INSTITUTE FOR AGRICULTURE AND TRADE POLICY

Using Regionally Grown Grains and Pulses in School Meals

Best Practices, Supply Chain Analysis and Case Studies

By JoAnne Berkenkamp, Tomorrow's Table LLC; Kaylee Skaar, IATP intern; and Erin McKee VanSlooten, IATP

Institute for Agriculture and Trade Policy

January 2015

Using Regionally Grown Grains and Pulses in School Meals: Best Practices, Supply Chain Analysis and Case Studies

By JoAnne Berkenkamp, Tomorrow's Table LLC; Kaylee Skaar, IATP intern; and Erin McKee VanSlooten, IATP

Published January 2015

Thank you to all the districts, community partners and School Food FOCUS staff in the Upper Midwest Learning Lab for their support and input.

The Institute for Agriculture and Trade Policy works locally and globally
at the intersection of policy and practice to ensure fair and sustainable food, farm and trade systems.

More at iatp.org

BEST PRACTICES FOR USING REGIONALLY GROWN GRAINS AND LEGUMES IN SCHOOL MEALS

Healthy, regionally grown grains and legumes are a growing part of Farm to School. Our six case studies on the introduction of locally grown grains and pulses feature school districts, food vendors and partners in communities ranging from: Portland, Ore.; Grand Rapids, Mich.; Ithaca, N.Y.; Hopkins, Minn.; Fairbanks, Alaska and Kalispell, Mont. Their forays into locally grown grains and pulses have included lentils, barley, dry beans, tofu and wheatberries, among others.

The Upper Midwest Regional Learning Lab, operated by School Food FOCUS, also catalyzed seven large, urban Midwestern districts to explore the opportunities and challenges of sourcing regionally grown grains and legumes on a larger scale.

While each district's experience is unique (and we invite you to review the individual case studies to learn more), some common themes emerged about what helped or hindered their efforts. To help you consider where locally or regionally grown grains and pulses might fit for your district, here are some best practices that emerged from their experience.

Helping hands: Partnerships to help you on your way

- You don't need to go it alone! All of the districts we studied have partner organizations that have played key roles as the districts honed their strategy for adding locally grown grains and pulses to their menu.
- As reflected in our case studies, partner organizations can help on many fronts. These include:
  - Identifying local sources of grains and legumes
  - Developing product specifications
  - Developing recipes tailored to your district's equipment and staff capacity
  - Planning and conducting taste tests with students
  - Identifying distribution partners and innovative delivery strategies
  - Linking with teachers and classroom activities to reinforce your Farm to School program outside the cafeteria
  - Conducting awareness-raising efforts with students, parents and your community
- Potential partners could include universities and colleges, local food and farming organizations, food enterprise incubators, agricultural trade associations, chefs, government agencies and national organizations like FoodCorps, among others.

Sourcing Grains & Legumes grown in your area

- Understanding the offerings and limitations of one's local food supply can help your district develop a definition of "Farm to School" or "local" or "regionally grown" foods that is appropriate to your district's unique circumstances. For instance, the Kalispell Public School District prioritizes sources that are quite close to home but reaches out statewide or regionally as needed given product availability.
- If you are purchasing from a processor or aggregator, make sure to ask about where their grains or pulses are actually grown and how much transparency they can provide back to the food's place of origin. This is key for ensuring that any statements you make about the origin of the product are accurate and verifiable.
- Candid, two-way communication between school districts and their vendors can help lay the groundwork to explore mutually beneficial strategies for meeting district procurement needs. Your feedback can also provide vendors with important information about how the nature of market demand may be changing (for instance, toward more local or sustainably grown products). As reflected in the Portland, Oregon case study, dialogue with vendors about the pros and cons of their products can also encourage continued quality improvements and innovation.
- Particularly where a grains or legume supply chain involves several players working in coordination (such as farmers, aggregators, processors and distributors, along with the school district itself), taking the time for all players to develop a mutual understanding of each other's aspirations, priorities and limitations can

be essential to bringing new local foods into a school district effectively.

Crunching the Numbers: Food Costs and Labor

- As foodservice staff increase their familiarity with local food and farming issues, their interest in working with locally grown foods is likely to increase. Make sure to give your staff fun and compelling learning opportunities by having your farm suppliers visit the school, enabling staff to visit farms, and interacting with related organizations in your local food system.

- A little training up front can do a lot to help staff feel comfortable preparing new grain and legume dishes. Provide adequate training for foodservice staff as you explore new foods.

- When considering how to incorporate grains and pulses into your menu, consider potential impacts on labor, both favorable and unfavorable. As Grand Rapids Public Schools in Michigan found, a less-processed product can sometimes require less labor time than a more processed "convenience" product once preparation methods have been sorted out.

- When exploring your options for locally grown and less processed ingredients like dry beans, consider whether these products could help you meet other goals, such as reducing sodium.

- Tasks like boiling dry beans may seem like a considerable use of staff time. However, some districts have found that staff can readily do other tasks while beans are on the boil, making more efficient use of their time. Also consider the time to be saved by avoiding the need to open and dispose of cans.

- Locally grown beans and lentils can be a helpful tool for bringing down the overall cost of entrees. Explore how these items could complement meat proteins at the center of the plate.

- When assessing the cost of incorporating these ingredients, it is important to look at the overall cost of the finished product, not only the difference in price per pound of a particular ingredient. Modest cost increases can often be accommodated by trimming costs in other areas.

- Experiment with alternative cooking methods. For instance, the Ithaca City School District in New York found that steaming dry beans was less time-consuming for their staff than the more traditional method of boiling dry beans.

- Make sure to factor delivery costs into your cost calculations, especially if you plan to buy direct from a local supplier that will deliver directly to your location(s). Most grain and legume items store well, so consider purchasing larger volumes that bring your delivery costs down.

- Increasing the acceptance of grains and legumes among Students thorough taste-testing with students of different ages is key before introducing new grain and legume recipes. The time you put into taste-testing is likely to be time well spent as you explore new recipes and hone your approach.

- Allowing students to see and touch the raw ingredients may increase their interest in trying new recipes.

- Marketing and educational efforts can help promote new menu offerings and inform students about where the grains and legumes on your menu come from. If possible, have farmers and other vendors visit your school to interact with students or have students get out on the farm (check out the national Farm to School website for a wide variety of nutrition, culinary and farm-based education tools: http://www.farmtoschool.org/resources).

- Innovative seasonings were viewed as key to encouraging students to eat more beans. Flavor profiles that parallel those of popular quick-serve restaurants would be one possibility. With beans on salad bars, it was suggested that districts use dry beans and add flavors suited to their student population to make them more palatable.

- Some districts observed that it can be challenging to provide enough beans to count as an entrée under USDA FNS requirements. That might argue for combining beans with other proteins. This approach may also have the added benefits of increasing palatability and reducing plate waste.

- Try introducing new grains and legumes to your menu by incorporating them into existing dishes that your students already know and like (such as turkey-bean chili, beef-lentil burgers, soups, cold salads and bread items.) Many districts we studied have found this to be highly effective as they transition locally grown grains and legumes into the tray.

ON THE FARM AND AT THE PROCESSOR:

Production and Processing of Grains and Pulses

Where are grains and pulses grown, and how do they get from the farm to the fork? This section gives you an overview of how grains and pulses grow and the supply chains that can bring them to your table.

Getting to know your grains and pulses

GRAINS: Grains include various kinds of wheat, oats, barley, corn and rye, as well as amaranth, buckwheat, millet, quinoa, rice and teff, among others.[1] Whole grains are an excellent source of fiber, iron and B vitamins.

PULSES / LEGUMES: Pulses are the edible seed of legume plants such as lentils, dry peas, chickpeas and fava beans. Pulses also includes a wide variety of dry edible beans including pinto, navy, dark and light red kidneys, black, turtle, pink, lima, cannellini and cranberry beans, as well as edible soy beans, among others. Legumes are an excellent source of protein, fiber, iron, zinc and B vitamins.

Leading states based on pulse production in 2012[3]

State	Dry Edible Beans (cwt)	Lentils (cwt)
North Dakota	#1	#2
Michigan	#2	
Minnesota	#3	
Montana	#10	#1
Washington	#6	#3
Idaho	#5	#4
Nebraska	#4	
Oregon	#11	
South Dakota	#12	#5
Wyoming	#8	
California	#7	
Colorado	#9	

On the farm: Production Dynamics

Pulses/Legumes

Farms where dry beans are grown vary greatly in size from a few dozen acres to upwards of 15,000 acres and range from family-owned operations to corporate farms. A typical size would be in the range of 500 to 2000 acres. As with many types of farming, dry bean operations have generally grown larger on average over time. Crops like dry beans, dry peas, lentils and chickpeas are grown for both human and animal consumption. All dried beans grown in the U.S. are non-GMO[2].

Dry peas, lentils and chickpeas are planted annually in rotation with other crops, often cereal grains such as wheat and barley. Harvested in August and September, the crop is partially dried while still in the field. At the time of harvest, a combine is used to cut the plant from the ground, separate the seeds from the rest of the foliage, distribute crop residue across the field and load the product into awaiting trucks (typically semi-trailers). From there, the product is transported for storage and processing.

Dry beans are grown widely in the Northern half of the United States. Crops like lentils have a smaller growing region focused on two primary areas: the Northern Plains (including Montana, North Dakota and South Dakota) and the Palouse region, which includes eastern Washington, northern Idaho, and northeastern Oregon as highlighted below.

The production of legumes offers significant environmental benefits. First, these types of plants can convert atmospheric nitrogen into nitrogen that can be used for plant growth, reducing the need for additional fertilization of subsequent crops. Second, crops like lentils, dry peas and chickpeas do not require irrigation and are typically able to rely on rainfall that occurs during the growing season. Depending on growing conditions, dry edible beans may be grown with or without irrigation. As a result, it typically takes only a fraction of the water to produce a pound of beans relative to foods like beef, pork or chicken.

Grains

Many different types of grains are grown in the United States including oats, rice, wheat, barley, buckwheat, millet and rye among others. Unlike the legumes discussed above, growing regions for grains are varied and widespread across the country, including both Northern and Southern climates. The chart below highlights the widespread production of grains in the U.S.

Top Grain-Producing States[4]

State	Barley (bushels)	Buckwheat (bushels)	Emmer and spelt (bushels)	Oats for Grain (bushels)	Millet (bushels)	Rice (cwt)	Rye (bushels)	Wheat for grain, all (bushels)
North Dakota	#1	#1		#3	#5		#13	
Idaho	#2							#2
Montana	#3	#4	#5					
Washington	#4	#2						
Colorado	#5				#1			#4
Minnesota	#6	#5		#1			#8	#3
Wyoming	#7							
California	#8			#10		#2		#7
Arizona	#9							
Oregon	#10	#6						#5
Pennsylvania	#11	#7	#3	#7			#3	
New York		#3	#1	#8			#12	
Ohio			#2	#9				#11
Michigan			#4	#11			#5	
Wisconsin				#2			#4	
South Dakota				#4	#3		#9	
Iowa				#5				
Texas				#6	#4	#6	#11	#1
Nebraska					#2			#6
Florida					#6			
Kansas					#7		#7	
Arkansas						#1		
Louisiana						#3		
Missouri						#4		#10
Mississippi						#5		
Oklahoma							#1	
Georgia							#2	
North Carolina							#6	#8
Maine							#10	
Illinois								#9

After the farm gate

After harvesting their crop, growers will haul the product by truck to a receiving station or elevator in their vicinity. Elevators are typically supplied by contracted farmers within a fairly tight geographic radius of the aggregation facility (e.g. 100 miles or less). Product is unloaded into massive bins and often co-mingled with crops from nearby growers.

