NRCS conservationists located in nearly every county in Montana can help with many resource concerns. As an agency, we recognize that although some resource concerns and goals are similar regardless of the size of the operation, small-scale farmers and ranchers, gardeners, and other progressive operations may have unique conservation needs.

The nine step planning process used by NRCS puts you, the producer, in the driver’s seat. The first two questions asked are what problems or opportunities you see and what are your goals? The answers to these questions help guide the rest of the planning process. Next, NRCS technical experts can help you to inventory your resources and analyze that data in order to come up with potential solutions in a conservation plan that help you to address concerns and reach your goals. Together, you can evaluate the solutions and decide what works best for you and your operation. At this point, you can take the plan and implement it on your own or with further technical assistance from NRCS. Your NRCS planner can also help you understand any financial assistance that might be available to help you implement your chosen conservation plan and associated practices.

Just a few of the concerns NRCS planners can help you to address no matter what size operation you run, include:

- Soil health and fertility
- Water quality and quantity
- Grazingland health and forage production
- Wildlife and pollinator habitat
- Energy savings
- Air quality

[Continued on page 2]
A Note from the State Conservationist

[Continued from page 1]

To further support community agriculture in Montana, NRCS has recently developed a Montana Urban Agriculture – Community Agriculture Strategic Plan. To read more about this strategy, visit www.mt.nrcs.usda.gov and click on Community Agriculture.

NRCS may be able to provide support for conservation in first foods efforts, community gardens, farm to table projects, and many other types of community agriculture.

Visit your local NRCS office for more information about technical assistance and other services. You can find the contact information for Tribal conservationists in this newsletter or go to farmers.gov/contact.

Thank you for your continued participation and partnership,

Tom Watson
NRCS State Conservationist in Montana

Dirt Cake with Hardin Primary First Graders

Zoe Craft, Hardin Field Office

The Hardin and Crow Agency NRCS offices visited six first grade classes at the Hardin Primary School this month to showcase the importance of soil and explain how soil is formed using a dirt cake activity. Seanna Torske, Supervisory District Conservationist, introduced the Natural Resources Conservation Service, and explained to the students what we do. Seanna explained what ‘natural resources’ are and why it is important that we conserve them.

Zoe Craft, Soil Conservationist, talked to the classes about how important soil is. Zoe went through a soil web exercise with students to show how our lives are deeply connected to the soil. We get food and fiber from soil, which in turn are used to make the food, clothing, and building products we enjoy every day. Evan Van Order, Tribal Conservationist, taught the classes about how soil is made from the weathering and breakdown of parent material. Evan talked about the different types of particles that make up soil and asked the class what else they might find in the soil. NRCS showed students a short video of healthy soil underneath a microscope. Protozoa, nematodes, and bacteria are shown moving across the screen – some of the vast microscopic life that lives beneath our feet. Students were quizzed on the different parts of their soil cups before everybody dug in. Healthy soil looks delicious!

NRCS helped each student make a dirt cake using a variety of ingredients. NRCS passed around the different components of soil for each student to build their own soil profile in a cup. Students were quizzed on the different parts of their soil cups before everybody dug in. Healthy soil looks delicious!

Each “Dirt Cake” ingredient represents a component of soil:

- Parent Material (rock) – Crushed Oreos
- Soil Particles (sand, silt, clay) – Chocolate Pudding
- Soil Microfauna – Rainbow Sprinkles
- Soil Macrofauna – Gummy Worm
- Organic Matter – Shredded Coconut
The Bipartisan Infrastructure Law (BIL) provides critical support to expand investments in local communities through NRCS watershed infrastructure. These investments are to protect entire communities and the people that are impacted by floods, natural disasters, and other watershed related resource concerns. The passage of BIL provided additional funding for the NRCS Watershed Programs.

NRCS Watershed Programs provides technical and financial assistance to local government agencies, tribal organizations, and other eligible sponsors, to help communities implement conservation practices that address watershed resource concerns. Each program has a specific area-of-focus as defined below.

**Watershed and Flood Prevention Operations (WFPO) Program** provides technical and financial assistance to entities of State and local governments and Tribes (project sponsors) for planning and installing watershed projects.

