



Grains to Institution in the Midwest

A Wisconsin Case Study

November 2022

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Introduction

Overview

This resource is part of [Grains to Trays](#), a multi-year multi-stakeholder USDA grant-funded initiative that aims to facilitate stronger institutional markets for for grains grown in the Upper Midwest region. Its goal is to simultaneously increase farm and institutional readiness and ability to establish long-term direct sales of regional grains to institutions. If successful, these activities have the potential to strengthen the economic, social, and environmental viability of farms through diversified marketing opportunities, while improving the quality, diversity, and nutrient density of meals served in **institutions**. The mechanisms and strategies identified in this Wisconsin case study may act as a template or model for other stakeholders within and outside the Upper Midwest interested in supporting **grains to institution** efforts in their region.

The Grains to Trays project's objectives include:

1. Understanding direct grains to institution resources and efforts (summarized in this resource and the companion [Grains to Trays Literature Review](#));
2. Increasing farmer readiness to access Wisconsin institutional markets through direct sales;
3. Increasing Wisconsin institutional readiness to purchase and use regional grains;
4. Facilitating relationship development and partnerships between farmers and food service professionals; and
5. Publishing and disseminating a suite of resources to educate and increase the ability of farmers, institutional food service professionals, technical assistance providers, and funders to successfully develop connections and purchasing relationships between regional grain farms and Upper Midwest institutions.

For the purposes of this project, **institutions** are defined as entities that purchase, prepare, and serve large quantities of foods in a cafeteria, catering, or retail setting, such as schools, colleges, hospitals, and corporate business campuses. These institutions are often, but not always, publicly funded and/or participate in federal or state nutrition programs, such as the National School Lunch Program. Institutions may also include correctional facilities, Tribal, state or municipal offices, early childhood care and education programs, and senior meal programs or living centers, though these entities are not the focus of this resource.

Grains to institution focuses on the specific needs, challenges, and opportunities of connecting regional grain farmers and food businesses with institutional markets.

About this Resource

This resource is a summary of efforts to assess and understand the grains to institution landscape in the Upper Midwest identified by gathering stakeholder knowledge, needs, and barriers. It acts as a companion to the [Grains to Trays Literature Review](#), a national database of published materials and stories on grains to institution projects, initiatives, and technical resources.

In developing the content for this resource, we focused on:

- Understanding existing grain-based direct-to-institution resources and efforts;
- Categorizing regional grain infrastructure and farmer interest, knowledge, and capacity for selling grain directly to institutions;
- Identifying community assets and existing gaps in regional grain infrastructure; and
- Analyzing current institutional grain buying trends, capacity, and efficient entry points for regional grains.

Grains to Institution in the Upper Midwest: A Wisconsin Case Study features information collected from experts including Wisconsin **food service directors** and Midwestern grain farmers, processors, and aggregators. It is intended to be used by **procurement** specialists, technical assistance providers, researchers, and support organizations interested in better understanding the challenges and opportunities involved with serving regional grains in institutions.

We have designed this document to be user-friendly with hyperlinks that take you directly to additional resources and pop-out boxes that expand on key topics. All bolded words are defined in the glossary at the end of this resource.

Our Process

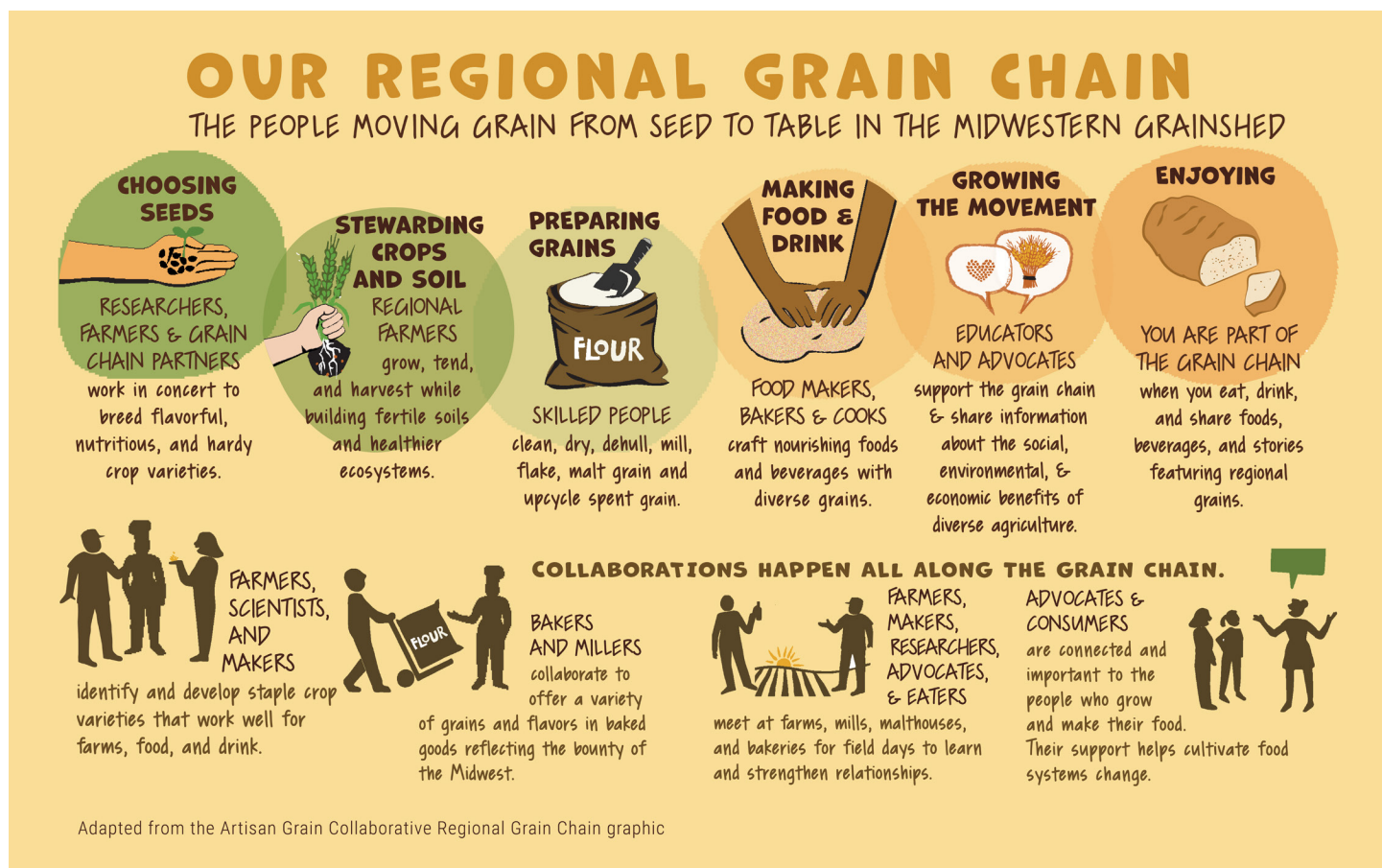
We began our investigation for this resource by exploring the **soft infrastructure** – [skills, competencies, and relationships](#) – among institutions and businesses in the grain value chain. We recognize that a strong soft infrastructure foundation provides the ability for individuals and organizations to more readily acquire and utilize **hard infrastructure**, such as facilities and equipment. To do this, we conducted over 25 semi-structured interviews with stakeholders between spring 2021 and 2022, including key interviewees identified during research for the [Grains to Trays Literature Review](#).

