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Issue 10

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Herbicide Contaminated Organic Material Kills Vegetables

By Jennifer Cook, Small Acreage Management Coordinator, CSU Extension/NRCS

Clopyralid, aminopyralid, and picloram are selective herbicides that can persist in dead plants, manure and compost for one to three years. Even a small amount of contaminated material can cause major damage to sensitive vegetables.

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Fall Irrigation for Cool Season Grasses

By Thomas H. Ebert, Soil Conservation Technician, USDA NRCS, Brighton, CO

Irrigated pastures in Colorado predominantly consist of cool season grasses. Cool season grasses are referred to as “cool season” because they put on most of their growth during the cooler months of spring and fall. Cool season grasses therefore have two critical growth periods, early spring and late fall, where providing adequate water is most important. During these seasons these plants are at their maximum productivity, storing sugars and carbohydrates in their root system.

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Front Range Sustainable Small Acreage News is edited and published by Jennifer Cook, Small Acreage Management Coordinator, NRCS/CSU Extension, 57 West Bromley Lane, Brighton, CO 80601
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United States Department of Agriculture
Natural Resources Conservation Service

Colorado State University

Extension

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Herbicide Contaminated Organic Material continued from page 1

When you buy grass clippings, hay, compost, or manure for use in your garden, ask your supplier if his grass, pasture, crops were treated with herbicides, and if so, which ones?

Clopyralid, aminopyralid, and picloram are selective herbicides used on pastureland, rangeland, and roadsides, to control broadleaf weeds such as thistles and knapweeds. They do not pose a problem when label directions are followed and they remain on the treated site. However, via various pathways, these herbicides can end up in your garden harming sensitive vegetables in the tomato/potato family including eggplants and peppers, the bean family (beans and peas), and the sunflower family (lettuce, endive, globe artichoke).

Pathways

- Mulch materials from treated hay, straw, or grass clippings
- Manure or bedding from livestock who were fed treated crops such as hay or grass
- Compost made from contaminated hay, grass clippings, bedding, or manure



When you get grass clippings, hay, compost, or manure for use in your garden, ask your supplier if his grass, pasture, crops were treated with herbicides, and if so, which ones?

For the most part, pesticides and herbicides rapidly degrade after use by exposure to heat, sunlight, moisture, and microbial action. But clopyralid, aminopyralid, and picloram, break down slowly during aerobic microbial action. Part of their appeal is that they persist and do not need to be applied as often as herbicides that rapidly degrade. But in manure piles, compost piles, and hay bales, lack of oxygen causes these herbicides to persist for years. If livestock eat treated pasture or hay they are not harmed but, the herbicide is still present in their manure. Even when manure is composted, the herbicide can remain in the compost for several years. If treated grain crop or grass is cut for hay or silage, the herbicide can remain in the hay or silage for several years.

Phytotoxic Symptoms of Vegetable Crops

Plants in the bean family (Fabaceae), the potato/tomato family (Solanaceae), and the sunflower family (Asteraceae) are stunted when exposed to clopyralid, aminopyralid, and picloram via contaminated compost, straw, leaves, manure, grass clippings, and bedding. They show cupped or curled leaves, low fruit production, and malformed leaves, twisted stems, and mortality of young seedlings. These symptoms can easily be misdiagnosed as a virus or disease problem. Human or animal health and most plants (grasses, corn, berries, fruit trees, majority of woody and perennial ornamental plants) are not affected by these herbicides.

What can we do?

- Gardeners, farmers, animal owners, and compost facilities need to be aware of the indirect effects of clopyralid, aminopyralid, and picloram, and be able to track manure, compost, and hay products as they move from grower to supplier to consumer.
- Ask compost suppliers if they tested the material using bioassay, a simple plant growth test that assesses the threat of herbicide contamination.

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Herbicide Contaminated Organic Material continued from page 2

