

AGRICULTURE

Golden Plains Area Newsletter

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Colorado State University, U.S. Department of Agriculture and Kit Carson, Phillips,
Sedgwick, Washington, and Yuma Counties cooperating.

Extension programs are available to all without discrimination.

HORTICULTURE

AAS Heirloom Winners for 2020

By CSU Horticulture Agent, Linda Langelo

All-American Selections is re-introducing heirloom flowers to our gardens. Heirloom flowers are at least 50 years old or older. All-American Selections have picked twelve winners which they classify as historical winners. Flowers have an amazing history.

The earliest re-introduction takes one back to 1934, the Hunnemania Sunlite a Mexican Tulip Poppy that grows in sandy or loamy soils. They are native to North America and great for naturalizing and as a cut flower. Their season long continuous bloom will enhance any garden.

The Royal Purple Zinnia in 1942, was a Giant Dahlia form, primarily native to Mexico but has been found growing wild in Colorado. The Spanish explorers brought the first zinnias to Europe in the 1500s according to Harvesting History. Zinnias were at first in colors of orange, brown and yellow as a daisy-like flower. Not until 1864 were double flowering zinnias bred in purple, orange, salmon, and red.

Morning Glory Blue Star in 1949 was once described in Vaughn's catalogue as a sport of 'Heavenly Blue'. According to Everwilde Farms,

historical research demonstrates ancient people of New Mexico and South America used the sticky liquid of the morning glory vine as a crucial ingredient in the production of latex. Blue is a prized color in any flower. 'Blue Star's parent 'Heavenly Blue' won the Royal Horticultural Society Award of Garden Merit in 1804.

Celosia Toreador in 1955 were not considered a potted plant as they were by the British in the was 18th century. The American colonists considered them a popular garden flower including Thomas Jefferson. According to Harvesting History, in the 1920's and 1930's, these plants became popular in exhibit competitions at county/state fairs. The objective was to product the plant with the largest crest of which on record was one award winning specimen which had a 21-inch crest.

There are several more re-introductions by the AAS Winners which are listed on their website, <https://all-americanselections.org/>. Flowers have an amazing history. They have their own stories to tell. Go on and look up the history behind the heirloom introductions

Co-Hort Attracting Birds all year-round or Feed the Birds

By Linda Langelo, CSU Horticulture Agent

How do we care for our fine-feathered friends throughout the year? Here are a few suggestions based on what are a bird's basic needs:

- Birds need a diversity of food sources
- Like any wild animal, birds need shelter
- Birds need nesting sites
- Birds need plenty of water

In among the trees and shrubs, various birds have different niches at different levels. Some forage on the ground while others forage and stay among the treetops.

But here is the important thing. Naturally occurring local plant material is the best for attracting

birds. Why? The birds are familiar to the local native plant venue. Without a good mix of native plants, there really is nothing on the menu. I compare this to my own dietary restrictions. I am gluten free. When I am out traveling and stop to eat, unless there is something I can eat on the menu, I won't be stopping.

Here are a few native shrubs from which to choose:

- Serviceberry- *Amelanchier alnifolia*
- Red Twig Dogwood- *Cornus sericea*
- Wax Currant- *Ribes cereum*
- Red Berried Elder- *Sambucus racemose*
- Western Sand Cherry- *Prunus besseyi*

Woods' Rose- *Rosa woodsii*

Silver Buffaloberry- *Shepherdia argentea*

Sumacs

For more comprehensive listing of native shrubs in Colorado, here is a good Colorado State University Extension Fact sheet: 7.422 Native Shrubs for Colorado Landscapes;

<https://extension.colostate.edu/docs/pubs/garden/07422.pdf>

Providing shelter varies with the species of bird. According to "Birds and Blooms", Chickadees prefer small trees and shrubs or thickets for shelter while Blue birds prefer being close to open fields. For the various birds that come in your landscape, you can provide bird houses for them in their preferred habitat. Here is a link to an article from Birds and Blooms:

<http://www.birdsandblooms.com/birding/birding-basics/attracting-nesting-birds-better-birdhouses/>

Another very important thing is birds choose their habitats at different levels in the landscape. Some spend a lot of time close to ground level and some spend their time among the tree tops. Pay attention to

this when placing your birdhouses.

