



Transfarmation®

Hamilton Farms Mushrooms

GRANT REPORT

Reporting Period: November 2023–November 2024

Amount Granted: \$15,000

Farm Location: Corydon, Indiana

Former Farm Type: Small dairy

Farming Method Tested: Specialty-mushroom cultivation inside a converted dairy parlor

Recommended for Other Farmers? Yes

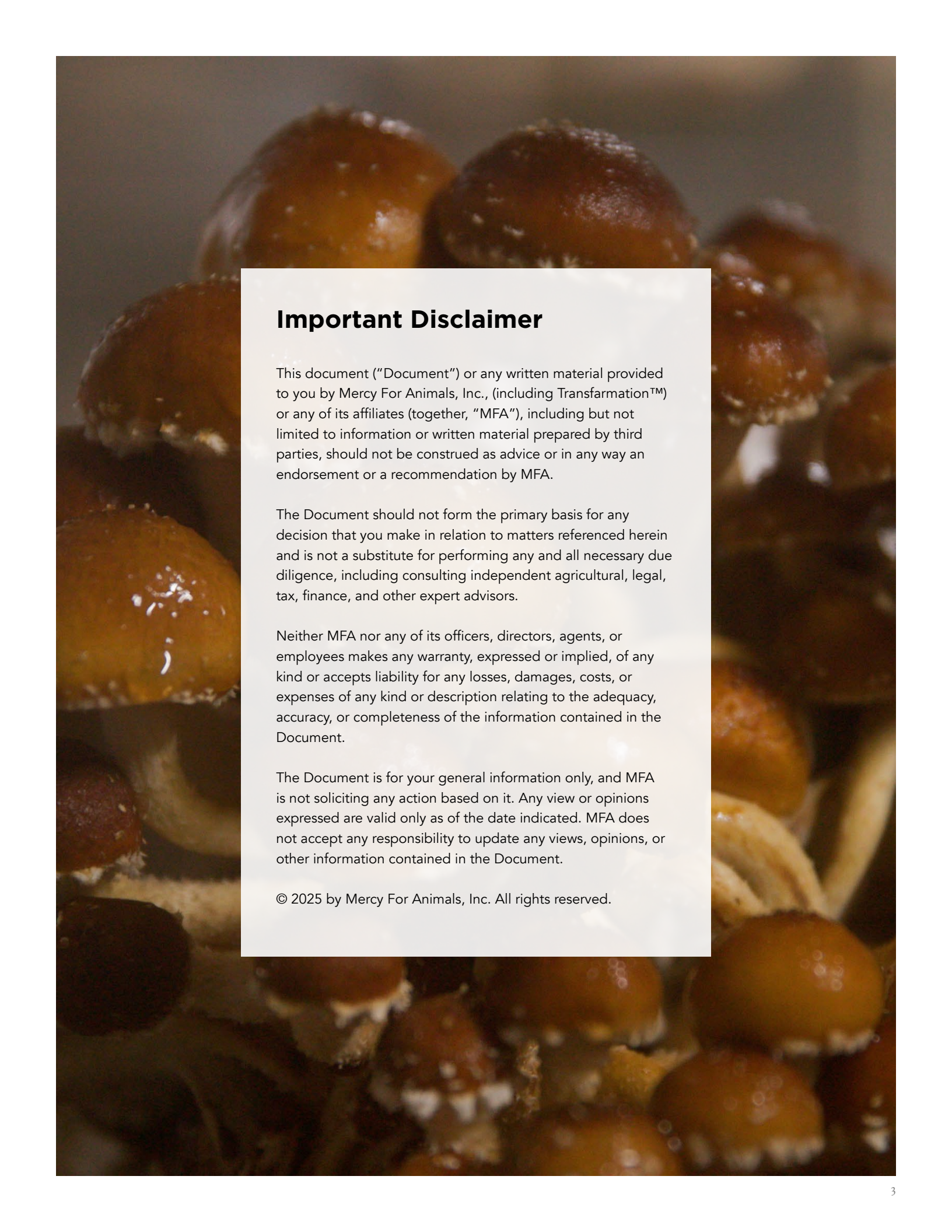
Biggest Learning: Farmers who research and experiment with new specialty crops on a small scale are better positioned to use their grant funding to quickly scale up production. Scaling production at the start of the farmers-market season enabled the Hamiltons to document six months of sales data. By pricing all mushroom species the same—a unique strategy in mushroom sales—they sold around 215 lb. of fresh specialty mushrooms for \$3,935, averaging \$18.30/lb. The Transfarmation Project® is eager to see how this uniform pricing strategy will influence the farm's sustainability and growth in the long term.



