Boulder County Small Acreage Management Newsletter

Spring 2013

http://www.extension.colostate.edu/boulder/acreage.shtml

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From the SAM Coordinator

While the recent snows have helped bring up our moisture levels, we are still very far behind especially in this part of the state. Much as the warmer temperatures and sunlight are nice, we really need the moisture.

As the pasture grasses begin to green up it is tough to resist the temptation to let your animals out to graze. With our dry conditions (I know that it is snowing out but we are still low in snowpack, reservoir storage and soil moisture), it is especially important to let the grass grow and develop enough leaf surface area to be putting energy back into the roots. Remember roots are critical to grass survival. At this time of the year, animals should be in your dry lot and not in the pasture anyway. Until your grasses are at least 6" tall, they are still using root stored energy to grow and produce leaf surface area. So please resist the grazing temptation for the sake of your grasses! Remember reseeding and recovery can be a multi-year and expensive process from one year or more years of overgrazing.

Depending on the amount of precipitation we receive this year, you may need to keep your animals in the dry lot and not on the pasture. I realize that this is not good news with the cost of hay this year but consider the cost of hay compared to the cost and time of reseeding. Also, consider the cost of lost top soil if you don't have cover to keep it in place.

The lack of precipitation will also affect fertilizing and weed control. The addition of too much nitrogen will favor weeds. The early season weeds access the nitrogen before many grasses are growing. Therefore, they get a head start. When conditions are hot and dry, weeds will develop a thicker cuticle (basically their skin) to preserve moisture. This thicker cuticle prevents herbicides from absorbing into the weeds making management more difficult.

It's not much fun being the bearer of a doom and gloom message and I hope that we do get the much needed precipitation.

Thank you,

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SAM Newsletters Online

View previous newsletters via the SAM link above.

SAM Email Listserv

If you are receiving this newsletter for the first time and are not subscribed to the boco_small_acreage@colostate.edu listserv, you may request subscription on the SAM website (linked in header above). This quarterly e-newsletter and other timely info will be distributed via this email listserv.

Subscribers may use the listserv also as a SAM info gathering mechanism. For example, you may inquire about who is available in the area supply hay, to perform swathing/baling, etc. The listserv is not a marketplace, however. Because it is hosted on the CSU server, NO COMMERCIAL EMAILS ARE ALLOWED. DO NOT ATTEMPT TO SELL ANYTHING VIA THE LISTSERV – THANKS. Use the newsletter ad section for these purposes.

Currently, there are 216 subscribers to the listserv

Weather Outlook

The NOAA forecasts for the next 30 and 90 days are showing that the most of the state will be drier and warmer than normal. The southeastern corner of the state will be warmer than the rest of the state. The southern and western portion of the state is indicated to have below normal precipitation. The northern and eastern portions are indicated to have normal precipitation levels. The statewide snow pack is holding at 74% as of April 1, 2013. Reservoir storage is still down due to dry conditions last year. The South Platte River basin is slightly below the statewide average at 69%.

http://www.cpc.ncep.noaa.gov/products/predictions/90day/

http://www.co.nrcs.usda.gov/snow/fcst/state/current/monthly/data/reportselection.html

Coming events and workshops

Upcoming events that may be of interest are as follows.

On June 8, we will be doing a weed identification and management walk/workshop in Gold Hill. More details to follow.

On June 10 and September 9, 2013, there will be Weed identification and Management workshops. The workshops will be the same so you only need to attend one of the two. We encourage participants to bring in their “weeds” or plants that are of concern to them and we’ll help determine a course of action. More information, the brochure and registration information are available in our office and on the small acreage website.

I hope that you will take advantage of these great events.

2013 Wildlife Master Volunteer Program

We are taking applications for the 2013 Wildlife Master (WM) Volunteer program. Volunteers receive 16 hours of training in dealing with wildlife/human conflicts. The cost for training is $60 with volunteer hours required or $100 with no volunteer hours required. Applications must be submitted by May 10, 2013 with training to occur on May 24 and May 31. Application and job description can be found on the website.

http://www.extension.colostate.edu/boulder/acreage.shtml

Please feel free to call me with questions.

