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**Wanted!
Spottedwing Drosophila**



The spottedwing drosophila (*Drosophila suzukii*) is an insect of Asian origin that was first discovered



Photographs from Michigan State University Extension Bulletin E-3140

in North America in 2008. This insect has caused considerable concern because it is capable of damaging intact ripe fruit, particularly soft-fleshed fruit such as raspberries, strawberries and grapes.

The injury from this insect that is most likely to be observed is *the presence of numerous, tiny pale-colored maggots in the flesh of ripe berries.* If reared to adulthood, males of this species are identifiable by having a dark spot on the forewing.

The first Colorado record of this insect was from Fort Collins in 2012. It is important that surveys be done during the upcoming season to identify other areas where this important pest may have become established. If you think you have found this insect in Colorado please report it so that the establishment and spread of the spottedwing drosophila in Colorado can be tracked.

Suspected samples of spotted wing drosophila can be submitted to County Extension offices or directly to the CSU campus. If using the latter please send the samples to Department of Bioagricultural Sciences and Pest Management, Attn: Whitney Cranshaw, Colorado State University, Fort Collins, CO 80523-1177. Prior to sending samples, email contact is suggested Whitney.Cranshaw@ColoState.EDU.

NOTE: There are numerous other *Drosophila* species found in Colorado. These develop on the yeasts of overripe fruit and are the well known “fruit flies” of the fruit bowl. Although very similar in appearance, these do not attack intact fruit. Adults of these other *Drosophila* species also lack any wing spotting.

AGRONOMY

Yield Monitor Calibration

R.F. Meyer, GPA Agronomy Extension Agent (rf.meyer@colostate.edu)

Combine yield monitors are an excellent tool to help determine grain yields while harvesting. However, proper calibration is required to help maximize their effectiveness and information provided.

To record yield with accuracy, yield monitors require careful calibration. The calibration process should begin with a review of the operators manual on how to properly calibrate all aspects of the yield monitor system. If a certified scale is not available, acquire a calibrated weigh wagon to assist in the calibration process.

Before going to the field, search the web or contact the yield monitor manufacturer for any software upgrades. Satellite subscriptions should be reviewed to guard against expiration during harvest and the satellite signal and monitor should be providing the proper differential correction. The memory card should be operating properly and any existing data should be saved to another location, preferably an office computer. Examine measuring devices on the combine to find wear, loose connections, or missing parts that require replacement.

Header stop height switches should be checked for proper operation and adjusted accordingly. Input information for proper row width and number of rows or platform width should be checked. The combine ground speed indicator should be observed for proper calibration by operating the combine in near-field conditions (non-road). The combine grain separator should be engaged to observe for irregularities in the elevator speed indicator.

Combines should be at field temperatures and in direct sunlight for calibrating

temperatures. Air temperature readings should be collected near the moisture sensor.

To calibrate for moisture content, a representative sample of each grain type should be collected and measured on a properly-adjusted moisture tester. For the load calibration process, a representative sample from a uniform crop area should be harvested. This is where the weigh wagon can be used to check for load weight calibration. After calibrating in uniform areas, move to non-uniform areas, such as hill sides, and harvest a sample as the flow rate will likely be different. Again, check the load with a weigh wagon.

Test weight should be checked on each type of grain such as white corn, yellow corn, and high-oil corn.

Proper calibration should be continually checked throughout harvest and adjusted accordingly. If combine parts are replaced or become worn, recalibration may be necessary. Recalibration should occur if: 1) there is more than a five percent error difference, 2) there is a temperature change of 10 degrees or more, or 3) there is a five pound per bushel difference in test weight.¹

Data should be frequently downloaded to another memory card or computer to help guard against lost data. With proper calibration and periodic system checks, combine yield monitors will provide accurate and instant yield results from each field on your farm.

Source: ¹Watermeier, N. Yield monitor calibration tips: Making the most from your data. ANR-8-04. Fact sheet. The Ohio State University Extension. <http://ohioline.osu.edu> (verified 8/22/11) Growing Knowledge, issue 1110, Monsanto Agronomy Center.



Harvest Tips for Lodged Corn

With larger than average areas dealing with lodged or downed cornstalks in some Colorado fields due to rootworm issues and/or hail, it's a good time to review steps to take when faced with harvesting significant areas of lodged corn.

The only way to evaluate whether any harvesting aid or technique is helping is to measure harvest losses. Each 3/4-pound ear on the ground per 436 square feet equals a loss of one bushel per acre.

Tips for Machine Operation to Reduce Losses

- Set gathering chains for more aggressive operation with points opposite each other and relatively closer together. Adjust deck plates over snapping rolls only slightly wider than cornstalks so that they hold stalks but not so narrow that stalks wedge between the plates.
- Operate the head as low as practical without picking up rocks or significant amounts of soil.
- Single-direction harvesting against the grain of leaning stalks may help. Evaluate losses though before spending large amounts of time dead-heading through the field.
- Limited field research suggests a corn reel may or may not help limit machine losses; however, a reel likely allows greater travel speed and improves productivity. Losses may be similar comparing harvest at 1 mile per hour without a reel and 3 miles per hour with a reel, but harvest progresses much faster. Spiral cones mounted atop row dividers or the addition of higher dividers on each end of the cornhead are other potential after-market harvest aids.
- If harvest speeds are significantly reduced, the amount of material going through the combine is reduced. Fan speed may need to be reduced to avoid blowing kernels out of the combine. Rotor speed may need to be reduced to maintain grain quality. Check kernel losses behind the combine and grain quality to fine tune cleaning and threshing adjustments.

However, as important as anything, get into the correct frame of mind and keep the right mental attitude. Recognize that harvest speeds will be slower. Communicate these expectations with others. Take the time necessary and don't allow an accident to compound harvest problems.