Interviewees included food service directors, chefs, operations managers, nutritionists, and dietitians at K-12 schools, universities, hospitals, and corporate business campuses, as well as grain farmers, processors, food businesses, aggregators, and support organizations. Interview analysis involved identifying themes across six categories and compiling resources, promising practices, and actionable next steps to continue this work, including needs for future resource development. Interview themes were categorized into the following sections:

- Hard and soft infrastructure (facilities, relationships, knowledge, labor)
- Procurement, policies, and contracts
- Menu and culinary trends
- Assets
- Barriers and opportunities
- Pandemic responses and disruptions (budget, supply chains, labor)

“A **grain value chain** is a network of people and groups, including farmers, millers, maltsters, bakers, chefs, food manufacturers, brewers, distillers, researchers, and advocates, working collectively to foster the development of an interconnected system of grain production, processing, and consumption in a designated geography.”

From graincollaborative.com



While our sample is not representative of all institutions, we believe the mixture of grains to institution stakeholders we interviewed provides a solid baseline for understanding the general challenges, assets, and opportunities for increasing the amount of regional grains purchased and served in Wisconsin institutions. More research is needed regarding the economic viability of grain farmers and grain-based food businesses selling to institutions as well as the scale or other supports needed to make these market channels sustainable into the future.

The Potential of Farm to Institution

When institutions purchase food from nearby farms, whether directly or through intermediary entities, these efforts are called **farm to institution**. Nationally, public and private institutions spend billions of dollars each year on food to serve in their cafeterias and other food service settings. Building off the success of the farm to school movement started in the late 1990s, institutions have increased their demand for local and regional foods – those produced within a specified nearby geography – over the last several decades.

An institution's motivations to increase its local food purchases might include:

- Improving meal quality and taste
- Increasing revenue or participation in its meal programs
- Educating eaters about food systems and opportunities to purchase locally or regionally
- Supporting farmers in the institution's own community or region
- Appealing to eaters' increasing interest in sustainability
- Providing education about food, nutrition, and diet-related disease
- Reducing food waste
- Meeting the requirements for participation in values-based purchasing programs, such as ScratchWorks, the Good Food Purchasing Program, Bon Appetit's Farm to Fork Program, or the Real Food Challenge
- Aligning spending on food with broader institutional goals or assessments aimed at supporting the regional economy or environmental sustainability, like the Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment & Rating System

With their significant purchasing power, institutions equipped with appropriate resources have the potential to drive consumer demand for regionally-sourced foods, provide nutrient-dense meals to their eaters, and increase **direct-to-consumer and intermediary** market opportunities for farmers. In addition, large institutions with values-based procurement priorities, such as purchasing foods grown, harvested, processed, and distributed with fair agricultural labor or sustainable production practices, may influence and improve regional food system supply chains.

Grains to Institution Pathways

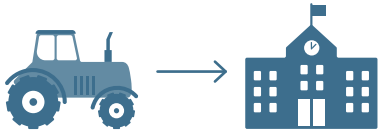
DIRECT-TO-CONSUMER

Farmer sells grain to institution*

**Focus of this project*

INTERMEDIARY

Farmer sells grain to aggregator, processor, or manufacturer to institution



Wisconsin Farm to Institution Efforts

Wisconsin has a strong legacy of conducting and engaging in state and regional farm to institution projects, research, network development, events, and evaluation through partnerships between state agencies, universities, and statewide and local non-profits. Twenty years of coordinated work, with an emphasis on developing collaborative and creative opportunities to advance farm to institution efforts throughout the state, have included a Wisconsin Farm to School Network and Advisory Council, Farm to Hospital and Farm to College Communities of Practice, and the Great Lakes Great Apple Crunch and Wisconsin Chili Lunch.

Many Wisconsin schools, hospitals, and corporate businesses campuses state they are eager to source regional raw and **value-added products** including fruits, vegetables, dairy, proteins, and grains. However, institutions may struggle with meeting their goals and eater demands in this area for a variety of reasons. These could include:

- Local or regional items may not be available through an institutions' existing contracts with broadline distributors or prime vendors, including USDA Foods.
- Purchasing outside of existing distributor contracts and processes may not be allowed or may increase paperwork and administrative burden for an institutions' staff, change delivery and intake schedules, or prohibitively increase overall costs.
- Local or regional items may not be available in the forms that are compatible with an institution's existing food service capacity and operations (e.g., frozen, milled, or pre-made).
- Institutions may not know where to purchase regional grains and grain-based products.
- Institutions may not have dedicated staff time for knowledge and relationship development required to purchase directly from farmers and food businesses.

