, *Delaware: Preserving Our Farms, Preserving Our Future*. This label creates a substantive marketing premium, so it can help enhance the agricultural returns of farms in regions facing development pressure. If Delaware or other states adopt this label, it should also lead to increased farmer interest in preservation, a key goal of Departments of Agriculture, including the Delaware Department of Agriculture.

Delaware has 41% of its land area in agricultural use, and leads the nation in the percent of farmland preserved. By 2012, Delaware had 109,682 acres in permanent preservation and spent \$197,868,193 to buy easements ([http://dda.delaware.gov/aglands/lndpres\\_prog.shtml](http://dda.delaware.gov/aglands/lndpres_prog.shtml)). The researchers estimated that there are 200-400 separate decision making units participating in Delaware’s preservation program, and the total number of Delaware farms (preserved or not) is 2,451 (USDA-NASS 2015).

**A description of how the issue or problem was approached via the project. Reference the**

## **project objectives and work plan.**

Watermelons were used as the food product to conduct this research, and they were selected for several reasons. For one, watermelons are grown on both preserved and non-preserved farms and are commonly sold at farmers' markets. Among Delaware's production of fresh market vegetables, yearly receipts for watermelons at \$10,856,000 were the highest, making it an important state crop (Delaware Department of Agriculture 2015). Watermelons have the greatest number of farms, at 87, selling for fresh market with the second-highest acreage total at 2,700 (Delaware Department of Agriculture 2015). Watermelon producers also have available a regional association label (Mar-Del, with Maryland) to allow expanded tests on the meaning of "local" to consumers. Specifically, watermelon affords the ability to test whether consumers are willing to pay an additional premium for food from a preserved farm locally, within a two-state labeled region, or in other neighboring states.

The overall objective for this project is to collect and analyze data on whether (and how large) consumers place premiums on watermelons that are labeled with local and/or preserved farm labels. The specific project objectives are to:

1. Determine consumer willingness to pay for a Delaware-grown watermelon;
2. Identify any premium consumers place on a Delaware-grown watermelon with the regional Mar-Del Watermelon Association marketing label;
3. Determine if a premium exists for a *Delaware Preserved Farm* label on a Delaware-grown watermelon with no other labels;
4. Determine if there exists an additional premium for a watermelon with both the Mar-Del label and *Delaware Preserved Farm* label;
5. Examine how premiums for the three label treatments above vary between farmers' market and general-population consumers and across three states: Delaware, Maryland, and Pennsylvania; and
6. Apply the findings to understand and help design more profitable local agricultural marketing.

Several steps were required before implementing the field experiments. First, given that farmland preservation is not necessarily a well-known concept for many in the general population, an accurate yet easily understandable definition needed to be created. Candidate definitions were devised and reviewed by Delaware Department of Agricultural officials and tested in a Qualtrics survey in January 2016, to select a final definition:

### *PRESERVED FARMLAND*

- A **voluntary** arrangement between farmers and the government
- **One-time payment** to farmers so that the **farmland is never developed** into houses and businesses
- The land still **belongs to the farmer**

Preserved farmland is a voluntary, legal agreement between a farmer and the government. In exchange for a one-time payment

from the government, the contract restricts use of the land to agricultural production, ensuring that productive farmland remains available for farming forever. In this contract, the land still belongs to the farmer, but the easement prohibits any future non-agricultural development by landowners.

The next stage was the creation of a design and slogan for labeling the watermelons as being from preserved farmland in Delaware. The slogan was selected with the help of the same officials and a consumer preference survey, using a convenience sample. Then, a competition was held to design the label image. The competition included students in the University of Delaware Department of Art and Design, with each student allowed to submit up to three designs. Entrants were given shape and size specifications along with the requirement to include the top survey slogan, “Preserving our farms, preserving our future.” The final design selected by a survey of some visitors to the University of Delaware’s Ag Day, a community event attended by approximately 8,000 people, appears below.



Original Label Used in Experiment for a Watermelon that was Grown on Preserved Farmland in Delaware; Design: Madison Spadafino; Property of University of Delaware

The researchers worked with the Mar-Del Watermelon Association, which is a marketing group supporting Delaware and Maryland growers, to secure the use of their local marketing label in the research and to help select growers with whom to work.