Elevators aggregate crops and then ship them on to a processor or other buyer. Elevators have historically been quite numerous and decentralized throughout key growing regions, although foreign ownership of elevators and processing plants is increasingly common, particularly with varieties of grains and pulses that have large export markets.

Farmers who grow pulse and grain crops will typically do so under contract with one or several buyers, providing them with an assured market for what they grow. Aggregation and processing companies typically vie against one another to secure sufficient acreage for production of needed crops to meet demand and to keep their handling facilities operating at maximum capacity. This leads many aggregators to closely

guard the identity of their growers. In other cases, farmers and buyers will operate without fixed contracts, selling and buying a portion of their supply on the open market.

Elevators that handle dried beans will often sell their product under contract to larger aggregation companies. In turn, these aggregators will clean, process and re-package the beans for sale to food processors, such as large canning companies, or for sale in dried form to broadline distributors that serve the retail grocery and foodservice sectors. It would not be uncommon for dried bean products to be grown in one state, delivered to an elevator relatively nearby, shipped to a plant in another state for washing and packaging, and then shipped to another location where to be further processed and later distributed.

As a result, dried bean products may have a fairly long "path" from farm to fork that involves numerous locations and handling by several different types of businesses in the supply chain. Similarly, because cereal grains typically require several stages of processing, those entering mainstream food processing chains often change hands several times and travel significant distances from where they are grown to the place where they are finished into a consumer-ready product.

Large conglomerates like Cargill, ADM and ConAgra Foods are major players in the legume and grain industries, often operating vertically integrated systems on a massive international scale. At the same time, smaller-scale operations have gathered some momentum in recent years, driven in large part by demand for regionally grown, sustainably produced and source-identified specialty foods, as well as the growth of craft breweries and distilleries that use specialty grains in beer and liquor production.

Processing of Cereal Grains and Pulses[5,6,7,8,9]

Cereal grains and pulses typically go through numerous stages of processing between the time when they leave the farm and when they make it onto the plate. Individual pulse and cereal grain crops have very different physical structures and unique biochemical properties. As a result, processing dynamics can be quite specific to individual crops. That said, processing of grains and pulses typically includes the following steps:

INITIAL CLEANING: Foreign matter from the field such as stones, dirt and vegetation and undeveloped or broken pieces is removed using various methods of screening (such as sifting over gravity tables) and/or winnowing (blowing out).

SORTING: The product is sorted by size, color, quality and other attributes through a combination of gravity tables, sieves that sort by size, electronic color sorters and other equipment. Product may be air-cleaned to eliminate dust. Products are typically run through a metal detection system to ensure that any metals are identified and removed.

PROCESSING DRY BEANS: After the initial cleaning, dry beans are often stored until a buyer is at hand. When properly selected and stored, legumes can be stored for three to four years without a loss of quality[10]. Beans are then prepared for shipment, bagged and shipped by truck or rail. Food manufacturers that purchase dry beans may soak, blanch and cook them as needed before canning or other processing. Products like black beans may be polished if they are going to be sold at retail.

PROCESSING LENTILS, CHICKPEAS AND DRY PEAS: These crops have a tough outer casing that must be removed after initial cleaning and sorting. The casing is first loosened using one method or several methods used in combination including prolonged open-air drying, applying small amounts of oil followed by drying, and/or soaking in water for several hours followed by drying. The loosened casing is then removed. After de-hulling, pulses such as dried peas are often steamed and split. Depending on the ultimate use, product may be puffed or roasted as well. Pulses can also be milled and processed into flour and other forms for use in prepared foods.

WHAT IS A WHOLE GRAIN?[11] Whole grains contain all of the essential and naturally occurring nutrients of the entire grain seed (germ, endosperm, and bran). Refined grains retain only the endosperm.

PROCESSING CEREAL GRAINS: Grains go through a multi-step "conditioning" process, in which water and/or heat are applied to change a grain's physical structure and make it more "functional" for food preparation. Processors use heat to bring out a grain's nutlike flavor and apply different levels of moisture for grains that will be used, for instance, for hot cereal or for flour.

Cereal grains typically have a tough outer hull that must be removed. However, to be considered a whole grain, the hull must be removed while leaving the bran and germ intact. The equipment needed for de-hulling can vary significantly from one grain to another. After de-hulling, the bran and germ can also be mechanically separated for use as distinct products such as wheat germ and oat bran.

Grains like barley, buckwheat, spelt and oats are typically milled for flour or steamed and rolled into flakes. After this processing, grains become recognizable to the consumer as hot cereals (e.g., steel cut or rolled oats, buckwheat groats, barley grits), flours and related products.

Export Markets

The majority of domestically grown pulses and cereal grains are exported to other countries rather than consumed in the United States. Vertically integrated global supply chains move U.S. grains and pulses to food manufacturers and markets throughout the world where various grains and pulses are dietary staples and are also used as animal feed. For example, nearly 90 percent of the lentil crop in the U.S. is exported, with Asia, the Middle East, Latin America, Europe and Africa being major export markets for U.S. growers.[12] More than 70 percent of U.S. dry pea production is exported to India, China, and Spain for food and feed processing.[13] Ninety-six percent of the buckwheat grown in the U.S. is exported to Japan, where it is used for noodles and in beverages.

Supply Chain Transparency

Conventional cereal grain and pulse markets tend to provide very limited information to buyers about where products are grown and by whom. Interviews with businesses in the grain and pulse industries show that, with some exceptions, providing greater transparency for the buyer back to the grower or specific place of origin has not been a high priority for the industry. This reflects the highly commoditized nature of these crops, the large scale of most processing operations, and a historic lack of demand for source-identified product in conventional markets.

For instance, as one major dried bean aggregator expressed it, "our (bulk) bags include lot codes that indicate the date that the beans were processed, tied to a range of time when the beans were received at the plant. That might include up to 40 farmers whose product was co-mingled in a given bin on a given day." While this aggregator could confirm the state in which all product in that aggregation facility is farmed, products are co-mingled across farms and the company considers their farmers' identities to be confidential.

While greater transparency is possible for conventional product, at least in principle, the adjustments needed to facilities, equipment and businesses' practices would likely be very substantial, particularly in the face of limited market demand. However, some smaller companies pride themselves on building closer connections between their growers and buyers and make supply chain transparency a priority.

Research from USDA[14] has also found that, "The U.S. grain system is increasingly marked by product differentiation and market segmentation. More specialty crops now require either some form of segregation or full-scale identity preservation to keep them separate from conventional commodities. Market segmentation within the grain system is driven by the need to preserve its market value, or ensure purity of the product. Internationally, U.S. grain markets must increasingly conform to a new regulatory environment reliant on traceability and identity preservation."

While identity-preserved products tend to be more costly, these trends may open the door over the longer term for improved access in the K-12 marketplace to grain products with clearer provenance.

Endnotes

1. Whole Grains Council, http://wholegrainscouncil.org/whole-grains-101 (accessed 4/3/14).

2. Personal communication, Gordon Gregory, ADM Edible Bean Specialties, Inc., 2/11/13.

3. United States Department of Agriculture, 2012 Census of Agriculture. Data based on harvested quantities shown in 100 pound increments. http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_024_024.pdf. Accessed 6/15/14.

4. United States Department of Agriculture, 2012 Census of Agriculture. Data based on harvested quantities. http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_025_025.pdf. "Field Crops" pdf by state. Accessed 6/21/14.

5. U.S.A. Dry Pea & Lentil Council, "USA Dry Peas, Lentils & Chickpeas: Processing Information & Technical Manual," http://www.pea-lentil.com/core/files/pealentil/uploads/files/Chapter 4.pdf, (accessed 3/14/2014).

6. North American Millers Association, "Oat Milling Process," North American Millers Association, http://www.namamillers.org/education/oat-milling-process/ (accessed 2/24/2014).

7. Iowa State University, "Buckwheat Profile," Agricultural Marketing Resource center website, http://www.agmrc.org/commodities__products/specialty_crops/buckwheat-profile/ (accessed 2/24/2014).

8. "Types of Barley." Whole Grains Council, http://wholegrainscouncil.org/whole-grains-101/types-of-barley (accessed 2/24/2014).

9. Brigid McKevith, "Nutritional Aspects of Cereals," British Nutrition Association Nutrition Bulletin, 2004. http://www.nutrition.org.uk/attachments/207_Nutritional%20aspects%20of%20cereals.pdf (accessed 2/24/2014).

10. U.S.A. Dry Pea & Lentil Council, "USA Dry Peas, Lentils & Chickpeas: Processing Information & Technical Manual," U.S.A. Dry Pea & Lentil Council, http://www.pea-lentil.com/core/files/pealentil/uploads/files/Chapter3.pdf, page 36 (accessed 2/24/2014

11. "Definition of Whole Grains," Whole Grains Council, http://wholegrainscouncil.org/whole-grains-101/definition-of-whole-grains (Accessed 2/24/2014).

12. U.S.A. Dry Pea & Lentil Council, "USA Dry Peas, Lentils & Chickpeas: Processing Information & Technical Manual," U.S.A. Dry Pea & Lentil Council, http://www.pea-lentil.com/core/files/pealentil/uploads/files/Chapter3.pdf, page 43 (accessed 2/24/2014).

13. U.S.A. Dry Pea & Lentil Council, "USA Dry Peas, Lentils & Chickpeas: Processing Information & Technical Manual," U.S.A. Dry Pea & Lentil Council, http://www.pea-lentil.com/core/files/pealentil/uploads/files/Chapter3.pdf, page 42 (accessed 2/24/2014).

14. The Changing Face of the U.S. Grain System: Differentiation and Identity Preservation Trends", USDA Economic Research Service, Aziz Elbehri. http://naldc.nal.usda.gov/download/19379/PDF (Accessed 4/3/14).

GRAINS AND LEGUMES: LESSONS FROM THE SCHOOL FOOD FOCUS UPPER MIDWEST REGIONAL LEARNING LAB

School Food FOCUS

School Food FOCUS leverages the knowledge and procurement power of large urban school districts to make school meals nationwide more healthful, sustainable and regionally sourced. Launched in late 2008, FOCUS aims to transform food systems to the direct benefit of children, farmers, regional economies and the environment. Thirty-seven districts across the country serving over 4.4 million students now participate in School Food FOCUS.

FOCUS' Upper Midwest Regional Learning Lab (UMRLL) engages selected school districts and their chosen community partners in collaborative research to discover methods for transforming their food options. The Lab brings school foodservice professionals and their partners together with research and technical assistance to study and work on specific procurement goals. The Learning Lab catalyzes changes in mindset, relationships, and perceptions of what is possible, and transmits emerging practices to other school districts.

Participating districts include Omaha, Chicago, St. Paul, Detroit, Cleveland, Minneapolis and Des Moines. These districts chose to focus on chicken, turkey, produce and grains/legumes as priority products. Below we explore some of the insights that have emerged from the Lab's exploration of grains and legumes, particularly as they relate to demand dynamics among participating districts and challenges that were encountered in developing the needed product supply.