**Watershed Rehabilitation Program (REHAB)** offers financial and technical assistance to rehabilitate dams constructed through NRCS Watershed Programs. This program extends the service life of dams to meet applicable safety and performance standards or decommission the dams so they longer pose a threat to life and property.

**Emergency Watershed Protection (EWP) Program** provides technical and financial safeguards lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed.

Watershed projects are planned and carried out jointly by local, state, and federal agencies with support of community landowners and citizens in the watersheds. Communities or Tribes identify resource problems to be addressed, practices to be installed, and carry out major portions of a watershed plan, such as obtaining easements, rights of ways, permits and local cost-share funding. NRCS provides technical and financial assistance to local project sponsors. Federal assistance is available for engineering and construction costs of flood control measures, conservation practices for water quality and erosion and sediment control, and for municipal and industrial water supplies and recreation facilities.

Please contact your local NRCS Field Office, if you have a project proposal to be considered if additional Watershed Program funding becomes available. Additional information can be found at Landscape Planning | NRCS (usda.gov).

**Currently Montana NRCS is assisting Tribes on multiple funded Watershed Program projects. The projects listed below received funding for watershed planning work through BIL. Several of the projects impact Tribal producers and lands.**

- **Fort Peck Tribes – Wolf Point Irrigation Project** BIL WFPO funding will be used to implement ag-water management methods to build towards climate resiliency. Funds are needed to modernize the Wolf Point Irrigation Project water delivery system.

- **Helena Valley Irrigation District** BIL WFPO funding will be used to implement ag-water management methods to build towards climate resiliency. Funds are needed to modernize the Helena Valley Irrigation District water delivery system.

- **Kinsey Irrigation District** BIL WFPO funds will be used to perform a feasibility study on a proposed watershed project that would rehabilitate and modernize the Kinsey Irrigation District water delivery system located in the Cabin Creek - Yellowstone River watershed near Kinsey, Montana.

- **Missoula Conservation District** BIL WFPO funding will be used to implement ag-water management methods to build towards climate resiliency. Funds are needed to modernize the Missoula Conservation District Irrigation District water delivery system.

- **St. Mary Canal Modernization Project** – BIL WFPO funding will be used to develop a new plan that will assist with agricultural water management related to St. Mary Canal. The canal is a deteriorated state resulting in reduced flow rates from the original design, steel siphons are at risk of failure due to slope stability problems and leaks, and the concrete in 4 of the 5 drop structures is severely deteriorating. In summary, hydraulic components of the conveyance system have an elevated risk of failure with potential damages ranging from minor to catastrophic.

- **Tongue & Yellowstone River Irrigation District** BIL WFPO funding will be used to implement ag-water management methods to build towards climate resiliency. Funds are needed to modernize the Tongue & Yellowstone River Irrigation District delivery system.

- **Wyota Irrigation Project** BIL WFPO funding will be used to implement ag-water management methods to build towards climate resiliency. Funds are needed to modernize the Wyota Irrigation Project water delivery system.
Program Definitions

Have you noticed a shift in NRCS program wording? It can be difficult to keep up with changes and to make sense of them. Here’s a short explanation of common phrases used when contracting practices under NRCS conservation plans.

Conservation Plan: Developed through a nine-step planning process. A conservation plan describes producer concerns and goals, a resource inventory and evaluation, potential solutions, and selected solutions.

Conservation Practice: Depending on solutions selected in the conservation plan, specific conservation practices may be used to achieve the solution. For example: cover crops, livestock water facility, high tunnel system.

Conservation Contract: If practices to be completed under a plan fit into NRCS financial assistance opportunities available at the time, those practices may be contracted. This means the producer would receive a flat rate payment once the practice is completed to stated standards and specifications.

Historically Underserved Producer (HU): Includes producers from the following four categories. These definitions are simplified here. Please ask your local NRCS field office about complete requirements for each category.

