



PACKHOUSE CASE STUDY

MOUNTAIN ROOTS PRODUCE

FARMERS: Mike Nolan and Mindy Perkovich

LOCATION: Mancos, CO

LAND BASE: 13 acres, 6 in production

MARKETING: 40% CSA; 50% to restaurants, smaller grocers, and schools; 10% to farmers market

EMPLOYEES: 2 owners, 2 full-time seasonal

FOOD SAFETY BASICS: No certifications required by buyers and qualified exempt from FSMA

Mike Nolan and Mindy Perkovich own and operate Mountain Roots Produce. In 2017, after more than four years of washing and packing in an open air washing and packing space, they were excited to finally upgrade to an enclosed, insulated packhouse. Their main considerations in building this space were to have an easily cleanable space, to improve storage, and to make winter farming more human-friendly with a heated space. On the late August morning when I spoke with Mike, it was 37 degrees in Mancos at dawn. Since they sell through the winter, they really needed a space that was insulated.

BUILDING BASICS

The new packhouse is a 32' x 40' prefab steel insulated building situated right in the middle of the 13-acre property. Mike and Mindy's house is about 400 feet away. This building was a kit from General Steel, and they built it with help from some friends and Mindy's dad. In the final days of the project, they hired a contracting team to come and finish the build because the project was beginning to overlap with their growing season. They hired a concrete contractor to pour the pad and install the drains. Although not inexpensive, he was the best they could find, did great work, and treated his crew fairly. At \$17,000, the concrete work was one of the largest expenses of the \$55,000 project.

To fund the new packshed, Mountain Roots refinanced their property with a 20-year loan. This long-term vision allowed them to make the best choices for the building they wanted rather than spending less on a cheaper product. However, they made the project more affordable by doing much of the work themselves and by shopping for inexpensive items over the past several years—like a walk-in from a restaurant going out of



business or industrial shelving from a closing Amazon distribution center—to make the space functional.

As this is the only enclosed building on the farm, it is used as the washing and packing space as well as general storage for some tools and materials. Large canvas sheets are hung to divide the space and control temperature.

The concrete floor slopes to the middle where the floor drains transport water out of the building. The walls are all fiberglass reinforced plastic (FRP) panels so they can be scrubbed, pressure washed, and sanitized and contribute to the brightness of the space.

PRODUCT FLOW

- The team harvests directly into a 10' x 6' insulated white trailer with a coolbot. After harvest, the trailer is unplugged, backed up about 500 feet to the building's bay doors. Then produce moves directly from the trailer, into the wash station, through the packing station and labeling station, and into the walk-in. At the end of the harvest day, they clear everything out, including the tables, and spray, clean, wash then put away the tools, tables, and totes. In the morning, the produce is moved out of the cooler and into the van.

- **Equipment and Storage:** For washing and packing, Mountain Roots has: two three-basin sinks; two homemade 4' x 8' spray tables topped with chicken wire; four 100- to 150-gallon commercial grade plastic rubbermaid tubs for soaking; and a Hobart salad spinner.

Industrial shelving along the walls meets various farm needs: one shelf is for employee check-in, SaniDate, soaps, markers, sharpies, and other incidentals. Another shelf holds all of



the packhouse supplies: bags, wax boxes, net bags, etc. Another houses all of their reusable crates.

- **Lighting and heat:** The building has LED lighting and a 24K BTU forced air heater so that they can wash during the winter and store crops that prefer warmer temperatures.

- **Climate:** Located in the mountains of Colorado, the climate is very arid. Mike reports that they feel their food safety risks are a bit lower than growers in humid climates since they never have standing water and their equipment dries so quickly.

OTHER FOOD SAFETY TASKS

- **Coolers:** Within this building is a 12' x 12' walk-in cooler, but the farm also uses a 6' x 8' winter storage cooler that is outside the building near their previous washing and packing area. They're also able to use the trailer cooler when needed. All three of those coolers are kept just above freezing for beets, turnips, rutabaga, cabbage, carrots, and kohlrabi. Mike leases potato storage 20 miles away that stays 35-40°F. They keep the temperature of the packhouse around 55°F for onions, garlic, and winter squash, that are stored on pallets in the corner and covered with moving blankets to minimize dust and keep the temperature more consistent.

- **Bathrooms and Handwashing:** Everyone uses the house restroom. They also have a handwashing station in the packhouse with touchless soap and paper towel dispensers. Mike says they're very cheap at Sam's Club!



- **Bins and tool washing:** Most of Mountain Root's harvest goes into plastic harvest containers and then they pack out into sealable food-grade plastic containers. They own about sixty of each of those. With two different types of bins, they never confuse what is clean or dirty. Wholesale crops usually are distributed in 2 mil plastic bags or mesh net bags for garlic or onions. All of the crates get soaked, scrubbed, rinsed, sanitized, and stacked to dry once a week. The entire washing station gets sanitized twice a week: once before they wash the bins and once about an hour before they start washing produce. Harvest knife washing and sanitizing occurs at the same time that they wash crates.

- **Water Distribution:** Water from a rural water provider, which is like municipal water, is delivered to the washing station in pipes laid through the slab. The pipes go up one wall between the two main sinks and tables and are attached to the FRP panels. Four hoses, some with spray nozzles and others for filling sinks, are attached to those pipes.

- **Drains:** The drain is 10 feet long by 12 inches wide by 10 inches deep. It's the width of a flat shovel and is sloped so that all the water exits the building to a hayfield. The drain is topped with removable metal screens so that at the end of the day, they can take the screens off, spray them down, and let them dry. Any excess material that fell into the drain is scooped out

with a shovel and put in the compost. Then the drain is hosed out.

BENEFITS AND REGRETS

- Mike reported lots of benefits and couldn't pinpoint any regrets! The project has been really priceless from both an emotional and physical standpoint—they're just much more comfortable. It also made them more efficient so they were able to hire another person. Simply having a space that can be cleaned and sanitized easily has felt so beneficial. In addition to getting them out of the elements, having this space has given Mountain Roots a chance to create more lasting systems and routines.

- In the next year, they're considering buying a washing line set up, but at the time of our interview, they hadn't decided on a specific piece of equipment. Over the years, they've found they can sell produce that is still a little muddy and sometimes, as is the case with wholesale potatoes or beets, completely unwashed. This has saved them tons of time and thus they haven't needed a washing line set up.

- While he couldn't think of any regrets, like many other farmers, Mike mentioned that the space seemed as big as they'd ever need, but they already feel a little cramped and like they could use a bit more space. They're always tweaking and investing in storage solutions, too.