Water is the next important thing. Like all other living beings, birds need water. They need it 365 and a half days a year. The trick according to Cornell Lab Ornithology is selecting the right type of birdbath. It cannot be too deep. It needs to be somewhat sheltered for protection. Birdbaths need to be easy to clean. For more specific details, here is the link to Bird Notes from Sapsucker Woods by Cornell Lab Ornithology: http://www.birds.cornell.edu/AllAboutBirds/notes/BirdNote09_ProvideWater.pdf

One final and interesting note about birds is the colors which attract different species. Here is a link to the National Wildlife Federation article: "True Colors: How Birds See the World," by Cynthia Berger (2012). In short, birds have 4 cone cells in their eyes while we have three. The fourth cone cell is sensitive to seeing UV wavelengths. Plus, it has been discovered that birds have a colored oil in each cone cell. Overall, they see what we cannot. Happy reading!

<https://www.nwf.org/Magazines/National-Wildlife/2012/AugSept/Animals/Bird-Vision>

Bees and Drought

By CSU Horticulture Agent Linda Langelo



How are you surviving in these 100-degree days? I am hot. How about you? Have you ever thought about how the bees are doing in this drought and heat? Drought is very stressful on bees as it is with all

other living beings. Without water, life ceases to exist. Bees need water daily. Bees do not store water. They need it for themselves and for the hive.

Here are a few reasons bees require water daily:

- Water is essential for temperature and humidity control. The bees bring water to the hive for the young bees developing in the brood.
- The evaporative cooling in the hive keeps the temperatures down. The nest temperature is best kept around 35 degrees Fahrenheit.
- Food for the brood is watered down to 70% water and honey pollen.

- The worker bees control the humidity of the hive.
- Water is essential for utilized stored food. Bees use the water to dilute the food because the glucose content may be too high.
- Water is essential for the nurse bee who needs water for their hypopharyngeal glands can produce jelly for the larvae.
- Water is essential for digestion.

Just how much water does a colony require in a day? According to Bees for Development, on hot days bees may collect several gallons of water every day. One bee can make up to 50 trips a day to collect 25mg of water.

That sounds like a lot of work for a worker bee! How do the bees find a nearby source of water? Since bees control the humidity of the hive, they are good at finding sources of water by the higher humidity in the air which is above a water source. Shallow sources of water may be missed because they do not increase the humidity in the air as much as does a deeper source of water. Bees can drown in deeper sources of water. Providing a way for them to reach the water safely

without drowning is key.

Bees are also sensitive to odors. So, if you are providing a source of water, make sure it is free of chemicals.

How can you help provide water for the bees?

- 1) Get a container that is shallow and wide. Put stones and/or twigs in the water for bees to rest on or the bees will drown.
- 2) Be sure to change and/or add water daily.
- 3) Place the container close to the hive.

If you have a birdbath, bees can land on the edge and drink water safely as shown in the photo below along with the other photos of watering holes for bees:



Photo credit: Christine Casey, UC Davis, The Bee Gardener



Photo credit: Nicolefoto/iStockphoto – Science News for Students



Photo credit: Christine Casey, UC Davis, The Bee Gardener

Unsolicited Seed

By CSU Horticulture Agent, Linda Langelo

If you have received unsolicited seed in the mail in a package, please do not plant them and do not throw them away. Please see the links below, especially the link from the Colorado Department of Agriculture. We ask that any individuals receiving such seeds should follow the steps outlined by CDA.