On November 3, 2023, Paula and Paul Hamilton received a \$15,000 Bo Halley research and innovation grant to support their Hamilton Farms mushroom pilot project. Paul, who inherited the farm from his father, ran a small dairy operation comprising 40 to 50 cows with Paula, his wife. The farm's co-op decided that their operation, after three generations and 69 years as a dairy, was too small and supplied too little milk to justify continued milk pickups. The co-op had already pushed out the two other companies that had purchased milk in the region. Left without a buyer and seeing the bleak outlook for small dairy farmers, the Hamiltons made the difficult decision to shut down their dairy in 2022 and began exploring alternatives.

Paula reached out to Farm Aid for support, and they introduced her to Transfarmation. She attended Farm Aid's annual festival, where she first learned about growing specialty mushrooms. She started growing mushrooms in her basement and later expanded into the farm's former milking parlor. Paul repurposed their dairy equipment by converting their **balk tank cooler** into a growing space for cold-loving mushrooms in the summer, building a substrate sterilizer out of an old 55-gallon drum, and creating a **laminar flow hood (front view)** to reduce contamination. The Hamiltons illustrate how a small dairy operation can transition to specialty-mushroom production and how access to capital can enable such a transition.





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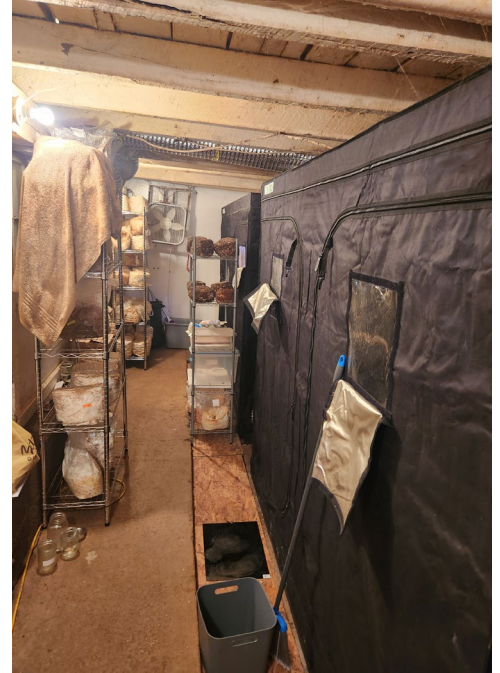
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Stages of Transition

The Hamiltons spent the first quarter of the grant period building out the production space in their former dairy barn. Paul added **electrical outlets** to power grow tents in the milking parlor. They also hired an electrician to expand the breaker box, install two 110 breakers wired to a new electric line for relocating the sterilizer barrel, and add a new 220 four-way outlet. They **insulated the milking parlor** and set up **two grow tents** with fresh-air exchange and **misters**. They also began the process of setting up two additional tents. The substrate mixing and bagging area was established and operationalized. They also assembled shelving racks and created an incubation space for colonizing inoculated substrate bags. A **heater** and **HEPA filter** were later added to the **inoculation space**, along with agar petri dishes and cups used to verify and propagate successful mushroom strains. The Hamiltons also set up a **substrate barrel sterilizer** and a grain bag sterilizer. They completed consultant Steve Gabriel's mushroom course and began a weekly rotation plan for producing blocks of different mushroom species.