Socially disadvantaged farmer or rancher (SDFR) is a participant who is a member of a socially disadvantaged group, including:

- American Indians or Alaskan Natives
- Asians
- Blacks or African Americans
- Native Hawaiians or other Pacific Islanders
- Hispanics

Beginning farmer or rancher (BFR) is a participant who:

- Has operated a farm, ranch, or non-industrial private forest for less than 10 consecutive years, and
- Who will materially and substantially participate in the operation of the farm or ranch.

Limited resource farmer or rancher (LRFR) is a participant:

- Who has gross farm sales less than an indexed value in the past 2 years, and
- Who has household income at or below set thresholds.

You can access a self-determination tool at https://lrftool.sc.egov.usda.gov/.

Veteran farmer or rancher (VFR) is a participant who served in the United States armed forces, including the reserve components, and

- Was released from service under conditions other than dishonorable, and
- Has operated a farm, ranch, or non-industrial private forest less than 10 years total, or
- Who first obtained status as a veteran during the last 10 years.

NRCS will be discussing financial assistance opportunities on the next quarterly producer meeting hosted by the Intertribal Agriculture Council. We will provide more details closer to that event.

If you have any questions about working through the conservation planning or implementation processes, contact your local NRCS office. You will find Tribal planner contact information in this newsletter or you can visit farmers.gov/contact.

NRCS payments do not reimburse producers for the actual cost of implementing a conservation practice based on their individual expenses. NRCS payments do provide financial assistance in completing conservation practices based on regional, estimated costs for completing the specified work.

The flat rate payment includes costs to complete the contracted practice. The costs built into the flat rate payment are for materials, equipment for installation, labor, mobilization, acquisition of technical knowledge, and foregone income.
**What is a high tunnel?**

A high tunnel is a metal framed structure covered with a polyethylene (plastic) sheet that uses passive heating from the sun to extend the growing season within the tunnel. The plastic covering traps sunlight and heat throughout the day, increasing the temperature of the air and soil within the high tunnel. During nighttime, the heat stored within the soil is released, helping to maintain a warmer temperature inside the tunnel. The high tunnel can maintain higher temperatures than the outside air and helps to protect crops from harmful weather conditions that could damage them. Successful use of a high tunnel can lengthen your growing season up to four weeks, allowing earlier access for planting in the spring and longer growing times into fall. High tunnels can also increase the quality of crops produced.

**Selecting a high tunnel**

Through Montana Focused There are two common high tunnel shapes, Quonset, and Gothic. The Quonset style is a half circle shaped high tunnel with rounded tops. The Gothic style is a peak shaped high tunnel with peaked roofs to allow for better snow removal. Quonset style tunnels will collect snow on their tops, which can cause unnecessary stress to the structure. In regions with heavier snow conditions, the gothic style is recommended.

A small size tunnel ranges from about 120 to 600 sqft in area, with a length of 12 to 20ft depending on the desired width. 14 to 20 ft wide tunnels are the most common, with 30 ft being the widest you will see from high tunnel manufacturers. The wider the tunnel, the more difficult to ventilate.

During the summer months, ventilation is key in a high tunnel. The side walls of the tunnel can be rolled up or down to increase or decrease the flow of air through the structure. Doors can also be added to both ends of the high tunnel to add additional ventilation to the system. Electricity can also be installed to run heating or cooling systems for the tunnel.

The plastic covering on the tunnel should be replaced around every 4 to 5 years to make sure there is adequate UV protection for the plants from the polyethylene sheet. Agricultural grade polyethylene sheets typically deteriorate within a year, 6-mil greenhouse grade polyethylene should be used for fewer replacements. For sites with higher wind damage concerns, a woven polyethylene
sheet can provide additional strength. A well-constructed high tunnel should last for around 10 years before structural components may need replaced.

NRCS has financial assistance available for high tunnels up to 2160 sqft in area, or up to a 30ft x 72ft structure, through their High Tunnel System Initiative through the Environmental Quality Incentives Program (EQIP). The high tunnel must be constructed from a manufactured kit approved by NRCS. High tunnels also must have a minimum of 6ft in height at the peak of the structure to allow for appropriate vertical growing space. Crops can either be grown directly into the ground or into a 12-inch raised bed. For more information about High Tunnel assistance, please contact your local NRCS Field Office for more information.