Source: Mark Hanna, Department of Agricultural and Biosystems Engineering, Iowa State University

WEED MANAGEMENT

Cheatgrass Bacteria

Brian Talamantes, GPA Weed Science/Agronomy Extension Agent (brian.talamantes@colostate.edu)

Interesting research is being conducted with naturally occurring soil microbes that may hold promise for control of cheatgrass (downy brome). Researcher Ann Kennedy of the USDA Agricultural Research Service isolated a type of naturally occurring bacteria that limits the competitiveness of cheatgrass. The bacterium, called *Psuedomonas fluorescens* D7, was

selected from thousands of different bacteria found on the roots of cheatgrass and wheat. The researchers found that about half of the organisms affected cheatgrass and one percent of tested innoculants would inhibit cheatgrass, but not wheat. From that one percent they chose *Psuedomonas fluorescens* D7. As with any weed, part of what makes cheatgrass so

competitive is that once removed from its native environment, the competitive series of checks and balances that have co-evolved with that species are no longer there and it can sometimes give that species the opportunity to flourish. Kennedy and her colleagues looked at soils from parts of Turkey and Kazakhstan where downy brome is native and found that 90% of the organisms in that soil would inhibit cheatgrass compared to only 50% of those in soils from the U.S. (Steury, 2009). It's easy to connect the dots to figure out that this lack of deleterious soil bacteria contributes at least in part to why cheatgrass is such an aggressive competitor in the western U.S. This bacteria does not kill downy brome but rather inhibits its root development thus allowing other more desirable plants to gain a competitive edge. Additionally, there may be promise for the bacteria to control jointed goatgrass in winter wheat fields, as well. Thus far, most of the research that has been done to my knowledge is

limited to the state of Washington and they have seen acceptable results, though Dr. Kennedy says suppression doesn't happen quickly. She said that in treated research plots up to 10 acres, they are seeing 50% control in 3 years and almost complete control in five to six years. The bacteria in tests has been soil applied in the fall where they spread during the colder months. The bacteria has yet to be registered as a bioagent with the Environmental Protection Agency and that could be five or more years off says USDA senior invasive species coordinator Hilda Diaz-Soltero (Cary, 2013).

Sources: Cary, Annette. "Soil bacteria may be answer to cheatgrass battle on reach."

McClatchy. Tri-City Herald, 16 Apr. 2013. Web. 10 Sept. 2013

Steury, Tim. "Foiling an Invasive, Insidiously." Washington State University, 15 May 2009. Web. 10 Sept. 2013

HORTICULTURE

Tips for Growing the Best Tomato

Linda Langelo, Horticulture Program Associate (linda.langelo@colostate.edu)

How did your tomatoes do this year? Did you have the numbers you want? Have you had any problems with the plants? If you were not pleased, here is a listing of tips to follow whether you start your tomatoes from seed or purchase plants.

Before you even purchase seed or plants, think about the diseases that occur in your area and then decide on varieties most resistant to those diseases. It takes 3 to 5 weeks to grow an ideal transplant. Ideally, your tomatoes should be 8 to 10 inches tall with a dark, stocky stem and a well-developed, healthy root system. Purchasing large tomatoes in small containers leaves you with too much top growth and not enough root system to support it. Do not plant these transplants in the soil until the soil temperature is above 60 degrees and

temperatures are consistently above 55 at night. Anything outside of this range impairs tomato growth.

The best site selection for planting your tomatoes in the garden is in full-sun with well-drained soil. Poor soil conditions leads to poor root development and physiological conditions such as blossom end rot. Tomatoes grow well in soils with a pH range of 6.5 to 7.0. Before amending your soils, send a soil sample to a lab to test. Then, based on the soil test follow the recommendations. Adding compost to the garden amends the structure of the soil, but does not make a significant difference in the nutritional value of the soil. It takes many years to build the soil to the 5% optimal nitrogen levels that many plants require. To start a tomato transplant off in a healthy way

make a 5-10-10 or 5-10-5 supplemental fertilizer available for the plants usually at 2 pounds per 100 square feet. As the season progresses, however, a side dressing of .5 pound of calcium nitrate per 100 feet of row or 5 pounds of fertilizer of a 10-10-10 when the first fruits are one-third grown. Apply this calcium nitrate again as the first fruits begin to turn red, yellow or black depending on the variety you selected.

When transplanting the tomato plants, be sure that you give them enough space between plants or a full-sun exposure won't matter. The best distance between plants is a minimum of 24 inches apart in a row. Even better distance would be 36 inches apart in a row. Between rows the best distances are 4 to 5 feet. Poor air circulation can cause higher humidity and trigger diseases on the leaves and fruit.

Next, staking! When you stake a plant, the full plant gets more sunlight and air circulation. So it stands to reason, that staked plants increase their yield, fruit set and quality. Another benefit is you don't have to bend over to pick the fruit. There are several options for staking. Wooden or bamboo stakes that are 6 feet, mesh or cylindrical wire cages all work. Your choice.

Do all tomato plants need to be pruned? No! Determinate and semi-determinate varieties do not need pruning. Indeterminate varieties benefit from having their axillary or side shoots removed. For those who do use wire cylindrical cages, you may only need to prune enough shoots to allow good air circulation and sunlight to the tomato plant.

In addition to everything mentioned thus far, keep the weeds away. Weeds rob plants of nutrients and water. The weeds also bring in diseases and insect vectors such as mites, aphids and whitefly. Make use of the red, blue or green plastic mulches now available. The

red is for higher fruit yield and can be used for most vegetable plants. The blue and green are more for vining crops such as cucumber, squash and melons. The colored mulches work based on the light wavelengths. The red light wavelength stimulates plant growth based on a pigment in the tomato plant called phytochrome. The blue and green also help with increase yield in other plants. But it is not just up to the plastic mulch. Temperature and the amount of sunlight are still key factors in your tomato production success. And all the colored plastic mulches did a better job of warming of the soil than black plastic according to Penn State researcher. However, black plastic was the best for weed suppression.

I tested mulches with eggplants and peppers two years ago in the Holyoke community garden. We set-up eggplant and peppers in red mulch and a few feet away from that eggplant and peppers in straw mulch. The eggplant and peppers in red mulch were two weeks ahead in yield and growth than the eggplant and peppers in straw mulch.

