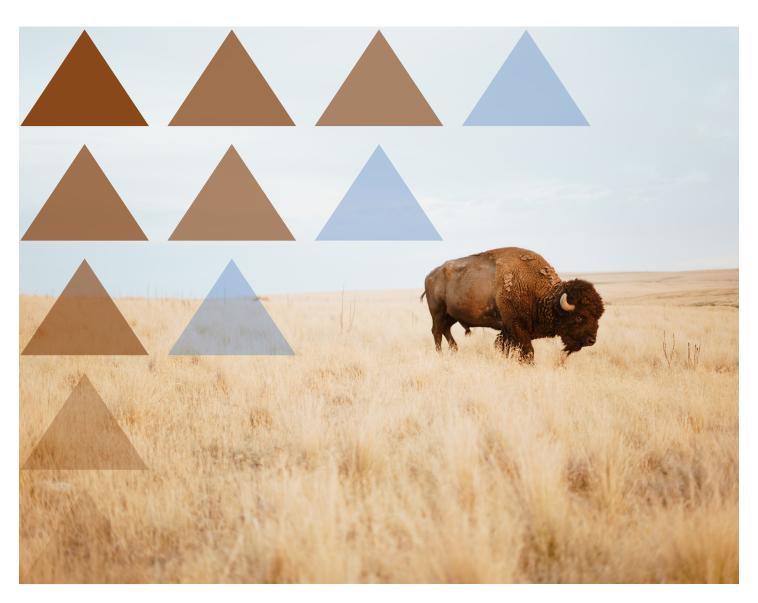
TRADITIONAL FOOD STORAGE

...... On the Northern Plains



TRADITIONAL FOOD STORAGE ON THE NORTHERN PLAINS
FINDING THE SOLUTIONS FOR THE FUTURE THROUGH TRADITIONAL PRACTICES





EXECUTIVE SUMMARY

The COVID-19 pandemic exacerbated the food system issues that Indian Country faces. Rural tribal communities were hard-hit during supply chain disruptions that led to increased food insecurity and reduced access to fresh produce. Also infrastructure issues arose when trying to store large food donations creating a "boom and bust" food supply effect.

First Nations Development Institute invests in and creates innovative institutions and models that strengthen asset control and support economic development for American Indian people and their communities. In fall 2021, First Nations awarded 14 grants under the Northern Great Plains Food Storage Grant Opportunity. Grants were awarded to food pantries focused on serving Native communities to provide support for their food storage efforts.

This report summarizes key findings from qualitative interviews with First Nations' grantees, as well as a literature review summary on traditional food storage methods on Indigenous Peoples in North America.

FOOD STORAGE IN THE NORTHERN PLAINS

















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INTRODUCTION



FOR THOUSANDS OF YEARS,
INDIGENOUS PEOPLE HAVE BEEN
STORING THEIR FOODS IN SAFE
AND INNOVATIVE WAYS TO FEED
THEIR COMMUNITIES.

Traditionally, Native people have utilized dry storage by drying meats, vegetables, roots, and other foods. Additionally, Native people have preserved food with root cellars, middens, and other underground storage spaces.

However, the concept of storage was different than our ideas around storage today. The practice of not taking more than you needed and sustainable harvesting was common for most tribes, which meant less needed to be stored. Living in this seasonal way meant that storage was only needed to survive less fruitful times, like winter.

Indigenous food systems have shifted drastically since the time of our ancestors. Through colonization, Native people were forcibly removed from their homelands and with this, their foodways. The advent of the reservation system and commodity foods forced Native people away from their traditional foods and processes. The loss of gathering and hunting lands led to a decrease in access to fresh, seasonal, traditional foods. This meant that Native people had to rely on non-Native methods of food storage because the seasonal diets of our