To test whether consumers were willing to pay more for produce from a preserved farm, researchers conducted economic field experiments at eight locations throughout Delaware, Maryland, and Pennsylvania. In the experiments, consumers were presented with two different labels: (1) the Mar-Del Watermelon Association label; and (2) our original label indicating that the watermelon had been grown on a preserved Delaware farm. Participants then provided the maximum amount that they would be willing to pay for a watermelon that had been grown in Delaware if it had no label, the Mar-Del label, the preserved farm label, or both the Mar-Del and preserved farm label.

Researchers recruited 328 participants for field experiments at eight locations from July – August 2016. Locations included farmer’s markets and parks in New Castle and Sussex Counties, DE, Cecil County, MD, and Chester County, PA. Researchers explained to participants that they could earn up to \$12 and potentially receive a watermelon. Participants were first provided with definitions of preserved farmland and the Mar-Del Watermelon Association, and then asked to state the maximum amount they would pay for watermelons with four different label types: no label, a preserved farm label, a Mar-Del Watermelon Association label, and both a preserved farm and Mar-Del Watermelon Association label. Researchers explained to participants that if they received a watermelon, their full earnings of \$12 would be reduced by the amount they said they would pay. Therefore, they were agreeing to forfeit real money for the chance to receive one randomly selected type of watermelon. Researchers explained that it was in participants’ best interest to state the most accurate, maximum amount that they would be willing to pay. The University Institutional Review Board approved the data-collection protocol.

**A description of the contribution of public or private agency partners in terms of the work performed.**

The researchers partnered with Delaware Department of Agriculture, specifically the Secretary and the director of planning. During three meetings and other email contacts, we described the project to the staff, received reactions, and discussed ways to partner in the data collection effort. The Delaware Department of Agriculture provided an employee and vehicle to truck the watermelons from the recruited growers and to the Department in Dover. The Department also helped contact the Mar-Del Watermelon Association and farmers who will sell us watermelons. The Secretary recommended a slight expansion of the initial scope of the project to include Sussex County, Delaware. The Secretary and his staff provided feedback on the experimental procedures and materials. Once the data were collected, the team presented the preliminary results at the Department of Agriculture. Reactions were gathered, which affected the final framing of the results in the extension report. The Secretary and his staff found the results surprisingly significant, but also pointed out challenges in the marketing chain to segregation and adoption. After the results were finalized into an extension report, the team then presented preliminary results to a public audience as part of the Delaware Agricultural Lands Preservation Foundation meeting. This is a public meeting of farmers and policy makers, which also included farmers, members of the press, and interested members of the broader public. The team gathered feedback, which affected the framing of results and data analysis. As a final step, the team presented results to several marketing associations to brainstorm ways to achieve broader acceptability of the label and ways for growers to see a financial gain from the label.

**A summary of results, conclusions, and lessons learned. Lessons learned should cover both positive and negative aspects. Include a discussion of how the project was evaluated and whether or not it met project objectives. To the extent possible, include measurable results. At least one quantifiable metric must be included that indicates the change in status of the project from initiation to completion.**

The data were first analyzed using descriptive statistics to estimate the different marketing

premiums for the differently labeled watermelons. The team determined that the preserved and local labels together (\$3.00 per watermelon) generated the largest premiums, followed by the preserved (\$2.38) and local (\$1.90) labels individually. The lowest willingness to pay was for the unlabeled Delaware watermelon. The remaining analysis involved econometric modeling. The primary method here was a tobit regression and a latent class analysis. Tobit regression takes into account the censored nature of the bid data (between \$0 and \$12, which were constrained as part of the experiment). The fundamental result was that the willingness to pay for the preserved farm label, when all else is held constant, is \$2.38, while the local marketing label is \$1.90. These are substantial premiums, which are created by the label—for the experiment used Delaware watermelons for all treatments. Moreover, the latent class analysis shows that there are different marketing segments. Some segments of consumers were willing to pay considerably more for the preserved farm label than others: range from \$2.23 to \$2.61. Further details on the econometric modeling are part of a journal article, which the project directors are preparing for submission to a peer-reviewed journal.