Site selection
Select a site that will have adequate sunlight and minimal shade to maximize the solar heating potential of your tunnel. Running the top of your high tunnel from East to West will help collect the most sunlight and minimize risk of wind damage. The site should be level, and if assistance is being provided by NRCS, the site should also have a history of crop production.

If you are interested in getting a high tunnel to extend your growing season, reach out to NRCS to have help with the design as each site can be different. NRCS can provide technical assistance at no cost.

Soil considerations
The planned site should be prepared a year in advance to reduce any weed pressure and improve soils as needed. The soil at the site should be tested to identify any deficiencies or needs prior to the installation. Following the installation of the high tunnel, the soil should be tested yearly to monitor for any changes in nutrient availability.

Companion Cropping
Some plants benefit from being around certain plants and do not like being around others. The table below lists the five most common plants that benefit from a high tunnel and their preferences for neighbors as modified from “Planting in a High Tunnel” by NRCS.

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Compatible</th>
<th>Incompatible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>Chives, Onions, Garlic, Parsley</td>
<td>Cabbage Family, Potato, Fennel</td>
</tr>
<tr>
<td>Corn</td>
<td>Beans, Legumes, Sunflower, Potato, Parsley</td>
<td>Tomato, Celery</td>
</tr>
<tr>
<td>Peppers</td>
<td>Tomato, Geranium, Petunia</td>
<td>Beans, Kale, Cabbage, Brussels Sprouts</td>
</tr>
<tr>
<td>Cucumber</td>
<td>Beans, Lettuce, Radish, Sunflower, Peas, Beets, Carrots</td>
<td>Potato, Aromatic Herbs</td>
</tr>
<tr>
<td>Baby Greens</td>
<td>Onion, Garlic, Beets, Cucumber</td>
<td>Spinach, Sunflower</td>
</tr>
</tbody>
</table>

Soil Temperature Conditions for Vegetable Seed Germination
Compiled by J. F. Harrington, Department of Vegetable Crops, University of California Davis. Modified from “Planting in a High Tunnel” by NRCS.

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Minimum (°F)</th>
<th>Ideal Range (°F)</th>
<th>Maximum (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>50</td>
<td>60 to 95</td>
<td>95</td>
</tr>
<tr>
<td>Cucumber</td>
<td>60</td>
<td>60 to 95</td>
<td>95</td>
</tr>
<tr>
<td>Lettuce</td>
<td>35</td>
<td>40 to 80</td>
<td>75</td>
</tr>
<tr>
<td>Pepper</td>
<td>60</td>
<td>65 to 95</td>
<td>85</td>
</tr>
<tr>
<td>Tomato</td>
<td>50</td>
<td>60 to 85</td>
<td>85</td>
</tr>
</tbody>
</table>
Water considerations

With the plastic covering, rain will not be able to infiltrate into the tunnel. A swale, or some type of water control system should be used to ensure water is not able to collect around the high tunnel.

Drip tape provides the best controlled application of water to the growing plants. If using drip tape, the water used for irrigation should be tested to ensure additives are not needed to prevent clogs in the tape. An acid solution can be injected through the lines to counteract any calcium buildup from hard water.

Crop considerations

Common crops that benefit from a high tunnel include tomatoes, cucumbers, corn, and peppers. Intercropping of different plants can be utilized to increase the diversity and overall quality of crops produced in the high tunnel.

Trellises, or other means of vertical farming, can be used to increase the amount of usable space for crops within the high tunnel.

Adding a plastic cover for the soil itself will help increase the temperature in the soil and can also provide additional time to the growing season. The inside of a high tunnel can range from 30 to 50°F warmer than the outside temperature given the right conditions. During high temperature events in summer, shade cloths can be added to minimize the amount of sunlight and heat entering the high tunnel. They can also provide shade for cool season species such as lettuce and mixed greens to meet their sunlight needs. Species that require higher amounts of sun like tomatoes or peppers, may have their growth inhibited by a shade cloth. However, temperatures above 100°F can also cause harm to growing plants.