While K-12 schools, institutions of higher education, hospitals, and corporate business campuses have been impacted in different ways and to different degrees by the COVID-19 pandemic, many have and continue to experience disruptive **labor shortages, supply chain issues**, and **various budget impacts, including food price inflation**. These disruptions, in combination with public health restrictions (e.g., quarantining, masking, social distancing), drove shifts in institutional food service procurement and operations. These changes include providing more pre-packaged and ready-to-eat foods (e.g., grab and go), eliminating salad bars and other communal meal formats, implementing **emergency feeding protocols**, and offering **mobile ordering** on college and university campuses – trends that are continuing years after the pandemic started.

At the same time, Wisconsin farm to institution efforts have grown over the last 20 years to promote farm viability, regional food and financial security, and increased community connections. Working with Wisconsin institutional buyers offers regional grain farmers an opportunity to grow and sell to entities in their own communities and regions, while potentially maintaining identity preservation from farm to tray. Since many institutions must spend money on food – often supplemented by federal or state funding – it is strategic and mutually beneficial to spend those dollars locally to support farms, businesses, and the broader regional food systems.



Food-Grade Grains in Wisconsin

Food-grade grains are the **edible seeds of certain plants**, including cereals (grasses like barley, wheat, and rye) and pseudocereals (including buckwheat and millet), grown and processed for human consumption due to their protein, carbohydrate (fiber and starch), and oil content. This project focuses on grains commonly used by or of interest to institutions that are also currently or historically grown in the Midwest region, including **corn**, **oats**, **wheat**, **wild rice**, **barley**, and **rye**.

Corn is a dominant crop of the Midwest. The majority of corn acreage is planted in hybrid yellow dent types that are **grown as an ingredient** for livestock feed, as well as food, beverage, and industrial products such as sweeteners, corn oil, alcohol, and fuel ethanol. These hybrids have been selected for their high yields and ability to be easily converted into refined products or rapidly grow livestock, but represent a very narrow snapshot of the genetic diversity of corn.

Less common food-grade corns include white, blue, hard-endosperm yellow, popcorn, and a variety of other culinary types. Particularly when grown in rotation with other grains and legumes, corn contributes to diversified farm economies and is valuable for making food products and distilled beverages. For example, corn can be milled to make polenta and grits or **nixtamalized** for masa and tortilla-making.

Worldwide, grains have remained a staple crop throughout history, supplying a significant portion of many peoples' daily **caloric intake and nutritional needs**. Grains are an essential component of institutional food service menus and are required by some federally funded nutrition programs.



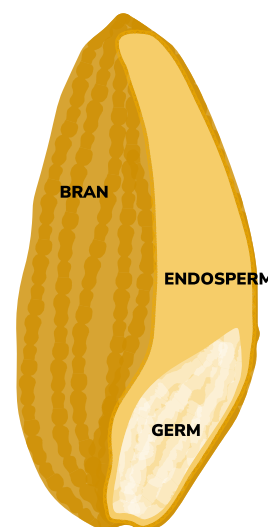
Wisconsin is currently **located on the unceded lands** of the Red Cliff Band of Lake Superior Chippewa, Bad River Band of Lake Superior Chippewa, Lac Courte Oreilles Band of Lake Superior Chippewa, St. Croix Chippewa Indians of Wisconsin, Lac du Flambeau Band of Lake Superior Chippewa, Forest County Potawatomi, Mole Lake (Sokaogon Chippewa Community) Band of Lake Superior Chippewa, Menominee, Stockbridge-Munsee Community Band of Mohican Indians, Ho-Chunk Nation, Brothertown Indian Nation, Oneida Nation, and other Tribes not recognized by the federal government.

Traditional foods are those that have been **traditionally grown, stewarded, prepared, or consumed by Indigenous people and Native Nations**. Depending on the community, these may include berries, bison, fish, maple syrup, potatoes, corn, beans, squash, wild rice, and venison. Two staple grains – corn and wild rice – continue to be grown, celebrated, and eaten by Native communities and others in Wisconsin and throughout the Upper Midwest.

One example of corn's cultural and culinary importance is demonstrated by the Oneida Nation's efforts to preserve and share **their heirloom traditional white corn**. On an 80-acre section of their land known as **Tsyunhéhkwa** (pronounced *joon-hey-qwa*, meaning 'life sustenance'), white corn is grown, dried, and harvested by community members. The white corn is then processed at the Nation's certified **cannery** and distributed to their school system for a number of traditional dishes that regularly appear on the school system's menus, including kan[^]stóhale (pronounced *kah-na-stole*, a corn and bean bread), corn mush, and Oneida corn and bean soup. White corn products such as flours, pancake mix, bread, and soups are also distributed to childcare programs, The **Oneida Emergency Food Pantry**, community events, and stocked on the shelves of retail outlets on the reservation.

For further information, see the 'traditional foods' resource category in the **Grains to Trays Literature Review**.

A grain seed, or kernel, has **three major parts**: a wholesome protective seed coat called **bran**, the small nutrient-filled segment called **germ**, and the starchy protein-containing middle that makes up most of the seed, the **endosperm**. When all parts of the grain are retained in a final grain product, that ingredient is considered 100% **whole grain**.



Food-grade wheat, corn, and other **small grains** are most commonly processed on roller mills, in which the germ and bran are removed from the endosperm by passing grain kernels **through a series of high-pressure rollers and sifters**. In the case of wheat, removing the oil- and fat-containing bran and germ produces a white flour with a longer shelf-life, which also makes it simpler to use in certain baking applications. To compensate for missing attributes of the grain kernel in white flour, some roller milled flours are enriched with vitamins and minerals to improve their nutritional composition. The germ and bran that were extracted during processing can be added back into the white flour to create whole wheat flour.

Because of their relative affordability, ease of use, and scale-appropriate volume requirements, smaller mills that serve regional end-users in the Midwest tend to operate **stone mills** to grind grain, facilitating the retention of all three parts of a seed in the final flour product. The stone milling process affects the flour's nutrient density, baking performance, flavor, and shelf life when compared to roller milled flours. Stone milled flours may be 100% whole grain, or sifted to remove some bran and germ depending on baking needs and consumer preferences.