Give these mulches a try with your tomato planting next season. They may bring you a better harvest by focusing the wavelength of the sunlight. Speaking of your harvest, remember to store your tomatoes by keeping them at room temperature. Allow your tomatoes to ripen fully on the vine before picking them. And keep the tomatoes well hydrated throughout the growing season. This requires well-drained soil. You want to soak your soil every time the top two inches of soil dries out. If your tomato plants are not well hydrated, the tomato fruits will begin to crack from moisture fluctuations. Tomatoes require evenly moist, but well-drained soils.

If you did not achieve any of this in this growing season, there is always next year to perfect your tomato.



Horticulture Tips For Late Season

Linda Langelo, Horticulture Program Associate (linda.langelo@colostate.edu)

Be aware of mites, aphids and whitefly especially in the vegetable garden. Continue to watch for cucumber beetles. The adults of the cucumber beetles do not die but overwinter in wooded landscapes, bushy areas, sheds, barns and homes. As the weather warms in the spring they begin feeding on any plant material. Keep on top of these cucumber beetles early in the season for they remain all through the growing season. Cucumber beetles will eat any plant part including flowers, leaves and stems. Once the nymphs emerge they hide under leaves of the plant and can be found early at the base of the stem where the plant emerges. With squash bugs, adults are difficult to kill and nymphs are easy to control with insecticides. The adults start slowly in the spring. Watch for the red to orange clusters of eggs on the underside of the leaves which you can collect and squash as a control.

Regarding fall planted vegetables, remember for next season that August 1st is a time for planting carrots, beets, chard, spinach, lettuce, scallions, peas, Asian greens, brassicas, turnips, rutabagas and radishes. Planting in fall reduces the insect problems considerably. Late August is also the time for harvesting onions that have 80% of their tops browning.

Check the condition of your lawn and the weather before you water your lawn. Water about every four days. Water the lawn depending on the species of turf you have such as Kentucky Blue grass. Kentucky Blue grass need 2.25 inches of water a week to stay healthy in August and about half that amount in September as weather cools. Buffalo grass requires one inch of water per week to stay healthy. Again this all depends on the weather conditions.

There is still time to fertilize the lawn, treat with pre-emergent herbicide and aerate the

lawn. Just remember to hydrate your lawn before fertilizing or applying herbicides. Do not spray Buffalo grass with any herbicide until it becomes dormant. I would recommend you do two lawn fertilizations, one in mid-September and the second in mid-October. Buffalo grass does not need fertilization. By applying nitrogen fertilizer you are feeding the root system and it will develop into a healthier root system. This causes the lawn to green up better in the spring and you can forego the spring fertilization. Spring fertilization creates more mowing because the grass naturally pushes out more top growth. Also, there is not a strong root system in place in the spring to support the top growth and this places the grass under stress.

Trees can be fertilized and deep root watered in mid-September. Do the deep root watering one more time in October before the ground freezes. The limbs of trees that are fully hydrated are more flexible and do not break so easily in high winter and spring winds. Deep root watering places the water in the root zone at the 8 to 10 inch depth. Grass roots are typically at 6 to 8 inches. When you water the lawn, the tree may get a small percentage of water, but not nearly enough to reduce drought stress. Colorado State University's formula for the amount of water a tree uses is 10 gallons per inch of the tree's caliber. This caliber is taken at knee height as you face the tree. You will find this is the widest diameter of the tree trunk. So a tree with a diameter of 20 inches may need 200 gallons of water to stay healthy once a month in the winter. During 100 degree days in the middle of August and no rain or subsoil moisture a tree may need this twice a month or more. This winter, if it snows and stays on the ground, trees do not need watering. If it snows a foot in a month, that foot of moisture can translate into $\frac{3}{4}$ of an inch of rain or more depending upon the moisture

concentration of the snow. Fifteen inches of snow typically converts to an inch of rain.

August and September are great for dividing perennials and replanting so that the root systems have time to grow before the ground freezes. Late season is also a time for collecting dried seed heads from herb plants.

Cut long stems from your herb plants for drying leaves. Do this during the morning of a dry day.

August and September are generally a time to take stock and prepare for next year's growing season.



Focus Groups, Community Gardens and Access to Fresh Food

Linda Langelo, Horticulture Program Associate (linda.langelo@colostate.edu)

Research from the USDA demonstrates that interest in local food is not a short-lived trend. This so-called "short-lived trend" has changed local food production and consumer behavior in many areas of the United States. The following is a list of the USDA's Agriculture Marketing Services findings:

- 33% increase in share of total agricultural sales by direct-to-consumer sales from 1997-2007
- 91% increase in the number of farmers' markets from 1998-2009
- 120% increase in direct-to-consumer sales from 1997-2007
- 190% increase in the number of Community Support Agriculture from 2001-2005
- 423% increase in the number of farm-to-school programs from 2004-2009

How does this trend create change for the local economy?

Here is just one theoretical study by Iowa State University and Civic Economic for Kent County, Michigan. When consumers make the choice from corporate chains to direct markets, that action could create a 10% shift in the market. This shift could create 1600 local jobs and increases the county output by \$137.3 million. This estimation is conservative.

Here is a model for the counties in the Golden Plains Area to consider: Montezuma County made dramatic changes in their local food scene. The results in 2012 were all three

school districts utilized more than 6,000 lbs. of local products, including local beef. These school districts participated in a farm-to-school program. Local restaurants ordered more local products from lettuce to yak meat. These restaurants changed their menus to accommodate the local products available. The hospital, Southwest Memorial Hospital, has increased purchases of local fruits, vegetables and meats. There are 275 students over the past two years taking teen cooking classes called Cooking Matters in collaboration with LiveWell Montezuma. In the summer those teens take classes with the Cortez Parks, Recreation and Montezuma School to Farm Project. According to LiveWell Montezuma, nutrition education combined with cooking classes helps educate students and residents about a healthy diet. And the training continues with local producers to provide education and business support on food safety, packaging, labeling, business planning and agriculture practices.