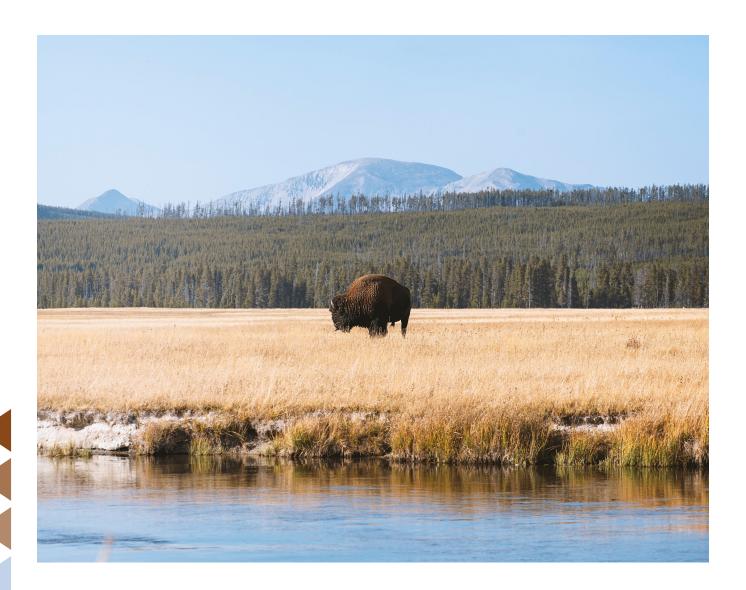
ancestors were disrupted. This has been the story of Native food systems from the 1800's until 2020.

While many of these traditional food storage traditions are carried out today, other methods have been utilized to varying degrees. Before 2020, Indigenous food systems relied heavily on refrigeration and frozen storage to preserve food that travelled many miles to get to Native communities. This created needs for electricity, facilities, and other infrastructure that Indian Country has been the last to receive.

Since the COVID-19 pandemic, tribes have had to face a myriad of challenges to their food system and storage systems. Food infrastructure that

the rest of the country relied on was often non-existent in Indian Country. Tribal communities are often remote and rely on food to be transported into their communities. During supply chain fluctuations since 2020, tribal communities have faced bare shelves and a lack of fresh food. However, in the face of these challenges, many communities have crafted resilient, innovative methods to continue to feed their people.

In this report, we will highlight traditional methods of food storage utilized by Native people across the United States, with an emphasis in the Northern Plains, both since time immemorial and carried out today since the COVID-19 pandemic.



SUMMARY OF METHODS AND OUTREACH

In the first stage of the project, First
Nations Development Institute and
Tahoma Peak Solutions (TPS) conducted
a literature review of traditional food
storage techniques practiced by
Indigenous peoples across the Americas.
This review informed the qualitative
interview questions for the next stage of
the project. As a reference, all sources
are listed in the bibliography at the end
of the report.

Once the qualitative questions were finalized, First Nations and TPS conducted interviews with First Nations' Northern Plains grantees. Interviews generally lasted one hour and were conducted over Zoom. In total, 13 out of the 14 grantees participated in the interview process. One to two individuals from each grantee project attended the interviews.

INTERVIEW QUESTIONS

- How did your community store foods traditionally? Which processes do you continue?
- Can you describe your community, who you are, and how food plays into that?
- How has your food system changed since your grandparents' time?
- When we say food supply chain, what comes to mind?
- What do you want your own community's food supply chain to look like?
- What food storage solutions have you tried or been offered that were not helpful to your and your community's needs?
- What does food storage mean to you? How does it take shape in your community and with your foods?
- How does culture and tradition play into your approach to food storage?
- What types of foods do you dry? What does this process look like? Why do you do it this way?
- What types of food do you refrigerate? Are there limitations or challenges related to refrigeration for you?
- What types of food do you freeze? Are there limitations or challenges related to freezing for you?
- How did COVID-19 shift your food system? Did it impact storage?
- What would have made it easier to weather the storm of COVID-19?
 Resources or access?
- What lessons did you learn from the pandemic?

TRADITIONAL FOOD STORAGE OF INDIGENOUS COMMUNITIES

Food Preservation and Storage

Indigenous people have been using traditional methods for preserving and storing food for millennia. Examples of these methods include drying, smoking, using root cellars or other caches. More conventional methods are also used, including canning, freezing, and other food preservation techniques. Below are examples of food preservation and storage techniques used. This section will discuss the traditional methods of food storage across Indian Country.