New American Stone Mills designs and builds mills optimized for a more ergonomic miller experience using American-made and sourced components, including granite from Vermont. They have seen significant growth in mill production since they started their business in 2014. **Meadows Mills, Inc.** is another U.S.-based stone mill manufacturer. Some farms and food businesses in the Midwest use Danish mills made by **Engsko**.

To date, robust development of grains to institution market opportunities has been hindered due to a combination of the unique culinary needs and procurement requirements of institutions, as well as limited awareness, partnerships, and resources for food service professionals to work with local or regional grains. The relatively early phase of development of many regional grain chains is another limiting factor. While grain farmers are interested in working with institutions as part of a diversified business portfolio, many lack clarity and farmer-specific resources about how to access and prioritize these opportunities. Current grain farmer challenges, explored in more detail in the **Assets, Gaps, and Opportunities** section, include:

- Navigating institutional procurement systems;
- Accessing accurate and up-to-date procurement regulations and institutional contact information;
- Building relationships and communicating with institutional buyers;
- Understanding institutional food safety requirements; and
- Meeting the logistical and distribution demands of institutions, such as accommodating delivery schedules and product specifications.

Institutional Procurement of Grain

Institutions already purchase and serve grains in a variety of forms, including flours, cornmeal, breads, cereals, cooked whole grains, and as components in processed products like pizza. These items are generally purchased through prime vendor agreements and other procurement contracts with national and **regional distributors, broadline distributors, and/or specialty vendors** and, in the case of K-12 schools, **USDA Foods in Schools**.

Of the interviews conducted for this project, few institutions are purchasing regionally grown or milled grains directly from farmers. Based on our research, corporate business campuses are an exception to this trend, demonstrating a greater ability to purchase local grains due to fewer contractual, regulatory, and/or budgetary restraints on their purchasing. Other institutions currently featuring local and regional grains on their menus are generally purchasing through a regional or specialty distributor or manufacturer.

There are a number of regionally available grains, such as rice, wild rice, barley, rye, teff, sorghum, and millet, in addition to grains like wheat and corn, that many institutions are using but not sourcing from regional farmers. Grains are often not the first local item an institutional food service director or chef might prioritize, especially as regional grains are just gaining traction as locally available **identity preserved** ingredients in the broader consumer marketplace. Some institutional food service personnel expressed concern about both the chef and eater acceptability of unfamiliar grains and were interested in resource development to assist in addressing this challenge.

In general, staff capacity, culinary skills, budgets, and equipment, storage, and product availability, as well as an individual institution's values and motivations, dictate which grains institutions buy, from whom they buy them, and in what quantities. For example, an institution equipped with an on-site commercial bakery, as seen at some university campuses, is better situated to purchase locally milled flour to incorporate into their bread program than an institution that does not have appropriate ovens or staff trained in baking and thus may have little use for flour at all.

While grains have not been a primary focus of many farm to institution efforts or resources to date, there are a number of local grain procurement examples already successfully implemented throughout the region. For example, some Wisconsin corporate business campuses are currently buying and serving regional grain



products to thousands of their staff each day, including all-purpose flour from [Meadowlark Community Mill](#), tortillas and masa from [Tortilleria Zepeda](#), and whole wheat sourdough loaves from [ORIGIN Breads](#). With additional coordinated effort among farm to institution practitioners and accompanying resource development for farmers and institutions to more efficiently and effectively work together, initiatives like these have the potential to become more common.

Integrating Regional Grains into Institutional Food Service Operations

As institutional food service professionals and chefs demonstrate an increased interest and ability to engage in learning about and purchasing regional grains, they are simultaneously requesting culinary skills training, recipes, technical assistance, and farm connections to assist their procurement and use of these ingredients. Compared to resources focused on fruits, vegetables, meat, and dairy products, there is limited information available about procuring, preparing, and serving regional grains in institutions in Wisconsin and throughout the country. For example, Farm to Institution New England (FINE) maintains a robust [farm to institution portal](#) with more than 290 resources to help stakeholders in the Northeast with institutional procurement of foods from the region. At the time of this writing, there is only one [grain-specific resource](#) in that repository, reflecting an overall lack of existing resources for this type of work.

Food service professionals and chefs are looking for resources that:

- Support the development of relationships with farmers and vendors.
 - Identify grain products well-suited for their needs (e.g., type, processed form, cost, menus, storage ability, and consumer preferences).
 - Include thoroughly tested recipes and other culinary resources geared specifically toward institutional food service settings.
 - Increase eater acceptance of menu items.
-

While this case study primarily focuses on direct sales from Upper Midwest farmers to Wisconsin institutions, our research indicates that intermediaries such as processors, aggregators, and distributors may play a significant role in driving demand and building capacity across the grain value chain, including opening up a wider variety of opportunities for local grains to strengthen institutional food service programs.

As evidenced in our interviews with institutions, grain farmers, food businesses, processors, aggregators, and support organizations:

- Most institutions will purchase the highest amount – dollar value or volume – of their ingredients through a vendor (broadline, specialty, regional, etc.), regardless of direct sale options.
- In any given institution, food service and culinary operations tend to use a mixture of pre-made items as well as **scratch** and **quick-scratch cooking** for their grain-based recipes. Regional grains need to be accessible in these pre-made and quick-scratch options.
- The ultimate goal of this work is to make ‘the local (or regional) choice the easy choice’, and to identify a variety of successful methods to integrate these products into existing purchasing habits. By necessity, the specifics of what defines ‘easy’ purchasing, distribution, and use will vary by institution.



Assets, Gaps, and Opportunities

Over 25 food service professionals and chefs from K-12 schools, higher education institutions, hospitals, and corporate business campuses in Wisconsin and grain farmers and processors across the Upper Midwest were interviewed for this case study. In those interviews, a number of assets, gaps, and opportunities emerged regarding current and needed efforts and resources to more efficiently and effectively procure, prepare, and serve regional grains in Wisconsin institutions.