The model that I described above is one that could work in any of our counties. I am forming focus groups with various county organizations, mostly who serve low-income folks to survey families. We wish to acquire a clear picture of our access to fresh food and to strengthen the usefulness of current community gardens in existence. The survey will also give a better understanding of the average low-income consumer. This survey can also be useful in other organizations not serving low-

income families to show a clear picture of access to fresh food. The focus groups have important input from the partners who come to join the group. We welcome Social Services, county officials, food producers, school officials and other organizations interested in building a local food system. If anyone is willing to join a focus group, please call me at Phillips County at (970)854-3616, or Email linda.langelo@colostate.edu.

My vision for the Golden Plains Area is one where local producers do sell beef to schools and other fresh food opening an avenue of income. I would also like to see the local restaurants purchasing local produce from producers as well. I see this as a way of strengthening our communities and with our local dollars helping to support each other. However, everyone still needs to keep generating other revenue streams.

What is happening in Montezuma and other areas of the country is creating a grassroots movement whereby policy makers at the state, county and local level need to find ways to support local producers, processors and distributors through tax incentives, public private partnerships or more.

The bottom line is with a long range plan and community commitment, we could build a sustainable food system that will decrease the food insecurity issues and some of our dependence on outside resources for support. It won't happen overnight. However, if we get started and take the steps necessary, this can move forward. The focus group is the task force that initiates and creates avenues by bringing people together for implementation. So let's begin!



What Minerals Do Plants Need?

Linda Langelo, Horticulture Program Associate (linda.langelo@colostate.edu)

Did you know that plants are the only living beings that make their own food? But to do so plants use many minerals to be successful. Their mineral needs are as complicated and as expansive as human mineral needs. What gives them a balanced diet?

The three main minerals which are absorbed in the largest quantities by plants are nitrogen, phosphorus and potassium. But just what do these minerals do for a plant? **Nitrogen** plays a major role in healthy leaves and stems and helps with rapid growth while increasing seed and fruit production. More specifically nitrogen is used in building proteins, nucleic acids and chlorophyll. **Potassium** is responsible for help in reduction of diseases, photosynthesis, fruit quality and building proteins. **Phosphorus** is the essential element in the process of photosynthesis since it transforms solar energy into chemical energy, involves the formation of oils, sugars and

starches, proper plant maturation, affects rapid growth and encourages blossoms and root growth.

Nitrogen, potassium and phosphorus are all macronutrients, but are not the only nutrients. Calcium, magnesium and sulfur are also absorbed in large amounts but not as large as nitrogen, potassium and phosphorous.

We know in humans that calcium builds strong bones. In plants it is an essential part of the cell wall structure and is the vehicle for transporting and retaining other elements. In this way, it builds the strength in a plant.

Magnesium, like nitrogen is part of the chlorophyll in all green plants and essential for photosynthesis. It helps activate many plant enzymes needed for growth.

Last but not least of the major essential elements or macronutrients (meaning large quantities) needed is sulfur. Sulfur works on the production of protein, promotes activity and development of enzymes and vitamins, and helps in chlorophyll formation. When plants need vigorous growth, sulfur is the element. Amazingly, sulfur gives plants a resistance to cold. Root growth and seed production are also improved with sulfur. Do you know where plants can acquire sulfur? Rainwater can supply plants with sulfur.

If you think we have exhausted the number of elements plants need, we have seven more to go that are called micronutrients. Plants need these elements in small quantities to keep the plant healthy. These are boron, copper, chloride, iron, manganese, molybdenum and zinc. They are listed as follows:

- **Boron** is found in borax and helps in the plant's use of nutrients while regulating other nutrients. It also helps with seed and fruit development and production of sugar and carbohydrates.
- **Copper** helps with root metabolism, the utilization of proteins and is essential in reproductive growth.

- **Chloride** aids in plant metabolism.
- **Iron** is essential for formation of chlorophyll and without its presence, plants could die. Think about all the maple trees with iron chlorosis or the yellowing on new leaves. The yellowing appears between the green veins on the leaf surface. They lack iron and essentially the photosynthesis cycle cannot be completed which means less sugars and starches or food for the plant to stay healthy.
- **Manganese** is involved with the breakdown of carbohydrates and nitrogen metabolism.
- **Molybdenum** helps the plant use nitrogen.
- **Zinc** is essential for the transformation of carbohydrates, for the regulation of sugar consumption and is part of the enzyme system that regulates plant growth.

The next time you look at a yellowing leaf on one of your plants, you will wonder what nutrients are missing. The age of the leaf plays a factor. But at least you know basically what each element does. You also now know that many elements work together in different functions to keep the plant healthy.



Plants Need Winter Watering

Linda Langelo, Horticulture Program Associate (linda.langelo@colostate.edu)

The overall health of your plants in your landscape will benefit from winter watering. Remember that a little water in the winter goes a long way because the plants are alive but not actively growing. Our winter winds desiccate plants and when the ground is frozen the plant's roots cannot uptake water to replace what is lost. If you water early in the day when air and soil temperatures are above 40 degrees, this makes water available to the roots.

Starting out in the fall by watering the plants before the ground freezes places them in a hydrated state where the plant's cells are turgid. Water is an element that plants need to carry minerals throughout the plant and among

many other functions water aids photosynthesis because the water is used in making the sugars and starches.

To make the best use of water in our plants, mulching root systems is beneficial. Mulch whether it is pine, straw or bark keeps the soil better insulated against the winter temperatures. By applying two inches of mulch you will mediate the soil temperature. The mulch also slows the moisture from evaporating as quickly so it slows down moisture loss. During the summer months it also keeps down the number of weeds because it is creating a darker environment. Seeds need light to germinate.

Mulching also helps mediate the freezing and thawing of the soil. The soil surface cracks open in these instances and expose the roots of plants such as perennials and ground covers.