- Homeowners and farmers should avoid using products containing clopyralid, aminopyralid, and picloram if you plan to recycle/sell grass, cuttings, or compost manure from pastured livestock.
- ***Always read herbicide labels before use.***
- When you buy grass clippings, hay, compost, or manure for use in your garden, ask your supplier if his grass, pasture, crops were treated with herbicides, and if so, which ones? Ask what the active ingredients are in the product they used. If they don't know, consult the product label.
- Know the products that contain these herbicides produced by Dow AgroSciences:
- Clopyralid is sold under trade names Reclaim, Redeem, Stinger, Transline, Confront, Lontrel, Curtail, Millenium Ultra, Millenium Ultra Plus, Clopyr AG.
- Picloram is sold under trade names Tordon, Grazon, Access, Surmount, and Pathway.
- Aminopyralid is sold under the trade names Milestone, Forefront, Pharaoh, and Banish.
- If you get manure from a horse owner, ask if they know what herbicides were used on the hay they fed their horses.
- If you don't know the history of material you plan to use in your garden, you can use it on or near non-sensitive crops or perform a bioassay growth test prior to using on or near sensitive plants.
- Do a bioassay by planting beans in pots using a commercial potting soil for a non-treated control group, and plant beans in pots using the material in question. For more details on bioassay, go to <http://whatcom.wsu.edu/ag/aminopyralid/bioassay.html>

References

Clopyralids and Other Pesticides in Composts, Ohio State University Extension

<http://ohioline.osu.edu/aex-fact/0714.html>

Pyridine Herbicide carryover: Causes and Precautions, Virginia Cooperative Extension

<http://pubs.ext.vt.edu/2909/2909-1413/2909-1413.html>

Herbicide Contamination of Organic Matter, WSU Whatcom County Extension

<http://whatcom.wsu.edu/ag/aminopyralid/>

Vegetable Herbicide Damage, CSU Extension Planttalk Colorado

<http://www.ext.colostate.edu/ptlk/1400-18.html>



Pepper plant shows symptoms of herbicide contamination.

Source: <http://whatcom.wsu.edu/ag/aminopyralid/>

Fall Irrigation continued from page 1

Fall irrigation can also help to leach salts. Salts are present in animal urine and feces, and in all irrigation water at some levels. Applying irrigation water in the fall can help leach these salts beyond the root zone and help prevent damage to your crop from excessive salts.

Additionally, irrigation water applied in the fall that is not taken up by plants is stored in the soil through the winter. This can help your grass if we have a warm dry winter, or if spring moisture comes late like it did this past year. Remember, 50% or more of the moisture in snow sublimates (converts from snow to water vapor) so if you can store some extra water in the fall it could be quite beneficial later on.

Begin irrigating in early to mid September when the days are shorter and the nights are cooler. Early morning is a good time to irrigate as wind speeds tend to be lowest. Applying too much irrigation water can lead to excessive runoff or leaching. Excessive runoff and leaching not only is a waste of valuable irrigation water but can result in the loss of soil, nutrients, and chemicals.

To get an idea of how much moisture is in your soil you should take a soil sample using a shovel, auger, or soil probe. You need to figure out your Available Water Capacity and Soil Moisture Deficit or Depletion. **Available Water Capacity (AWC)** is the portion of water in a soil that can be readily absorbed by plant roots of most crops. **Soil Moisture Deficit (SMD) or Depletion** is the amount of water required to raise the soil moisture content of the crop root zone to field capacity. A method has been developed to estimate AWC and Depletion by feel and appearance.

This is an example of the feel and appearance method for **Sandy Loam and Fine Sandy Loam Soils Only:**

Total Available Water Capacity - 1.3 -1.7 inches of water / foot of soil

0-25% available, .7 – 1.0 in/ft depleted – Dry, forms a very weak ball, aggregated soil grains break away easily from ball.

25-50% available, 1.3 - .7 in/ft depleted – Slightly moist, forms a weak ball with defined finger marks, darkened color, no water staining on fingers, grains break away.



**25-50 percent available
1.3-0.7 in/ft. depleted**

50-75% available, .9-.3 in/ft depleted – Moist, forms a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.



**50-75 percent available
0.9-0.3 in./ft. depleted**

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Fall Irrigation continued from page 4

75-100% available, .4-.0 in/ft depleted – Wet, forms a ball with wet outline left on hand, light to medium staining on fingers, makes a weak ribbon between the thumb and forefinger.

100% available, 0.0 in/ft depleted (field capacity) – Wet, forms a soft ball, free water appears briefly on soil surface after squeezing or shaking, medium to heavy soil/water coating on fingers.



Please note the above example is for Sandy Loam and Fine Sandy Loam Soils Only!

The complete guide which includes other soil textures, “Estimating Soil Moisture by Feel and Appearance” is available at -

<ftp://ftp-fc.sc.egov.usda.gov/MT/www/technical/soilmoist.pdf>.

One more important thing to consider is soil compaction. The field should not be grazed or driven over during or immediately after irrigation because this will lead to soil compaction, preventing root growth and soil tilth.