Existing Assets for Increasing Regional Grain Procurement in Wisconsin Institutions

Supply and demand interaction of grains: Compared to fruits and vegetables, grains are typically grown in large quantities. As a result, even one relatively small farm's production could likely meet the flour and whole grain demand of an institution, given sufficient capacity along the value chain to process and distribute that grain. This could be a win-win for both institutions and grain farmers; institutions often need large volumes of grains and grain products to supply the thousands of meals they serve each day. With the right conditions, their consistent purchases of grains and grain-based foods could provide a stable and reliable income stream for everyone across the grain value chain. To reduce financial risk and ensure sustainability, however, it is important that both institutions and farmers diversify their procurement and marketing portfolios.

Institutions are motivated to purchase and serve more local and regional food, including grains: Meals made with ingredients grown near to where they are served are important for institutions that have operational priorities related to the environment and human nutrition or formal food sourcing commitments and pledges. With these goals, in combination with eater demand, broader culinary trends, and increased farm to institution advocacy, institutional food service directors, chefs, dietitians, and nutritionists are striving to provide meals prepared with more local and regional ingredients, including grains.

General culinary trends in food service and among eaters point toward plant-based and plant-forward meals: Eaters, meal program participants, dietitians, and nutritionists are increasingly asking institutional food service operators for more vegan, vegetarian, and plant-forward menu items. As a result of this demand, in combination with formal sourcing commitments and nutritional goals, institutions are aiming to offer more interactive plant-based options to their eaters. These include farm to table-focused entrées, customizable vegetarian stations, and [Meatless Mondays](#).

Institutions are increasingly focused on providing culturally-relevant meals: Eater requests and culinary trends are pushing institutions to develop and provide more culturally-relevant menu items, including traditional foods. Culturally-relevant recipes are often grain-based and include dishes such as grain bowls, breads, stir frys, curries, and pastas made with whole grains like rice, wheat, barley, and millet. Grain-based dishes are relevant staples for many different populations, communities, and cultures. As the demographics of the Upper Midwest continue to shift and diversify, being able to purchase, prepare, and offer a variety of grain-based foods is critical for Wisconsin institutions to continue to meet consumer preferences.

Regional grains are often whole grains: Eating a wide range of grains that are grown, cleaned, and milled closer to home using sustainable production practices may mean eating a more fresh, flavorful, and nutrient-dense product. The nutritional benefits of whole grains – especially those grown regionally and in healthy soil – is a motivator for some institutions to more regularly incorporate them into their menus and source them from regional farmers and processors. Whole grains are more nutritious than enriched grain products that may be available through food service distributors. Improving whole grain options for institutions will not only support food service directors, chefs, dietitians, and nutritionists in meeting meal program requirements or nutritional goals, but will also allow institutions to offer more fresh, flavorful, diverse, and nutritious grains and grain products to their eaters.

Existing and growing grain farmers and businesses in the Midwest: There are an increasing number of grain farmers, processors, and grain-focused food businesses in the region, working in community with one another to develop infrastructure, systems and processes, and capacity. Many of these entities are interested in selling grains to institutions as part of their business plans and have expressed the need for more direct support in facilitating relationships and contacts with institutional buyers.

Support for new grain product visibility and viability: Institutions with culinary capacity and procurement flexibility are a promising avenue for trialing and promoting regional grains. For example, the purchasing and culinary teams at the corporate business campuses interviewed for this case study are dedicated to finding and supporting new regional grain products for their menus and each business is already buying and serving regional grain products daily to thousands of staff across their campuses.

Institutions are purchasing significant quantities of grain-based value-added products: While this project focuses on opportunities for direct sales from farmers to institutions, a significant amount of the grains used in institutions are purchased as value-added pre-made products like bread loaves, buns, rolls, granola, tortillas, pastries, and desserts. Because of this, a significant opportunity exists to increase the use of regional grains, especially among K-12 schools, by supporting the development of value-added products for the institutional market, or facilitating improved institutional access for existing products.

Current Gaps and Opportunities for Midwestern Grain Farms and Wisconsin Institutions

Interviews and research for this project revealed existing gaps and corresponding high-impact opportunities and action steps critical for increasing institutional purchasing of regional grains.

Gap or Barrier	Opportunities
Grains require specific processing and preparation steps to get from the field to the table: There is insufficient existing regional grain infrastructure – including cleaning, drying, and storage equipment at appropriate scale – to service grains to institutions statewide. From planting and harvest, to cleaning, storage, and distribution, regional grain chains may have higher costs than existing grain sources institutions purchase from. Investments in equipment and systems and processes development are a few of the factors that contribute to high start-up costs for emerging regional grain chains.	Support development of alternative, mobile, and/or cooperatively-owned infrastructure and services for food-grade grain processing.
	Support investment opportunities in regional-scale storage and aggregation facilities.
	Improve upon the success of Farm Service Agency Farm Storage Facility Loans as a model to fund other essential grain handling infrastructure, such as aggregation, and expand farmer knowledge of this financing opportunity.
Unclear food safety and liability requirements for grain farmers and food businesses selling to institutions: While there are minimal federal food safety and liability barriers for grain farmers to sell to institutions, the information about these requirements is unclear and inconsistent across different types of institutional buyers and across jurisdictions, especially for processed products such as bread. Institutions can decide to enforce their own food safety and liability requirements; however, most institutions interviewed do not request additional requirements beyond those of their prime vendors.	Explore more ways to connect grain farmers and processors with existing distributors and support the development of alternative or cooperatively-owned regional distributors that understand the challenges farmers, food businesses, and institutions face in working together.
	Provide financial incentives for regional farmers and food businesses to grow grains for public institutions.
	Survey institutional buyers, processors, aggregators, and distributors to identify state, local, and institutional food safety and liability requirements for regional farmers and food businesses.
	Develop a resource for farmers, food businesses, processors, aggregators, distributors, and institutions communicating the range of food safety and other liability requirements.
	Develop fact sheets for farmers clarifying state food safety regulations for raw and processed grains.