With trees, shrubs and perennials if there is no snow cover during each month in the winter, water your plants. Be sure to water trees at the drip line which is located at the ends of the branches where the absorption roots will take in the water.

Be aware there are shallow rooted plants. These plants require the supplemental water during dry winter periods. Some of these plants are as follows: Norway, Silver and Red Maples, Hybrid maples, linden, willows, spruce, and fir, yew, arborvitae, and Oregon grape-holly, boxwood and Manhattan euonymus.

Your lawn will need watering if there is no snow cover and long dry periods. Monitor the weather and be sure to water once or twice a month. Late in the winter season during warm dry periods, lawns are susceptible to mite damage.

Be sure to check on plants that have a southern or western exposure in the winter because these plants will be exposed to a drier winter climate. Plants placed in these exposures may need more water when there is no snow cover. This brings us to the idea of "Right Plant, Right Place". If the plant does not survive in that exposure, you might want to replace it with something more appropriate.

For newly planted and established shrubs, here is a list of watering recommendation to

follow from Colorado State University Fact Sheet on Fall and Winter Watering:

- Apply 5 gallons twice per month for newly plant shrubs
- Apply 5 gallons monthly for shrubs less than 3 feet tall for established shrubs
- Apply 18 gallons on a monthly basis for shrubs more than 6 feet tall for established shrubs
- Monitor rainfall or snow and decrease these amounts accordingly

For trees, here is updated information on winter watering:

- Use a ruler to measure your trees diameter 6" above ground level. The rule is that per need 10 gallons of water. If the tree has a diameter of 5 inches across, the tree will need 50 gallons of water. This is only a general rule. Monitor precipitation and adjust accordingly.
- Well established trees water once a month, if there is no snow cover.
- Allow water to soak to a depth of 12 inches at the drip-line.
- When using a deep-root fork or needle or deep-root waterer insert it no deeper than 8 inches into the soil.

Lastly, anything that you plant at the end of the growing season will take longer to establish. This is why newly planted plants are more susceptible to winter drought injury. As another general rule, if you plant a tree that has a four inch caliper, the tree will take a minimum of four years to become established. One more important point to add is under normal growing conditions a tree may take four years to establish, but not under extreme drought, which takes longer.



Prairie Gardens of Sedgwick County

Linda Langelo, Horticulture Program Associate

The main focus of this project has been two fold. One, to add our natural beauty to the area since Sedgwick County is located in a strategic

place, being the first county to visitors from the east. Secondly, we were establishing the

prairie wildflowers to assist pollinators which we are losing due to environmental conditions.

Wildflower areas were placed by some of the signs entering into the locations of Julesburg and including an area across from the Welcome Center. Having the signs enhanced with colorful plants represents our Colorful Colorado which welcomes visitors to our state. Plants are quietly doing the marketing for the community. These signs are our welcome mat. If they appear warm and friendly, they extend a

warm friendly greeting to the potential visitors to the community, encouraging people who might want to start a business or raise a family.

I am encouraging other communities to do the same; they will give you years of beauty. We have different types of wildflower seed packets for sale in the Sedgwick and Phillips County Extension offices, if you wish to help donate to the project. Please call Linda Langelo at (970)854-3616.

IRRIGATION

Colorado State University's Center for Agricultural Energy Offers Reduced-Cost Irrigation Efficiency Audits and Decision Tools

Colorado State University's Center for Agricultural Energy (CAE) is now accepting applications for reduced-cost irrigation efficiency audits for agricultural producers on the Front Range and Eastern Plains. Each audit assesses the efficiency of up to 3 center pivot pumps per site. USDA grant funds are being used to lower the cost of these audits—from \$1,000 to \$250 per producer.

An audit will include the following: determination of flow rate, static water level, pumping level, and energy use; estimated costs of recommended upgrade(s); estimated savings from upgrade(s); payback periods of upgrade(s); and a written report to the producer. Options for financing and performing the upgrades will be presented to the producer. The audits will also make participating producers eligible for USDA grant funds to implement the recommendations.

Audits will be scheduled with the applicant. Applicants will be contacted about their application status within 2 weeks of submission. Applications are easy to fill out and can be found and submitted online at www.ext.colostate.edu/cae/audits.html or can be requested by contacting Cary Weiner at (970) 491-3784, or via email: cary.weiner@colostate.edu. Applications are accepted on a rolling basis.

The CAE has also recently released an online Do-It-Yourself Agricultural Energy Audit and has established a webpage that provides step-by-step guidance for applying for funds for agricultural energy projects through USDA. Producers can use online wind, solar, and anaerobic digestion decision tools to determine if they are good candidates for those technologies and, if so, the estimated costs and savings they might expect from installing them.

The mission of the CAE is to improve the financial positions of agricultural producers and rural Colorado communities while providing solutions to 21st century energy problems. Affiliated staff and faculty are conducting agricultural energy audits, outreach, and research to this end. More information about the CAE—including links to the irrigation efficiency audit applications and decision tools—can be found at www.cae.colostate.edu