Aspirations around Grains and Legumes

The Upper Midwest Learning Lab was officially launched in May 2012. The seven participating districts and their partners first convened in November 2012 and at that time identified grains and legumes as a priority category and explored their aspirations for their greater use. The group identified the following change goals as priorities:[1]

Grains:

- Identify or develop regionally grown and produced grain products
- Increase demand on the open market for innovative grains served in schools
- Address the growing need for gluten-free and vegan grains and identify such products that could be offered to all students

Legumes:

- Focus on beans, likely pintos, which are commonly used in burritos
- Increase low-cost protein options for entrée/center-of-the-plate options
- Incorporate multicultural menu items that students are more familiar with
- Benefit farmers/regional growers
- Increase frequency of these items on the menu
- Increase consumption of menu item
- Transition from "hiding" to marketing bean dishes
- Transition from a side dish to center-of-the-plate menu item

Subsequently, UMRLL district members were surveyed about their use of grains and legumes. The survey data showed that Lab members had typically increased their purchases of legumes significantly from the 2011-2012 school year to 2012-2013 as they moved into compliance with new requirements under the Healthy Hunger Free Kids Act.

Most bean purchases identified were in canned form, with black, Great Northern, garbanzo, refried and baked beans being among the more prevalent.[2] Most bean products were received through the USDA Commodity program. Relatively few purchases of dried beans were identified. Use of wheat products and brown rice was widespread, but few other grains were being used in any significant volume.

Specific Product Priorities

With these aspirations in mind, members of the Learning Lab crafted a set of criteria to guide the selection of specific product priorities. Selection criteria included:[3]

- Student acceptance
- Operational feasibility (prep issues, packaging, etc.)
- Nutrition profile (e.g. importance of gluten-free, whole grain)

- Product availability
- Budget implications (including replacement of commodity purchases or ability to use commodity products in directly diverted items such as burritos, prepared soups or hummus)
- Potential impact in schools and in supply chains

Members of the group were also intrigued by the potential for legumes to offer a lower-cost alternative to meat, and the potential to combine meat and legumes (in items like turkey-bean chili) that might increase the palatability of legumes for students. Bean products in packaging other than cans were also viewed as having the potential for different taste profiles that might increase student acceptance.

The group explored products ranging from corn tortillas and grits (including GMO-free corn products) to wild rice blends, quinoa, hummus and black bean burgers. Their dialogue led to the prioritization of the following products for additional supply chain research and potential market development:

- Pre-cooked, regionally grown beans without seasoning in shelf-stable packaging other than a can (e.g. cryovac or aseptic refrigerated pack).
- A bean burrito in a whole grain tortilla using regionally grown pinto beans, preferably with both bean-cheese and beef-bean options in a two-meat/meat alternative, two-bread size.
- Gluten-free grain products that could be served affordably to all students.

Product Development and Supply Chain Challenges

Regional Learning Lab staff, district foodservice directors and the districts' community partners conducted significant research into the potential for the above products, primarily through one-on-one dialogue with a variety of existing and potential suppliers and food manufacturers. This led to a variety of insights about what is needed to align supply and demand for these products in the K-12 marketplace:

- Where non-traditional grain and legume ("G&L") products are concerned, it proved difficult to identify or develop processed G&L products that are manufactured on a large enough scale to meet large districts' needs, while also being affordable and having a greater degree of supply chain transparency than conventional product. By contrast, some smaller processors offered regionally identified or "cleaner label" products (or were open to exploring their development) but did not have the scale of operation to meet the volume needs of large districts.
- While manufacturers typically have extensive food safety protocols in place that allow them to trace product in the event of an emergency, this often does not translate into transparency for a K-12 buyer about where the product they receive was actually grown. This can make it challenging to fit grain and legume products, particularly those that are further processed, into Farm to School programming.
- While participating districts currently purchase small amounts of gluten-free product for students that require them, we found a lack of gluten-free products that are suited to K-12 contexts and that are affordable enough to offer to all students. This often leads districts to use corn-and rice-based grain products (which are gluten-free) to meet the needs of their gluten-free students.
- Affordable gluten-free items that are clearly identified as regionally grown are even more scarce.
- We also found that districts are dis-incentivized from purchasing G&L products from sources in their region since products like oats, wheat, cornmeal and beans are offered through the USDA commodity program for nominal cost and can be processed into a wide variety of foods. Further, the actual location where these commodity products are grown isn't conveyed to K-12 buyers before they purchase, contributing to the disconnect between the source and the user.

- Flours made from products such as lentils or garbanzo beans don't "count" as a grain or as a protein under current USDA Food & Nutrition Service regulations, discouraging their use. Regulatory changes on this issue could help expand the K-12 market for these products.

- In general, we found that G&L manufacturers are more open to developing "cleaner label" products than products with source-identified ingredients. For instance, the Minneapolis Public Schools were successful in working with burrito maker Los Cabos to develop a burrito product with reduced sodium and preservatives (for specifications, see http://www.schoolfoodfocus.org/publications-2/learning-lab/). It was not feasible at the time to utilize source-identified beans in that product; however, there are signs that the process of developing the "clean label" product together may have opened the door to exploring regional sources of beans in the future.

- Interaction with various industry players about growing demand for G&L product innovations often met with a limited response. However, some new products are emerging (such as single-serve hummus) that are well-suited to K-12 needs.

- The Lab experience also suggests that demand is evolving not only for different types of products but also for innovative packaging. That includes pre-cooked bean products in shelf-stable pouches that obviate the need to open and dispose of cans and offer a different flavor profile. Individually portioned sizes can also make product more attractive to kids and easier to serve.

Learning Lab Meal Service Lessons

- Items like garbanzo beans are widely used in salad bars, but salad bar items tend to be low-volume. To drive demand for legumes, they will need to be featured in entrées.

- Demand among students in the Upper Midwest for items like lentils, dried peas and unusual grains was generally perceived by Lab participants as low. That said, Asian-and Mexican-themed foods were generally viewed as popular with students. Incorporating regionally grown grains and legumes into these dishes could be an attractive approach.

- Innovative seasonings were viewed as key to encouraging students to eat more beans. Flavor profiles that parallel those of popular quick-serve restaurants would be one possibility. With beans on salad bars, it was suggested that districts use dry beans and add flavors suited to their student population.

- Adding lentils to taco meat was identified as an effective money saver and something that students in participating schools liked.

- Districts can benefit from clarifying their goals around expanded use of G&L products; e.g., is the objective to mask the legumes in an effort to increase acceptance or to make them visible in an effort to introduce students to new foods? Clarity on this point is important, as it can drive a district's menuing decisions.

- It can be challenging to provide enough beans to count as a meat/meat alternate under USDA FNS requirements. That might argue for combining beans with other proteins. This approach may also have the added benefits of increasing palatability and reducing plate waste.

- Training foodservice staff to prepare G&L products and experimenting with different food prep strategies are important steps along the way, as is taste-testing new G&L recipes with students.

- Having more well-developed specifications for desired products appropriate to the K-12 marketplace could help food manufacturers understand how demand is evolving and explore how they could potentially accommodate that demand.

- USDA commodities currently include beans that are either canned or dried. The addition of a pre-cooked cryovaced option would be attractive to some districts.

Endnotes

1. From FOCUS' notes from the November 2012 RLL meeting in Milwaukee
2. From March 2013 survey of UMRLL districts' purchasing during Fall 2012
3. From the notes from the June 2013 RLL meeting in Milwaukee

GRAND RAPIDS PUBLIC SCHOOLS: MICHIGAN-GROWN DRY BEANS

Overview

Grand Rapids Public Schools (GRPS) is Michigan's fourth-largest public school district, serving more than 17,000 students. GRPS' Nutrition Services[1] serves approximately 25,000 meals a day with 86 percent of students being eligible for free lunch. About 36 percent of the student body is African American, 33 percent Hispanic/Latino, 22 percent Caucasian, and six percent are multi-racial. Through its central commissary, Grand Rapids School District also manages food services for the East Grand Rapids Public Schools, four parochial schools and six charter schools.

The district has an extensive Farm to School program. GRPS has teamed up with Pearson Foods,[2] a Grand Rapids-based processor and distributor of fresh-cut produce, to offer students a wide variety of regionally-grown fruits and vegetables in season. Amy Klinkoski, Nutrition Service Coordinator for Grand Rapids Public Schools,[3] has found that locally grown produce tends to be of higher quality and competitively priced relative to alternatives when she factors in labor costs. GRPS' Farm to School program also extends into the classroom, where teachers and community volunteers offer nutrition education and taste-testing and nudge students to try unfamiliar foods.

Michigan-grown Dry Beans

Although Michigan is often most recognized for the fruits and vegetables that it grows, the state is also one of the nation's largest producers of dry beans. As Grand Rapids Public Schools sought to expand their Farm to School program, dry beans emerged as an important avenue for exploration. Klinkoski also anticipated that dry beans would actually involve less labor than canned beans that needed to be opened, rinsed and then the cans recycled.

Klinkoski was fortunate to have the assistance of Michigan State University (MSU) Extension, which introduced to her farmer Fran Carlson-Arbogast. Carlson-Arbogast, who is registered dietitian as well as a Michigan-based farmer, shared Klinkoski's passion for introducing students to locally grown beans. She had also sold her beans to other school districts in the past and was familiar with the challenges of working with schools and eager to find a way to make it work for Grand Rapids.

A Michigan bean bag

GRPS was soon able to purchase dry pinto, red, black, and navy beans from Carlson-Arbogast Farms[4]. One challenge they faced along the way was finding a distributor for the product. Klinkoski initially approached her broadline distributor, but they were not able to offer the beans year-round. However, the farm's beans were being distributed by one of GRPS's smaller distributors, Pearson Foods, with whom the district already had a relationship.

GRPS also sources edible soybeans from Bur Oaks Farm[5] in Ann Arbor, MI with distribution by Cherry Capital Foods[6], based in Traverse City, MI. In addition, the district buys hummus made with Michigan-grown organic black beans from Cherry Capital. Klinkoski notes the black bean hummus is a unique product and not available from their broadline distributor. Since lentils and chickpeas are not available from Michigan-based sources, she continues to source those products from other areas of the country via GRPS's broadline distributor.

Recipe Development, Food Prep and Costs

Klinkoski and her staff went through extensive recipe testing when they started using the local beans. There was also a learning curve for staff in developing the appropriate cooking techniques for dried beans. Klinkoski asked the local health department to give a presentation to staff about the nutrition profile of beans and invited farmer Arbogast-Carlson into the kitchen to help staff adapt recipes for canned beans to the dried beans.

Once the cooking technique had been worked out, Klinkoski was able to confirm her hypothesis that cooking dry Michigan beans from scratch took less time for her staff than opening, rinsing, and recycling canned beans. Using a 100-gallon steam-jacketed kettle, they found that it took them about an hour and a half to cook the beans—but during most of this time, staff can tend to other tasks. In addition to the time savings, Klinkoski found that beans cooked from scratch had far less sodium than the equivalent canned products, putting GRPS well on the path to meeting federal sodium reduction guidelines.