Drying

Indigenous communities were aware that water and moisture are conducive environments for fungus and bacteria to grow. Thus, their storage methods often involved drying or dehydrating food. There are several techniques for drying foods like fish, game, berries, and other plants and animals. Many methods include using sun, wind, or fire (smoke). Eastern Woodland communities demonstrated a diversity of innovative food storage methods, including drying, smoking, curing, and using stones to dehydrate meats like fish.

The two main ways of drying food for these communities was with heat energy from the sun and heat energy from fire. Foods such as fruits were often sun-dried, while meats and vegetables were more likely to be preserved using smoking methods. Other methods included parboiling, a quick boil, and parching; fast-drying by roasting or charring were used to preserve nuts, seeds, corn, beans, wild rice, and other grains. This method was effective in killing bugs and larvae already found in the food before the drying stage. These methods are still used today when preparing foods such as wild rice for long-term storage (Diemer-Eaton, 2014).

In a review done by the Food Safety
Network on Safe Preparation and
Storage of Aboriginal Traditional/Country
Foods, meat and fish were most often
smoked outdoors with the sun and wind
or using racks over low fires. All storage
processing was done with great intention
and care, as safe food practices were
taken very seriously for community foodsharing and the risks of poorly stored
food were known. Other meats, like deer
or buffalo meat, were also traditionally

sun-dried. However, in modern times this practice is now more commonly done through a food dehydrator (Saboe-Wounded Head, 2008).

In Northwestern California and Southwestern Coastal Tribes of Oregon, traditional techniques of processing and storing fish also included drying and smoking. For smelt, as an example, the women dried the fish at temporary camps that were located along the beaches. This drying process took two to three days depending on the weather. The fish were then taken back to villages and stored. Salmon were processed by splitting, gutting, and cutting the fish into pieces that would then be smoked or sundried outdoors or inside smokehouses. Processed and stored foods were kept in houses that functioned as storage facilities. These preparation and storage methods provide quick and nutritious food throughout the year (Tushingham & Christiansen, 2015).

The Diné people of the Southwest have used drying methods to store precious white corn to make a food called "neeshjizhii." Neeshjizhii is made by steaming white corn underground. First, a fire is lit to warm the soil and once the ground is hot enough the fire is moved, and a pit is dug in the ground for the corn. Some pits are dug large enough to fit a

human inside and can fit thousands of bushels of corn at one time. Once the corn is inside the pit, water is added to create steam and then the pit is covered up and another fire is built on top, burning for eight to 10 hours. Once this process is complete, the corn is removed and laid out to dry. Once dried, the neeshjizhii can be stored indefinitely and easily boiled to activate again. This method is especially effective for keeping away insects (Totiyapungprasert, 2021).

Many other traditional Diné foods are still prepared for later use by drying, such as chil'chin (sumac berries) and Navajo tea. Other foods like peaches, apricots, and other fruits were sliced open and placed on rocks to dry in the sun while an assigned family watched over them to protect them from animals and bugs (Palmer, 2021).

In the Northern Plains, foods such as whole turnips with roots intact would be braided and hung to dry. Additionally, the turnips were sliced into circles and threaded into a "necklace" and then hung to dry. These were common methods to preserve foods for the winter. Teas were also dried for storage and were very important during the winter months to combat colds or other illnesses.

Caches/Cellars/Pits

Another very common storage method was the use of cache pits. Cache pits are a technological storage method used by many Indigenous communities. Cache pits are large subterranean pits, usually lined with bark, clay, reeds and grasses and used to store foods such as dried meats, plants, seeds, dehydrated foods, and other materials. Some communities may have cleaned their storage pits with fire between uses to prevent mold and bugs. The pits varied in depth depending on location. In upper Michigan, cache pits tended to be around 4 feet deep while Lenape pits, in what is now New Jersey, could get up to 8 feet deep. The construction of these storage facilities required important ecological knowledge and understanding of the environment on behalf of Indigenous people. Cache pits provide a means of safely storing seasonally abundant resources and extending their shelf life after processing by providing for over winter storage.

