

## SUMMARY

# Small Potatoes, Big Impact

**MICHIGAN FARM TO SCHOOL POTATO  
PROCESSING PARTNERSHIP CASE STUDY**



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# Introduction

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## **FARM TO SCHOOL IS STILL AN EMERGING MARKET AND POTATOES CAN HAVE A BIG IMPACT.**

The potato processing project began with an idea from Dan Gorman, farm to school innovator and food service director for Montague Area Public Schools. Dan wanted to explore the possibility of processing Michigan produce in-house, starting with potatoes. Potatoes are a highly accepted vegetable among students and have a high volume potential. Dan also saw potential for improving student nutrition by replacing a less nutritious potato product, french fries, with a roasted Michigan potato.

Schools' ability to utilize fresh, whole produce can be limited by staff, equipment, time, funding, and other factors. Often, produce is easier to incorporate into school meals when it has been pre-processed. Because chopping potatoes by hand is labor and time intensive, Dan wanted to test the feasibility of centralized school-based processing by purchasing some scale appropriate equipment that could wash, chop, and freeze potatoes for distribution to district schools and potentially other schools in the region. Dan received a USDA Farm to School Grant in 2021 to purchase the equipment. Also in 2021, Michigan State University (MSU) received a sub-award from the Michigan Department of Education's Specialty Crop Block Grant Program, through the Michigan Department of Agriculture and Rural Development, to fund farm to school supply chain development in support of the 10 Cents a Meal program and offered to support the development of a potato processing program at Montague Area Public Schools.

Due to supply chain issues, Montague Area Public Schools' equipment did not arrive in time to conduct the trials for the potato processing project on-site. Therefore, we leaned on Kalamazoo Valley Community College's ValleyHUB, which has similar processing equipment, to run the trials. At ValleyHUB, two rounds of trials were conducted looking at several variables, including potato variety, dice size, blanching time, and treatment concentration. Potato researchers from MSU were brought in to identify potato varieties and processes that would work best for this application. When the ideal variety was determined to be a chipping-type potato, an opportunity was identified to develop a farm to school supply chain for this particular type of potato.



### **TEN CENTS A MEAL FOR MICHIGAN'S KIDS AND FARMS**

10 Cents a Meal is a program funded by the state of Michigan that promotes purchasing and serving locally-grown healthy foods in schools and early care and education programs. The program provides match funding of up to 10 cents per meal to purchase and serve Michigan-grown fruits, vegetables and legumes.

More information about the program can be found at <https://www.tencentsmichigan.org/>.

# Processing Trials and Lessons Learned

## PHASE 1: MARCH 2023

**Potato type:** Red skin, 5/8-inch dice, vacuum seal

### Results

Product had too much moisture and required long baking times, to the point of nearly burning the potato to get them dry enough. Some of the bags were vacuum sealed, and others seemed to have lost the seal at some point because the potatoes were loose in the bag. The loose potatoes were preferred as the others came out in a frozen chunk, which was undesirable for the process of oiling, seasoning, and cooking in the school kitchen. A larger size dice would be preferable.

Between phases 1 and 2, the team consulted with potato specialists from MSU, Jeff Swada and Chris Long.



The inconsistency in sealing the bags of frozen potatoes can be seen here. Photo credit: Mariel Borgman

### Takeaways from this consultation included:

- Though red potato varieties work well for ValleyHUB's fresh-cut potato product, these potato varieties have a low specific gravity, which means they have a lower percentage of solids as related to liquids (water). This is the reason why the product seemed too wet and required long cooking times.
- It was recommended to use a potato with a high specific gravity, namely those used in the potato-chip industry. Chipping potato varieties are seasonal and include Atlantic, Snowden, Lamoka, and Mackinac.
- Variables that can cause discoloration (browning/blackening) of the potato include the length of blanching time and potato variety. Moving to a larger dice size may increase browning due to the larger surface area for oxidation, so these different variables will need to be tested to find a process that minimizes the discoloration.

## PHASE 2: AUGUST 2023

**Potato type:** Chipping (variety Lamoka), ¾-inch dice, no vacuum seal, various Nature Seal treatment levels

### Results

Very promising! The potatoes had a good flavor and held well after cooking. The preferred Nature Seal treatment level is 2%. Product without Nature Seal had more browning during cooking and holding. Product with 3% Nature Seal had a white film on the edges.