2013 Collaborative On-Farm Test (COFT) Variety Performance Results

2013 Varieties^a

County/Nearest Town	Byrd		Antero		Brawl CL Plus		Denali		Hatcher		Snowmass		COFT Average	
	Yield ^b bu/ac	Weight lb/bu												
Baca/Vilas	8.2	56.1	10.0	55.2	6.5	57.9	5.2	57.1	5.7	56.0	6.3	54.6	7.0	56.2
Kit Carson/Burlington	15.0	57.9	12.5	59.0	16.5	58.6	14.2	59.1	11.5	59.1	11.4	58.2	13.5	58.7
Lincoln/Arriba	32.8	57.5	36.3	56.6	34.8	56.6	37.0	55.6	31.6	55.8	28.4	55.4	33.5	56.3
Logan/Leroy	25.6	59.0	24.2	59.5	24.2	62.0	26.9	59.0	23.4	59.5	21.1	58.0	24.2	59.5
Logan/Peetz	30.1	59.0	30.8	59.0	19.6	59.0	37.8	58.0	36.3	57.2	29.6	58.0	30.7	58.4
Logan/Sterling W	34.8	55.0	32.0	56.0	35.3	55.5	31.5	56.0	33.8	56.5	27.2	53.5	32.4	55.4
Phillips/Haxtun	48.0	53.8	43.3	54.1	46.7	55.4	44.5	55.8	43.5	52.8	36.3	52.4	43.7	54.1
Washington/Akron S	39.0	60.0	36.3	60.0	40.5	61.5	34.8	62.0	30.5	60.0	37.8	60.0	36.5	60.6
Washington/Akron W	16.7	55.0	19.8	55.0	18.1	56.0	17.0	56.0	15.6	55.0	15.5	55.0	17.1	55.3
Washington/Central	21.3	55.5	22.6	58.5	22.0	56.9	21.7	58.2	20.4	57.5	19.8	55.3	21.3	57.0
Washington/Otis	48.8	58.5	39.9	58.5	42.5	60.5	41.7	61.0	40.2	59.0	34.8	59.0	41.3	59.4
Weld/Keenesburg	37.7	56.0	33.1	57.0	35.3	56.5	27.9	58.0	34.7	59.0	25.2	57.0	32.3	57.3
Weld/New Raymer	26.8	56.5	33.0	57.0	24.9	58.0	25.3	57.0	26.2	56.0	26.7	56.0	27.1	56.8
Weld/Roggen	49.8	59.0	56.6	60.0	48.4	60.0	52.2	60.0	49.4	61.0	41.0	60.0	49.6	60.0
Yuma/Yuma	37.8	59.6	34.1	60.3	37.0	61.5	33.7	61.2	32.8	59.4	27.8	59.1	33.9	60.2
Average	31.5	57.2	31.0	57.7	30.1	58.4	30.1	58.3	29.0	57.6	25.9	56.8	29.6	57.7

Significance^c

LSD ($p < 0.30$) for yield = 1.2 bu/ac

LSD ($p < 0.30$) for test weight = 0.3 lb/bu

^aVarieties are ranked left to right by highest average yield.

^bAll yields are corrected to 12% moisture.

^cSignificance: Varieties with different letters have yields that are significantly different from one another.

AG MARKET PRICES

*John Deering, Agriculture and Business Management
Dennis Kaan, Agriculture and Business Management*

LIVESTOCK CASH PRICES				Week Ending 8/9/13		
				Current ¹	One Month Ago ²	One Year Ago ²
Colorado Auction Feeder Cattle, Medium & Large Frame #1						
Steers, 400 lbs		/cwt	None Reported	None Reported	None Reported	
Steers, 600 lbs		/cwt	None Reported	\$144.00	None Reported	
Heifers, 500-550 lbs		/cwt	None Reported	\$139.50	None Reported	
Heifers, 600-650 lbs		/cwt	None Reported	\$134.50 - 136.00	None Reported	
Colorado Weekly Weighted Average Direct Slaughter Cattle, FOB the Feedyard After 3-4% Shrink						
<u>Live Basis Steer Sales</u>	Hd Count	Wt Range	/cwt	/cwt		/cwt
Over 80% Choice						\$117.00
65-80% Choice	614	1,175-1,399	\$120.00 - 120.50	\$121.00 - 121.50		\$117.00
35-65% Choice	882	1,325-1,450	\$120.50	\$120.00 - 121.50		\$117.50
0-35% Choice						
<u>Live Basis Heifer Sales</u>	Hd Count	Wt Range	/cwt			
Over 80% Choice	252	1,266	\$120.00	\$121.50 - 121.50		
65-80% Choice	623	1,200-1,350	\$120.50	\$121.00 - 121.50	\$116.00 - 117.50	
35-65% Choice	125	1,075-1,,225	\$120.50	\$120.00 - 121.50		
0-35% Choice						
Western Weekly Lamb Report, Formula Contract Purchases, Sales FOB with 4% Shrink,						
	Hd Count	Wt Range	/cwt	/cwt		/cwt
Domestic	N/A	75-85	None Reported	None Reported		None Reported
Imported			None Reported	None Reported		None Reported
Hogs, As of 8/9/13						
Base Market Hog, 185 lb. Carcass Basis, Plant Delivered						
0.9-1.1" Back-Fat, 6.0/2.0 Loin Area/Depth		/cwt	\$87.00 - 102.00	\$96.89 - 101.00		\$86.00 - 100.97
Iowa – Southern Minnesota Daily Negotiated Purchases 185 lb Carcass Basis						
1.0" Back-Fat, 6.0/2.0 Loin Area/Depth		/cwt	\$94.50 - 98.00	None Reported		\$86.00 - 102.00
Western Cornbelt Daily Negotiated Purchases 185 lb Carcass Basis						
1.0" Back-Fat, 6.0/2.0 Loin Area/Depth		/cwt	\$86.00 - 98.00	\$97.00 - 101.00		\$86.00 - 102.00
LIVESTOCK FUTURES PRICES				8/9/13		
Live Cattle – CME				Current ¹	One Month Ago ²	One Year Ago ²
Aug		/cwt	\$122.50	\$122.17		\$119.58
Oct		/cwt	\$126.87	\$126.12		\$123.78
Dec		/cwt	\$128.80	\$128.07		\$127.70
Feb		/cwt	\$130.47	\$129.20		\$129.90
Feeder Cattle – CME						
Aug		/cwt	\$153.92	\$151.07		\$147.53
Sep		/cwt	\$157.47	\$153.05		\$151.00
Oct		/cwt	\$159.82	\$154.67		\$152.90
Nov		/cwt	\$160.20	\$156.05		\$154.38

¹ Commodity specifications apply to the current period only. Specifications may have been different for prior period listings.

² Prices reported for the one month ago and one year ago periods are taken from previous issues of this publication.