<https://www.colorado.gov/pacific/agmain/news/ag-department-asking-reports-unsolicited-seeds-received-mail-0>

For additional information, here is information from the USDA-APHIS.

https://www.aphis.usda.gov/aphis/newsroom/stakeholder-info/sa_by_date/sa-2020/sa-07/seeds-china?utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term

The United States Department of Agriculture does the following:

Plant Protection and Quarantine (PPQ) regulates the importation of plants and plant products under the authority of the Plant Protection Act. PPQ maintains its import program to safeguard U.S. agriculture and natural resources from the risks associated with the entry, establishment, or spread of animal and plant

pests and noxious weeds. If you would like to read more about this, please go to the following link: <https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information>

Remember Dutch Elm Disease? Below is a link from the American Phytopathological Society: <https://www.apsnet.org/edcenter/disandpath/fungalasco/pdlessons/Pages/DutchElm.aspx>

In the 1920's furniture makers used European Elm logs for veneer on cabinets and tables. By 1930's the disease was uncontrollable and swept across the country killing American Elms. Dutch elm disease killed over 40 million American Elms and though it started in the 1930's it took until 1973 to reach the west coast from the east coast.

Our first line of defense is accomplished by the Department of Agriculture who have trained specialists

to inspect plant material. Anyone can however send unsolicited plant material through the mail. As individuals we can even inadvertently carry insects or disease from region to region. The best example is with firewood. Bark beetle has been transported to other regions through firewood. According to the Forest Service, to avoid this, select dead and dry firewood from forests where collection is allowed. At home, burn firewood by the end of June before any remaining beetles emerge to infest other trees.

There are many examples of similar issues that have occurred in your region. Please feel free to check with your local Extension Service about any newly emerging pests or diseases for your region. Become aware and help control the unnecessary spread of bark beetles and other plant issues.

Gall or Herbicide Damage

By CSU Horticulture Agent, Linda Langelo



Herbicide injury from a growth regulating type herbicide 2,4-D, dicamba, triclopyr or picloram.

LIVESTOCK

Controlling Flies on Beef Cattle

By CSU Livestock Agent Travis Taylor

Driving the roads right now, we see cattle herds bunched in pasture corners, standing in ponds, or worse stamping out large areas of grass. It is fly season, and those pests have been causing weight loss, cattle discomfort and rancher aggravation for years. Horn flies have been shown to feed on animals up to 30 times each day and Face flies can travel up to 2 miles and effect both gain and animal health. Unfortunately, there is not a “one size fits all” product that will eliminate flies, so a producer’s best option is to implement a control strategy. Producers should contemplate if feeding a substance that breaks the insect lifecycle or a larvicide like insect growth regulator (IGR) works with their operation goals. Cows need to be fed such products, usually in a mineral or protein supplement starting 30 days before flies typically emerge, until 30 days after a killing frost. Another measure that is being successfully utilized is fly tags. With new technological improvements fly tags are now better able to release a uniform insecticide concentration and are an effective tool in controlling flies. It is recommended to rotate between pyrethroid and organophosphate based tags, reducing chances for building flies’ chemical resistance. Follow label directions on the number of tags per cow, and refrain from using the same chemical tag type more than two years in a row. For best results when using tags, wait until you have around 200 flies per cow to tag

as applying too early decreases their efficacy. Keep in mind that tags should be removed in three to five months to help with resistance issues.

Other control measures such as pour-ons, sprays and dust bags are proven beneficial. A pour-on can be used at the same time you fly-tag cows. Most pour-on dewormers will also have efficacy against horn flies and will have the added benefit of controlling internal parasites. If deemed necessary to re-pour cattle later in the season, switch to a product only labeled for flies and/or lice as using the same deworming product multiple times throughout a given year can contribute to internal parasites building resistance. Spraying or fogging cattle in certain situations can be beneficial, but the equipment and chemical clean-up necessary makes it less economically feasible for a majority of producers. Cattle rubs or dust bags, when placed correctly can provide for cost effective control of flies. The tradeoff is the time and management required to keep equipment charged with insecticide and in proper working order. Utilizing only one of the fly control methods will most likely not give you the results you desire. Using a multifaceted approach, rotating insecticides and consulting with your beef extension specialist, veterinarian and animal health consultant to talk strategy can help increase herd health and protect your bottom line.