Cache pits were used by Eastern
Woodland communities ranging
in time from the Late Paleoindian
through Late Pre-Contact period and
into the modern era. The widespread
use of cache pits across the Eastern
Woodland region over more than a

thousand-year period illustrates the deep linkages between people and place, while also demonstrating the durability and dependability of this type of food storage method (Hambacher & Schaetzle, 2021).

Other methods included using the environment's freezing climate to preserve food. For thousands of years, Northern Indigenous communities in the Arctic used various storage methods including surface, above-surface, and below-surface storage facilities, with the thick layer of permafrost a foot below the surface acting as a freezer. Today, Indigenous communities continue to use these storage methods. Inupiaq people in Northwest Alaska use subsurface stone lined caches and ice cellars to store food (Frink & Giordano, 2015).

Among northern Indigenous communities such as the Inuit, Metis, and Cree, food storage methods include caching both above and below ground, freezing, home canning and drying by air and sun (Food Safety Network, 2009). Before modern technology, food preparation for storage required deep knowledge about how to prepare foods like meat depending on age and gender of the game, how it was killed, the season, the period of storage, the preservation technique,

FOOD STORAGE IN THE NORTHERN PLAINS

and the tastes of the consumer. Many of these foods were prepared in "wet preservation" containers, bags crafted from fish skin, animal organs, and seal skin. The seal poke bag, expertly crafted by women in the community, was an essential food storage technology. The inflated whole seal skin preserved sea mammal oil, a highly prized food and fuel source, over long periods of time and transport. Some experts believe the seal poke bag technology was used by Inupiat people of Northwest Alaska for more than 4,000 years. Seal oil was and continues to be one of the most critical subsistence resources for Arctic communities (Frink & Giordano, 2015).



STORAGE METHODS IN MODERN TIMES

Today, many traditional methods of food storage are continued by Native communities across the country. Indigenous people have adapted and evolved the traditions of their ancestors into modern times. Below is a summary of techniques used by grantees that were interviewed by FNDI and TPS.

Drying Meat and Vegetables

Drying meat and vegetables in the traditional way are most popular among those interviewed. Almost every grantee recalled drying buffalo meat, as well as deer and elk, as a traditional food storage practice that continues today. While methods differed (some drying in the wind, some drying over a low fire, some in an electric dehydrator), the practice of drying meat is alive and well in the Northern Plains. Many grantees remarked that elders preferred dried meat over receiving a frozen roast because it is what they were raised with.

Programs with a focus on gardening noted the practice of drying vegetables. Vegetables like squash, greens and peppers were favorites among the

Northern Plains grantees for drying practices. Many programs continued the tradition of drying corn in the traditional ways. Again, this was a favorite among elders and the community because it is much harder to come by. Grantees bought dehydrators to assist in this work. A handful wanted to begin making soup mixes out of their dried vegetables.

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GRANTEE SPOTLIGHT

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DRY MEAT

People's Food Sovereignty Program Ronan, Montana \$15,000

The People's Food Sovereignty Program based in Ronan, Montana, on the Confederated Salish and Kootenai Tribes reservation aims to provide traditionally harvested deer and elk to tribal members. With deliveries directly to tribal members, the People's Food Sovereignty Program ensures that the hunting traditions of the Salish and Kootenai peoples continue to this day. The program supports traditional hunters by providing a market for their services while also serving the nutrition needs of the community.

GARDENING

Oyate Teca Project Growing Year Around Kyle, South Dakota \$15,000

With food storage funding provided by First Nations Development Institute, the Oyate Networking Project will be able to build on to their existing 30' x 100'- high tunnel to convert it into a growing house for the entire year. Oyate Teca will dry and refrigerate the foods grown in the new greenhouse.



STORAGE METHODS USED BY FNDI GRANTEES

Root Cellars and Cache Pits

In addition, many grantees noted the use of root cellars to store root vegetable harvests. When asked about food storage traditions utilized during their grandparents' time, most grantees noted the use of root cellars. Root cellars, or traditional cache pits, provide dry storage for root vegetables with longer shelf lives. This ensures the availability of root vegetables throughout the seasons.