Grand Rapids staff serving Michigan beans

GRPS currently offers Michigan-grown beans in a variety of different preparations, including baked beans, bean salad, and in a number of soups. Klinkoski estimates that she purchases 13,000 pounds of Michigan-grown navy and black beans each year for roughly $10,400. For all of the recipes currently used by GRPS, beans are counted as vegetables (in the legume category).

The student reaction to the new bean recipes has varied from one recipe to another. Because many students are not used to eating beans, Klinkoski has had the most success by pairing beans with familiar foods, such as baked beans with a ham sandwich. Klinkoski has found that beans with a bit of a crunch, including honey ginger soy beans and roasted chickpeas, have been popular with students. The bean salads (including a black bean salad and a three bean salad) and the bean hummus are more popular with grades 6 to 12 than with younger students.

District staff note that the Michigan-grown beans are less expensive than the canned beans GRPS had been using. The dry bean one-fourth cup equivalent costs $0.035 compared to $0.09 for canned.

Student Education

GRPS has found that the gold standard for Farm to School is to integrate the cafeteria into the classroom. Through a variety of community partnerships, Nutrition Services offers food coaches and interactive nutrition education, and encourages teachers to model healthy eating in the cafeteria. MSU's Kendra Wills, who works as a healthy eating coach, says that having an adult in the cafeteria urging children to try new foods is critical: "We explain the food, how it is grown, how it is good for your body, and we ask kids to try it and tell us what they think…we make it cool to eat something new."

Best Practices

- Training foodservice staff on new foods and cooking techniques is key to success.
- When looking at new food products, consider how incorporating them into your meal program will impact labor time. As Grand Rapids found, a less processed product can sometimes require less labor time than a more processed "convenience" product once preparation methods have been sorted out.
- When exploring your options for locally grown and less processed ingredients like dry beans, consider whether these products could help you meet other goals, such as reducing sodium.
- The likelihood of successfully introducing new foods can increase when new choices are paired with nutrition education in the cafeteria and/or classroom, the use of food coaches, and when teachers model healthy eating.

Endnotes

1. For more information about Grand Rapids Nutrition Services, see http://www.grps.org/nutrition.
2. For more information about Pearson Foods, see http://pearsonfoods.com
3. Amy Klinkoski, personal communication, May 23, 2014.
4. For more information about Carlson-Arbogast Farms, see this video from the Michigan Farm Bureau: https://www.youtube.com/watch?v=yiEHmEEZC3k.
5. For more information about Bur Oaks Farm, see http://buroaksfarm.com/.
6. For more information about Cherry Capital Foods, see http://cherrycapitalfoods.com/.

ITHACA CITY SCHOOL DISTRICT AND NEW YORK-GROWN ORGANIC DRY BEANS AND TOFU

Overview

The Ithaca City School District (ICSD) is located in Ithaca, New York, 225 miles northwest of New York City. Nestled at the southern end of Cayuga Lake in the Finger Lakes Region, Ithaca's beautiful bucolic setting and proximity to an abundance of farmland has been credited with inspiring a food culture that prioritizes local, fresh and often vegetarian cuisine.

ICSD serves 5,400 students in grades K-12 with eight elementary schools, two middle schools, one high school, and one alternative middle school/high school. ICSD's Child Nutrition Program serves 3,400 meals every day (3,000 lunch and 400 breakfast), with 37 percent of students eligible for free and reduced-price meals. The district draws students from both urban and rural areas and has a student population that is 69 percent white, 12 percent Asian, 11 percent Black or African American, five percent Hispanic or Latino, 0.7 percent American Indian, and 2.3 percent Other.

ICSD's central kitchen facility has two combi ovens that offer three methods of cooking: steam, convection heat, and a combination of the two. They also have two 80-gallon kettles, ovens, and ample freezer and refrigeration space. Notably, each school is able to do a significant amount of on-site preparation and the high school and alternative school do all of their own food preparation.

The district's Farm to School efforts began in 2010 with a focus on procuring New York–grown organic beans that were used in plant-based entrees as meat alternates. The program has since expanded to include local tofu as well as produce that can be prepared during the harvest season and frozen for use during the school year (for example, tomatoes made into tomato sauce and basil made into pesto).

Expanding the Reach of "Farm-to-School"

Denise Agati, Director of the Child Nutrition Program,[1] is a long-time supporter of local procurement and Farm to School education. Thanks to her vision of expanding local offerings on school menus, Denise led ICSD in partnering with the Coalition for Healthy School Food,[2,3] a nonprofit organization whose mission is to expand plant-based foods and nutrition education in schools. The Coalition's[4] Cool School Food initiative is a Farm to School program that helps bring plant-based recipes to school cafeterias by connecting growers, distributors, and chefs with school districts, and by conducting on-site taste tests and Farm to School education. The Coalition's partnership in Ithaca includes ICSD, Moosewood Restaurant, Wood's Earth and Cayuga Pure Organics.

Beginning in the 2010-2011 school year, ICSD partnered with the Cool School Food initiative to develop, test, and menu four plant-based recipes that featured locally grown organic beans. Coalition members helped connect the district with Cayuga Pure Organics,[5] a local grower, processor, and distributor of grains and beans, and one of the only businesses of its kind in New York. The company is conveniently located seven miles south of Ithaca. Founder Erick Smith,[6] inspired by the idea of students eating healthy organic food, sold dry, organic beans to the school district at cost until 2013 when a fire interrupted Cayuga's operations. Cayuga resumed production in the fall of 2014.

Taste Testing and Food Prep

DRY BEANS: Ithaca opted to introduce locally grown dry beans as meat alternates in recipes including the Black Bean ("Beanie") Burger, Fiesta Mexican Lasagna (black beans), Tuscan Tomato Pie (white beans), Mrs. Patel's Rajma (kidney beans), Pasta Fazool (white beans) and Roy's Cuban Wrap (black beans). Each entrée contained one half cup of cooked beans in order to comply with USDA regulation for meat alternates.

The dry beans were soaked overnight and then steamed in the combi oven for 20 to 45 minutes depending on the recipe, a preparation method that staff found to be much easier than boiling. To reduce waste, any bean-based entrées that

Dry beans

were not consumed were made available the following day as a vegetable side. During their first year of menuing, ICSD purchased 2,000 pounds of dry beans from Cayuga Pure Organics and continued to purchase New York-grown beans until the interruption of Cayuga's operations in 2013.

TOFU: With the expansion of the USDA's definition of tofu as a meat alternate in 2012, the district began using local organic tofu in two new recipes during the 2012-2013 school year. Tofu was purchased from Ithaca Soy, grower of organic soybeans and processor of tofu and soy-based products. Ithaca Soy was started in 1981 and quickly gained a reputation as the best tofu around, eventually becoming a staple at renowned Moosewood vegetarian restaurant.[7]

Tofu was incorporated into newly developed recipes including Chinese Stir-fry and Golden Croquettes with Orange Ginger Sauce. (Recipes are provided at the end of this case study and at www.healthyschoolfood.org/recipes.htm). Preparing tofu required some staff training, after which staff report that food preparation was easily accomplished using existing equipment. ICSD uses approximately 2,000 pounds of tofu per year and anticipates continuing to purchase tofu from Ithaca Soy.

After creating the new recipes, taste tests were conducted at each of the eight elementary schools to determine if the recipe was popular enough to place on the menu, and if so, how many servings should be prepared. The Coalition coordinated the taste tests including donating food, creating marketing materials (recipe cards, fliers, voting ballots and boxes) and providing volunteers to help conduct the taste tests. If a recipe was received well, it was menued the following month.

While implementation began in the district's elementary and middle schools, it expanded to include the high school during the 2014-2015 school year.

Cost and Performance

Once staff became proficient at new methods of preparation, they found that the cost of using local, certified organic tofu or beans to be about equal to that of a conventional, non-local meat item—approximately $0.50 per entrée, according to Denise Agati. In addition, food service staff report that the organic, local product has a superior flavor, texture, and cooking ability when compared to alternative products, and that developing new recipes keeps them engaged and committed to their work.

The district continues to develop new plant-based recipes—roughly two per year. Recipes are menued each Thursday during the school year. As students' palates have developed,

Tuscan tomato pie at the Ithaca

staff have seen an increase in purchasing of plant-based entrees by students: during the 2013-14 school year about 10 percent of meals served (roughly 300) were plant-based meals served each Thursday.

Although student's palates have started to shift toward less processed, more scratch-cooked and plant-based foods, ICSD foodservice staff are keenly aware that change doesn't happen overnight. As a result, staff menu bean- and tofu-based entrees along side meat-based options. This gives students a range of choices and helps ensure participation rates stay level. The district hopes to expand plant-based options slowly over time.

At the same time, participating farmers report feeling inspired, knowing their products are being served in schools, and have been willing to take a smaller profit margin in order to offer prices that can work for the schools. And while this initial volume represents only modest sales for these vendors, the potential for growth with Ithaca and other districts represents a significant market opportunity for local growers.

Best Practices

- Find local partners that can help explore new locally grown foods and assist with the introduction of new recipes and recipe testing.
- Make sure to conduct thorough taste-testing with students of different ages before introducing new local items that students may be unfamiliar with.
- Allowing students to see, smell, and touch the raw ingredients increases their interest in trying the new recipes.

Ithaca City School District

Page 1 | Recipe | May 8, 2014

Recipe: 000103 CHINESE STIR FRY
Recipe Source: COOL SCHOOL
Recipe Group: ENTREES

Recipe HACCP Process: #2 Same Day Service

Alternate Recipe Name:
Number of Portions: 50
Size of Portion: SERVINGS

902471 KETCHUP	2 1/2 CUP	1. BLEND OR WHISK TOGETHER ALL THE SAUCE INGREDIENTS
050383 OIL, VEGETABLE	3 CUP	2. CUT TOFU INTO SMALL CUBES WITH THE SAUCE AND ALLOW THE MIXTURE TO MARINATE OVERNITE.
012698 SESAME BUTTER,TAHINI,KRNLS UNSPEC	1/4 CUP	3. THAW FROZEN VEGETABLES, DRAIN, THEN ADD TO TOFU AND STEAM FOR 10 MINUTES
011215 GARLIC,RAW	2 CUP	4. FOLLOW RICE DIRECTIONS
002030 PEPPER,BLACK	1 TBSP, ground	5. SERVE OVER RICE
016126 TOFU,FIRM,PREP W/CA SULFATE&MAGNESIUM CHLORID	14 LB	
050451 RICE, LONG GRAIN, BROWN, COOKED, WITHOUT SALT	50 .5 CUP	
016424 SOY SAU MADE FROM SOY&WHEAT (SHOYU),LO NA	2 1/2 CUP	
011130 CARROTS,FROZEN,UNPREPARED	3 GAL, slices	
051459 BROCCOLI, FROZEN, FLORETS	3 GAL	
011590 WATERCHESTNUTS,CHINESE,CND,SOL&LIQUIDS	1 GAL, slices	

*Nutrients are based upon 1 Portion Size (SERVINGS)

Calories	463	kcal	Cholesterol	*0.00*	mg	Protein	*20.98*	g	Calcium	*415.87*	mg
Total Fat	*20.72*	g	Sodium	727.86	mg	Vitamin A	*2624.43*	RE	Iron	*4.88*	mg
Saturated Fat	*3.46*	g	Carbohydrates	55.58	g	Vitamin A	19289.70	IU	Water¹	*269.55*	g
Trans Fat¹	*0.00*	g	Dietary Fiber	*13.80*	g	Vitamin C	*76.51*	mg	Ash¹	*4.54*	g

40.25%	Calories from Total Fat
6.73%	Calories from Saturated Fat
0.00%	Calories from Trans Fat
47.98%	Calories from Carbohydrates
18.11%	Calories from Protein

N/A - denotes a nutrient that is either missing or incomplete for an individual ingredient
* - denotes combined nutrient totals with either missing or incomplete nutrient data
¹ - denotes optional nutrient values

Miscellaneous		Attributes	Allergens Present	Allergens Absent	Allergens Unidentified
Meat/Alt	oz				? - Allergen 1
Grain	oz				? - Allergen 2
Fruit	cup				? - Allergen 3
Vegetable	cup				? - Allergen 4
Milk	cup				? - Allergen 5
Moisture & Fat Change					? - Allergen 6
Moisture Change	0%				? - Allergen 7
Fat Change	0%				? - Allergen 8

NOTICE: The data contained within this report and the NUTRIKIDS® Menu Planning and Nutritional Analysis software should not be used for and does not provide menu planning for a child with a medical condition or food allergy. Ingredients and menu items are subject to change or substitution without notice. Please consult a medical professional for assistance in planning for or treating medical conditions.