Pollinators can be encouraged to visit the high tunnel through the planting of a pollinator seed mix around the high tunnel or growing flowers interspersed throughout the high tunnel bed.

Winter production

Wintertime usage is possible with the addition of a small portable heater or installation of a below ground heating system. Micro greens can be cultivated in approximately 14 days if the tunnel temperature is able to be kept above freezing.

Proper storage of crops can also aid in extending the availability of fresh produce. Common storage conditions for a variety of vegetable crops are listed in the figure below

References:


https://www.nrcs.usda.gov/wps/portal/nrcs/mt/programs/financial/eqip/329c2717-8bb5-451b-9b8e-0e73a-68ec9df/


NRCS. “Planting in a High Tunnel.” April 2014.


https://www.sare.org/resources/high-tunnels-and-other-season-extension-techniques/

<table>
<thead>
<tr>
<th>Common Storage Conditions for Vegetable Crops</th>
<th>Modified from “Planting in a High Tunnel” by NRCS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold and moist: 32°F and 90-95% relative humidity (RH)</td>
<td>ex: Beets, cabbage, carrots, parsnips, turnips</td>
</tr>
<tr>
<td>Cold and dry: 32°F and 65-70% RH</td>
<td>ex: Garlic and dry onions</td>
</tr>
<tr>
<td>Cool and moist: 45°F and 90% RH</td>
<td>ex: Potatoes</td>
</tr>
<tr>
<td>Warm and moist: 57°F and 85-90% RH</td>
<td>ex: Sweet potatoes</td>
</tr>
<tr>
<td>Warm and dry: 55°F and 50-70% RH</td>
<td>ex: Winter squashes, pumpkins</td>
</tr>
</tbody>
</table>
Community Defined Vision:

“By 2032, we envision the Blackfeet Nation fully engaged, informed, and actively involved in the development of holistic agriculture resource management for the economy, the environment, and the health of the people, land, flora, fauna, and water. Together we will work to embrace our natural laws, values, and relationships based on respect, trust, and healing. **The ARMP will provide a means for establishing reciprocal partnerships among producers, businesses, and landowners to increase the profitability and sustainability of agricultural production for current and future generations. Our Blackfeet youth will have mentoring opportunities to learn from elders, producers, and leaders to contribute their voice to a quality Blackfeet way of life.**”

Importance of the ARMP:

- Increasing Farmer and Rancher Profitability (Largest contributor to Blackfeet Private Sector economy)
- Ease Barriers of entry to Federal Support Programs (FSA, NRCS, etc.) for Blackfeet producers
- Explore solutions to Leasing issues faced by Blackfeet producers
- Increase Interdepartmental and cross organizational coordination
- Reduce overgrazing and trespass livestock issues
- Invest in future Blackfeet producers
- Address climate change concerns faced by Blackfeet producers
- Address agricultural resource data gaps
- Increase ability to acquire funding for projects outlined by Blackfeet producers
- Forms the foundation to achieve Food Sovereignty through Agriculture production

8 Primary Focus Areas of the ARMP:

- Rangelands and Grazing Management
- Crop production
- Wildlife
- Soil
- Water
- Cultural Resources
- Policy
- Education and Business

For each topic, the planning team analyzed current conditions, management issues and opportunities, and developed and revised goals, objectives, and actions to address current challenges based on their importance, feasibility, and alignment with the statutory authority and intent of the AIARMA.

See the [Blackfeet ARMP Facebook](#) page for more information, including a link to the [Google Drive where the full document](#) is available.