Cold and Frozen Storage

However, many grantees noted the use of refrigerated and frozen food storage solutions in their communities that did not reflect the traditions of their ancestors. The use of refrigerators and freezers came with challenges that will be covered later in this report.



KEY FINDINGS FROM NORTHERN PLAINS GRANTEES

While the literature review provided many key findings that can provide a good framework, First Nations and TPS looked to organizations that are doing the work on the ground for answers. Grantees were asked about their food storage traditions, which traditions continue today, how the COVID-19 pandemic may have impacted their supply chain, and what activities they will be doing under their grant.

Facilities could not keep up with supply chain interruptions and surpluses

As most of America experienced issues around supply chain fluctuations, Indian Country faced the same supply issues, however, typically to a much greater degree.

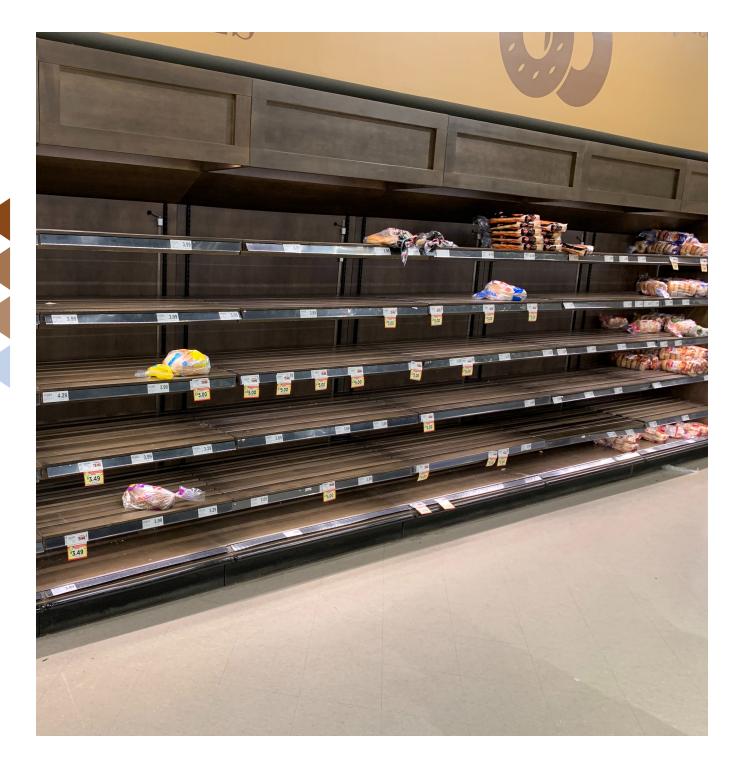
Most notably, many First Nations grantees expressed issues with a lack of robust infrastructure that could support the fluctuations in supply chains. For example, many facilities did not have storage capacity large enough to store deliveries. When deliveries would come in, they would need to deliver food to community members immediately because they did not have the space

to store it overnight. Similarly, when deliveries were sparse, facilities were not big enough to store foods over longer periods of time without scheduled food deliveries. This meant that many Native food pantries and distribution centers experienced a "boom and bust" food supply and were not able to store deliveries that were few and far between.



COVID-19 IMPACTS

Since March 2020, our global food system has changed in many unanticipated ways. Problems that lurked under the surface emerged front and center in the past two years. This couldn't be more accurate for Indian Country. Persistent issues like food insecurity, lack of fresh food, and other rural food access issues were exacerbated by the supply chain disruptions during the pandemic.



KEY FINDINGS FROM NORTHERN PLAINS GRANTEES Interest in gard

More established programs saw impacts of federal COVID-19 support, but smaller programs did not

Additionally, we found that more established programs that were part of larger entities like tribes or colleges saw the impacts of federal COVID-19 support, while smaller nonprofit organizations did not. Larger programs within tribes or USDA Food Distribution Program on Indian Reservation (FDIPR) had some storage needs met by Cares Act funding and other federal COVID-19 relief programs. However, small non profits often did not see this level of support and were still struggling to purchase big-ticket items like walk-in coolers and freezers.