- Marketing materials such as flyers, PA announcements, and recipe-specific lesson plans help promote new recipes.
- Monitor the impact of local foods not only on costs but also on participation and the impact on your overall costs and revenues.
- Make sure to provide adequate training for foodservice staff as you explore new foods and motivate staff to motivate students to try something new.
- Experiment with alternative cooking methods. As the Ithaca Public Schools found out, steaming dry beans proved to be a less time-consuming approach for their staff than the more traditional methods of boiling dry beans.

Endnotes

1. Denise Agati, Ithaca Public Schools, personal communications. May 17, 2014.
2. Amie Hamlin, Coalition for Healthy School Food, personal communications, various dates, April and May, 2014.
3. http://www.healthyschoolfood.org/about.htm
4. http://www.healthyschoolfood.org/project_cool_school_food.htm
5. http://cporganics.com/
6. Erick Smith, Cayuga Pure Organics, personal communications, June 13, 2014.
7. Nick Gardener, Regional Access, personal communications, June 10, 2014.

PORTLAND PUBLIC SCHOOLS AND REGIONALLY GROWN LEGUMES AND GRAINS

Overview

The largest school district in Oregon, the Portland Public Schools (PPS), is composed of 47,000 students in 81 schools. PPS is a diverse district with 46 percent of children eligible for free or reduced-price meals. About half of its student body is white, 16 percent are Hispanic, 11 percent are African American, eight percent are Asian, and seven percent are multiracial. Portland's Nutrition Services[1] serves 11,000 school breakfasts, 20,000 school lunches and 1,800 suppers daily and employs approximately 240 staff, including seven registered dietitians, child nutrition program managers, food service leads, and central distribution personnel.

Portland Public School's Nutrition Services is taking many steps to put more locally and sustainably grown food on students' trays. Students have participated in the *Harvest of the Month* program since 2007. Each month, a regionally-grown fruit or vegetable is highlighted in the classroom and then served in the cafeteria. Nutrition Services also offers Local Lunch Days, which feature regionally grown and minimally processed foods, including antibiotic-free meat.

The most significant component of Portland's Farm to School efforts focuses on the procurement of foods offered in the cafeteria as part of normal meals on a daily basis. Over 30 percent of the food purchased—including fresh, preserved, and frozen items—comes from local farmers and local companies.

PPS' Nutrition Services partnered with the nonprofit organization Ecotrust,[2] the western regional lead for the National Farm to School Network,[3] to build its local purchasing program. Gitta Grether-Sweeney, Director of Nutrition Services,[4] says that she wanted to support local companies through food service procurement while introducing students to more minimally processed, locally grown foods. Through Ecotrust, the district was introduced to many regional growers and processors, including Truitt Family Foods, a certified sustainable food processor, and Shepherd's Grains, a cooperative of wheat growers using sustainable farming practices. Both vendors, along with a cluster of other suppliers, have played key roles as Portland has expanded its offerings of regionally grown legumes and grains.

Truitt Family Foods' Beans

Truitt Family Foods[5] is a food processor based in Salem, Oregon that incorporates principles of sustainability all along the supply chain from production to harvesting and processing. When the district first started buying from Truitt, they ordered canned green beans, pears, and plums. This soon expanded to include black beans, garbanzos, and a vegetarian chili. Truitt's beans are grown in northern Idaho and eastern Washington, with the specific grower labelled on each can, providing an unusual degree of transparency in the supply chain. Grether-Sweeney is able to order Truitt's products through PPS' broadline distributor, Food Services of America (now it is McDonald Wholesale Co.).

The district now offers bean salads, including a black bean and corn salad and a garbanzo salad, every three to six weeks. Vegetarian chili, made with several bean varieties by Truitt, is offered once every three weeks. The bean salads are counted as a vegetable, and the chili, served with cheese, is counted as a protein.

Rod Friesen, Director of Market Development at Truitt Family Foods,[6] says that his company sells to several other school districts in the Pacific Northwest, but reports that "Portland is unique in the sense that they are very clear on their mission and what they want to do. Then they figure out how to get it done. If they want to get products, they will figure out how to make it possible." This two-way communication between district and supplier has been particularly important with bean-based recipes, which have been somewhat challenging to introduce to students.

Grether-Sweeney says that bean-based recipes are unfamiliar to most students. Although Nutrition Services has offered taste testings, she says that it can be challenging to change student preferences in the cafeteria. She explains, "One thing we have found to be more effective is fresh fruit and vegetable program in classroom. That way they are not risking their lunch on trying something new—when they see an unfamiliar item they are going to pick something they know." As the students become more familiar with the bean-based recipes over time, Grether-Sweeney expects to see an increase in consumption. She is also working closely with Truitt to make adjustments to the recipes.

Friesen says that his company really values the partnership with Portland Nutrition Services: "Feedback about cost, packaging, and flavor goes directly back to the product development team and changes what we offer." PPS is currently

working with Truitt on recipes for hummus and other bean-based dips using regionally-grown products, which Grether-Sweeney hopes to offer to students in the fall.

Shepherd's Grain

PPS' Nutrition Services has also worked to expand its use of regionally grown grains, particularly wheat products. A key partner in this effort is Shepherd's Grain,[7] a cooperative of about 60 wheat growers from southern Alberta (Canada), the Pacific Northwest and southern California. All of their growers use sustainable farming methods and either are, or are becoming, certified by a third-party audit. PPS vendors currently use Shepherd's Grain flour in all pizza crusts, in hotdog, hamburger and dinner rolls, and a breakfast bar. PPS offers bread and other grain products on its menu every day. Pizza is offered once a month, which is typically the highest-participating day each month with 15-16,000 participants.

When PPS asked its vendors to use Shepherd's Grain flour in their recipes, Grether-Sweeney discovered that some vendors, like Portland's Fairlight Bakery (which produces a breakfast bar used by PPS and many other school districts), were already using Shepherd's Grain. Other vendors were surprisingly open-minded about making the transition.

Roadrunner Pizza, a Portland-based manufacturer of fresh-frozen pizza and pizza dough, began using the flour in all of its products after making the switch for PPS. Dave Caum, Plant Manager at Roadrunner Pizza, says that "PPS was a major factor in our decision to change our recipe. When they approached us with the idea to use a local, environmentally conscious product, it just made sense. It made so much sense that all our Roadrunner brand products include it today."[8]

Cauliflower pizza

Roadrunner has found that PPS is not the only institutional purchaser interested in local and sustainably-produced foods. Caum says that "consumers are paying closer attention to labels to see where the product is originating from and the ingredients used in the product." Tom Fitzgerald of Fairlight Bakery agrees: "There's a growing concern—people want to know where their food comes from."[9]

Grether-Sweeney reports that using Shepherd's Grain did result in a small price increase for some suppliers. However, she plans to continue purchasing products made with regionally grown and sustainably produced ingredients as long as she can fit it into her budget. And she is continually looking for new suppliers. In fall 2014, she hopes to offer locally-produced tortillas made with Shepherd's Grain flour.

Moving toward systemic change

PPS was able to build on existing business relationships with its local vendors to purchase regionally grown beans and grains, expanding the regional economic impact of district purchasing. PPS worked with its vendors to reformulate recipes and select products that meet its goals. The vendors interviewed for this case study clearly valued their two-way relationship with PPS.

Grether-Sweeney says that, while PPS will continue to offer special meals featuring local products, her goal is to make systemic changes to how Portland Public Schools procures food: "Not just once-a-month a pizza made with local flour, but every time I serve it. It's more cost-effective and efficient to do systemic change." She explains that most of the students are not aware that the foods they are eating in the cafeteria are grown by local farmers. Instead, students tend to choose familiar foods. While PPS has successfully expanded its Farm to School purchasing, the changes in the cafeteria need to be reinforced in the classroom, in the community, and at home. As Grether-Sweeney asserts, more education and outreach programs are needed to make children, teachers, and parents aware of how the changes in the cafeteria impact the health of students, the local economy, and the food system.

Best Practices

- Candid, two-way communication between school districts and their vendors can help lay the groundwork to explore mutually beneficial strategies for meeting district procurement needs. While these relationships can take time to cultivate, they can often result in innovative, unanticipated solutions.

- Communications from school districts can also provide vendors with important information about how the nature of market demand may be changing (for instance, toward more local or sustainably grown products). Ongoing feedback to vendors about the pros and cons of their product can also encourage continued quality improvements.

- When assessing the cost of incorporating ingredients like locally grown grains and legumes, it is important to look at the overall cost of the finished product, not only the difference in price per pound of a particular ingredient. Modest cost increases can often be accommodated by trimming costs in other areas.

- Efforts to make children, parents and teachers aware of Farm to School efforts can help build support and increase children's openness to new foods.

Endnotes

1. For more information on Portland Public School's Nutrition Services, see http://www.pps.k12.or.us/departments/nutrition/index.htm.

2. For more information on Ecotrust, see http://www.ecotrust.org/.

3. For more information on the National Farm to School Network, see http://www.farmtoschool.org/.

4. Gitta Grether-Sweeney, Portland Public Schools personal communication, May 19, 2014.

5. For more information on Truitt Family Foods, see http://truittfamilyfoods.com/.

6. Rod Friesen, Truitt Family Foods, personal communication, May 23, 2014.

7. For more information on Shephard's Grain, see http://www.shepherdsgrain.com/.

8. David Caum, Roadrunner Pizza, personal communication, June 9, 2014.

9. "Bake Works takes Fairlight Bakery brand to new heights." Vancouver SW Washington Business Journal. May 30, 2014. Available at http://www.vbjusa.com/home/spotlight/retail4/10179-bake-works-takes-fairlight-bakery-brand-to-new-heights.