Drought, Plan Your Response

By CSU Livestock Agent Travis Taylor

With the national weather shifting from the El Nino to a La Nina pattern, over 80 percent of Colorado finds itself in some form of a drought situation. This triggered the State Drought Mitigation and Response Plan phase two to be activated. This also activated the Agricultural Impact Task Force which will conduct an initial assessment on physical and economic impacts and recommend mitigation opportunities. Cow/calf producers should have a thought out and well developed plan to deal with drought. A plan that ties to the economics and grazing resources under the ranches control. The cow herd can be thought of as the “Factory Unit,” but without the forage input and land to put the factory on a producer has limited options for economic success. Drought plans should involve a series of trigger points to help the operation make strategic and thought out positions when dealing with drought. This allows producers to make calculated decisions that take into account forage and soil health, tax situation, cow herd genetics, long term recovery and ranch profitability. Emotions can drastically affect the decision making process during drought, by responding to preset trigger points ranches can respond without having the desperate “all or nothing” decisions.

Measuring parameters need to be established to determine trigger points. The easiest measureable parameter for most operators is the amount of precipitation or rainfall through the winter and spring. Just as important is the timing of moisture. Moisture after the cool season grass species growing season does little to improve range stocking rates. It is certain that the amount and timing of rainfall immensely impacts the forage produced in a given year. With this in mind, trigger points need to be established accordingly. For example a ranch may normally receive 50 percent of its annual rainfall by July 1, but at that date this year rainfall is only thirty percent of normal. A significant decrease may trigger the ranch to early wean calves to decrease cow forage and nutritional demands.

Another example would occur if on October 1 the ranch has received only 50 percent of its expected rainfall. This could trigger one or more of the responses

that no replacement heifer calves are kept, or all cows over nine years would be sold. Such moves should be seen as an opportunity to increase the productivity and efficiency of your cowherd. Other actions that could be associated with trigger points may be to cull cows below a body condition score of 4 or cull the cows that weaned calves weighing in the bottom 25 percent of the heard the past two years. Actions taken during drought plans should target efficiency such as reducing average cow age, shorting calving period, or removing cows with higher maintenance requirements.

It is important to have a number of trigger points and reasonable responses. The longer a drought continues the more aggressive producers need to be to reduce grazing pressure on the ranch. Producers that sell prior to a necessary drought liquidation phase, and when indicators tell them to do so, usually receive higher prices for their cattle. This gives those same producers a better position financially to re-stock and land more time to recover. It is important to remember that feeding your way out of a drought is expensive. Seedstock producers may attempt to do this to preserve the valuable genetics that they have developed, but in a commercial situation it can be costly to maintain the core herd genetics during periods lasting over a year. During multi-year droughts it may become imperative to remove all grazing from the rangeland, and available hay and alternative forage most likely will be expensive in such a situation. Ranches that have a responsive drought plan, are proactive, and understand managing to stockpile standing forage during wet years are better able to react to a drought. It is economically important to have plans, record important information, and be responsive when facing drought to make sound decisions and decide on the spur of the moment. The Colorado State University Extension ABM team has created some decision tools to help producers that can be found at <http://www.wr.colostate.edu/ABM/decision.shtml> website. The “Buy Hay or Sell Cows” and the “Strategies for Cattle Herd During Drought” spreadsheet tools can assist producers with making the right financial decisions for their operations.

Nitrates in Livestock Feeds

By CSU Livestock Agent Travis Taylor

Dry weather has left Colorado crop and livestock producers pondering what to do with failing crops and in search of alternative livestock forages. Plants under optimal growing conditions convert nitrogen from the soil into stored protein. Stressed growing conditions, such as the current dry weather interfere with a plants ability to convert nitrogen and it accumulates as stored nitrate. Forage crops, especially grass types (corn, sorghum, barley, wheat and millet) can store excess nitrates in plant tissue when the plant is stressed during growth. Other plants like pigweed, wild sunflower and kochia are known to store nitrates. Normally, livestock convert nitrate to nitrite which is excreted in the urine. However, excessive levels that animals cannot process are absorbed into the blood stream and block oxygen transport, thus causing the animal to be starved for oxygen. Feed containing extreme nitrates is toxic, but even elevated levels when fed will cause poor performance and possible aborted pregnancies. Individual response to nitrate levels and the toxic level can be different for each animal.