Interest in gardening programs increased, leading to downstream storage solutions

Many grantees noted that interest and participation in gardening programs increased by large numbers. For instance, Oyate Techa saw over 100 new participants in their garden program. This renewed interest in gardening has led to more available fresh fruits and vegetables in these communities. However, many programs anticipated the need for storage of that food after the harvest.

To address the need to preserve and store the summer's harvest, programs have implemented canning and other food preservation training and established root cellars. Grantees noted that the lack of reliable food supplies at grocery stores during the pandemic led to the increase in local gardening programs, leading to a return to traditional foodways when modern supply chains fail.



Canning Trainings

Turtle Mountain Band of Chippewa Indians Healthy Foods Healthy Families Belcourt, North Dakota \$15,000

The Turtle Mountain Entrepreneurial Center and their Healthy Foods Healthy Families project preserves and stores produce grown in and around its high tunnel growing system, while providing learning opportunities to support project objectives. The Turtle Mountain Entrepreneurial Center is using its funds from First Nations Development Institute to build a workstation in which to conduct canning classes. Continuing the canning traditions of recent elders, the Turtle Mountain community will store food it grows locally while sharing knowledge with the community to ensure future food access needs are met.

IDENTIFIED NEEDS

While these programs have demonstrated resilience and flexibility during the ups and downs of COVID-19, there remains a real need to support these communities. These needs almost always require capital that is not available within tribal communities. Almost every respondent opined, "If I had the funds, there is so much more I could do."

FACILITIES

Facility improvements and construction was the largest expressed need across grantees. This looked different based on the age and size of the program. For smaller, newer programs, it was common for them to operate in shared spaces or smaller spaces with limited storage and facilities.

Conversely, more established, older programs tended to have their facility construction needs in process but not yet complete. These programs needed assistance with next-level infrastructure needs like equipment.



SHARING SPACES

Because many food pantries and distribution programs do not have adequate facilities to serve their communities, they are looking outside their facilities for help. Programs that were established in the past two years like FAST Blackfeet and the Peoples Food Sovereignty Project both shared fridge and freezer spaces outside their facility.





FAST Blackfeet Browning, Montana \$15,000

FAST Blackfeet is located in Browning, Montana, just outside the gates of Glacier National Park. With its mobile delivery service $\bar{O}'y\bar{o}'\cdot\dot{p}'$, it delivers thousands of meals a week to its community spread out throughout the Blackfeet Reservation. FAST Blackfeet is currently operating out of a church. Because they do not have adequate facilities to operate a food distribution program, they often rely on local restaurants and grocery stores to store some of their food. However, this model is not sustainable for the program because the restaurants and grocery stores are 20 miles away, leading to major transport costs. In addition, during the summer season when tourists flock to Glacier National Park, the restaurants and grocery stores cannot continue to store food for FAST Blackfeet in their freezers and coolers because of increased demand from tourists.

IDENTIFIED NEEDS

BASIC INFRASTRUCTURE, LIKE ELECTRICAL AND DOORWAYS, ARE LIMITING PROGRAMS

Basic infrastructure is needed to run a safe and productive food pantry. However, many food pantries do not have adequate electrical and doorway infrastructure to fully operate.

Red Paint Food Pantry in Dodson, Montana, is operating out of a small, shared space with single-phase electrical wiring. Single phase wiring is the standard for residential homes while three-phase wiring is the standard for industrial spaces to handle larger electrical loads with more stability. Through donations, the food pantry was able to receive large freezers but cannot use them due to their electrical wiring. When the freezers are plugged in, the electrical system shorts, leaving the donated freezers unused. To install threephase wiring (the industrial standard) would cost hundreds of thousands of dollars, at which point it would make more sense to build a new facility for the Red Paint Food Pantry.