Development Process:

Community Input:

- Public Meetings – 3 years of monthly meetings
- 2 Day Strategic Planning process with key stakeholders
- O’Komi survey developed in house (657 survey participators including 144 Ag producers)
- Review of existing Blackfeet Planning Documents
- Continued Input from Blackfeet Natural Resource Conservation District
- Input from local, regional, and National partners
Recent Conservation Events across the Fort Belknap Community

Over the past weeks NRCS soil conservationist Zach Lenning has been providing education and outreach for several events held by various tribal organizations. On Saturday, April 16th, Randi Fetter, the local food sovereignty coordinator supported by AERO (Alternative Energy Resources Organization) and Abundant Montana hosted a food sovereignty summit that was attended by organizations supporting local food production to talk about community needs and innovative techniques. Friday April 22nd the Aaniiih Nakoda College hosted a water forum to discuss topics related to water. NRCS presented drought mitigation strategies for all land uses and long-term drought planning. On Tuesday, May 17, in collaboration with Aaniiih Nakoda College Library, Aaniiih Nakoda College USDA Extension and MSU-Extension in Fort Belknap a pollinator workshop was hosted where attendees learned about native pollinators and the ecosystem functions that they provide. NRCS presented on pollinator habitat establishment and management for north-central Montana.

Additionally, NRCS has been working with a number of tribal departments and organizations to revive the Fort Belknap Tribal Conservation District. There is a public meeting planned for June 2 at the community center. Call Zach Lenning, NRCS Tribal Planner, at (406) 357-2320 ext 18 for more information.

Watch for public meetings and other conservation-related activities around the Fort Belknap community. Contact the Aaniiih Nakoda College, the Extension Service, and NRCS with any questions you have about conservation, community agriculture, pollinators, and more. We’re happy to help.

Zach Lenning, NRCS Tribal Planner. Photo courtesy of the Fort Belknap Extension office.
Tribal Field Office Directory

**Browning Field Office**
Serves: Blackfeet Reservation
Blackfeet Tribal Headquarters
640 All Chief’s Rd.
Browning, MT 59417
Phone: (406) 338-3153

*Tribal Conservationist - Cassie Powell*
Email: cassie.powell2@usda.gov
Phone: (406) 338-3153 ext. 100
Cell: (406) 224-5112

*Soil Conservationist - Dezerae Lorash-Knoll*
Email: dezerae.lorashknoll@usda.gov
Phone: (406) 338-3153 ext. 103

**Crow Agency Field Office**
Serves: Crow Reservation
Hardin Service Center
205 13th West Street
Hardin, MT 59034-0205
Phone: (406) 629-3228

*Tribal Conservationist - Evan Van Order*
Email: evan.vanorder@usda.gov
Phone: (406) 629-3228
Cell: 551-3952

**Fort Belknap Field Office**
Serves: Fort Belknap Reservation
Currently serviced by the
Chinook Service Center
228 Ohio St.
P.O. Box 189
Chinook, MT 59523-0189

*Supervisory District Conservationist - Kailee Calnan*
Email: kailee.calnan@usda.gov
Phone: (406) 357-2320 ext 117

*Tribal Planner - Zach Lenning*
Email: zach.lenning@usda.gov
Phone: (406) 357-2320 ext 18

**Lame Deer Field Office**
Serves: Northern Cheyenne Reservation
Phone: (406) 477-6494
19 W. Chief’s St.
P.O. Box 330
Lame Deer, MT 59043-0330

*Tribal Conservationist - Kathy Knobloch*
Email: kathy.knobloch@usda.gov
Phone: 477-6494

**Pablo Field Office**
Serves: Flathead Reservation
Phone: 675-2700
Tribal Land Department
42487 Complex Boulevard
P.O. Box 871
Pablo, MT 59855-9700

*Tribal Conservationist - Herb Webb*
Email: herb.webb@usda.gov
Phone: 675-2700 ext. 1245

**Poplar Field Office**
Serves: Fort Peck Reservation
Phone: (406) 768-3964
500 Medicine Bear Road
Box 1027
Poplar, MT 59255-1027

*Tribal Conservationist - Paul Finnicum*
Phone: (406) 768-3964
Email: paul.finnicum@usda.gov

**Rocky Boy Field Office**
Serves: Chippewa Cree Reservation
Currently serviced by the
Havre Service Center
206 25th Ave. W., Ste. 1
Havre, MT 59501-6008

*Tribal Conservationist - Elizabeth Ballou*
Email: elizabeth.ballou@usda.gov
Phone: (406) 265-6792

*Supervisory District Conservationist - Kailee Calnan*
Email: kailee.calnan@usda.gov
Phone: (406) 357-2320 ext 117