References and Further Information

Fall Irrigating: To Be or Not To Be by Dr. James W Bauder

<http://waterquality.montana.edu/docs/irrigation/fallirrigation.shtml>

The Stockman Grass Farmer, Tips on Irrigated Pasture Management by Allan Nation

www.stockmangrassfarmer.net/cgi-bin/page.cgi?id=589

Part 650, NRCS Engineering Field Handbook, Chapter 15, Irrigation

<http://directives.sc.egov.usda.gov/viewerFS.aspx?id=3619>



Going Native

By Jessica Reed, Small Acreage Landowner

Last fall, my husband and I left the city life and bought twenty-one acres of rural land next door to my parents. This was in the spirit of the advice I always gave my writing students: risk-taking involves a willingness to fail.

Our house is on highly erodible cropland so we were eligible for the USDA Conservation Reserve Program (CRP). My parents' land is also in CRP: they get a payment to *not* farm their land because the root systems of their forests, grasses and wildflowers anchor the dirt and provide a wildlife habitat. Their tall grasses flourish, and they gawk at rare birds through binoculars. This sounded good to us: my husband and I could do the right thing by doing nothing (by letting the existing grasses be).

However, a detail in our CRP contract forced me out of my comfort zone immediately. We had to replace seven acres with native, warm season grasses. At the time, I didn't even know there was a difference between cool and warm season grasses.

Native grasses are not easy to establish. For grasses that evolved in this environment, they are fussy. The process of preparing the bed was elaborate. The field required two applications of Roundup (which only kills what is green) and one of Plateau (a residual that stays in the soil for a couple weeks, suppressing the competition). Native grass seeds are expensive, Plateau is hard to find, and failure would come at a great cost.

The seeds are fluffy and require a special no-till drill. Calibrating the drill can be difficult, and the few experts I could find assured me that I would run out of seed before I'd covered all seven acres. As it turned out, we had seed left over, which I had to vacuum out of the drill and broadcast by hand. Then, I watched for rain.

We lifestyle farmers differ from generational or career farmers in that we don't depend on our farm to make a living. Still, this move amounts to little without genuine risks. I've been told that it takes years before a field of native grasses looks good. In the first year, eighty percent of the plant's mass is underground. So we won't know for sure whether this worked for a couple years. It's no vegetable garden.

Doing the right thing should not be as easy as doing nothing, and it is against the spirit of moving here. Putting down roots should be a challenge. When I left my teaching job, my boss reminded me that anything worth doing comes with doubt and trepidation. Each day, I walk the field and look for blades of grass peaking out of the ground. Every one I find is a small triumph.

For information on CRP, review the [Farm Service Agency \(FSA\) CRP factsheet](#) or contact your local USDA-FSA office.



Jessica loads the no-till drill with fluffy native grass seeds.

Facts About Purple Loosestrife

By Tina Booton, Weld County Weed Division Supervisor

When purple loosestrife invades irrigation systems, economic losses to agriculture can exceed \$2.6 million annually. To give an idea of how fast purple loosestrife can change our world, here's what happened in Washington State. The largest purple loosestrife infestation in Washington covers an estimated 23,000 desert wetland acres in the Winchester and Frenchman Hills wasteways of Grant County. Purple loosestrife was first noticed in the area in the 1970's. In less than 20 years purple loosestrife invaded this new 55,000 acre desert wetland habitat and established a monoculture.

Purple loosestrife (*Lythrum salicaria*) is a non-native, tap-rooted, perennial forb. It is native to Europe and was introduced to North America as an ornamental plant for gardens in the mid 1800's and has escaped into natural areas such as streambanks and shallow

ponds. Purple loosestrife reproduces primarily by seed. A single, mature plant can produce up to 3 million seeds per year. The seeds can remain viable in the soil for 5 to 20 years. Pieces of roots or stems also can produce new plants. Purple loosestrife produces multiple 4-sided stems that can grow 2 to 8 feet tall. Leaves are 2 to 5 inches long, lance-shaped and whorled on the stems. Flowers are tightly grouped in long, vertical heads; they bloom from the bottom up on heads. They are reddish-purple in color, about 1 inch long, and have 5 to 7 petals. Flowers appear from late June through September.

Purple loosestrife can be found along riverbanks, ditches, and wet meadows throughout the state. Infestations rapidly replace native vegetation, can impede water flow in canals and ditches, and have little wildlife habitat value. If purple loosestrife is left unchecked, the wetland eventually becomes a monoculture of loosestrife. The roots form dense mats that choke out and assist in out growing cattails, sedges, rushes and other wetland vegetation.