When should you worry about nitrate in feedstuffs? Conditions such as drought, hail, hot winds and even extended periods of cloudy weather when swathing can change forage nitrate levels. Other contributing factors like high levels of fertilizer or manure application, as well as the timing of herbicide application can

compound nitrate problems. In short, if a forage has been significantly stressed during growth, it is important to test for nitrates. A diphenylamine test can be done and returns a quick positive blue or purple color in plant tissue containing higher nitrate levels, but cannot determine the feeds actual nitrate level. Forages that test positive should have a more detailed qualitative analysis test done to determine actual nitrate levels. The Colorado State University Extension fact sheet found online at <https://extension.colostate.edu/topic-areas/agriculture/nitrate-poisoning-1-610/> contains guidance for testing and information about what levels are safe for different classes of livestock.

Forages that test higher in nitrates can be utilized, but they may require some additional processing and especially mixing to be feed. Standing forages may be sparsely grazed as plants tend to store excess nitrates in the stalk of the plant. If being baled, failed crops might be swathed at a taller height to leave more stalk behind and thus lower the nitrate level in bales or silage. Additionally, non-pregnant livestock can tolerate higher nitrate levels, but such adaptation takes time. In this dry year, producers should make sure to test for nitrates if putting up failing crops or purchasing stressed feeds. For additional information on nitrates in feeds contact your local CSU Extension Office.

How Much Hay Do I Need

By CSU Livestock Agent Travis Taylor

There are many factors that determine the amount of feed needed to winter your mature beef cow herd. Several estimates are required, but more precise information increases a producer's ability to make critical financial decisions. Understanding the average cow size in your herd is important. The best time to get an actual average cow weight would be after weaning and early in the second trimester. Just as importantly, producers should have an accurate inventory of available

standing or baled forage when estimating winter feed needs. Better decisions can be made with actual forage quality tests, or more educated forage quality estimates.

Higher-quality forages have larger concentrations of important nutrients, and cattle can consume them in greater quantity, as rumen fermentation is increased, allowing for quicker passage and utilization. Additionally, after calving, cows will be able to consume a higher percent of their body weight, which

increases the needed total ranch winter feed availability.

Remember that no two balers are exactly the same, so as producers it is important to have an understanding of your winter forage supply available and its quality.

Glenn Selk, Emeritus Extension animal scientist from Oklahoma State University, listed the following general beef cow guidelines relating to forage consumption in the November 12 Cow-Calf Corner broadcast. “Low-quality forages (below 6% crude protein) will be consumed at about 1.5 percent of body weight (on a dry matter basis) per day. Higher-quality grass hays (above 8% crude protein) may be consumed at 2 percent of body weight. Excellent quality forages like good alfalfa, silages or green pasture may be consumed at the rate of 2.5 percent dry matter of body weight per day.”

To illustrate, imagine you have 1,200 pound pregnant spring calving cows in good condition (BCS 5-6), and a sorghum hay supply that tested 8 percent crude protein and 90 percent dry matter. Cows should consume 24 pounds of dry matter per day (1200 lbs. x 2% = 24 lbs.). Adjusting for dry matter content of the forage (24 lbs. DM/ 90% forage DM) the cows should voluntarily consume 26.66 pounds per head each day. In a 100 cow

herd fed 120 days, or January through April, the producer would estimate feeding 160 tons of hay. If the same cow herd had an average mature cow weight of 1,300 pounds the estimated feed inventory needed would be 173.33 tons. The percent increase or decrease in total feed required is the same as the percent change in mature cow weight, or an increase of 8.33 percent in this example.

Another component to be estimated is Hay wastage. Different feeding methods can improve hay waste which generally ranges from 10 to 20 percent, but can be even higher. At 15 percent in the above example, that would be an additional 24 tons or an entire semi load wasted. Assuming an \$85.00 per ton hay value that is \$20.40 per cow and increases the break- even price for 500 pound calves by \$5 per hundred weight. Waste estimates are influenced by factors like wind, mud, snow, feeding area, forage type and feeding equipment. Extended periods of cold and wet weather equates to cows needing increased energy and additional feed. By using more precise estimates relating to forage available and mature cow size, producers can better calculate an operations winter feed needs. More accurate estimates mean better management decisions and translate into a more profitable operation.

AGRONOMY

Development of Alternative Crops

By CSU Agronomist Todd Ballard

Alternative crops bring both benefits and challenges that are not present in the major crops of our region. Growing an uncommon crop means pest pressure will likely be lower. It also means finding a market can be unreliable. Several alternative crops have potential in our region. They also come with a higher risk of crop failure. Being a cutting-edge producer can bring pride and joy. But, producing crops that are not common in the region means having to search harder for answers to challenges.

Canola is a major crop in the Canadian great plains,

Montana, North Dakota, Minnesota and western Europe. Breeding efforts for canola have expanded its growing region into parts of the southern great plains. Colorado has not been approved for crop insurance for the crop in 2021. The challenge to developing canola varieties for this region is winter kill. Canola that has broken winter dormancy becomes sensitive to late frosts. Eastern Colorado is more likely to receive a frost after winter dormancy has been broken than Montana and the Dakotas due to a tendency for frosts to occur after several warm days with no snow cover. The resistance to winter kill is improving over time with the Kansas State

University breeding program focusing on this issue.

Cotton is another potential alternative crop. The highest cotton quality globally comes from Egypt. Cairo sits at the same latitude as Houston, has rich soil, and an adequate water supply from the Nile River. Growing cotton eleven degrees north of there in a semi-arid region results in shorter lower value fibers. The nearest operational cotton gin is in Hutchinson, KS. To produce cotton in our region would require varieties that can consistently mature early with a drier summer. Growers would either need to plant on a large enough scale to justify a local gin or commit to sending bales by rail to central Kansas.

Sunflower is a member of the Asteraceae family that is native to the region. It is well adapted to semi-arid conditions and can grow in a shorter growing season than here. North Dakota is the largest producer of sunflowers. CSU Extension has a sunflower expert on staff in Ron Meyer. The crop provides a high protein

meal and a cooking oil. Marketing should not be a challenge as the pork industry is interested in using the meal. The drawback of sunflower in a semi-arid region is also what makes it well adapted. Sunflowers are water scavengers. This trait leaves little water behind for the next crop. The best time to grow sunflower is likely before chemical fallow in your rotation.

Sesame produces a high value cooking oil. The crop has an established U.S. growing area across the southern border from California to Florida and as far north as central Kansas. Sesame is well adapted to high afternoon summer temperatures. The biggest challenge with producing sesame is its inconsistent maturity. Pods near the bottom of the plant will be mature and shattering long before the plant stops producing seed. Flowers can still be open on the top of the plant when shattering on the bottom begins. The sesame seed company in the U.S. has long focused their breeding efforts on reducing the tendency to shatter with limited success. Harvest timing remains an essential decision to success in sesame production.

Integrated Pest Management

By CSU Agronomist Todd Ballard

Integrated pest management (IPM) is a commonly used term in agronomy. IPM implies the use of multiple tools to control pests in your fields. While the name lends itself to control of unwanted animals, IPM is used as a strategy to control any unwanted organism. Let us look at some of the tools; why they work and why adaptation to current conditions is necessary to keep as many tools viable as possible.

Tool 1

Crop rotation has been used for centuries to avoid pests. Insects will lay their eggs in areas where they expect the host plant to be present upon the eggs hatching. Wild plants will drop their seeds close to the mother plant or be carried by wind and water downstream of the mother plant. Insects would lay their eggs accordingly. Agriculture changes that tendency. Breeding to domesticate plants has in most cases increased seed size to the point of wind not carrying seeds away. Shattering of crops has also been

decreased greatly. While volunteer crops certainly occur, the volunteers are nowhere near the population density of an intentionally cultivated crop. Rotating away from the prior year's crop has interfered with the insect's tendency to lay their eggs where the host is currently growing. Insects have adapted to this change through at least two techniques: extended diapause (Levine et. al, 1992) and laying eggs in fields with crops other than the host (U of IL, 2020). For crop rotation to continue to be effective the diversity of crops in a rotation should be increased.

Tool 2

Natural enemies are commonly promoted by organic producers. They should also be part of the IPM strategy of conventional producers. Lady beetles eat many pests including aphids, mites, white flies, and scales. If scouting finds lady beetles in your field, consider delaying insecticide application to see if they can control your insect problems. Parasitoids exists for

many insects. Releasing parasitoids has been successful in controlling some pests including the sugarcane stem borer. In other cases, the reproductive rate of the pests far outpaces the ability of the parasitoids to control them. This is the case with the wheat stem sawfly. Amphibians and lizards also play a role in the control of insect pests. Rodent pest populations can be reduced by the presence of owls. Consider adding barn owl boxes close to your fields to promote their presence. Barn owl boxes bring another beneficial organism to your fields as well. They are attractive homes for honeybees to start hives.

Tool 3

Making the habitat inhospitable to pests by changing a cultural practice contributes to IPM as well. The water level in rice fields is manipulated throughout the growing season to control two major pests. Rice water weevil will not lay their eggs in shallow water. They have developed this aversion due to the risk of shallow fields drying out before the eggs hatch. Early in rice growing season when water weevils are the greatest threat to young stems, the fields are kept shallow. Later in the season when stinkbugs chewing on developing seed heads is a problem, the opposite management technique is used. Stinkbugs avoid water over four inches deep, so the water depth in rice patties is raised to discourage their presence. A bordering buffer crop can be used as a cultural practice to decrease wheat stem sawfly damage. The flies being carried in by wind will be caught by taller stemmed thickly populated triticale planted around the border of wheat fields. This filter will decrease the number of flies entering your field.

Tool 4

Genetic resistance to pests is perhaps the most sought-after approach by producers. In 2013 grain sorghum crops in Texas were devastated by the sugarcane aphid. Growers throughout the sorghum belt became concerned of the cost of controlling this insect. Seed companies quickly discovered a gene to make new hybrids resistant to sugarcane aphid. Since the gene is a dominant trait, it was easy to identify parents which contained the gene. By 2015 many sugarcane aphid resistant grain sorghum hybrids were available. Similar approaches are taken by breeders with respect

to disease. Corn smut is uncommon due to resistant hybrids. Rusts of many crops have been reduced by the development of resistant varieties. Unfortunately, the proliferation of previously uncommon biotypes of both insects and pathogens will break down the resistance to these pests causing the need for further breeding efforts. Agriculture will always be changing to adapt to the evolutionary tools that it created selection pressure to promote.

Tool 5

Finally, pesticides are effective in many pest management situations. Pesticides are quick and they do less long-term damage than mechanical practices such as tillage. In many cases, they are the cheapest route. Much like genetic resistance built into varieties, using the same pesticide repetitively will promote the proliferation of resistant biotypes. To delay or ideally prevent a buildup of pesticide resistance, the pesticide used should be rotated. A Johnsongrass control plan during fallow may look like glyphosate applied in the spring followed a group 1 herbicide after it recovers from injury, the final application before returning to glyphosate application would be a group 18 herbicide. Using all three of these modes of action to control a perennial grass decreases the chance of any given specimen being resistant to the entire management strategy.

Stewardship for pesticides goes beyond managing the buildup of resistant populations. These chemicals must be handled with respect to prevent the damage they will cause if misused. Harm to the handlers can include chemical burns, short term toxicity, and lifelong health risks. Harm to the environment can include biomagnification and interruptions in the food web. To avoid these risks always read the chemical label before applying. Chemical handlers need to be trained in the worker protection standards. Their supervisors need to be licensed applicators to minimize the risk to both the handlers and the environment.

Combining all these tools into IPM will provide the most sustainable suppression of pests' damage. To seek advice on implementing a plan for IPM on your farm feel free to contact CSU extension.

