

# Healthy Acres

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A RESOURCE TO PROMOTE HEALTHY LANDS AND HEALTHY COMMUNITIES



## Fall Tasks for the Garden

Fall is a good time to lay the groundwork for a successful garden plot next year. Patrick Mangan - MSU Missoula County Horticulture Agent

**A**utumn is a great time to celebrate in the garden, reaping the harvest and benefits of a growing season's worth of efforts as all of those long duration crops ripen and grace your plate and storage space. Fall is also a good time to lay the groundwork for a successful garden plot next year. So while you're digging potatoes, harvesting corn, pulling winter squash off the vines, and canning tomatoes consider implementing some of these practices. They will add to the fertility and success of your garden next year.

### Make a plan for next year:

Start thinking about what you want to plant and where you want to plant it in your garden. Think about what veggies you want to grow and eat, and the best place to plant them. It's best to rotate what you grow in your garden beds instead of growing the same thing in the same place year after year. A three to four year rotational cycle can break pest and disease cycles in garden pests by separating the host from the

pest. Different plants will also demand different types of fertility from the soil as we switch them up. Swap out heavy feeding plants like corn or tomatoes with legumes in that bed the next year. Plant fibrous rooted crops like leafy greens in the bed you had root crops in this year. Switch up the family of plant you are growing in each place, the type of root structure it has, how it grows, or what it produces (think root, leaf, and fruit vegetable structures). Order your seeds in the winter and be ready to start them when the time is right.

### Sanitize the garden space (if needed):

Sanitizing a garden space is a cultural practice used in successful Integrated Pest Management (IPM) systems. Using this practice does not always need to be done but is a consideration if you are facing disease and pest issues in the garden plot. Sanitizing the space, as a general practice, means removing the dead and decaying plant materials from that growing season and disposing of it off site. Sanitizing should be

# Fall Tasks for the Garden continued



used as a strategy if you're facing a specific pest or disease problem with a vegetable, or family of vegetables. The pest or pathogen causing the pressure on your vegetables can overwinter in the dead and decaying plant residues as you leave them in your garden, and become the inoculation site for next year's infection. So, if you're facing a disease or pest pressure, consider removing the plant material as a way of sanitizing the garden plot and reducing the source of infection for future years.

If you are not facing any disease or pest pressure in your garden space, you may consider leaving the plant residues in the garden and breaking them down onto the soil surface, where they can feed the soil and build soil organic matter and nutrients into the soil system.

## Add fertility to your garden:

Fall can be a great time to add soil amendments and fertility strategies to your garden soils and allow them to integrate into your soil over the winter months. Additions like composted manures and garden compost, when applied in the fall, will slowly complete their breakdown cycle, feed soil microorganisms and provide a fertile garden for spring planting next year. If using manures as a soil fertility building treatment, composted manures are better than raw manures. Also be aware of the possibility of residual herbicide carryover in manures. If you're unfamiliar with the source of manure, the farmer and their practices, and where the hay comes from, you may want to consider a bioassay of the manure to determine if it carries any herbicide residuals with it, they can be detrimental to garden crops once they are mixed into the soil. More information about residual herbicide carryover can be found here: <https://store.msuextension.org/publications/AgandNaturalResources/4628.pdf>

## Plant a fall cover crop:

There might be a window of time between your last harvest of a vegetable bed and the frozen soils of the winter months. If you have a window with some good growing temperatures left in the fall, consider planting a cover crop. Cover crops are seeded crops that add qualities to the soil at the end of the growing season and more importantly, as the name suggests, keeps the soil covered with living vegetation. Your goal is not to grow something for you to eat yourself, but rather to plant a short-term crop that feeds the soil system. There are a lot of options for cover crops in a garden, and it can depend on whether you have a goal in mind of a quality you want a cover crop to add to your soil. Quick green growing plants like annual rye, oats, or buckwheat will sprout and grow quickly and cover the soil with growing plants that be turned into the soil next spring. Peas and other legumes can add a little nitrogen into the soil for fertility reasons, and daikon radish can quickly develop deep taproots in the late summer and fall, breaking up compacted soil layers and increasing drainage and aeration.