Similarly, FAST Blackfeet is using their First Nations grant to build a new doorway system for delivering large loads of food. Because they are operating out of a church with narrow doorways, large pallet deliveries don't have clearance and FAST Blackfeet is not able to move their deliveries around freely.

Lacking infrastructure like electrical and doorways are symptoms of lacking facilities. Programs are making do with what they currently have.

EQUIPMENT

Like the lack of adequate facilities, most grantees highlighted the need for equipment across their programs. First Nations funding allowed many grantees to purchase the necessary equipment, but many are still relying on outdated or unsustainable solutions.

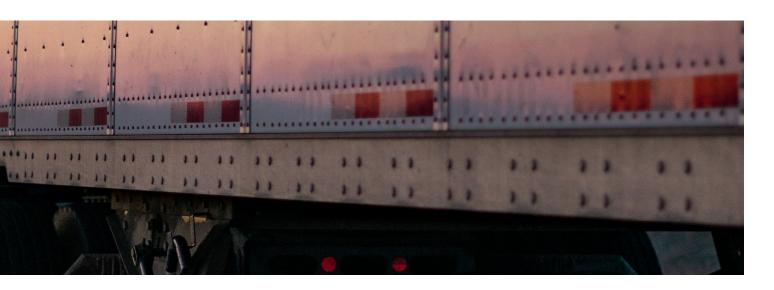
Sharing Equipment

Many grantees rely on the sharing of equipment with other programs or local institutions. Most shared equipment included freezer and refrigeration space with restaurants. While this is a necessary solution in the short term, it is not sustainable over the long term.

Locally Grown Food

Most Reservations Ship in Food

All grantees noted the lack of local food production on their reservations. When asked about where most of their food comes from, all grantees described a food system where 90% of food is shipped in from outside the reservation. During COVID-19, this meant that the entire food supply for tribal communities was at the mercy of the ever-changing supply chain. While the rest of the U.S. experienced bare shelves intermittently, many reservation communities, often last on the delivery routes of distributors, experienced bare shelves for much longer periods.



SOLUTIONS

While many issues emerged related to food storage in Indian Country during COVID-19, the FNDI grantees remained resilient by addressing issues with extremely innovative solutions. Below are examples of these solutions.



MOBILE PANTRIES

Mobile food pantries are on the rise in Indian Country. Mobile food pantries succeed in Indian Country because they meet people where they are. With vast, remote populations and disparate food access, mobile food pantries that deliver food are incredible food access solutions that fit the needs of Indian Country. This addresses transportation issues that many tribal communities face.

Ō'YŌ'∙P'

FAST Blackfeet Food Storage Project Browning, Montana \$15,000 FAST Blackfeet began its mobile pantry, Ō'yō'·p',in 2019. The refrigerated van serves the Blackfeet community every Tuesday and Thursday, providing fresh produce, meat, and pantry staples for the rural populations on the Blackfeet Reservation in Montana. Ō'yō'·p' also serves the needs of the community through a stationary food pantry based out of the Methodist Church. This two-pronged approach allows for the unique needs of the rural community to be met.

ROOT CELLARS

Chippewa Cree Rocky Boy Community Root Cellar Box Elder, Montana \$15,000

The Chippewa Cree Tribe in Montana, through its Sustainability Agriculture Commission (CCSAC) is using funds from FNDI to construct a root cellar to store ample foods for community consumption. This root cellar will complement the CCSAC efforts with high tunnel and commercial value added products currently being produced. During the 2019 growing season the CCSAC program successfully grew and distributed over 2,000 lbs of potatoes and Indian corn to the community.

This food system solution is rooted in traditions. Chippewa Cree people have been utilizing root cellars and underground storage for years. This is a continuation of the culture that provides solutions to 2022's problems.

LOCAL GARDENS

Oyate Teca Pine Ridge, South Dakota \$15,000

During the pandemic, Oyate Teca saw their gardening program participation double in size due to the lack of food in stores. This return to traditional gardening during the pandemic led to more access to traditional foods like dried corn and less reliance on store-bought, shipped-in foods.

With the food storage funding,
Oyate Teca will be able to build
on to their existing 30' x 100' high
tunnel to convert it into a growing
house as well as an electrical furnace
that can provide adequate heating
for year around-growing.

SOLUTIONS

EDUCATION AND TRAINING

Lastly, grantees noted the increased interest in education and training opportunities around storing foods. Many reservation communities are interested in food storage and being more involved in their local food systems, but need the education and training to achieve this. First Nations grantees are providing an array of education and training opportunities through hands-on classes that serve community members.

SPIRIT LAKE FOOD DISTRIBUTION

Seed Storage Fort Totten, North Dakota \$10,000 Spirit Lake Food Distribution (SLFD) increases access, variety, and availability for seeds by providing a network in the community to share garden varieties of seeds by educating them on the ability to harvest, store, and share seeds at the Spirit Lake Seed Bank.

The Spirit Lake Nutrition Program purchases seeds for long-term use to create an educational opportunity to provide community members with the knowledge and skills to plant their gardens in the spring. SLFD provides educational opportunities to provide local gardeners an opportunity to also harvest their seeds from their garden for sustainability and select the best garden varieties from the seeds provided, as well as seed storage for the Spirit Lake community to use for many years.



CONCLUSION

Food storage is an effort to preserve food to feed tribal communities. Native people have been using traditional methods since time immemorial and continue many of these traditions today, like drying meat and storing in root cellars.

But the cultural framing of traditional food systems has been disturbed for 500 years. The food storage issues that present themselves in Indian Country cannot be solved with conventional methods that work in non-Native communities. Solutions rooted in culture

that connect to traditional foodways are the solutions that will take root in Indian Country. Storing of food in large quantities like warehouses is not in alignment with many traditional philosophies of taking only what you need. Storing of food during winter to manage the nutritional needs of the community are traditional values that tribal communities operated under. Using traditional techniques of storage and access points to food are more sustainable and environmentally friendly versus using large refrigeration warehouses.





FOOD STORAGE IN THE NORTHERN PLAINS

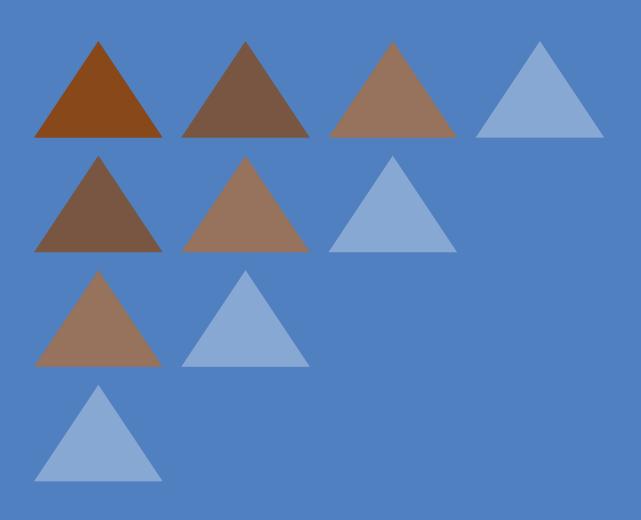
Today, the U.S. food system is rooted in capitalism and systems only addressing food insecurity through a deficiencyfocused approach rather than a sustainable and holistic approach. Because of this, food is stored in large quantities inside warehouses or other facilities for distribution. Traditional storage methods are what tribes relied on even without the conventional food storage infrastructure and can be future innovations and answers to gaining better control of the food system. By creating tribal supply chains that utilize traditional food production and storage, it will place Indigenous communities at the forefront of the food system rather than the last.

The pandemic illuminated the lack of adequate facilities and equipment. Tribes didn't have the infrastructure to hoard the supply chain, but they did have traditional methods of growing and storing food and that is what sparked innovation. Innovative approaches like mobile food pantries, continuing traditional root cellars, and education and training showed how tribes can combine traditional philosophies with serving the community's needs. While the challenges that Indian Country faces are real, the solutions are often found in community innovators and the cultures they come from.

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STRENGTHENING NATIVE AMERICAN COMMUNITIES & ECONOMIES