The Hamiltons' milking parlor before and after building out their mushroom production space.

In the second quarter, the Hamiltons had all four tents running near full capacity. They transitioned from cooler-weather mushroom strains—like enoki, chestnut, black pearl, and snow white mushrooms—to warm-weather oyster strains, including pink, blue, gold, and phoenix, for the spring.

While applying for farmers market permits, they realized the Indiana state health department required **home-based vendor** (HBV) status for vendors selling value-added and packaged products containing dried and ground mushrooms. The Hamiltons paused production to prepare for an inspection, which entailed cleaning and labeling their equipment and creating written protocols. After successfully passing the inspection, they received HBV status and farmers market permits. By April, they were attending farmers markets weekly and selling value-added products (VAPs), such as mushroom seasonings, alongside their fresh and dried mushrooms.



Mushroom tents occupying the space where the cows used to be milked in the parlor.



Inside Paula's inoculation tent, each mushroom strain she uses lasts about five to six generations before she needs fresh strains.

After pausing mushroom production to prepare for the HBV status inspection, the Hamiltons spent the third quarter playing catch-up. Since lion's mane is their best seller, but slow to colonize, they tried a new, faster-growing strain. They also began selling produce at the local Harrison County farmers market and expanded to the larger Jeffersonville market in Clark County by June. Paula sought to build relationships with local businesses and restaurants by sharing samples of value-added products and obtaining feedback. She also explored online space channels, including setting up an Etsy store.

In the final quarter, the Hamiltons recognized the need to think differently and creatively about their sales channels as the seasons changed. Weekly sales slowed down from \$300/week to \$50/week, but they had anticipated the decline and adjusted production accordingly, using a two-month production planning runway. They maintained their mushroom spawn but reduced inoculation to half-sized runs. They also switched from warm-weather strains of white and blue oysters to cooler ones and retired pink and yellow oysters for the season. Heaters in the barn were also turned on to accommodate this change. As of their final report, the Hamiltons were focused on securing buyers, specifically chefs and restaurants, for the winter season and being consistent with their production and sales throughout the year.

Project-Related Tasks

Throughout the project, daily tasks included scanning each grow tent for mushrooms that were ready to harvest, evaluating whether colonized substrate bags were ready for fruiting, checking for contamination or pests, and cleaning and wet-vacuuming the space. During the first quarter, daily work also involved key build-out activities, such as carpentry, electrical work, reorganizing the layout for production, and troubleshooting, especially when unexpected issues arose.

Weekly tasks included making and inoculating substrate bags, cleaning tents, managing production and harvesting, and dehydrating excess fresh mushrooms for use in value-added products. In the first quarter, weekly tasks also included mycology lab work. By the second quarter, substrate preparation—including sterilization and inoculation—increased from once to twice a week. The Hamiltons also started attending farmers markets. In the third and fourth quarters, weekly tasks expanded to include marketing and value-added production from dehydrated and ground mushrooms.

Monthly tasks included emptying spent substrate onto forested land on their property, deep cleaning the tents, and bookkeeping. In the final quarter, Paula noted a growing emphasis on researching restaurants and seeking additional markets over the winter.

Mushroom Production and Value-Added Products

The Hamiltons mixed their own substrate to create mushroom fruiting blocks on-site. Paula estimated that each batch yielded 19 blocks weighing eight to nine pounds or smaller blocks if they stretched the mix to 20 blocks instead. Each batch filled their mushroom sterilizer barrel to capacity. To minimize waste, they avoided running the sterilizer half full and made efficient use of all substrate materials.



Species grown and average yields

	# of flushes/ block	Average yield in pounds/block	February–April (Q2)	May–July (Q3)	August–October (Q4)
Enoki	1	2–3			
Chestnut	2	2–3			
Oyster mushrooms Pink Gold Italian Blue White elm	3	Pink and gold 2–3 Italian, blue, white elm 5–6			
Lion’s mane	3	5.5–6			
Shiitake	1	3			

Second Quarter (Q2) Yield and Sales

*MFA does not endorse products.