MONTANA-GROWN LENTILS AND THE KALISPELL, MONTANA PUBLIC SCHOOLS

Overview

Located in rural northwestern Montana, the Kalispell Public School District has about 6,000 students, about 3,500 of which are served lunch daily.[1] The district places a strong emphasis on providing locally grown products, and its Farm to School program now involves 12 to 15 local producers. Lunch menus include more than a dozen varieties of local fruits and vegetables, as well as local whole grains, meat and dairy products. The Kalispell district prioritizes growers from very nearby areas whenever possible, followed by those located within the state and region.

Farm to School efforts are aided by the Montana Team Nutrition Program, a state arm of the USDA Food and Nutrition Service,[2] which provides technical training and other support to school nutrition services developing Farm to School programs.[3] The program is located at Montana State University and facilitated by the Montana Office of Public Instruction.

Montana-grown lentils

In 2011, Montana surpassed North Dakota to become the largest producer of lentils in the United States.[4] Recognizing the important role of lentils in Montana's agriculture, the Kalispell School District has made it a priority to incorporate locally grown lentils into its meal program. This has also helped the district meet the federal nutrition requirement to increase offerings of legumes.

Lentils are gluten-free, low on the glycemic index and high in fiber, iron and folic acid. Nutrition staff feel that lentils are more convenient to prepare than items like dried beans because they require only a stockpot and a range and do not require presoaking.

Their versatile flavor and texture make lentils a nutritious and inexpensive alternative or complement to meat, allowing the district to save money that can instead be used to purchase meats of higher quality.

Stage 1: The Montana Lentil Patty

With the goal of providing an "alternative, center-of-the-plate protein option" that would also support the local food system,[5] the district began exploring locally grown lentils with the Montana Lentil Patty in 2011. The patty, developed by the nonprofit Mission Mountain Food Enterprise Center (MMFEC), consisted primarily of locally grown ingredients including oats, barley, organic eggs, flax seed, bell peppers, onions and carrots. In practice, however, the lentil patty recipe faced a number of difficulties:

A lentil patty.

- The new product was introduced to students quickly when they were still quite unfamiliar with lentils. More testing and a slower introduction might have led to better student reception.
- The patties tended to dry out and crumble when held on heat for necessary periods of time. Even with specific instructions to counter this, the patties created extra challenges for kitchen staff.[6]
- Taste-testing in five K-12 schools found that students were generally not interested in non-meat burgers. Ultimately, the patty was better received by older students and is now used at institutions such as the University of Montana at Missoula.

Stage 2: Beef-Lentil Crumble

After mixed results with the Montana Lentil Patty, the district made a second effort in 2014 focused on a new Montana Beef-Lentil Crumble, a 1:1 blend of locally raised ground beef and Montana lentils also developed by MMFEC. Testing conducted by the district's FoodCorps Service Member found that students had a very positive response to the crumble and liked that lentils tend to take on the flavor of other ingredients they are cooked with.

Its two flavors, plain and taco, can be used in many dishes in place of straight ground beef. Members of the district staff report that the crumble has become quite popular among students.

Kalispell Public Schools purchased a total of 1,260 pounds of pre-cooked Taco Beef-Lentil Crumble in March and April of 2014. School kitchens simply need to reheat the product with some water to moisten it. The crumble has now been successfully taste-tested with five school districts in western Montana, with three purchasing the product for school lunches.

The crumble is a 100-percent Montana-grown product and costs the Kalispell district 44 cents per two-ounce serving. Alternatively, in instances when the district uses commodity beef and tomatoes and combines them with Montana-grown lentils (purchased at $1.53 per pound), the cost is approximately 19 cents less per serving than the 100-percent Montana product.

For purposes of the federal nutrition standards, the district counts lentils as a vegetable when served in the salad bar, and as a protein when served as a meat alternative. The district's central kitchen provides lentils to its high schools and middle schools two to three times per week. Satellite schools incorporate them into ground beef dishes at least once weekly.

Product Development and Supply Chain

Several partner organizations have played critical roles in the district's efforts to use locally grown lentils.

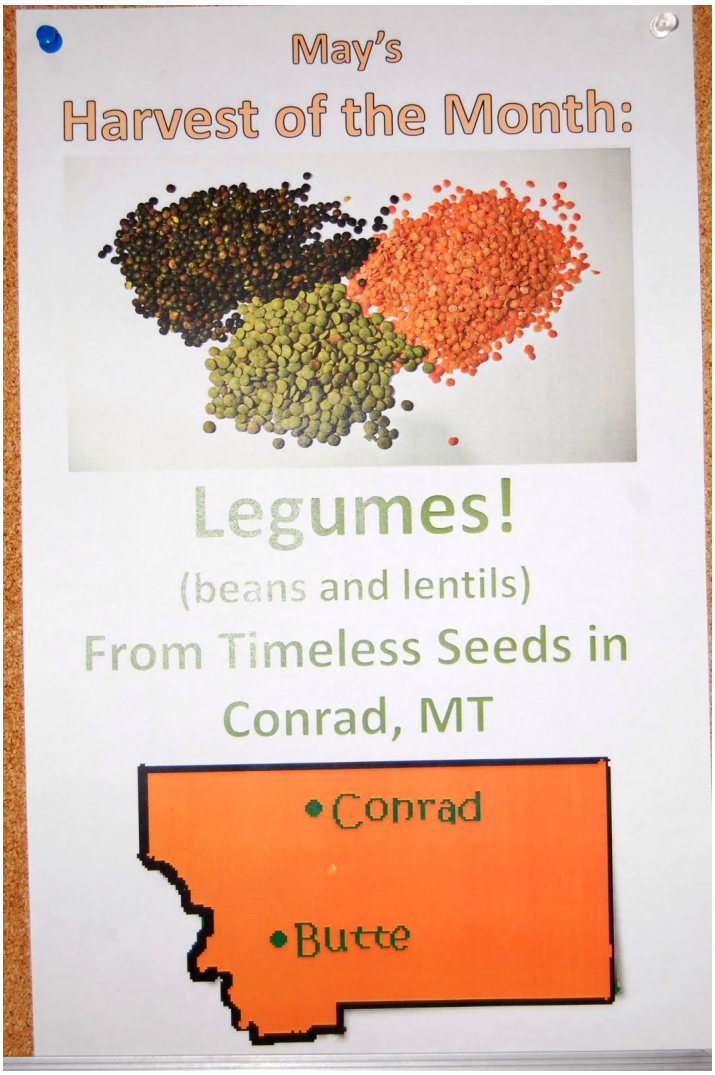
- Grower/Aggregator/Processor: At its processing facility about 200 miles away from Kalispell, Timeless Seeds, Inc. processes and distributes lentils from as many as 16 growers within a range of about 500 miles.[7] The company is able to provide traceability back to individual farms of origin, enabling interested buyers to know where the product is coming from. Lentils are sold and delivered to the district in 25-pound bags.

- Distributor: The Western Montana Growers Cooperative (WMGC), a coalition of over 40 local producers, handles distribution. The co-op distributes a large variety of local products to the Kalispell School District, other districts in western Montana and a range of other institutional and retail accounts. The K-12 market presently accounts for about five percent of WMGC's sales and is growing.[8]

- Product Developer: Mission Mountain Food Enterprise Center (MMFEC)[9] is a food processing, research and development organization that has been key to developing products that use Montana-grown foods. MMFEC connects local food producers and processors with buyers, trains food entrepreneurs, provides food processing facilities to "incubate" new food products, and develops products to suit the needs of its clients while expanding market opportunities for Montana products and food businesses.[10] The Enterprise Center processes the pre-cooked lentil-beef burger for sale to the Kalispell schools, with distribution provided by the Western Montana Growers Cooperative.

Education and Promotion

FoodCorps Montana has also been a key player in supporting Kalispell's work with Montana-grown lentils and other Farm to School foods.[11] Among other roles, members of FoodCorps Montana and the Montana State University Dietetic Internship feature a Montana crop on a monthly basis as part of the Montana Harvest of the Month series.[12] They create lesson plans and visual materials to be displayed in schools as promotional and educational resources. They have also supported taste-testing, among other activities.



Poster promoting lentils.

Best Practices

- Tenacity and a willingness to experiment with creative applications of lesser-known products can increase the rate of acceptance among students. Kalispell students were more likely to try and like lentils when the new ingredient was slowly incorporated into other dishes that they already enjoyed. This was more effective than introduce an unfamiliar all-lentil product "cold."

- The Kalispell Food Service staff brought a strong interest in and commitment to their area's agricultural system and local economy, which helped them weather initial challenges with new product introductions.

- Recognizing the offerings and limitations of one's local food supply can help districts determine a definition of "Farm to School" or "local" foods that is appropriate to a district's unique circumstances. In Kalispell's case, they prioritize sources that are quite close to their district but reach out statewide or regionally as needed given product availability.

- External partners like Mission Mountain Food Enterprise Center, FoodCorps Montana and the Western Montana Growers Cooperative can be key to making district efforts successful. Working with a product developer (like the Mission Mountain Food Enterprise Center) meant much less legwork for the school district as the district explored applications for locally grown lentils and was key in finding suppliers and working out distribution.

- Particularly where a supply chain involves several players working in coordination, taking the time for all players to develop a mutual understanding of each other's aspirations, priorities and limitations is key to bringing new local foods into a school district effectively.

- As with the other case studies, the Kalispell example highlights the importance of having a food processor in the region that has the technical capacity to process legumes into a form that can work for schools, the ability to provide an appropriate level of supply chain transparency, and the ability to provide product in needed quantities. Without the needed processing and distribution capacity, it can be very challenging to bring products like local legumes and grains into K-12 environments even if they are grown plentifully in a school district's region.

Endnotes

1. Montague, Jenny, MS RD. Food Service Director, Kalispell Public Schools. Personal communications, various dates in March and May, 2014.

2. "Team Nutrition," U.S. Department of Agriculture. Available at: http://www.fns.usda.gov/tn/team-nutrition. Accessed June 2, 2014.

3. "Farm to School," Montana Office of Public Instruction. Available at: http://opi.mt.gov/Programs/SchoolPrograms/School_Nutrition/browse.html?gpm=1_3. Accessed May 27, 2104.

4. "Annual Statistical Bulletin," U.S. Department of Agriculture. Available at: http://www.nass.usda.gov/Statistics_by_State/Montana/Publications/Annual_Statistical_Bulletin/2012/2012_Bulletin.pdf. Accessed May 20, 2014.

5. "The Montana Lentil Patty," Lake County Community Development Corporation. Available at: http://www.lakecountycdc.org/The_Montana_Lentil_Patty. Accessed May 27, 2014.

6. Farmer, Shay. Food and Agriculture Coordinator, Mission Mountain Food Enterprise Center, Lake County Community Development Corporation. Personal communications. April 22, 2014.

7. Oien, David. Co-founder, CEO and General Manager, Timeless Seeds, Inc. Personal communications. May 14, 2014.

8. Prather, Dave. General Manager, Western Montana Growers Cooperative. Personal interview. May 20, 2014.

9. "Mission Mountain Food Enterprise Center," Lake County Community Development Corporation. Available at: http://www.lakecountycdc.org/MMFEC%20Landing. Accessed May 27, 2014.

10. "Overview and History," Lake County Community Development Corporation. Available at: http://www.lakecountycdc.org/Overview_and_History. Accessed May 27, 2014.

11. "About Us," FoodCorps Montana. Available at: http://mtfoodcorps.ncat.org/about-us/. Accessed September 1, 2014.