Rabies along the Front Range

A total of 32 animals this season have tested positive for rabies, eight of them since mid-March. Twenty eight skunks, one raccoon, one bat, one cat and one fox have tested positive for rabies. The raccoon was spotted in Loveland acting "sluggish". It later tangled with a pet dog which was put into 45 day quarantine. The latest skunks were found near Carter Lake and Masonville. The fox got into a fight with a pet dog in Berthoud. The latest a skunk was found near the Boulder Larimer County border. So far rabies cases are 4 times higher than last season.

Statistics over the last few years indicate that skunks are the leading carrier of rabies in Colorado. Up until 2009, the skunks were mainly east of I-25 but obviously they have jumped that line. In 2009, 103 animals were reported to have rabies, 37 skunks from 10 counties east of I-25, 2 red fox, 1 mountain lion and 1 horse, and 62 bats. In 2012, Larimer County had 52 confirmed rabies infected animals – 38 skunks with the remainder including bats, raccoons and bison.

Just a quick reminder, be on the lookout for wildlife acting differently or being out at a time not normal for them. Do not touch or attempt to catch and animal that you suspect to be ill. If you come across an ill or dead bat, do not handle it. Call the public health department in your county to see if they would like the carcass for testing. They will tell you how to properly handle it for your safety. Horse owners may want to consider having their horses Report these animals to local Animal Control agencies or in the case of large mammals, Colorado Parks and Wildlife.

References:

http://wildlife.state.co.us/Research/WildlifeHealth/Rabies/Pages/Rabies.aspx
http://www.ext.colostate.edu/pubs/livestk/01819.html

Alternative energy sources for small acreages

With increasing fuel and electricity prices, people are looking for alternative electricity, heating and cooling sources. Property owners may want to consider these 4 options – wind, geothermal, solar, and small hydropower (for mountainous sites)

Prior to investigating any of these systems, analyze your current windows, doors, lighting and insulation for efficiency. Inefficient fixture replacement or insulation addition will save energy not matter what alternative system is chosen and will make the alternative system more efficient. When designing and constructing new buildings review plans with the thought of taking advantage of as much solar light and heat as possible and using landscaping for cooling.

These systems not only lower your energy costs but will also reduce the need for fossil fuels and production of greenhouse gases. For homes in remote locations, they will also help avoid the cost of running utility lines.

Wind

Colorado farms and ranches have used windmills (wind energy) for over 100 years to pump ground water for livestock. Colorado ranks as the 11th best location in the nation for wind energy generation. The best and most efficient areas in Colorado for producing wind energy are along the borders with Wyoming,

Nebraska and Kansas. Wind energy production requires the consistent low wind speeds not the high winds we experience. During the high winds, the windmills must be stopped to keep them from being destroyed.

The energy produced can be used exclusively on the farm/ranch or in some cases may be sold back to the local utility for additional income. A typical turbine can produce 3600 kWh (sufficient for an average home for 1 year) using winds of 14 mph. One drawback with wind energy is that it is intermittent so an alternate system must be available.

A wind system consists of the wind turbine, tower, wiring, controllers, batteries and inverters. Turbines produce energy in the opposite manner than how a fan works. The wind turns the blades that turn a shaft that transfers energy to an alternator or generator. The produced energy is stored in batteries.

Ideally winds averaging 17 mph are most efficient for energy production but energy can be produced with a minimum of 10 mph winds. If your wind speeds are on the low side, consider a higher tower. Wind speeds increase with elevation so by increasing the tower height from 60 ‘ to 100' you will increase electricity production by 25% at a minimal cost increase. To determine wind speeds at your location you will need to measure them with an anemometer located at your expected tower height. Contact Colorado State University about their Anemometer Loan Program. http://www.engr.colostate.edu/ALP/ The program has lost its funding but you can check with them to see the cost of loaning the equipment. They loan out the anemometer, tower, and data collection equipment needed to determine your wind speeds. One important factor to note is that data should be collected for 1 year to determine average wind speeds. Once data is collected, they will assist in the data evaluation.

There are several other considerations prior to installation. They are environmental (bird flight paths and other wildlife issues), space (land used for the tower and guy wires may be unusable for other purposes), and local restriction (visual impact, local airline and crop duster flight paths, local covenants). Systems can last 20 to 25 years.