The key to effective control of purple loosestrife is early detection when infestations are small. It is fairly easy to control small numbers of loosestrife plants when the seed bank in the soil is small. Eradicating large populations is much more difficult. Biological control should primarily be considered when populations of loosestrife have become large or are inaccessible. Small loosestrife infestations should be eradicated by hand-pulling or herbicide application.

For more information visit www.weldweeds.org.



Flowering purple loosestrife plants infesting South Platte riverbanks.
Source: www.co.weld.co.us/assets/ca1a75C4481196A5120A.pdf

Homesteaders

By Jennifer Cook, Small Acreage Management Coordinator, CSU Extension/NRCS

The word homesteaders came from the Homestead Act of 1862. Under the Homestead Act of 1862 the U.S. government gave away surveyed land in the West to anyone willing to settle it. Families traveled long distances by foot and covered wagon to settle on unfamiliar terrain. By the Act, settlers could claim the land deed for up to 160 acres, only after farming the land for five years and building at least a 12 by 14 dwelling. Title for the land could also be acquired after 6 months of trivial improvements by paying the government \$1.25 per acre. After the Civil War in 1865, Union soldiers could deduct the time they served from the residency requirements to claim land.

This was a time of perseverance, danger, and resourcefulness for homesteaders. Winds, blizzards, prairie fires, wild animals, insect plagues, and often Indians challenged the pioneers. The dry, treeless plains were hard to farm and raise livestock on. While 160 acres was plenty of land to sustain a family in the east, it was certainly not enough in the dry scarcely vegetated plains. Many original homesteaders abandoned the land before the five years.

Frostbite and snake bites were common. Women gave birth on covered wagons with little medical assistance. People died from hunger and hard work. Range cattle stampeded camps. Outlaws stole food and money from travelers and homesteaders. And before the Railroad Act of 1869 made travel and transportation of supplies easier, homes were built out of sod because no trees grew on the plains.

Today, homesteading refers to a lifestyle in which we aim for agrarian self-sufficiency. All of our modern day homesteading pursuits are challenging, but we can always go to the local grocery store if

hail ruins the tomatoes, or order proper building supplies for our houses. Homesteading is easy compared to the 1860s. It's good to keep things in perspective.

References

My Folks Came in Covered Wagon, by Michele R. Webb.

National Archives, Teaching With Documents: The Homestead Act of 1862

www.archives.gov/education/lessons/homestead-act/

National Park Service

www.beatricene.com/homestead/history.html



'They built "a little sod shanty on a claim." The four sisters shown below claimed land in Custer County, Nebraska under the Homestead Act of 1862. There were few trees on the Great Plains so the pioneers had to build shelters of earth or "sod."'

(Image and text from Moon, Glenn W. and John H. MacGowan, Story of Our Land and People. NP: Henry Holt and Company, 1955.)

Source: www.flickr.com/photos/cat-sidh/176377129/



Landowner Stewardship Workshop

September 10, 2011 (8-Noon)

Florissant, CO

Join the Teller-Park Conservation District for free breakfast and presentations at the Blue Mountain Ranch. Meteorologist Brian Bledsoe will present The Encore of La Nina, how long it will last and how it will impact southern CO. Rangeland Specialist Ben Berlinger of NRCS will talk on native rangeland grasses: characteristics, seasons, and growth habits. RSVP by Sept 7 to Pat Galvin 719-686-9405 or pat.galvin@ca.nacdnet.net.

Viva Salsa!

September 13, 2011 (6-7:30pm)

Littleton, CO

Salsa is one of the most popular condiments in America! Learn how to prepare and water-bath can salsa using a recipe that has been tested and is safe for home canning. For more information contact Sheila Gains at sgains@co.arapahoe.co.us or 303-730-1920.

Extreme Makeover

September 17, 2011 (8:30-4:00pm)

Berthoud, CO

Topics include Pasture Management, Septic Systems & wells, Landscaping with Pollinators, Irrigation, Composting Manure & Yard Waste, and Windbreak Design. Participants have a chance to win a grass seeding job, seedling trees, \$500 of weed spraying service, and other door prizes. Brought to you by Big Thompson, Boulder Valley, Fort Collins, Longmont, and West Greeley Conservation Districts, Colorado State University Extension, and Natural Resources Conservation Service. Register by Sept. 10 at www.nococd.org.

Viva Salsa!