12. Manly, Jessica. FoodCorps Service Member, National Center for Appropriate Technology and Kalispell Public Schools. Personal communications. July 3, 2014.

ALASKA GROWN BARLEY AND THE FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

Overview

Located in interior Alaska, the Fairbanks North Star Borough School District serves daily lunches for over 5,000 of its 14,300 students.[1] The district includes 35 public, charter, magnet, and specialized schools that range in size from a rural elementary school of fewer than 100 students to a high school of 1,200 students.

Fairbanks' efforts to incorporate Alaska Grown foods into its meal program is part of an extensive Farm to School movement in Alaska.

The state Legislature passed legislation to formally create the Alaska Farm to School program in 2010.[2] This included the appropriation of $3 million to the Nutritional Alaskan Foods in Schools pilot program both in Fiscal Years 2013 and 2014. The funding provides reimbursements[3] to individual school districts for the procurement of a wide variety of Alaska Grown and raised products including finfish, shellfish, livestock, milk, fruits, vegetables, native produce and berries that are commercially harvested, poultry and grains. The Fairbanks North Star Borough School District was allocated approximately $208,000 of this funding each year.

A chicken patty on a 51 percent whole grain bun

Two state agencies play key roles in facilitating the procurement and use of local food products in the state's public schools. The Alaska Division of Agriculture within the Department of Natural Resources runs the Alaska Farm to School program. The Department of Commerce, Community, and Economic Development and the Division of Community and Regional Affairs (DCCED, DCRA) administers the Nutritional Alaskan Foods in Schools program (NAFS).

From the outset of the program, the state Farm to School coordinator worked to connect potential vendors and school partners through tours of local farms and school kitchens. These have proven very instrumental in giving vendors and foodservice staff the opportunity to build relationships and understand each other's capabilities. The program has also tailored recipe development for districts with kitchens of different sizes and capabilities[4] and generated a variety of promotional materials[5]. During the 2011-2012 school year, the Alaska Grown products most procured statewide in terms of value were seafood, carrots, beef, lettuce and pork.

Recipe Development and Food Preparation using locally grown barley

As Fairbanks began its Farm to School program, one of the first products it sought to incorporate was locally grown barley. The state Farm to School coordinator was instrumental in identifying The Alaska Flour Company as a potential partner for the district. The district began to incorporate Alaska Grown barley flour into hamburger buns and rolls in the fall of 2012. Barley can be stored easily and is available for purchase year-round, making it suitable for use throughout the school year.

The University of Alaska Fairbanks Cooperative Extension Service played a key role in the process, operating under a contract with the state Division of Agriculture's Farm to School Program to develop recipes featuring Alaska Grown products. Extension's test kitchen staff were hired by the Farm to School program to develop the hamburger bun recipe for the Fairbanks North Star Borough School District. The buns use 15 percent barley flour and 36 percent whole wheat, satisfying federal guidelines that require grain products in school meals to contain at least 50 percent whole grains.

Throughout the development process, Extension worked with district staff in the district's central kitchen to ensure that the recipes would be workable on-site. The recipe was tailored to suit the district's existing staffing capabilities and infrastructure, including a newly built central kitchen facility that was equipped to produce bread products in-house.

51% Whole Grain Hamburger Buns

Yield: 60 hamburger buns – 3”x 3”

1/4 cup + 4 teaspoons spice, active dry yeast
4 cups water, 90 degrees Farenheit
1 cup granulated sugar
6 2/3 cups all purpose flour
2 cups Alaska Grown barley flour
4 3/4 cups whole wheat flour
1 tablespoon salt
1 cup non-fat powdered milk
3/4 cup oil, vegetable
2 tablespoons honey

1. Mix all ingredients on lowest setting of electric mixer with dough hook attachment for 5 minutes.
2. Increase speed to medium/medium high and knead for 15 minutes.
3. Remove dough and let set 20 minutes on floured surface.
4. Process into hamburger buns or rolls according to your facility procedure.
5. Raise at 100 degrees Farenheit for 60 minutes.
6. Preheat oven to 350 degrees Farenheit.
7. Bake for 10 minutes or until golden brown.
8. Remove from oven, let cool on cooling rack.

Nutrition Facts

Serving Size (57g): **1 roll**
Servings Per Container

Amount Per Serving

Calories 160	Calories from Fat 35
	% Daily Value*
Total Fat 4g	**6%**
Saturated Fat 0.5g	**3%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 140mg	**6%**
Total Carbohydrate 28g	**9%**
Dietary Fiber 3g	**12%**
Sugars 5g	
Protein 4g	

Vitamin A 0% • Vitamin C 0%
Calcium 2% • Iron 8%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

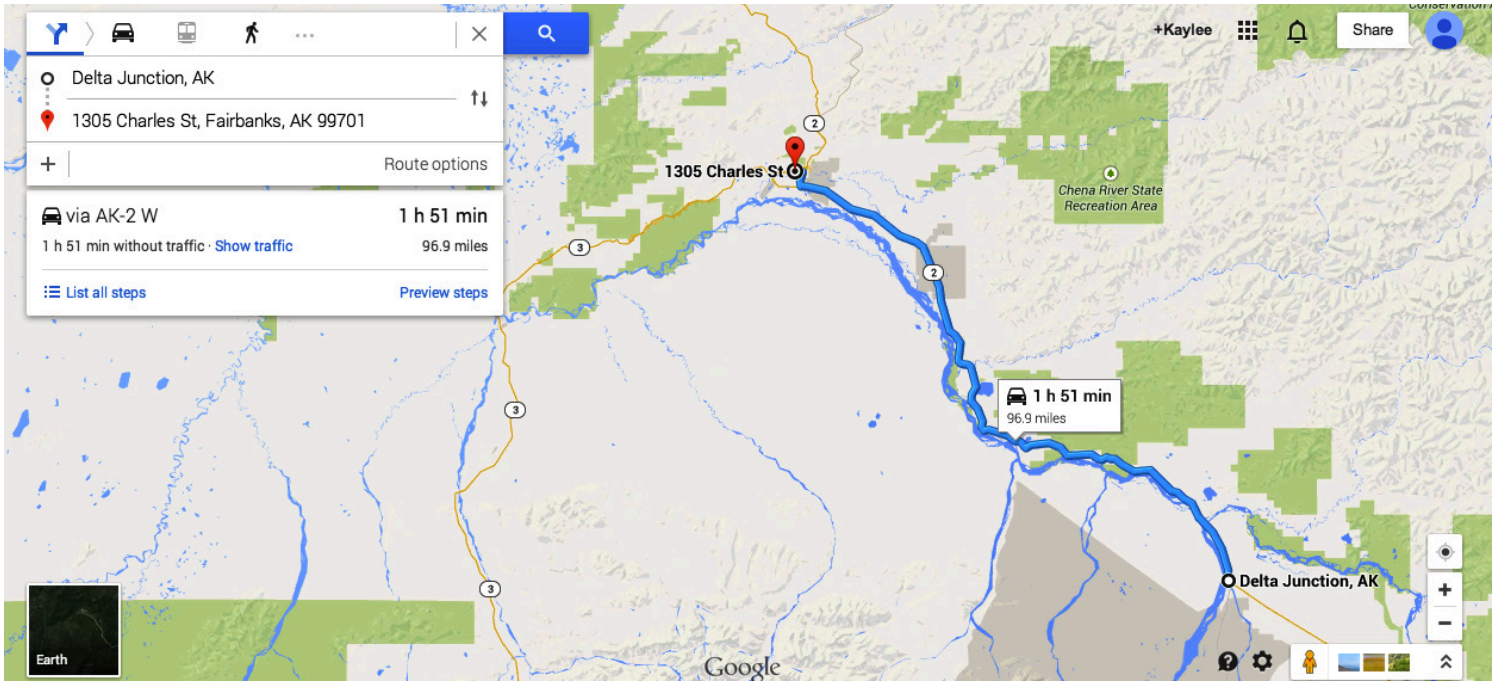
		Calories: 2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Extension tested the new recipe with students and found that students were widely receptive to the new product. The buns have a look and taste that are familiar to students, so it was not immediately apparent to many that the product had been prepared with whole grains.

At the district’s central kitchen, staff prepares 8,000 buns and rolls each week, typically offering them on school menus at least two to three times per week. The district is also beginning to offer breadsticks prepared by simply cutting the same dough recipe into a different shape.

The 51 percent whole grain hamburger bun using locally grown barley costs the district 11.2 cents per bun. This compares to 10.6 cents per bun using the USDA commodity wheat flour recipe that it replaced. The local barley flour costs the school district 65 cents per pound, compared to 42 cents per pound for commercially purchased wheat flour. Recipes for the hamburger bun in different batch sizes are available at http://dnr.alaska.gov/ag/ag_SchoolFood.htm.



A grains and pulses supply chain in Alaska

When the 51 percent whole grain hamburger bun recipe was introduced, the Fairbanks district promoted the product in its school cafeterias. Menus also indicate that the district serves local products when possible.

The vendor

Located approximately 97 miles away, the Alaska Flour Company supplies the district with 2,000 to 2,500 pounds of hulless[6] barley flour each year.

The family-owned company grows and processes all of the locally grown barley served in the district, providing an easily traceable supply chain from the grower to consumer. It operates the only commercial flour mill in the state of Alaska, providing a critical link in the chain from farm to fork.

In combination with other deliveries to the Fairbanks area, the vendor delivers the product to the district's central kitchen. The district orders several hundreds pounds at a time, which helps to ensure that direct deliveries to the district are financially viable for the vendor. While this model requires an investment of time and resources on behalf of the producer, the company asserts that it fosters a close and mutually beneficial relationship with the school district.[7]

The Alaska Flour Company also supplies hot breakfast programs at a variety of Alaska school districts (including Juneau, Northwest Arctic, Gateway and Petersburg, among others) with its Cream of Barley Breakfast Cereal. Recently, it began to also sell a pancake mix. It developed both products with the K-12 market in mind. Schools now account for approximately 15 percent of the company's business.

Best Practices

- To give yeast breads the proper consistency, barley flour must be mixed with wheat flour. But non-yeast quick breads such as muffins, pancakes, biscuits and scones can be made entirely from barley flour, so adding those items to school menus could increase use substantially.

- The partnership with University of Alaska Fairbanks Extension was key for developing suitable recipes. Tailoring the recipe to the district's existing equipment and staff capabilities also made introducing the product much more workable for foodservice staff.

- It can be challenging for districts as large as Fairbanks North Star Borough to identify farmers and vendors that are capable of fulfilling substantial orders. Assistance from the State has been particularly helpful in identifying vendors that operate at a scale to meet Fairbanks' needs.

- Alaska's school districts are spread across a vast area with widely varying topographies, so meeting distribution needs statewide can be complex. Fortunately, funding through the Nutritional Alaskan Foods in Schools program that is administered by the Department of Commerce was designed to allow districts to cover shipping costs.

- The use of local barley products would not have been possible without the existence of the local mill operated by the Alaska Flour Company. A loan from the Alaska Agricultural Revolving Loan Fund[8] helped cover the mill's start-up costs, while the state Farm to School program served as an informational resource throughout the process and helped the company address state regulations. This is a good example of how supply chains for local foods can be facilitated through the provision of financing programs for suppliers and processors that play key roles in bringing local foods to market in a form that can be used effectively by local buyers like schools.