Most cover crop plants are annual plants and will frost kill in the winter, so you won't have to wrestle with your cover crop greening back up in the spring. Scout out your local seed supplier and ask the Extension office for help in choosing cover crop species for your desired goals.

I suppose fall would be the ideal time to step entirely away from the garden, after a long summer of constant watering, weeding, and maintenance. But a little more effort in the fall will give you even greater success next growing season. Happy autumn!

# Fall Weed Control

There is still time in the fall to treat those pesky noxious weeds!

**W**ith all the things that we try to fit into our wonderful (but short!) western Montana summers, it sometimes feels like there is never enough time to treat those weeds that we keep meaning to get to. Before you know it, the spotted knapweed is flowering, and the days are too hot and too dry for effective weed control. But don't give up on getting that chore checked off your list just yet! Fall can provide an excellent opportunity for effective weed control. Many of our noxious weeds, including leafy spurge, spotted knapweed, Dalmatian toadflax, Canada thistle and more experience re-growth in the fall, spending the warm sunny days photosynthesizing and storing energy in their roots to give them an extra advantage the following year. Many of our annual grasses like cheatgrass and ventenata also germinate in the fall. Here are some good rules to go by if you are considering taking advantage of the fall to treat your weeds.



## 1. Pay attention to the weather

The best window for treating weeds in the fall starts roughly two weeks after we start to get fall rains. Plants need this moisture in order to germinate or initiate regrowth. In most years, this occurs by mid-September, but can come early, late or not at all. Make sure your plants are actively growing before making your application. For spotted knapweed, simply follow this year's seed stalks down to the base of the plant and check for green vegetation.



## 2. Pay attention to temperature

The optimal temperature for most herbicide applications is between 65 and 75 degrees Fahrenheit. That can be a pretty narrow window for fall days in Western Montana, so a general rule for fall herbicide applications is to make sure the temperature is at least 40 to 60 degrees. It may take the plants longer to die at that temperature, but your application will still be effective. It is also important to note that once we begin getting hard frosts (below 28 degrees for an extended period of time) herbicide applications can become less effective. Usually, you can plan on treating during September and October.

## 3. Pay attention to your product

It is important to note that there are some products that should be applied in the fall prior to our fall rains and the germination of your target weed, especially for annual grasses. Products with Indaziflam or Imazapic (Rejuvra and Platteau for example) should be applied prior to our fall rains and annual grass germination, while products like glyphosate would be applied after.

## 4. Call us if you have questions

If you are not sure if a fall application would be the most effective in your situation, just give us a call at 258.4217. We can answer your questions and even set up a site visit with you to go over your situation and determine the best management strategy for you and your property.

# Misconceptions About Biocontrol

**C**lassical biological weed control, more commonly known as biocontrol, is the deliberate release of specialized natural enemies from the weed's native range to reduce the weed's abundance and spread in its introduced range. There are many misconceptions related to biocontrol programs, many of which stem from programs before the 1960s when pre-release testing was not conducted or not as extensive as it is today, and there were fewer regulations around the introduction and release of biocontrol agents.

## **Misconception: Biocontrol agents are unpredictable in which plant species they target**



This misconception likely stemmed from the 1960s release of a thistle head weevil to control invasive thistles in North America. By the 1990s, it was reported that this agent was having adverse impacts on the native thistles that shared a genus with the invasive thistle. Pre-release studies conducted at the time found this to be a likely event; however, because the emphasis was on protecting crop species rather than native species' health, the releases went ahead despite

concerns. Today, with the increased pre-release testing conducted, which involves years of host specificity testing, and extensive review processes, the thistle-head weevil would never be approved for release.

## **Misconception: Biocontrol agents can rapidly evolve**

While biocontrol agents can evolve their life cycles to be better suited for their climate, there has never been a genetic shift that has impacted an agent's preference or performance. Host-specific evolution occurs extremely slowly and, in 110 years of biocontrol, there have been 469 different species released in 70+ countries with only 40 cases of non-target specific attacks. Furthermore, most if not all instances of non-target specific attacks have been on native species within the target species' genus, meaning the biocontrol agent is not shifting their preference away from the target weed.