In the first quarter, the Hamiltons harvested existing blocks of Italian and blue oyster mushrooms, which they dried, ground, and used to develop VAPs. In the second quarter, Paula reported the following yields and sales:

Mushroom	Yield (number of boxes)	Boxes sold	Reason for difference
Enoki	6	2	Lack of buyers; limited understanding of specialty mushrooms in the area
Chestnut	4	3	Lack of buyers
Oysters	60	35	Supply in excess of demand, improved customer retention
Lion’s mane	20	13	Dried for extra-value products

Small boxes held 4–6 oz. of mushrooms, while large boxes held 12–14 oz. Although Paula did not specify box sizes in her survey, the sales breakdown at \$5/box suggests that all second-quarter sales were small boxes. Unsold fresh mushrooms were either donated, bartered, dried for VAPs, or eaten. Paula noted that 8 lb. of fresh mushrooms yielded about 1 lb. of dried mushrooms, which were blended into various VAPs. Exact quantities were difficult to quantify, however, since multiple mushrooms were combined in each blend. The Hamiltons started selling VAPs once they received their HBV certification in the second quarter. While most were traded with other vendors for signage, Paula sold two 1.5 oz. mushroom seasonings for \$5. Paula reflected that direct personal sales, such as when customers called to check mushroom availability and picked up orders from her driveway, were easier than selling at farmers markets.

Value-Added Production

While applying to become a vendor for two farmers markets—one in Harrison County and one in Clark County—Paula encountered differing requirements. The Clark County market didn’t require a certificate from the health department for the sale of VAPs, but Harrison County proved far more challenging. Paula understood that Indiana placed no restrictions on dehydrated mushrooms under the [Home Based Vendor](#) laws and that Purdue Extension’s [Food Safety Regulations for Farmers Markets](#) did not include mushrooms on the “Risky Food” list. Despite this, the Harrison County health department insisted that their farmers market certification be evaluated by the Indianapolis state health department. The Hamiltons prioritized passing this inspection in the second quarter, as the Harrison County market had already started and VAPs were crucial to their farm plan, particularly for using unsold fresh mushrooms profitably.



Paula provided an overview of their value-added production process: Fresh mushrooms that do not sell at market are immediately dehydrated using a [stainless steel dehydrator](#) with [stainless steel trays](#). The dehydrator's temperature and time settings ensure consistent drying conditions. The mushrooms are tested to confirm that the moisture content is below 10%, with a target of 5%–7%, well below any published standards. The entire process is carried out in the clean room, a dedicated lab space for inoculating sterile substrate with mushroom spawn. Once dried, mushrooms are ground in a [stainless steel flour mill grinder](#) and packaged as seasonings or ground products. Seasonings are bottled with an inner paper cap seal and shrink wrap band, while the ground product is placed in mylar bags and heat-sealed. The labeling complies with the HBV regulations.

The Hamiltons used dehydrated oyster and lion's mane mushrooms to create a variety of mushroom seasonings, including garlic and onion mushroom salts, Italian mushroom seasoning, instant umami seasonings, and a mushroom soup mix.

Third and Fourth Quarter (Q3 and Q4) Sales

The Hamiltons started making consistent sales in the third quarter, attending both the nearby Harrison County market and the Jeffersonville farmers market in Clark County. The local market in Harrison County is relatively small, drawing about 50–100 visitors each week. To expand their reach, Paula researched bigger markets in their area. She received a call from the Jeffersonville market, which was actively looking for mushroom vendors. Located at the foot of a walking bridge connecting downtown Louisville, Kentucky, and Jeffersonville, Indiana, the market reportedly had four restaurants that purchased produce directly. Although the Jeffersonville market required a \$150 annual vendor fee and an additional \$150 to meet compliance standards (canopies, signage, certified scales, etc.), it attracted about 1,000 visitors each week and hosted 50 other vendors. The Hamiltons began attending in June, estimating that selling at least \$70/week would make the trip worthwhile.