Overall, all project objectives were met. Importantly, the outcomes were positive in that the premiums hypothesized were found to exist and even carried across state lines. Positive lessons also exist for other researchers in showing how field experiments with new label designs can be conducted successfully. One quantifiable metric of the change in status is that, originally, the researchers were going to collect data in three counties; however, with consultation from the Secretary of Agriculture a fourth county was added.

#### **A discussion of current or future benefits to be derived from the project.**

This research suggests that by simply providing labels for use on local and preserved farm watermelons will increase consumer willingness to pay and allow growers to capture higher returns for the exact same watermelons they are currently marketing. Some growers already use local labels. This research suggests that growers who have preserved farms can use that attribute to generate additional marketing premiums. The same type of result was found for the Mar-Del label, suggesting these growers could also quickly and easily benefit from expanded labeling.

Consumers also benefit in that these label options will allow them to better express their goals and interests with their food product purchases. Specifically consumers that believe farmland preservation is important will now have a means of supporting that cause by seeking out foods with that label, much as they currently do now for local and organic foods. This could ultimately help contribute to a broader policy/planning process that delivers more preserved farmland, higher income for farmers, and stronger local agricultural economies in areas facing development pressure.

#### **Recommendations for future research and, if applicable, an outline of next steps or additional research that might advance the project goals.**

While our results show that premiums can be gained by farmers through labeling their products as being from preserved farms, there remains a large potential for future research. One obvious area would be to try the label on additional food products, perhaps including a processed food to check if the premium is restricted to fresh products. A second would be to test for the premium in other states or areas of the country. This could be especially useful in states that have been

less successful in preserving or are just starting to preserve farmland as it could induce more farmers to consider doing so.

It would also be helpful to determine how the label would fare compared to an organic version of a food product. Similar to the design here, the premiums for organic and preserved farm could be compared and also examine if the combination of organic and preserved could generate an even larger premium for farmers. This could even be done in a three-label treatment with a local label again included to see how they interact or even at what point they might begin to lose value.

### **A description of the project beneficiaries including the number, type and scale of producers, processors, and other businesses.**

There are several beneficiaries to these findings. One of the biggest beneficiaries are owners of preserved farmland who can now consider attempting to gain higher premiums for their products by promoting this fact to consumers. This added benefit to having your farm preserved should make it easier for policy makers to convince more farmers to join their programs and achieve their goals. While it would take some further study as discussed above, processors could eventually benefit by advertising and labeling some of their product ingredients as being from preserved farms.

Members of the Mar-Del Watermelon Association should benefit in the knowledge that their label, despite not adding much information besides the watermelon being local, can gain a premium from consumers. Such information would likely be useful to many other small associations across the country and would suggest they consider promoting themselves more to consumers. Overall, the premiums found suggest many opportunities for those in the food system to gain considerably from these results. The numbers of beneficiaries are thus likely substantial.

Consumers also benefit from being able to better satisfy their preferences for labeled food products.

### **Additional information generated by the grant project such as publications, presentations, and websites.**

The principal product that is published is an extension publication, which communicates the results to a wide audience:

- Duke, J.M., J.C. Bernard, S. Albrecht, G. Vitz. 2017. A Summary of Research on Whether Consumers Will Pay More for Watermelons Grown on Preserved Farmland. *Dept Applied Economics and Statistics Extension Report ER17-01*

Two journal articles are currently being prepared for submission to peer reviewed outlets. In addition, the two graduate students working on the project wrote and defended their master theses. There were several presentations made, reaching diverse audiences:

1. Duke, Bernard, Vitz, Albrecht. Willingness to pay for a preserved farmland label: A field experiment. Sel. paper at *Ann. Mtg NE Agr Res Econ Assoc.*, Washington

2. Duke, Bernard, Albrecht, Vitz. A Summary of Research on Whether Consumers Will Pay More for Watermelons Grown on Preserved Farmland. *Delaware Agric. Lands Preservation Foundation Meeting*, Dover, DE
3. Duke, Bernard, Albrecht, Vitz. The effect of preservation labeling on local food marketing premiums: Results of watermelon experiments. *Delaware Dept of Agric.*, Dover, DE.