## **Misconception: Biocontrol takes many years and is too expensive**

The bulk of time and money involved in biocontrol comes from pre-release testing, which has been put in place to ensure that agents released will not cause significant damage to native or beneficial species. The testing process can take up to 20 years with an additional review process of 3-5 years and costs \$1-2 million. However, the cost and time to a landowner utilizing biocontrol is relatively small.

Many variables impact the length of time it takes to see decreases in weed infestations once biocontrol agents are released. In an ideal situation, you might begin to see reductions in weed infestations within three years post-release; however, the longer an agent is in an area, the more the cost-benefit ratio increases. For example, the St. Johnswort beetle, which was released in the late 1940s, has shown a return of \$4000 to agriculture for every \$1 that was put into its development.

## **Misconception: Biocontrol eradicates weed infestations**

# Misconceptions

*continued*

The goal of biocontrol is to reduce the abundance or spread of a weed infestation to a level that no longer causes concern, not to eliminate the weed from the landscape. Many of the biocontrol agents utilized in Montana have a cyclical relationship with their target weed species because it is in the biocontrol agent's best interest for a weed to survive so that the target-specific agent can also continue to survive. Once biocontrol agents are released in a dense weed infestation, the insects' population will increase significantly over time, considerably reducing the weed infestation. In response to the reduction, the insects will move on to a new infestation in search of a new food source. This allows the weed infestation to recover until insects return, after which the cycle starts again. Because of the cyclical nature of biocontrol, it is important to utilize an integrated weed management program to have the most impactful control over infestations.



Biocontrol today looks significantly different from those used in the method's infancy nearly eighty years ago, thanks to increased regulation and testing before release. Today, biocontrol is a safe and cost-efficient way to control weed infestations and is a recommended component of an integrated weed management plan.

## Missoula Weed District Secures Grant Funding for the Blackfoot Clearwater Watershed



We are excited to announce that the Missoula County Weed District was able to secure a \$462,572 grant to be utilized over the next 5 years. This grant is from Montana Fish, Wildlife and Parks Wildlife Habitat Improvement Program (WHIP) for habitat restoration in the Blackfoot Clearwater Watershed. The grant award from the MT FWP WHIP program will be matched with \$142,190 of cooperative partnership funding, bringing the total 5-year project to \$605,472. This project will encompass the FWP Blackfoot Clearwater Game Range and adjacent private lands, as well as adjoining MT DNRC lands. Partners will be treating a variety of noxious weeds to improve wildlife habitat. Target weeds include spotted knapweed, leafy spurge, yellow toadflax, houndstongue, oxeye daisy, St. Johnswort, Canada thistle, as well as containment of annual grasses such as ventanata. Partners will be using a suite of tools to manage for habitat improvement, including biological controls, revegetation, mechanical and herbicides. The Missoula County Weed District will be doing vegetation monitoring for this project over the next 5 years and look forward to seeing how this funding can help improve wildlife habitat in the Blackfoot.

# It was a great year for growing these - Now what do I do with them?



**T**he unusually hot, dry summer produced tons of tomatillos, hotter peppers, and more recognizable melons in Montana gardens. As an FCS Extension Agent, I received more requests than usual for ideas to better utilize and preserve these items. Being a “You had me at chips and salsa”, kind of person, makes Salsa Verde (green in Spanish), a summertime staple in my kitchen. It’s a perfect way to blend the best of summer into one fresh, flavorful, and easy recipe!

Whether you’ve been fortunate enough to find a local producer with beautiful, large tomatillos or you’ve grown some smaller varieties yourself, they make an excellent salsa when combined with other garden items like peppers, onions, garlic, and cilantro. The full- sun loving tomatillo plants (often called husk fruit) can produce green, yellow, or purple fruit depending on the variety. The fully ripened green fruit has a citrusy flavor perfect for mixing with the stronger flavors of garlic and peppers. The husks of the ripened tomatillo should remain attached until the tomatillo is ready for use. Peel the husks away from the ripened fruit prior to use. The underlying sticky surface will require washing with cool water before proceeding with the recipe.

## Salsa Verde

Recipe for 4-5 people, requires 6 medium or 5 large ripe tomatillos.