Photo credit: Mariel Borgman

# Refining the Product

Partners at ValleyHUB leveraged their network of school food service buyers in southwest Michigan to test and continue to refine the product offering for the school food market channel. The Lamoka potato variety for the trials was sourced from Walther Farms, a large potato producer headquartered in Three Rivers, Michigan. To identify a scale-appropriate source for potatoes within their existing supply chain partners, ValleyHUB reached out to their partner farms to identify available potato varieties and engaged their culinary students in mini trials of processing, tasting, and evaluation to identify a suitable substitute for the Lamoka. The Kennebec variety, grown by Crisp Country Acres in Holland, Michigan, was the top choice. The frozen Kennebec potatoes were tested by Battle Creek Public Schools and Kalamazoo Public Schools in late 2023. The product generated excitement and resulted in a large order from Kalamazoo Public Schools in December and more than 1,000 lbs of potatoes served across the district on a single day: December 21, 2023. ValleyHUB continues to produce and distribute the product using the Kennebec potato variety.

# Supply Chain Challenges

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The chipping potato industry in Michigan is the largest in the United States. The state grows 1.7 billion pounds of potatoes annually, and 70% of those go toward potato chip production. Diverting some of this product to supply crispy, roasted potatoes for farm to school presents a challenge as most growers are used to shipping massive amounts of soil-coated potatoes into a well-established chip manufacturing supply chain. The farm to school market, while growing significantly, is (pun intended) small potatoes, and would not provide the return on investment needed to significantly rework packing and distribution logistics. The team identified a need to develop a farm to school-specific supply chain for chipping variety potatoes. Strategies the team will pursue to build out this supply chain include:

- supporting existing farm to school and food hub suppliers to add chipping potato varieties to their production; and
- working with the USDA Foods Consortia to bid out Michigan-grown chipping potatoes to be processed by MI Potato Processing Partnership partners.



Photo credit: Clarence Rudat

# Future Directions

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On the potato side of things, the team would like to develop a shelf-stable flavor pack to accompany the frozen potato project that will streamline the preparation process in the school kitchen. Montague Area Public Schools will implement in-house processing using ValleyHUB-developed protocols when their processing equipment is installed. Other opportunities, including frozen carrot and sweet potato products, are being explored.

# Acknowledgements

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## About the Michigan Farm to Institution Network

The Michigan Farm to Institution Network is a statewide network that helps people across the farm to institution supply chain learn, connect, and collaborate. First launched in 2014, the network has undertaken many initiatives over the years to promote local food purchasing by institutions, educate food service and nutritional staff on local sourcing, educate farmers and food producers on how to sell to institutions, and serve the growing number of stakeholders and organizations collaborating on farm to institution programs. The network is coordinated by the Center for Regional Food Systems and supported by MSU Extension's Community Food System team members.

As MSU Extension educators working in community food systems, we support, connect and educate local food stakeholders through network development, capacity building, program development, and much more. Simply put, we help local community members purchase and eat more food from local food producers. Community Food Systems is the broad term given to the activities that support food from production on the farm to preparation as part of a school cafeteria meal. Community Food Systems work encompasses support for those activities (production, transportation/distribution, processing, preparation, consumption, and waste management) to happen within a local community or region. Our community food systems work operates from the understanding that not all members of a given community have equal access to resources needed to support a community food system, and much of the work is focused on reducing barriers to food access and sovereignty.

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## Gratitude to the Project Partners

- Mariel Borgman and Garrett Ziegler, community food systems educators, MSU Extension
- Dan Gorman, food service director for Montague Area Public Schools
- Clarence Rudat, MSU Product Center and manager of MSU Farm Food Processing Accelerator in Muskegon
- Rosie Florian, Jeff Sobolewski, and Josh Bartz, Kalamazoo Valley Community College's ValleyHUB Food Hub
- Glenn Noffsinger, former school food service director and current consultant with the Kalamazoo Valley Community College Culinary Program
- Christopher Long, potato extension specialist, MSU
- Jeffrey Swada, associate professor of food science at MSU and director of MSU Food Processing Innovation Center
- Makenna Schwass, food science teacher at Montague High School

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## VISION

CRFS envisions a thriving economy, equity, and sustainability for Michigan, the country, and the planet through food systems rooted in local regions and centered on Good Food: food that is healthy, green, fair, and affordable.

## MISSION

The mission of CRFS is to engage the people of Michigan, the United States, and the world in applied research, education, and outreach to develop regionally integrated, sustainable food systems.

## ABOUT

CRFS joins in Michigan State University's legacy of applied research, education, and outreach by catalyzing collaboration and fostering innovation among the diverse range of people, processes, and places involved in regional food systems. Working in local, state, national, and global spheres, CRFS' projects span from farm to fork, including production, processing, distribution, policy, and access.

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