By July, Paula reported consistent weekly sales of \$70 and complete sell-outs on weekends when the weather was good. By educating and interacting with consumers at these markets, the Hamiltons built a loyal base of regulars who would line up at 9 a.m. to purchase their produce. By mid-July, combined sales of mushrooms and VAPs touched \$200, with VAP sales outpacing fresh mushroom sales by the month's end.

Despite a slowdown in production due to the summer heat and increased contamination, the Hamiltons produced approximately 7 lb. of fresh mushrooms each week. Paula estimated that they could sell about 10 lb. weekly if they expanded to two or three markets. They sold fresh mushrooms, VAPs, and fresh garden produce, hitting about \$300/week in sales. While this covered their mortgage, they reinvested most of the revenue into the business.



Paula also remained mindful of maintaining equipment, stocking up on replacement parts to mitigate system failures, and monitoring wear and tear on machinery that ran continuously. In July, they took a weekend off to celebrate their wedding anniversary. They also purchased a Square reader to accept credit card payments and processed \$70 in credit card sales during the first week using it.

In the fourth quarter, Paula started making sample mushroom boxes and reached out to local restaurants, including businesses listed in Transformation's [Greater Louisville market analysis](#). The Hamiltons remained flexible with the

mushrooms they grew, tailoring production to meet the preferences of chefs and restaurants. Toward the end of the season, VAP sales, especially soup mixes, increased considerably. So Paula ensured an ample supply at all times. She also mentioned a willingness to grow more enoki mushrooms if local Japanese restaurants expressed interest. While watching a Japanese cooking competition called *White Spoon Black Spoon*, Paula noticed a contestant, Edward Lee, who operated a restaurant in Louisville, Kentucky. She considered delivering a sample of mushrooms to his restaurant to congratulate him on his runner-up finish and spark his interest in their offerings. Paula also followed up with Newfields, an arts and nature campus in Indianapolis, multiple times but had not received a response at the time of writing.

With regular farmers markets paused through Thanksgiving and resuming indoors after the holiday, the Hamiltons set a sales threshold of \$25 to make attendance worthwhile. They also hoped to find alternate markets for selling dried mushrooms with winter approaching. While they sourced consistent buyers, their fresh harvest was converted directly into dried products.

The Hamiltons also bartered some mushrooms for business essentials, including updated signage, business cards (listing their mushroom offerings), and a logo for their eBay page. One such barter occurred when the Hamiltons traded boxes of shiitake mushrooms with a customer who offered to distribute their business cards to homeopathic shops. The shiitake had emerged unexpectedly after a cold snap from logs they had inoculated earlier in the year—logs they had assumed were defective. Paula's tailored approach to business outreach and ability to retain loyal customers illustrate her entrepreneurial skills.

Quarterly sales

Month	Type of retail market	Attendance	Fresh mushrooms \$5/4.5 oz. container	Fresh mushrooms \$10/8.5 oz. container	VAPs \$5/1 or 1.5 oz.	Total
April	USDA office	1	Not categorized			\$20
	Farmers markets	1	Not categorized			\$60
Q2 total						\$80
May–July	Farmers markets	14	161	74	29	\$1,690
		2	Not categorized			\$355
Q3 total						\$2,045
August–October	Farmers markets	6	218	130	60	\$2,690
Q4 total						\$2,690
Total sales in 2024						\$4,815

In the third quarter, as farmers markets became the Hamiltons' primary sales channel, Paula reiterated that navigating the differing requirements across markets, particularly certifications such as the HBV designation, continued to be the most demanding aspect. With the certification in place, the Hamiltons could legally sell value-added products within Indiana, though not across state lines. By the fourth quarter (Q4), establishing relationships with chefs and securing restaurant buyers became their most energy-intensive task. In contrast, the Jeffersonville market was the easiest for them to manage, thanks to the consistent harvest and packaging routine they had developed.

Fresh mushroom sales

In dollars	In pounds	Fresh mushroom price/lb.
\$3,935	214.97 lb.	\$18.30

Paula reported pricing all mushroom species at \$20/lb. At their first Jeffersonville market on June 8, the Hamiltons decreased their large fresh-mushroom portion from 12–14 oz. to 8.5 oz. and priced them at \$10/unit while keeping the small portion at about 4.5 oz. for \$5. After feeling unprepared for the number of customers and fast pace at that initial market, Paula simplified sales tracking by tallying the number of small and large units sold, as well as VAPs. Units were later converted from ounces to pounds to calculate total fresh mushroom sales and compare them against reported revenue. Over the course of the farmers market season, the Hamiltons secured an average price of \$18.30/lb.—offering a strong proof of concept for Transformation’s estimated market price of \$16/lb. retail and \$8/lb. wholesale.



Sufficiency of Project Funding

The Hamiltons submitted an original budget that exceeded the \$15,000 they were awarded through the grant. They tracked project expenses beyond the grant amount for comparison, covering additional costs out of pocket or through reinvested sales revenue. Notably, Paula saved \$579 by using coupon codes, placing bulk orders, and taking advantage of online deals.

Proposed budget		Actual budget	
Production space and tent setup	\$7,260.40	Production space and tent setup	\$6,516.41
Block production	\$5,136.83	Block production (includes inoculation materials)	\$7,271.34
Specialized labor for plumbing	\$500.00	Specialized labor for electrical	\$250.00
Misc.	\$200.00	Misc. cleaning and self-protective materials	\$725.77
Utilities	\$2,400.00	Utilities*	N/A
VAPs	\$0.00	VAPs (materials and packaging)	\$257.05
Sales	\$0.00	Sales (non-VAP packaging, market fees, point-of-sale materials)	\$830.20
Total project cost	\$15,497.23	Total project cost	\$15,850.77

*Isolating utility costs for the pilot project was difficult because the Hamiltons used their grain dryer during the transition from their dairy to a mushroom operation.

Labor

Paula and Paul worked between 30 and 40 hours per week on the project. In the second quarter, their son contributed 30 hours during the buildout phase, and they also hired an electrician for five hours of work. They did not pay themselves for their labor. Paula provided the following breakdown of their time allocation during the last two quarters:

Project labor/week breakdown

Quarter	Q3	Q4
Production	22	22
Sales/marketing	5	10
Transportation	3	5
Management/accounting	0	3
Total hours	30	40

Unexpected Challenges and Lessons Learned

In the first quarter, the Hamiltons recognized the need for a better heat source for winter months. Two weeks of subzero temperatures prevented them from working on mushroom production and inoculation. The physical demands of the project were also unexpected, requiring the Hamiltons to seek assistance. For example, their son helped insulate the milk parlor because Paula and Paul were unable to lift and maneuver the foam insulation board. They also hired an electrician to install a new 220-volt plug system needed for the barrel sterilizer. When the substrate bagger didn't work as intended—the substrate stuck inside instead of falling through—they repurposed it for holding hardwood pellets used in substrate production. They also underestimated the amount of substrate needed to reach their mushroom block production goals. While developing value-added products, they encountered unexpectedly high costs for label printing. By the end of the first quarter, they had received limited interest from local restaurants.

In the second quarter, they lost a batch of substrate bags due to a problem with the grain spawn. Much of their time and resources were also spent on obtaining their full food vendor certification.

The third quarter brought new climate-control challenges as summer heat slowed production. Paula noted slightly higher rates of bacterial growth and contamination in grain spawn bags, which she suspected may have come from the bags themselves. She addressed the problem by purchasing a new set of spawn bags. She also emphasized the difficulty in identifying and troubleshooting the source of contamination, as even one spore could affect an entire batch. Discarding spent bags was another challenge, which they addressed by earmarking a wooded area on their property for disposal.

In the fourth quarter, the onset of fall and winter adversely impacted sales and profit margins. The Hamiltons adjusted by switching to half runs of substrate bags. Making connections with local restaurants also proved harder than anticipated. Paula recognized the importance of consistently following up via email and phone and making in-person visits with sample boxes to cultivate these connections.

Farmer Reflections

What have you learned about the day-to-day operations of your project that could be useful for other farmers with similar plans?

- Cheaper is not always better. We originally sourced mushroom bags from China, but they had a high rate of contamination. After switching to the industry standard Unicorn Bags, the contamination rate dropped. We tested the leftover bags by filling them with water and found leaks around the filter patches.
- It's important to set up and stick to a schedule for things like weekly tent cleaning and making substrate bags. Without one, it's easy to fall behind.
- Documentation is key. We write down everything in a binder, including which species we're growing and need to grow, which agar plates are active, and how far along they are.
- Flexibility is vital. Things didn't always go as planned, so we either changed where it went or what it did. If you get too stuck in your plan and aren't willing to adapt, it becomes a miserable experience. People ask if we grow in bags, in buckets, or on logs—assuming you have to use one or the other. But we use all three. We are open to whatever works and even grow mushrooms in kitty litter buckets.

- Every mushroom farm is different based on the selection of species and overall setup.
- Organization is critical. We label the bags and track which flush they are on. Finding genetics we like and keeping them going has been crucial. Each farmer needs to find their own rhythm and figure out how to deal with the mushrooms that don't sell, whether it's donating or creating VAPs. At the end of the day, it boils down to a lot of hard work.
- Daily and regular deep cleaning make a big difference. We swapped out a wooden stool for a stainless steel one, and now our contamination rate is down to 1%. At this point, we don't have any contamination issues.

What do you wish you had done differently in your farm transition?

In the first quarter of our project, there wasn't anything we wished we had done differently. We knew it was going to take a lot of work to get this up and running, and we believed it was worth it to keep the farm going as a small family farm. In our later surveys, we felt the same—we stayed on track and had no major regrets. We felt we had planned the project well, and having a clear plan in place before getting started helped us far more than trying to figure things out on the fly.



Farmer Achievements

The Hamiltons employed a number of creative solutions during the course of this project. One example was their repurposing of a concrete mixer as a substrate mixer. As Paula noted early on, "some of our crazy ideas are working." They successfully converted their milking parlor into a mushroom-growing area early in the project by reinforcing pillars, pressure washing, adding insulation, and building exhaust ducts to decrease the spore load in the building.

They also established systems that enabled their business to function independently and reduced reliance on outside suppliers by learning how to clone mushroom and grain spawn—replacing strains that were previously purchased from other vendors.

Successfully passing a board of health inspection in the second quarter enabled the Hamiltons to access additional markets, a critical step in their long-term success. They expressed pride in exceeding their initial sales expectations in the third quarter, reaching a point where they could reinvest income into the farm business.

Despite having no prior experience in mushroom production, Paula and Paul quickly developed the skills and knowledge needed to run a mushroom farm. They credited educational resources provided by Transformation and consultant Steve Gabriel, describing the materials as high-quality and instrumental in helping them grow mushroom varieties known to be challenging. They also felt a sense of achievement in being less physically tied to the farm than when they ran a dairy operation.

Amplifying Farmer Voices

At the conclusion of her R&I reporting, Paula reflected on how her family's experience with the dairy co-op made her a strong and vocal advocate for creating "off-ramps" for farmers facing the loss of their farms due to corporate consolidation. She shared numerous instances of her advocacy. She was invited to join a focus group at her local farmers market due to her efforts to support fellow farmers—particularly after the poultry-processing-plant closure in Corydon, Indiana. At her market booth and during events such as Farm Aid, she tells her farm's story using posters showing the transformation of the milking barn into a mushroom operation.