- 5 tomatillos
- ¼ to ½ cup fresh cilantro
- ¼ c. finely chopped and rinsed onion (roasting the onion brings out a sweeter flavor)
- 1 to 3 medium Jalapeños (or mixture of Poblano, Fresno, and Anaheim chilis) dependent on heat preference
- 2-3 large garlic cloves
- Salt

Place halved tomatillos on a large baking sheet with peppers (seeds can be removed prior to roasting if preferred), and whole garlic cloves. Toss with about 1-2 T. olive oil. Sprinkle with salt to taste. Place in 450-degree pre-heated oven and stir occasionally until the vegetables begin to take on a charred appearance. Remove from oven and place directly into a food processor bowl or blender. Pulse for a minute or two to blend ingredients. Add fresh cilantro and onion, pulsing once. Add salt to preferred taste. Allow to cool for best flavor. Serve with tortilla chips or as a taco bar item. Salsa can be stored in refrigerator for up to 5 days for optimum flavor and freshness.

Enjoy the taste of summer!



# A Bite That Bites Back

Hot pepper eating contest at the Western Montana Fair pushes contestants to take the heat and come back for more!



**F**ar beyond the hot and muggy ambient air temperature on Thursday of the Western Montana Fair was the heat contestants contending the second annual Hot Chile Pepper Eating Contest, sponsored by Missoula County Extension. Three contestants dueled off against one another to tolerate the spicy nature of different cultivated varieties of chile peppers in their bid to become the Hot Chile Pepper Eating Champion of 2021. The contest started with Ring of Fire Cayenne (50,000 – 70,000 SHU), Round 2: Habanero helios (100,000 - 300,000 SHU), Round 3: Scotch Bonnet (100,000 - 350,000 SHU), Round 4: Puma (300,000 -400,000 SHU), and Round 5: Ghost (850,000-1,000,000 SHU). Two contestants remained after the five rounds, which lead to a final round of ghost peppers in which the winner consumed four more! Congratulations John O'Donnell, who received a trophy, fair ribbon and a \$50 gift certificate donated by Pink Grizzly Greenhouse. Peppers (*Capsium* spp.) have been cultivated as a domestic fruit for 6,000 years or more in southern and central America. While only a few of the 25 species of the *Capsium* genus have been domesticated as a crop, selective breeding has led to a diversity of fruit types in size, shape, color, and level of spice. Peppers were carried from central and south America in the 16th and 17 centuries by European explorers and have spread throughout the world and have been integrated into many different cultures and cuisines.

Peppers can be a fun addition to any garden, but

will take some special management and finessing to produce a truly hot pepper. Peppers are very frost intolerant, and don't particularly even like cool evenings. Some of the hottest peppers have a long growing season, up to 220 days or more from seeding to mature fruit production, so can be a bit of a struggle to grow in Montana's climate without a good place to start seedlings and grow them in a controlled environment such as a greenhouse or high tunnel.

Capsaicin, the alkaloid that makes peppers



hot, are most concentrated in the white membranes inside of the fruit pod. The intensity of the peppers and its capsaicin is measured in a scale called the Scoville Heat Units scale (SHU), which uses instruments to measure the concentrations of capsaicin. Peppers can range from a standard bell pepper, with 0 units, to jalapeno pepper, which can range from 2,500-8,000 units, to some that are almost blisteringly spicy, like ghost peppers, at 855,000- 1,041,427 Scoville Heat Units.

# Rocky Mountain Gardens and Exploration Center

**D**uring the Western Montana Fair in August, you may have noticed we went from excavators to fences in the north-east corner of the Missoula County Fairgrounds. The construction of the Rocky Mountain Gardens and Exploration Center is literally moving forward. As you drive by the Fairgrounds this fall you may notice those large piles of dirt being relocated and more activity creating the foundation for this one-of-a-kind destination for Missoula and Montana. This project has been decades in the making. Along with our partners at the Missoula Butterfly House and Insectarium and Missoula Conservation District we are excited to be at this stage. As construction begins, we continue to plan for the 2.5 acres of educational gardens to be created following the facility completion. We have received outstanding support from the community and look forward to sharing this vision and engaging our friends, old and new, in its development. We would not be at this stage without the great team we have leading the way on this project and the campaign for support. Our team is available to share this exciting project with you,



your organizations, and businesses. Contact us at 406-370-0441, or [jenkins@missoulacounty.us](mailto:jenkins@missoulacounty.us) to schedule a presentation. To learn more about the project and how to contribute visit us at [JoinTheBuzzMissoula.org](http://JoinTheBuzzMissoula.org).