Gap or Barrier	Opportunities
Institutions have limited capacity and facilities to store, cook, and bake grains in-house: Some institutions have little to no capacity to cook and bake with grains due to lack of space, equipment, or staffing and thus must rely on vendors to provide pre-made products such as dinner rolls, hamburger and hotdog buns, bread loaves, tortillas, pre-cooked rice and pasta, pastries, and desserts. Additionally, institutional storage and kitchen equipment that supports the appropriate holding and preparation of food-grade grains is limited. The bulk of current resources, training, and infrastructure is dedicated to getting more fresh and minimally processed fruits and vegetables, as well as meat and dairy, on institutional menus. Grains have unique processing, distribution, storage, and preparation needs and thus cannot necessarily be plugged into existing farm to institution models or systems.	Increase the number of regional grain-based pre-made products available in existing food service distributor and vendor inventories. Connect bakeries and other vendors that are using regional grains with institutions as potential new market outlets. Support bakeries already selling to institutions in sourcing regional grains for their products. Expand initiatives like the Buy Local, Buy Wisconsin grant program that support businesses in utilizing more local ingredients through new or existing marketing, processing, and distribution efforts. Develop systems to offer technical assistance and create educational resources to assist institutions in successfully storing and using grains.
Lack of grain and flour-focused food service training and recipes: While some institutions are comfortable cooking, baking, and serving grains such as rice, corn, oats, and all-purpose and whole wheat flour-based items, introducing unfamiliar regional whole grains like wheat berries, barley, and millet, as well as stone milled flours, may require new staff training and recipe development. Further, nutrition guidelines for federally-funded institutions may make it challenging for farmers and makers to sell these institutions regional grain-based products. For example, K-12 schools participating in federal Child Nutrition Programs including the National School Lunch Program and National School Breakfast Program are required to meet specific meal pattern requirements for grains, with at least half the amount being whole grain-rich. Starting in School Year 2022-2023, the requirement for schools to source whole grain-rich products will increase to 80 percent. This means that K-12 schools may be uniquely challenged to think of how grains can be leveraged outside of the “whole grain-rich approved” recipes and products already on their menus, as well as which regional grains may require different preparation and cooking methods.	Target institutions with funds for technical assistance specific to recipe development, testing, and culinary training. Design an open-source recipe testing and development process for Midwest grains that considers whole grain-rich requirements. Establish a tested regional grain recipe database for institutions. Work with Wisconsin Department of Public Instruction to establish a pilot ‘grains to school’ program to reduce risk for farmers and improve technical assistance for institutions. Support interested farmers in selling products into USDA Foods’ Direct Diversion (e.g., diversion to processor) and Direct Delivery (e.g., Brown Box) procurement methods.

Gap or Barrier	Opportunities
Existing contracts with prime vendors may limit institutions' ability to directly purchase regional grains: By establishing a prime vendor agreement with a national or regional distributor, institutions are able to access discounted prices on a wide selection of readily-available grain products, including enriched flours and whole grain-rich verified packaged goods. When working with a broadline distributor, institutions are able to reduce paperwork and management of numerous vendor relationships. With few exceptions, the inventories offered by broadliners with prime vendor contracts do not include locally or regionally produced grain items, limiting institutions' ability to access these products through their existing purchasing arrangements. Small- and mid-sized farmers may choose not to sell their products through large food service distributors and vendors because the cost to do so may make the sales unprofitable.	Work with specialty and/or regional vendors, and regional grain farmers, processors, and food businesses, to add regional grains and grain products to those vendors' inventories. Develop educational resources for institutions related to contract and vendor flexibility. Develop and maintain a grain farmer, processor, and food business specifications database for institutions to identify grain options available regionally and where to purchase them.
The low cost and convenience of readily available grains discourages buyers from incurring the additional cost and time of acquiring regional grains: Grain and grain products from commodity manufacturers and suppliers are often easily available to institutions for purchase at a discounted cost through their prime vendor pricing agreements, and, more generally, are often lower in price through broadline distributors. Regional grains are not only more difficult to source due to limited existing regional grain infrastructure and market channels, they are typically also more expensive. K-12 food service directors may depend on low-cost items like enriched flours and whole grain-rich packaged goods to use their USDA Foods entitlement allocation and help round out budgets, while prioritizing fruits, vegetables, dairy, and meat for their bigger local purchases. Similarly, chefs at other types of institutions may rely on grain and grain products that are discounted through their prime vendor to balance pricier items in their budget.	Advocate that local food incentive policies, such as a \$0.10 per meal additional reimbursement currently available in Michigan for purchases of state-grown produce, be expanded to grains. Give preference to food service vendors and management companies that utilize regional grains on menus. Share educational resources to institutions that outline the benefits of consuming regional grains and the role they can play in food service. Share data and resources outlining the true cost of grains produced in various systems related to environmental, climatic, economic, and health impacts. Conduct research on grain quality and functional performance across a series of base recipes to support institutions in incorporating regional grains into their menus while maintaining consumer sensory acceptability, meeting nutritional goals, and achieving established cost requirements.