Endnotes

1. Rouse, Amy. Director of Nutrition Services, Fairbanks North Star Borough School District. Personal interview. April 23, 2014.

2. An Act establishing the farm-to-school program in the Department of Natural Resources, and relating to school gardens, greenhouses and farms, H.B. 70, 26th Legislature (May 4, 2010) Available at: http://dnr.alaska.gov/ag/FarmToSchool/HB0070Z.pdf.

3. "Nutritional Alaskan Foods in Schools," Department of Commerce, Community, and Economic Development. Available at: http://commerce.alaska.gov/dcra/grt/NAFS.htm Accessed May 3, 2014.

4. Herron, Johanna. Former Farm to School Program Coordinator, State of Alaska - Division of Agriculture. Personal interview. April 30, 2014.

5. "Farm to School Local Food Hero," Alaska Department of Natural Resources. Available at: http://dnr.alaska.gov/ag/ag_heroFTS.htm. Accessed on April 23, 2014.

6. The "hulless" variety requires less processing than "hulled" barley because its outer, inedible hull grows more loosely on the kernel and detaches during harvesting while keeping more of the bran intact.

7. Wrigley, Bryce. Founder, Alaska Flour Company. Personal interview. April 18, 2014.

8. "Agricultural Revolving Loan Fund," Alaska Department of Natural Resources. http://dnr.alaska.gov/ag/ag_arlf.htm. Accessed June 1, 2014.

HOPKINS, MN PUBLIC SCHOOLS AND MINNESOTA-GROWN WHEATBERRIES

Overview

Located just west of Minneapolis, MN, the Hopkins Public Schools system serves nearly 7,400 students. The district is composed of six elementary schools, one magnet Chinese immersion school, two junior high schools and one high school. Thirty-eight percent of the district's students qualify for free or reduced-price meals.

Hopkins Public Schools strives to offer menus composed of minimally processed foods. Approximately 90 percent of the food served in the high school is prepared from scratch, as is 75 percent of the offerings in the district's elementary and junior high schools. The district purchased approximately $290,000 of locally grown and raised foods for the 2013-14 school year, including milk, yogurt, apples, tomatoes, meat, poultry and wheatberries.[1] The district aims to inspire students with nutritious food and uses locally grown products whenever possible given their freshness and taste.

Hopkins' kitchen facilities include nine on-site full preparation kitchens.

Recipe development and kitchen prep

Wheatberries are the entire kernel of wheat, including the bran, germ and endosperm (and excluding the hull). Similar in appearance to brown rice, cooked wheatberries have a chewy texture and a nutty, earthy flavor and contain significant quantities of fiber, protein and iron.

The local wheatberry recipes used most frequently by the Hopkins district are a lentil-wheatberry soup and a wheatberry Waldorf salad. Recipe development and taste-testing takes place each summer when Hopkins foodservice staff gather to discuss potential modifications to current recipes and brainstorm ideas for new recipes. Students who eat cafeteria lunches in summer school programs taste-test the recipes during the normal lunch period. Findings are used throughout the following school year when new and modified recipes are implemented.

When the relationship began between the local wheatberry vendor and Hopkins Public Schools, the vendor also provided the district with various recipes, including a lentil-wheat-berry soup that the district modified and continues to serve at the junior high and high schools. Given the mix of grains and pulses, this dish is high in protein, fiber and nutrients.

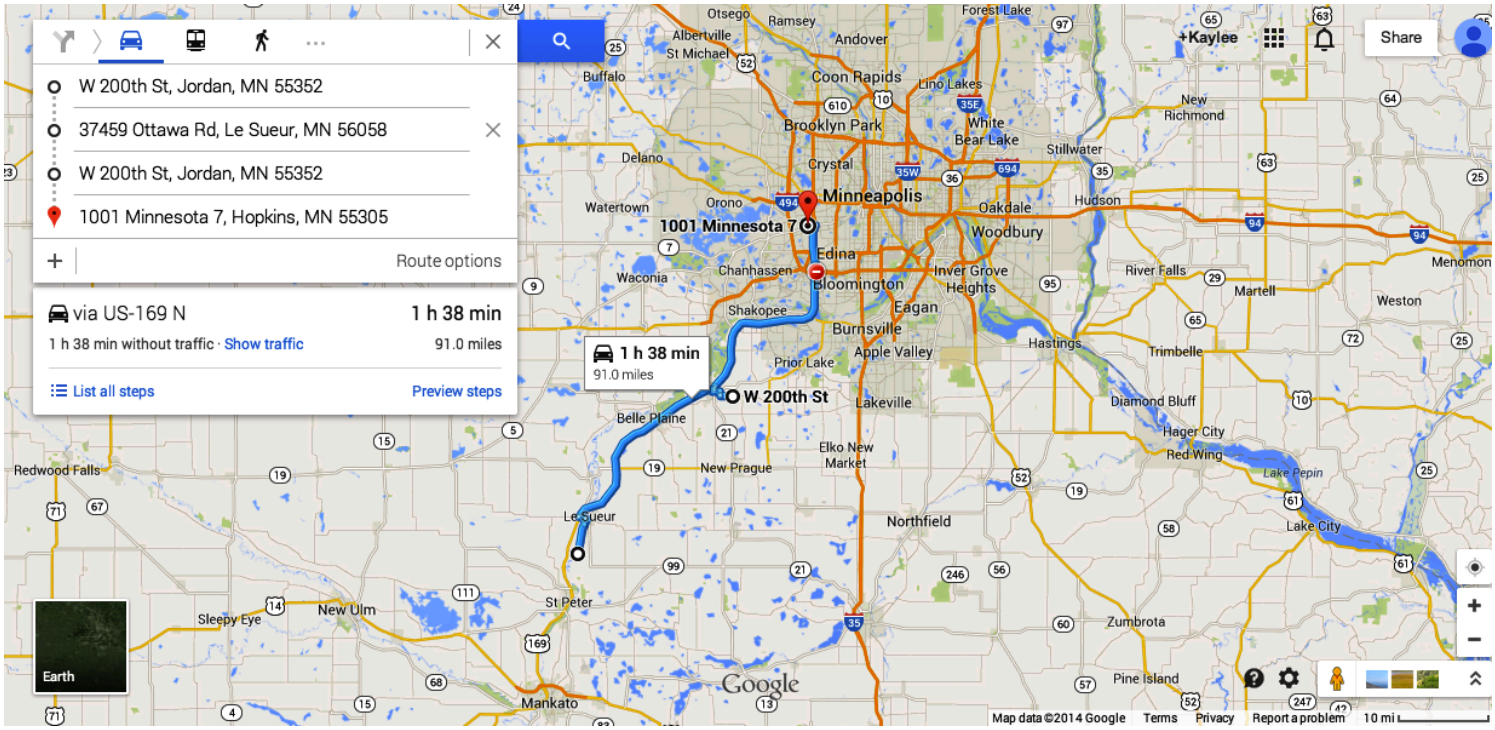
School kitchens prepare the wheatberries in steamers and on the stovetop, using its existing equipment and facilities. Staff did not need any additional training to feel comfortable preparing the wheatberries. Wheatberries are also appealing for school kitchens to work with because they have a long shelf life and can be stored in freezers for long periods if larger quantities are ordered.

The supply chain

Sutton Ridge Farm[2,3] supplies locally grown wheatberries to the district. This organic, family-run farm is located 30 miles from the community of Hopkins. The farm also produces 100 percent grass-fed beef, milk-fed pork, free-range eggs, organic berries and wool products.

Haas Seed Processing in Le Sueur, Minnesota cleans and packages wheatberries from Sutton Ridge Farm. The facility handles a range of products and specializes in organic and non-GMO food grains. After Haas cleans and bags the wheat berries, the product returns to Sutton Ridge Farm. District staff place orders directly with Sutton Ridge, and farm staff deliver the product to the district for a fee, providing full transparency about the product's source.

The relationship between the vendor and district staff formed as a result of an event hosted by area nonprofits several years ago to make connections between producers and K-12 buyers.



A grains and pulses supply chain in Minneasota

Education and Promotion

Hopkins has also supported the introduction of new foods through its innovative Food Coaching program.[4] Through the program, nutrition staff and parents/guardians encourage children to taste new foods and educate them about healthy options. A training manual offers strategies and talking points that can be used with students in the cafeteria.[5]

Foodservice staff report that students generally enjoy locally grown foods and appreciate the positive impact that cooking with local products has on the local food system. Hopkins' Director of Student Nutrition Services, Barb Mechura, notes that it is not uncommon for parents to contact the foodservice office in search of recipes for dishes like squash and Brussels sprouts after students share their school lunch experience at home with their parents. Some parents have even said that their children's school food has inspired them to do more scratch cooking at home with locally grown ingredients.

The innovative work of the school nutrition staff has also caught the attention of teachers, including those focused on health and nutrition. Every year, the district's director of school nutrition services is also invited to speak to a journalism class as students conduct research for an article assignment on school lunches.

Best Practices

- The district has found that some wheatberry dishes are challenging to make appealing to students' tastes without added sugar. For instance, a breakfast porridge made with oatmeal and wheatberries was introduced at the high school but did not go over well with students. Adding sugar to the recipe might have improved student reception, but the district opted to discontinue the dish altogether rather than add the sugar.

- Most students were unfamiliar with wheatberries when the district began introducing them. Foodservice staff have tried successfully to overcome this by adding wheatberries to existing recipes that students already enjoy such as popular soups and salads.

- The delivery charge for small product quantities can present a challenge to the overall cost of the product. The district has been paying the supplier $1.09 per pound for the wheatberries, but a $25 delivery fee for a 25-pound order almost doubles the total price. The district has found ways to mitigate this by placing larger, less frequent orders. Hopkins has sufficient cold storage space, making larger orders a viable option for them.

- Staff commitment to local sourcing is a key success factor, given the additional legwork that may be involved in identifying suppliers, testing recipes and purchasing outside familiar channels. Hopkins has also made a concerted effort to hire staff with cooking skills. This encourages creative applications of local products in the recipe development process and facilitates high-quality cooking.

- Outside organizations, like local farm organizations, nonprofits or University Extension Services can be helpful partners in identifying potential suppliers and fostering relationships in the local food system.

- Making the school dining experience enjoyable for students can excite both students and parents about the benefits of local foods. Hopkins has found that strong promotional efforts and engagement strategies like their cafeteria Food Coaching program have been very helpful in generating student and parent support for expanded Farm to School programming.

Endnotes

1. Mechura, Barb. Director of Student Nutrition Services, Hopkins Public Schools. Personal interview. July 8, 2014.

2. "Home", Sutton Ridge Farm. Accessed June 30, 2014. Available at: http://www.suttonridgefarm.com/.

3. Jensen, Jennifer. Owner, Sutton Ridge Farm. Personal interview. June 12, 2014.

4. "Volunteer to Become a Food Coach", Hopkins Public Schools. Accessed June 30, 2014. Available at: http://www.hopkinsschools.org/servicesdepartments/student-nutrition-and-lifestyle-services/volunteer-become-food-coach.

5. "Food Coach Manual", Hopkins Public Schools. Accessed June 30, 2014. Available at: http://www.hopkinsschools.org/sites/default/files/public/downloads/page/food_coach_manual_revised.pdf.