Geothermal

Geothermal energy uses the heat (energy) stored within the earth to heat air or water. The earth’s temperature several feet below the surface stays constant year round in the range of 45 to 75^{o}F depending on location. Geothermal can be broken down into 2 different systems. If you are fortunate to be located where there are geothermal waters, you can pump the water for use to heat your home or buildings (check with the State Engineer's office for any water rights issues). If you are not so fortunate then you can use a heat pump. There are also systems that use ambient air temperature to provide heat. Some dual systems can use both air and ground temperature.
The geology of your site must be considered as some soils have good heat transfer capability (readily releases heat to the system) while others do not.

There are 4 types of geothermal systems. Three closed loop systems include either horizontal or vertical systems where pipes are buried either 4

to 6' (horizontal) or 100 to 400' deep (vertical) system. The pipe is full of environmentally friendly antifreeze that extracts heat from the soil (heating) or releases heat to the soil (cooling). The energy is then transferred to air within the house/building by a heat exchanger. A third system uses a pond or lake as the heat source. The pipe is placed below freeze line in the pond or lake and the system extracts the energy from the water as opposed to the soil. A fourth option is an open loop system where ground water is pumped from a well through the heat exchanger and returned to the ground via a second well. You will need to check with the State Engineer's office for this option.

Piping can last 25 to 50 years and heat pumps for 20 years. Systems use 25 to 50% less energy than convention heating systems.

Solar

Solar energy can take several forms. In space heating, solar heating can be passive or active or both. Passive space heating utilizes the sun's energy via southern facing windows to warm floor or wall materials that then release the heat at night. The heat can be direct gain by slowly heating materials such as tile or concrete within a living space, or indirect gain by heating a wall located between the sun and the space to be heated, or isolated gain where heat is collected in a different location such as a sunroom then the warmed air moved to another part of the home. Active solar space heating utilizes solar collectors to absorb the energy and then release it in the desired living space via methods such as radiant floor or hot water radiator systems.

Solar energy also uses photovoltaic cells to capture the sun's energy to produce electricity or heat. The most common system used in the average home is a solar water heater.

There are 3 types of solar collectors. Flat plate collectors are the typical system one sees for home use. They are insulated boxes that have dark absorbent plates under glass covers. These collectors heat air or water to a temperature of less than 180^{o}F. Systems that use water in the collectors are more efficient than ones that use air. Integral collector storage systems use black tanks or tubes where cold water is pumped through the collector then to a normal water heater. They act more as a preheater. Evacuated tube solar collectors have rows of transparent glass tubes (actually an outer glass tube with and inner metal absorber tube) attached to a fin. The fin readily absorbs heat energy and slowly releases the energy. They heat fluid to 170 to 350^{o}F and are most appropriate for commercial and industrial use.

Small hydropower

Generating power from water (small hydropower system) is a viable option if you have a falling/flowing water source (a mountainous or hilly location). In most small hydropower systems, water is diverted from the upper (higher elevation) through a pipe to a turbine or water wheel (lower elevation) that transfers the motion to an alternator or generator producing electricity.

Two factors must be determined to calculate a system's feasibility. The "head" is the vertical distance that the water falls minus losses from pipe friction. The "flow" is the water quantity usually measured in gallons per minute (gpm). To calculate the watts (power unit) produced use the following formula.
[net head (in feet) X flow (gpm)] / 10 = W (watts) X 0.53 (*efficiency factor) = final power output
*The system is only 53% efficient.

Other considerations for small hydropower systems are the cost to build and maintain the system, local permits required, modification to current water rights or purchase of additional water rights for this use. Contact the state engineers' office or a water rights attorney for assistance. For permits needed in your area, contact your county engineer and also Federal Energy Regulatory Commission (FERC) and the U.S. Army Corps of Engineers. New legislation is being proposed to streamline the lengthy process for permits.

References and websites:

http://www.ext.colostate.edu/energy/index.html
Wind Energy in Colorado – Colorado State University Cooperative Extension publication
http://www.coopext.colostate.edu/WR/windbooklet.pdf
International Ground source Heat Pump Association www.igshpa.okstate.edu
Geothermal Heat Pump Consortium
www.geoexchange.org
American Wind Energy Association
www.awea.org
U.S. DOE Energy efficiency and Renewable Energy website www.eere.energy.gov
American Solar Energy Society www.ases.org
Solar energy Industries Association
www.seia.org
Landscaping for Energy Conservation Fact Sheet 7.225, Colorado State University
http://www.ext.colostate.edu/pubs/garden/07225.html
Colorado State University Energy Program website for fact sheets on wind, solar and other topics
http://www.ext.colostate.edu/energy/index.html