Gap or Barrier	Opportunities
Low student and eater acceptability of new and/or unfamiliar grains: Many regional grains such as wheat berries, amaranth, millet, and barley may be unfamiliar to eaters due to their appearance and texture. Similarly, whole grain flours, breads, and pastas often have a different flavor, texture, and appearance than products made with more processed grains and white flour. Some institutions expressed concern about student and eater acceptance of regionally grown and milled whole grains and flours which has reduced their interest in introducing these ingredients into their menus.	Develop educational and promotional resources, including materials on how to host successful taste tests and special events, along with appropriate marketing materials and signage, for institutions to engage their eaters around new regional whole grain-based foods. Share success stories and proven strategies of how to elicit student and eater feedback and engagement around new grain-based menu items. Provide peer-to-peer learning opportunities for institutions to share success stories and brainstorm ideas for improving eater acceptability.
Lack of resources and technical assistance for institutions and grain farmers interested in working together: In our interviews, institutions, grain farmers, and food businesses identified a lack of support in connecting with one another, as well as access to resources with information specific to purchasing and selling these ingredients. This information may include where to find institutional buyers and farmers, best contact information, food safety and other vendor requirements, desired product and volume minimums, and distribution preferences.	Facilitate networking opportunities for food service directors, chefs, farmers, and food business owners to engage in dialogue on how to work collectively to solve distribution and marketing challenges, as well as planning crop planting and development of value-added products. Create and maintain a matchmaking database for both institutions and regional grain farmers to identify the grain options and institutions available to them. Develop and disseminate case studies and other storytelling opportunities connecting products back to where they were grown and who produced them, and highlighting prior successful instances of regional grain sourcing by institutions. Develop marketing cooperatives and encourage peer-learning opportunities for farmers to share resources in accessing institutional markets. Invest in a full-time position dedicated to farm to institution value chain coordination in the Upper Midwest, including connecting grain chain partners with relevant state and federal grant opportunities, such as USDA Farm to School and Local Agriculture Market Program grants. Host peer-to-peer learning opportunities for institutional buyers aimed at increasing buy-in for new ingredients and incorporating grains and grain products into existing and new recipes through demonstrations and recipe testing.

Gap or Barrier	Opportunities
Sustained supply chain gaps and disruptions: The COVID-19 pandemic, in combination with sustained climate change impacts and global conflict, have illuminated many of the vulnerabilities and limitations of our fragile national and global food systems and their hyper-reliance on efficiency. At the same time, the sustained supply chain distributions has emphasized the benefits of interconnected and well-supported shorter value chains built with an eye to redundancy for resilience.	Conduct regional grain value chain resilience assessment and planning. Share educational resources that outline the benefits of consuming regional grains related to food security, environmental sustainability, and decentralized regional supply chains with adaptive and redundant elements. Create a food-grade grains grant modeled after Wisconsin's Meat Processor Infrastructure Grant Program to support robust regional grain chain infrastructure development.
Limited data collected on amount and impact of grains purchased and served in institutions: Aside from the USDA's voluntary Farm to School Census for K-12 schools, there are no comprehensive surveys collecting data on the amount of local or regional foods, including grains, being purchased and served in institutions. One of the many outcomes of this is that there is a lack of sufficient qualitative and quantitative data on the racial and social equity impact of grains to institution efforts.	Implement Farm to Institution Metrics or similar projects at the institution-wide level (including institutions of higher education, hospitals, and corporate business campuses) to collect data on purchasing practices, such as: • business type (e.g., bakery, mid-sized farm) and ownership (e.g., Black, Indigenous, and people of color-owned; woman-owned) of farmers and food businesses that institutions are purchasing from; • farm impact (e.g., percent of ingredients sourced regionally); • farm identity preservation (e.g., percent of ingredients that are identity-preserved); • product type; and • market channel (e.g., direct, food hub). Additional metrics to be developed and implemented may include quantities of grain ingredients purchased, price and willingness to pay, eater demographics reached and impacted, factors contributing to increases in volumes purchased by institutions, economic viability of grain farmers selling to institutions as a primary or secondary market channel, and racial and social equity goals and impact of grains to institution efforts.

Conclusion

The success of grains to institution efforts in the Midwest has the potential to increase the economic viability of regional farms, improve the quality of meals served in institutions, better connect rural and urban communities, and positively impact the environment. However, fundamental aspects of existing systems must undergo significant transformation to realize the full potential that large-scale institutional procurement of grains could create.

In an era of centralized national and global food supply chains, current institutional budgets and purchasing practices require significant modifications to truly prioritize eater health and wellbeing, investment in regional farms and food businesses, and broader community interconnectedness. Similarly, regional farms growing grains, whether transitioning from dominant row crop operations or starting new enterprises geared specifically toward serving regional food markets, must modify aspects of their operations and systems to access the opportunity that selling to institutions could represent.

Further development of the grain chain will be required to connect farms and institutions, including new strategies for grain cleaning and processing, product manufacturing, aggregation, and distribution. Many of these systems-level transitions will require external financing and policy changes to be widely successful. In the meantime, there are discrete resources, training, connection opportunities, and investments that can be developed to begin to address the barriers and gaps identified in this resource and aid procurement specialists, food service directors, and grain farmers partnering with one another in the short term. As grain value chains grow in the Midwest, it will be critical to continue highlighting and celebrating grains to institution successes to illustrate what is possible in a regional grain economy and encourage stakeholder engagement, while also continuing to push for additional resources, capacity, and broader systems change.

Glossary

1. **Bran** – The multi-layered outer skin of a grain kernel that contains antioxidants, B vitamins, and fiber.
2. **Broadline distributor (broadliner)** – A company that carries large volumes of a wide range of products and manages ordering, storage, and delivery logistics. Depending on buyer needs, a broadline distributor may also act as a prime vendor, providing discounted prices on frequently purchased items. Examples of broadline distributors include Sysco, US Foods, Gordon Food Service, and Performance Food Group (formerly known as Reinhart).
3. **Commodity** – Crops and livestock that are raised and harvested without any distinguishable marketable characteristics and traded globally on the basis of price. Commodities are classified into six categories: meat, dairy, oil seeds, cereal grains, miscellaneous, and other soft commodities such as coffee, cocoa, and sugar. The top cereal grain commodities include wheat, corn, oats, barley, and rice. In the context of K-12 schools, those participating in reimbursable meal programs likely purchase some products through USDA Foods in Schools, formerly known as USDA Commodities (see definition below). USDA Foods' direct diversion or 'pass-through commodities' program routes bulk raw commodity ingredients to manufacturers to make into processed products (e.g., bulk beef into beef patties) before shipping directly or delivering through intermediary distributors to schools.
4. **Direct-to-consumer markets** – Marketing arrangements in which farmers sell agricultural products directly to final consumers, including through farmers' markets, community supported agriculture (CSA) programs, or farm stands.
5. **Endosperm** – The portion of a grain kernel that provides energy to the grain plant in its early growth, allowing it to send roots into the soil for water and nutrients, and sprout toward the sun. The endosperm is the largest portion of the kernel and contains carbohydrates (starch), proteins, and small amounts of vitamins and minerals.
6. **Farm to institution** – The process of connecting local and regional farmers and food businesses with institutional markets.
7. **Food service director** – The person responsible for the management of the day-to-day operations of school food service for all participating K-12 schools under the jurisdiction of a School Food Authority.
8. **Germ** – The portion of a grain kernel that contains the embryo, which has the potential to sprout into a new plant; it contains many B vitamins, as well as some protein, minerals, and fats.