**MISSOULA COUNTY EDUCATION GARDENS MISSION**

An educational facility featuring hands-on activities and innovative programs that help the human spirit learn about growing and preparing vegetables, fruit, and herbs through plant research, education and display, while encouraging a lifelong interest in pollinators, gardening, nutrition awareness, and opportunities to connect with nature.

# 2021 Western Montana Fair

Record setting Fair draws huge crowds and hundreds of 4-H and FFA youth exhibitors to the Missoula Fairgrounds.



Despite the heat, the smoke and the Delta variant, Missoula 4-H Members managed to have a “back to normal” Western Montana Fair, and those who sold market animals at the Livestock Auction saw record-setting prices. Prior to the official start of the Western Montana Fair on August 11th, many 4-H Members competed in the Fair-sponsored Horse Show, Dog Show and Shooting Sports competitions. All Exhibitors sat down with adult volunteer project interview judges prior to exhibiting, and livestock exhibitors competed under the scrutiny of professional livestock judges in both showmanship, and animal conformation classes.

Some Highlights from the market animal shows are below:

- Grand Champion Beef exhibited by Kyla Roberts
- Reserve Champion Beef exhibited by TJ Brown
- Grand Champion Mini Beef exhibited by Kallie Rummel
- Reserve Champion Mini Beef exhibited by Bow Petersen
- Grand Champion Sheep exhibited by Sophie Reeves
- Reserve Champion Sheep exhibited by Haley Wolsky
- Grand Champion Hog exhibited by John Warner
- Reserve Champion Hog exhibited by Ben Holtzen
- Grand Champion Meat Goat exhibited by Michael Rummel
- Reserve Champion Meat Goat exhibited by Oliver Long



The Missoula area Business Community was out in full force for the 4-H / FFA Livestock Auction on Saturday the 14th, opening their checkbooks for record setting prices in all species. By supporting youth with such generosity, they put more than \$600,000 back into the local economy, as kids use their sale money to pay feed bills, purchase animals for the 2022 Fair, and save for college education. Buyers were rewarded with some of the highest quality locally sourced meat products available.

Record Setting Livestock Sale prices:

- Beef \$4.77 per pound average (\$2.89 in 2020)
- Mini Beef \$4.47 per pound average (\$3.07 in 2020)
- Sheep \$10.02 per pound average (\$7.38 in 2020)
- Hogs \$7.20 per pound average (\$5.36 in 2020)
- Meat Goats \$10.13 per pound average (\$6.00 in 2020)



# Upcoming Events:

LOLO MOSQUITO DISTRICT  
& TRAVELER'S REST STATE PARK



## BATS & SKEETERS

JOIN US TO LEARN  
ABOUT MOSQUITOES &  
THEIR PREDATORS!

SUNDAY SEPTEMBER 12, 2021  
2-3 PM - PRESENTATION ON MOSQUITOES & BATS  
3-4 PM - HELP US PAINT BAT HOUSES TO PUT UP AROUND LOLO  
TRAVELER'S REST STATE PARK  
FREE & OPEN TO THE PUBLIC



Conference hosted  
by MSU Missoula  
County Extension  
Office, with  
support through  
WSARE.



WESTERN  
**SARE**  
Sustainable Agriculture  
Research & Education

## Montana Small Farms Conference



**October 19-20<sup>th</sup>, 2021**

**Missoula, MT**

Attend this two-day conference with presentations about growing high value perennial crops, niche markets for meat products, small farm management, selling and marketing your farm products, and many other topics. Includes half-day tours to local small farms and agricultural businesses.

**Registration:**

\$65 per person (lunch included both days)

<https://www.missoulaeduplace.org/horticulture-events>