September 17, 2011 (10-11:30am)

Longmont, CO

Salsa is one of the most popular condiments in America! Learn how to prepare and water-bath can salsa using a recipe that has been tested and is safe for home canning. Contact Anne Zander for more information at 303-678-6238 or azander@bouldercounty.org.



Fundamentals of Small Acreage Swine Production Webinar

September 29, 2011 from Noon-1:00 MT

This webinar is an introduction to raising pigs for meat or for breeding. We will discuss feed, facilities, health, nutrition, and proper management of small-scale swine production. Presented by Brett Kaysen, animal science professor at CSU, and expert in swine production. To register for the swine production webinar, please go to: [https://spreadsheets0.google.com/viewform?](https://spreadsheets0.google.com/viewform?hl=en&hl=en&formkey=dG1sUWpDYnIHcGNCT0FVSTFtNldrSnc6MQ#gid=0)

[hl=en&hl=en&formkey=dG1sUWpDYnIHcGNCT0FVSTFtNldrSnc6MQ#gid=0](https://spreadsheets0.google.com/viewform?hl=en&hl=en&formkey=dG1sUWpDYnIHcGNCT0FVSTFtNldrSnc6MQ#gid=0) or visit the Hot Topics section of CSU Small Acreage Management website at www.ext.colostate.edu/sam/.

Small Acreage Tree Thinning and Weed Id

October 1, 2011

Larkspur, CO

This workshop will be held on at Statter Ranch from 8:30am to 12:00pm. Forester Bill Williams, and Dan Nosal, NRCS Rangeland Management Specialist will be the speakers and a free lunch will be provided. This workshop is open to the public. RSVP by September 26, 2001 to Pam Brewster, Douglas County District Manager at 303-688-3042 ext. 100 or pam.brewster@co.nacdnet.net.

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Events continued from page 9

CO Energy Master program

Custer, LaPlata, Larimer, Logan, & Pueblo Counties

Take courses on energy efficiency and renewable energy, earn CEUs or CECs, or become an Energy Master. Program offered by CSU Extension. For program details and course schedules, visit www.ext.colostate.edu/energymaster/index.html

CO Building Farmers and Ranchers Program

The Colorado Building Farmers and Ranchers program builds community and capacity in agriculture through classroom and experiential learning for beginning farmers and ranchers (0 to 10 yrs experience). The program is a series of 8 evening classes designed to help new farmers and ranchers explore agriculture as a business, and provide intermediate and experienced farmers and ranchers with tools and ideas to refine and enhance their business management, production, and marketing skills.

Boulder County—contact Adrian Card for more info at Adrian.card@colostate.edu

Jefferson/Denver Counties—contact Blake Angelo for more info at blake.angelo@colostate.edu

LaPlata County—contact Darrin Parmenter for more info at Darrin.parmenter@colostate.edu

Larimer County - Classes are Mondays 5:30-8:30 pm from Oct. 10 to Dec. 5, 2011, register by Sept. 1, 2011. Contact Larimer County Extension at 970- 498 -6003 or visit <http://www.colostate.edu/Depts/>

CoopExt/LARIMER/index.html

Pueblo County – Classes are Wednesdays 5:30-8:30 pm from Oct. 26 to Dec. 14, 2011, register by Oct. 14. Contact Pueblo County Extension at 719-583-6566 or visit <http://www.coopext.colostate.edu/Pueblo/agr/agri.shtml>

San Miguel County—contact Yvette Henson for more info at Yvette.hensen@colostate.edu

Yuma County—contact John Deering for more info at john.deering@colostate.edu

Small-Scale Livestock Workshop

October 15, 2011 (8 am-4:15 pm)

Longmont, CO

Beginner and experienced livestock owners are invited. Workshop will be at the Clover Building at Boulder County Fairgrounds. Valuable hands-on presentations will focus on health, production, nutrition, housing, and know-how. In-depth discussions will build on pre-recorded introductory webinars which participants should watch prior to the workshop. Bring your questions! Brought to you by CSU Extension, and NRCS. Register online at www.ext.colostate.edu/sam/livestock

Sauerkraut and Kim Chi

October 22, 2011 (10am-12pm)

Longmont, CO

Natural fermentation is one of the oldest means of food preservation. Learn the science of making and canning sauerkraut and kim chi safely in this hands-on workshop. Contact Anne Zander for more information at 303-678-6238 or azander@bouldercounty.org

For an updated list of events, visit **CSU Small Acreage Management website** www.ext.colostate.edu/sam/



Colorado State University Extension and U.S. Department of Agriculture programs are available to all without discrimination. Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating.