



Transfarmation®

Barn Farm Plant Haven

GRANT REPORT

Reporting Period: September 2022–September 2023

Amount Granted: \$31,342

Farm Location: Wadesboro, North Carolina

Former Farm Type: Broiler

Farming Method Tested: Specialty-mushroom cultivation inside an insulated trailer

Recommended for Other Farmers? Yes

Biggest Learning: Material and trailer prices can fluctuate dramatically over the course of a project, and farmers should prepare for that.

A Bo Halley Research and Innovation Grant totaling \$31,342 was awarded to Tom Lim for his Barn Farm Plant Haven pilot project. Tom raised chickens for 20 years before the company he contracted with terminated him without warning in 2018. Receiving this grant enabled him to purchase a refrigerated shipping container to create a specialty-mushroom cultivation room.





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Table 1. Stages of transition and time required

Stage	Time
Securing refrigerated trailer	6 hours
Building trailer staircase	1 day
Painting inside of trailer	3 hours
Building shelving in trailer	~3 days
Building wall to enclose trailer	2 days
Securing an electrician	2 weeks
Installing electricity	3 days
Securing an HVAC technician	2 to 3 months
HVAC installation	30 hours
Enclosing production-space entryway and installing exhaust fan	18 hours
Creating disinfection and production-tracking systems	4 hours
Securing ready-to-fruit mushroom blocks	7 weeks
Mushroom production	1 hour/day
Harvesting mushrooms	3 hours/day
Consistent production, building relationships with buyers, establishing the business, and establishing systems and processes for production	Last 3 months of project

Project-Related Tasks

Tom’s project-related tasks evolved over the course of his project. In the beginning, his most frequent tasks were acquiring materials and tools and prepping the shipping container for the build. During the build, Tom continued to acquire necessary materials and began constructing stairs, shelving, and framing and installing the misting system. He spent a significant amount of time making calls attempting to secure specialized labor for the electrical and HVAC installations. Once the production space was complete, Tom’s tasks shifted to routinely checking the environmental systems, inspecting mushroom blocks, and harvesting and dehydrating his mushrooms. While beginning mushroom production, Tom began reaching out to potential buyers and creating his branding for Barn Farm Plant Haven. At the end of the grant period, Tom achieved consistent production, with tasks including harvesting mushrooms, cleaning the production space, and checking the environmental controls. Tom posts weekly on his business’s Facebook page and makes biweekly deliveries to buyers.

Unexpected Challenges

Throughout the project, Tom was able to source materials more easily than specialized labor for critical project components. He struggled to find someone to install his HVAC unit because he found that most technicians were willing to do the installation only if the unit was purchased through a company they worked with. Tom also struggled to find an electrician willing to connect his utilities to his mushroom-production space. He was able to secure them, but it took significantly longer than he had expected. Tom’s current challenge is learning how to align his mushroom growth cycles with his buyers’ timelines.

Sales

Tom began recording his sales during the last quarter of his pilot project. As the table below shows, he has experience with selling to food hubs, farmers markets, and friends. He said that selling at farmers markets took the most effort due to the need to explain and discuss his product repeatedly during market days. Selling to family and friends took the least effort because they were already familiar with Tom and the mushrooms he offered. From a production standpoint, he said that all marketing avenues took the same amount of effort because packaging was the same.



Table 2. Growth and sales data for various mushroom varieties

Crop	Golden oyster	Pink oyster	Shiitake	Blue oyster	Lion's mane
Days to harvest	8	17	14	7	10
Q4 yield	15 lb.	24 lb.	60 lb.	264 lb.	68 lb.
Q4 total sales (quantity)	10 lb.	1 lb.	10 lb.	223 lb.	13 lb.
Reason for difference between total yield and sales	No buyers outside the food hub; schedule conflicts for farmers markets	Spoilage due to power outage	Spoilage due to power outage	Food-hub order cap; lack of buyers for remaining stock	Lack of buyers for stock not purchased by food hub
Retail / direct market sales					
Food hubs	10 lb. at \$12/lb.			200 lb. at \$12/lb.	9 lb. at \$13.75/lb.
Wholesale / indirect market sales					
Farmers markets			2 lb. at \$14/lb.	14 lb. at \$14/lb.	3 lb. at \$16/lb.
Friends and family		1 lb. at \$11/lb.	8 lb. at \$11/lb.	9 lb. at \$11/lb.	1 lb. at \$13/lb.

Was the funding sufficient for the project?

No, two rounds of supplemental funds were needed to carry out the full project. By the end of the first quarter, \$13,880.98 of the initial funding had been spent. The HVAC system (\$4,832.31) and refrigerated trailer (\$4,500) were the two most expensive items, followed by the misting system and materials from Lowe's to convert the shipping container. In the second quarter, Transformation granted Tom \$7,500 in supplemental funding to continue the project, almost half of which went toward electrical installation for the trailer (\$2,950). In the third quarter, \$8,842 in supplemental funds was granted to cover the remaining project build-out, including installation of the HVAC unit (\$4,100).



Table 3. Proposed and actual budgets

Proposed budget		Actual budget	
Materials		Build-out supplies	\$9,179.30
53' refrigerated trailer	\$5,000.00	Shipping container	\$4,500.00
4-ton HVAC unit	\$4,279.00	HVAC unit and installation	\$8,932.31
Duct elbows	\$74.28	Specialized labor, electrical	\$2,950.00
Spiral ducting	\$187.90	Mushroom blocks	\$1,150.48
Galvalume sheeting	\$215.80	Packaging	\$707.91
Spray-foam insulation kits	\$818.00	Dehydrator	\$140.00
Self-tapping screws	\$27.96	Administrative costs	\$282.00
Hollow steel doors	\$500.00	Additional packaging and storage space	\$3,500.00
Metal shelving	\$3,168.00	Grant funds total*	\$31,342.00
High-pressure misting pump kit	\$1,739.19		
Harvest cart	\$139.99	Out-of-pocket costs during the remaining project-reporting period	\$2,235.26
Fans	\$365.97		
Can fans	\$515.96		
Miscellaneous tools	\$100.00		
Miscellaneous cleaning supplies	\$100.00		
Miscellaneous electrical	\$700.00		
Lighting	\$199.49		
Total project cost	\$18,131.54	Total project cost	\$33,577.26

*At the end of the R&I reporting period, operational expenses were tracked under a pilot phase, as the farm would become a Transformation demonstration hub.

What would the farmer have done differently?

Most notably, Tom wishes he had started this project sooner after he lost his poultry contract. In addition, he would have made a shade cover to further protect the mushroom trailer, set up a dedicated packaging space, and installed a large cooler to store his harvested mushrooms.

Farmer Achievements

Tom expressed strong feelings of achievement throughout the project. "Everything, everything I do is an achievement to me," he said. "Every time I go inside the trailer, I feel achievement. ... Growing mushrooms, everything you do is under your control. I lived under somebody else's control when chicken farming." Regarding his first sale, he said: "I feel like, did I sell this for real, or did they pretend to buy this from me? I've never experienced this in my life. I was nervous, but when we got home we felt excited. Beyond happy. We made this from the start to this sale, and we actually got a customer that bought from us. Transformation has kept helping us along the way."