Agronomy Agent's Corner #7

By CSU Agronomist Todd Ballard

Farm Safety

Safety is always a major concern on farms. In high school, my power mechanics teacher asked the class one day “what is the most dangerous profession in the U.S?” His answer was farming. I don't know if he had data to back up his statement, but the intent of the question was to point out how many hats farmers wear. The reasoning was farmers are distracted from focusing on safety from having many other career tasks. Farmers are heavy equipment operators, hazardous material handlers, biologists, mechanics, and businesspeople.

The risks of farming have not left those close to me unscathed. My father had a head injury from dropping boards while preparing to rebuild a horse stall. I fell in a gopher hole while measuring out plots for a study. The resulting injury required a knee surgery and several months of rehab. Others working in neighboring farms lost their lives to vehicle accidents.

Risks can be reduced by using the following tools.

Tailgate meetings

The idea of a tailgate meeting is to have a ten to fifteen-minute discussion each week to remind workers of how to mitigate a specific risk. It is a good idea to look ahead to see if any job tasks will be occurring in the next week that have not been completed recently. If corn planting is coming up, a good tailgate meeting would be repetitive motion or heavy lifting. If your team will be handling a particularly hazardous chemical like paraquat, reading over the safety data sheet would be the appropriate tailgate meeting. Getting into the habit of discussing potential risks shortly before working around the risks decreases the chances of a major injury. Ohio State University has a list of tailgate meeting topics

available at <https://ohioline.osu.edu/tags/agricultural-tailgate-safety-training-operators-and-supervisors>. If you do not find a meeting guideline here that you are looking for, please contact me and I will look for other sources. Or work with you to create a summary of the topic.

CDMS

Crop Data Management Systems, Inc has a large database available to review EPA approved application labels as well as safety data sheets for farm chemicals. This tool will help train in not only the safety aspects of chemical handling, but also to learn on the active ingredients and labeled crops for each branded product.

WPS

Farm owners are mandated to provide each worker on the farm that is not an immediate family member with eight hours of safety training as described by OSHA on an annual basis. The training is known as the Worker Protection Standards (WPS). This training allows those without a pesticide applicator's license to handle restricted use pesticides under the guidance of a licensed applicator. Key aspects of WPS training are ladder safety, heavy lifting, repetitive motion injuries, how to read a safety data sheet, handling of pesticide contaminated clothing, and recognizing the systems of pesticide exposure.

Mental Health

Social isolation and long work hours are both risks factors to mental health. Farmers are exposed to both on a regular basis. According to Health Day in some years the farmer suicide rate is up to five times that of any other occupation. The added stress of a financial downturn only adds to this risk. Please speak openly about mental health concerns with your physician.

AG BUSINESS



United States Department of Agriculture
Farm Service Agency

BREAKING AG NEWS: Requirement to Remove Livestock Prior to First Freeze Date for CRP Emergency Haying and Grazing has been Waived

WASHINGTON, September 15, 2020 — The Farm Service Agency (FSA) in Colorado announced that producers no longer have to remove livestock 30 days prior to the first freeze date on acres approved for emergency haying or grazing. This requirement has been waived for the 2020 program year in response to the critical need due to extreme drought. Producers approved to hay or graze their CRP acres may continue to do so according to their approved conservation plan with no requirement to implement a 30-day rest period on the cover.

Conditions in Colorado have been progressively dry with deteriorating rangeland and wildfires plaguing millions of acres. As a result, producers have been faced with difficult decisions about how to manage their livestock in these tumultuous times. The requirement for producers to remove livestock for 30 days would impose an extreme hardship. Emergency haying and grazing of CRP acres has been a tool used by farmers and ranchers to provide relief. As drought conditions persist, emergency haying and grazing on CRP acres provides an option to graze and feed their livestock to avoid marketing their herd prematurely.

All other policies regarding emergency haying and grazing remain in place. It is important for producers approved for emergency haying and grazing to understand the requirements and to follow their conservation plan to ensure long-term damage to the cover is avoided and minimum stubble height to ensure plant thermal cover is adequate.

Questions regarding this waiver and any other issues pertaining to CRP emergency haying and grazing, should be directed to your local FSA office.

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