Source: U.S.D.A. Agricultural Marketing Service

Chicago Board of Trade

Kansas City Board of Trade

Chicago Mercantile Exchange

<http://www.ams.usda.gov>

<http://www.cbot.com/cbot/pub/page>

http://www.kcbot.com/futures_quotes.asp

<http://www.cme.com/>

CASH GRAIN PRICES**8/9/13**

		Current ¹	One Month Ago ²	One Year Ago ²
#1 HRW Wheat				
Fleming, Haxtun, Julesburg, Holyoke, Paoli, Amherst	/bu	\$6.87 - 7.02	\$6.53 - 6.59	\$7.24 - 7.29
Yuma, Wray, Brush, Akron, Otis, Anton	/bu	\$6.82 - 6.87	\$6.41 - 6.50	\$7.20 - 7.33
Burlington, Seibert, Flagler, Arriba, Genoa, Hugo	/bu	\$6.87 - 6.92	\$6.41 - 6.61	\$7.32 - 7.42
#2 Yellow Corn				
Haxtun, Julesburg, Fleming, Holyoke, Paoli, Amherst	/bu	\$6.14 - 6.34	\$6.47 - 6.59	\$6.97 - 7.25
Yuma, Wray, Brush, Otis, Anton Seibert, Arriba, Burlington, Flagler, Bethune, Stratton	/bu	\$5.93 - 6.39	\$5.97 - 7.10	\$6.90 - 7.09
		\$6.24	\$6.57 - 6.82	\$6.79 - 7.09
Northeast Colorado, Western Nebraska Beans				
Pinto Beans	/cwt	\$42.00	\$38.00	\$50.00
Great Northern Beans	/cwt	\$45.00	\$45.00	\$42.00
Light Red Kidney Beans	/cwt	\$50.00	\$50.00	\$55.00 - 57.00
White Millet				
E Colorado / SW Nebraska	/cwt	No Bid	\$36.00 - 50.00	\$13.50 - 18.00
Sunflowers				
E Colorado / SW Nebraska	/cwt	\$21.00 - 23.00	\$21.00 - 24.50	\$25.00 - 26.25

GRAIN FUTURES PRICES**8/9/13**

		Current ¹	One Month Ago ²	One Year Ago ²
Wheat, Kansas City Board of Trade				
Sep	/bu	\$6.97	\$6.77	\$7.85
Dec	/bu	\$7.04	\$6.91	\$8.03
Mar	/bu	\$7.12	\$7.12	\$8.24
May	/bu	\$7.14	\$7.26	\$8.36
Corn, Chicago Board of Trade				
Sep	/bu	\$4.76	\$6.56	\$7.19
Dec	/bu	\$4.53	\$5.32	\$6.74
Mar	/bu	\$4.67	\$5.01	\$6.75
May	/bu	\$4.75	\$5.13	\$6.82

CASH HAY PRICES**Week Ending 8/8/13**

		Current ¹	One Month Ago ²	One Year Ago ²
Colorado Hay Report, Northeastern Areas				
Large Square Bales, FOB Stack				
Supreme Alfalfa, 180+ RFV (On Contract)	/ton			\$225.00 - 250.00
Premium Alfalfa, 150-180 RFV	/ton	\$240.00 - 250.00	\$240.00 - 250.00	\$200.00 - 225.00
Good Alfalfa, 125-150 RFV	/ton	\$215.00 - 220.00	\$215.00 - 220.00	\$190.00 - 200.00
Fair Alfalfa	/ton	\$200.00 - 210.00	\$200.00 - 210.00	
Utility Alfalfa	/ton			
Premium Grass (Small Squares)	/ton	\$300.00 - 350.00	\$300.00 - 350.00	\$300.00 - 350.00
Premium Grass (Small Squares)	/bale	\$10.00 - 12.00	\$10.00 - 12.00	\$9.75 - 12.00
Straw (Large Squares)	/ton	\$90.00 - 100.00	\$85.00 - 95.00	\$85.00 - 90.00
Corn Stalks (Large Rounds)	/ton		\$85.00 - 100.00	

AG MARKET PRICES

John Deering, Agriculture and Business Management

Dennis Kaan, Agriculture and Business Management

LIVESTOCK CASH PRICES				Week Ending 9/6/13		
				Current ¹	One Month Ago ²	One Year Ago ²
Colorado Auction Feeder Cattle, Medium & Large Frame #1						
Steers,	400 lbs	/cwt	None Reported	None Reported	None Reported	None Reported
Steers,	600 lbs	/cwt	None Reported	None Reported	None Reported	None Reported
Heifers,	500-550 lbs	/cwt	None Reported	None Reported	None Reported	None Reported
Heifers,	600-650 lbs	/cwt	None Reported	None Reported	None Reported	None Reported
Colorado Weekly Weighted Average Direct Slaughter Cattle, FOB the Feedyard After 3-4% Shrink						
<u>Live Basis Steer Sales</u>	Hd Count	Wt Range	/cwt	/cwt	/cwt	/cwt
Over 80% Choice	241	1,375-1,411	\$123.00 - 123.50			\$117.00
65-80% Choice	370	1,375-1,475	\$123.00 - 124.00	\$120.00 - 120.50		\$117.00
35-65% Choice	1,380	1,300-1,450	\$122.50 - 124.00	\$120.50		\$117.50
0-35% Choice						
<u>Live Basis Heifer Sales</u>	Hd Count	Wt Range	/cwt			
Over 80% Choice	157	1,322	\$123.00	\$120.00		
65-80% Choice	769	1,125-1,275	\$123.50 - 124.00	\$120.50	\$116.00 - 117.50	
35-65% Choice	921	1,140-1,325	\$123.00 - 124.00	\$120.50		
0-35% Choice						
Western Weekly Lamb Report, Formula Contract Purchases, Sales FOB with 4% Shrink,						
	Hd Count	Wt Range	/cwt	/cwt	/cwt	/cwt
Domestic	N/A	75-85	None Reported	None Reported	None Reported	None Reported
Imported			None Reported	None Reported	None Reported	None Reported
Hogs, As of 9/10/13						
Base Market Hog, 185 lb. Carcass Basis, Plant Delivered						
0.9-1.1" Back-Fat, 6.0/2.0 Loin Area/Depth	/cwt	\$75.00 - 93.50	\$87.00 - 102.00	\$86.00 - 100.97		
Iowa – Southern Minnesota Daily Negotiated Purchases 185 lb Carcass Basis						
1.0" Back-Fat, 6.0/2.0 Loin Area/Depth	/cwt	\$75.00 - 93.50	\$94.50 - 98.00	\$86.00 - 102.00		
Western Cornbelt Daily Negotiated Purchases 185 lb Carcass Basis						
1.0" Back-Fat, 6.0/2.0 Loin Area/Depth	/cwt	\$75.00 - 93.50	\$86.00 - 98.00	\$86.00 - 102.00		
LIVESTOCK FUTURES PRICES				9/10/13		
Live Cattle – CME				Current ¹	One Month Ago ²	One Year Ago ²
Oct	/cwt	\$125.25	\$126.87	\$119.58		
Dec	/cwt	\$128.83	\$128.80	\$123.78		
Feb	/cwt	\$130.90	\$130.47	\$127.70		
Apr	/cwt	\$132.30	\$131.60	\$129.90		
Feeder Cattle – CME						
Sep	/cwt	\$156.43	\$157.47	\$147.53		
Oct	/cwt	\$157.75	\$159.82	\$151.00		
Nov	/cwt	\$158.40	\$160.20	\$152.90		
Jan	/cwt	\$157.68	\$159.15	\$154.38		