9. **Grains to institution** – The specific needs, challenges, and opportunities of connecting regional grain farmers and food businesses with institutional markets.
10. **Grain value chain** – [A network of people and groups](#), including farmers, millers, maltsters, bakers, chefs, food manufacturers, brewers, distillers, researchers, and advocates, working collectively to foster the development of an interconnected system of grain production, processing, and consumption in a designated geography.
11. **Hard infrastructure** – The physical and organizational structures and facilities (e.g., buildings, roads, equipment) needed for the operation of a system.
12. **Identity preservation** – The [traceability practice](#) of maintaining certain characteristics of a crop across the value chain, from planting to harvesting to market, such as how the crop is produced and by whom.
13. **Institutions** – For the purposes of this project, institutions are defined as entities that purchase, prepare, and serve high volumes of foods in a cafeteria, catering, or retail setting, including schools, colleges, hospitals, and business campuses. These institutions are often, but not always, publicly funded and/or participate in federal or state nutrition programs, such as the National School Lunch Program. Institutions may also include correctional facilities, Tribal, state or municipal offices, early childhood care and education programs, and senior meal programs or living centers, though these entities are not covered in this case study.
14. **Intermediated markets** – [Marketing opportunities](#) in the local food supply chain that include additional players to facilitate the transaction between farmers and buyers through support with aggregation, marketing, and distribution. This process may include farmers selling to local, regional, or national aggregators or distributors, such as food hubs or broadliners, who then sell to grocers, restaurants, institutions, and other buyers.
15. **Nixtamalization** – [The process of mixing](#) dried corn kernels in a boiling alkaline solution, such as wood ash, to break down the outer layer of the kernel, [enhancing nutrient content](#) and making the corn softer and more digestible. This is a critical first step prior to making products such as masa and tortillas.
16. **Prime vendor agreement** – A contract between a food service distributor and a buyer in which the distributor obtains a high percentage of the buyer's total annual purchases in exchange for discounted prices on products that are frequently purchased. For example, an institution and prime vendor may have a contract that requires the institution to purchase 90 percent of their food products through the prime vendor in order to be in compliance with their agreement and access discounted pricing. In some cases, institutional buyers will not have a prime vendor and instead have contracts with multiple vendors to access the products they need.
17. **Procurement** – [A multi-step process](#) of specifying, itemizing, and purchasing goods or services. In this resource, procurement refers to the process of purchasing ingredients and food products for institutional food service operations.
18. **Quick-scratch (or speed scratch) cooking and baking** – A [preparation method](#) that increases preparation speed and reduces the number of products purchased and prepared in their raw form, while maintaining an emphasis on working with whole foods and minimally processed ingredients. Pre-made flour mixes for baking cakes, cookies, or quickbreads or precooked noodles for a pasta dish are examples of grains used in quick-scratch methods.
19. **Regional distributor** – A type of specialty distributor that sells regional products and/or distributes products within a specific region of the U.S. In some cases, a regional distributor may operate as a broadline distributor (see definition above). In the Midwest, specialty/regional distributors include DEB Wholesale, R.E. Golden Produce, Midwest Foods, and V. Marchese Inc.

20. **Scratch cooking and baking** – A method of cooking or baking that utilizes ingredients in their unprocessed form. For grains, this includes whole uncooked grains such as barley, millet, sorghum, or wheat berries and minimally processed grains such as milled wheat or rye flours.
21. **Small grains** – Cereal crops with kernels physically smaller than corn or soybeans including barley, Kernza®, millet, oats, rye, spelt, teff, and wheat.
22. **Soft infrastructure** – The social, economic, and cultural networks in a system made up of skills, competencies, and relationships.
23. **Specialty vendor** – A distributor that offers a specialized or niche product inventory or that has a specialty vendor agreement with a buyer to sell them specific products. Under a specialty vendor agreement, the vendor sells a specific product or set of products to a buyer, such as chicken or milk, but is not precluded from selling other items they offer.
24. **Stone mill** – A piece of processing equipment that grinds grain kernels between two slabs of rock, such as granite, milling the entire grain kernel (bran, germ, and endosperm) into flour. A mechanical particle separation system can be used alongside a stone mill to remove some bran and germ for sifted stone milled flours.
25. **Traditional foods** – Foods that have been traditionally prepared and consumed by Indigenous people and Native Nations. These foods may include berries, bison, fish, maple syrup, potatoes, corn, beans, squash, wild rice, and venison.
26. **USDA Foods in Schools** – A program that facilitates purchases of foods and ingredients from agricultural producers for use by schools and institutions participating in the National School Lunch Program, School Breakfast Program, and Child and Adult Care Food Program.
27. **Value-added products** – Items grown or processed in a way that increases their worth. Examples of value-added products include grains grown using certified organic production practices or the process of cleaning a tote of grain into a lot of food-grade wheat berries for culinary use.
28. **Whole grain** – The U.S. Food and Drug Administration has not defined any claims concerning the grain content of foods. However, the agency has established standards of identity for various types of cereal flours and related products in 21 CFR Part 137, including a standard of identity for 'whole wheat flour' (§ 137.200) and 'whole durum flour' (§ 137.225). In general, a grain product is considered to be 'whole grain' as long as all three components of the grain kernel – the bran, germ, and endosperm – are present in the same proportions in the final product as they were prior to any processing steps.
29. **Whole grain-rich** – A designation created by the U.S. Food and Nutrition Service to indicate that at least 50 percent of the grain content of a given product is whole grain. The remaining grain content may be enriched, meaning it has added vitamins, minerals, or other ingredients.