¹ Commodity specifications apply to the current period only. Specifications may have been different for prior period listings.

² Prices reported for the one month ago and one year ago periods are taken from previous issues of this publication.

Source: U.S.D.A. Agricultural Marketing Service

Chicago Board of Trade

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<http://www.ams.usda.gov>

<http://www.cbot.com/cbot/pub/page>

http://www.kcbot.com/futures_quotes.asp

<http://www.cme.com/>

CASH GRAIN PRICES		9/9/13		
		Current¹	One Month Ago²	One Year Ago²
#1 HRW Wheat				
Fleming, Haxtun, Julesburg, Holyoke, Paoli, Amherst	/bu	\$6.63 – 6.69	\$6.87 - 7.02	\$7.24 – 7.29
Yuma, Wray, Brush, Akron, Otis, Anton	/bu	\$6.66 – 6.70	\$6.82 - 6.87	\$7.20 – 7.33
Burlington, Seibert, Flagler, Arriba, Genoa, Hugo	/bu	\$6.69 – 6.74	\$6.87 - 6.92	\$7.32 – 7.42
#2 Yellow Corn				
Haxtun, Julesburg, Fleming, Holyoke, Paoli, Amherst	/bu	\$5.59 – 5.89	\$6.14 - 6.34	\$6.97 – 7.25
Yuma, Wray, Brush, Otis, Anton Seibert, Arriba, Burlington, Flagler, Bethune, Stratton	/bu	\$5.33 – 5.83 \$5.44 – 6.24	\$5.93 - 6.39 \$6.24	\$6.90 – 7.09 \$6.79 – 7.09
Northeast Colorado, Western Nebraska Beans				
Pinto Beans	/cwt	\$42.00	\$42.00	\$50.00
Great Northern Beans	/cwt	\$45.00	\$45.00	\$42.00
Light Red Kidney Beans	/cwt	\$53.00	\$50.00	\$55.00 - 57.00
White Millet				
E Colorado / SW Nebraska	/cwt	\$8.50 - 9.50 Mostly \$9.00	No Bid	\$13.50 - 18.00
Sunflowers				
E Colorado / SW Nebraska	/cwt	\$19.50 - 22.00	\$21.00 - 23.00	\$25.00 - 26.25
GRAIN FUTURES PRICES		9/10/13		
		Current¹	One Month Ago²	One Year Ago²
Wheat, Kansas City Board of Trade				
Sep	/bu	\$7.07	\$6.97	\$7.85
Dec	/bu	\$6.95	\$7.04	\$8.03
Mar	/bu	\$7.02	\$7.12	\$8.24
May	/bu	\$7.07	\$7.14	\$8.36
Corn, Chicago Board of Trade				
Sep	/bu	\$4.75	\$4.76	\$7.19
Dec	/bu	\$4.69	\$4.53	\$6.74
Mar	/bu	\$4.82	\$4.67	\$6.75
May	/bu	\$4.90	\$4.75	\$6.82
CASH HAY PRICES		Week Ending 9/5/13		
		Current¹	One Month Ago²	One Year Ago²
Colorado Hay Report, Northeastern Areas				
Large Square Bales, FOB Stack				
Supreme Alfalfa, 180+ RFV (On Contract)	/ton			\$225.00 - 250.00
Premium Alfalfa, 150-180 RFV	/ton	\$230.00 - 240.00	\$240.00 - 250.00	\$200.00 - 225.00
Good Alfalfa, 125-150 RFV	/ton	\$215.00 - 220.00	\$215.00 - 220.00	\$190.00 - 200.00
Fair Alfalfa	/ton	\$200.00 - 210.00	\$200.00 - 210.00	
Utility Alfalfa	/ton			
Premium Grass (Small Squares)	/ton	\$300.00 - 350.00	\$300.00 - 350.00	\$300.00 - 350.00
Premium Grass (Small Squares)	/bale	\$10.00 - 12.00	\$10.00 - 12.00	\$9.75 - 12.00
Straw (Large Squares)	/ton	\$90.00 - 100.00	\$90.00 - 100.00	\$85.00 - 90.00
Corn Stalks (Large Rounds)	/ton	\$95.00 - 100.00		
Oats (Large Squares)	/ton	\$150.00		
Cane Hay (Large Rounds)	/ton	\$140.00 - 150.00		
Millet Hay (Large Squares)	/ton	\$175.00		

