

FARM AND YARD

September 2020

ISU Extension Butler County

320 N Main Street
Allison, IA 50602
Phone: (319) 267-2707
Fax: (319) 267-2708
www.extension.iastate.edu/butler

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IOWA STATE UNIVERSITY Extension and Outreach

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FOR RURAL AND URBAN FAMILIES

Soil Health

USDA Natural Resources Conservation Service

Soil health, also referred to as soil quality, is defined as the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. This definition speaks to the importance of managing soils so they are sustainable for future generations. To do this, we need to remember that soil contains living organisms that when provided the basic necessities of life - food, shelter, and water - perform functions required to produce food and fiber.



What Soil Does

Healthy soil gives us clean air and water, bountiful crops and forests, productive grazing lands, diverse wildlife, and beautiful landscapes. Soil does all this by performing five essential functions:

- **Regulating water** - Soil helps control where rain, snowmelt, and irrigation water goes. Water and dissolved solutes flow over the land or into and through the soil.
- **Sustaining plant and animal life** - The diversity and productivity of living things depends on soil.
- **Filtering and buffering potential pollutants** - The minerals and microbes in soil are responsible for filtering, buffering, degrading, immobilizing, and detoxifying organic and inorganic materials, including industrial and municipal by-products and atmospheric deposits.
- **Cycling nutrients** - Carbon, nitrogen, phosphorus, and many other nutrients are stored, transformed, and cycled in the soil.
- **Physical stability and support** - Soil structure provides a medium for plant roots. Soils also provide support for human structures and protection for archeological treasures.

Dynamic soil quality is how soil changes depending on how it is managed. Management choices affect the amount of soil organic matter, soil structure, soil depth, and water and nutrient holding capacity. One goal of soil health research is to learn how to manage soil in a way that improves soil function. Soils respond differently to management depending on the inherent properties of the soil and the surrounding landscape. To view the complete article go to <https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>

Using Cereal Rye Cover Crop and Narrow-Row Soybean to Manage Herbicide-Resistant Waterhemp

Bob Hartzler, Prosashant Jha, ISU Extension Weed Specialists



Waterhemp control is an increasing challenge for soybean producers due to the evolution of multiple herbicide-resistant populations. With dwindling herbicide resources, there is a need to integrate non-chemical strategies into current weed management programs in soybean. Cereal rye is the most common cover crop grown in the Midwest due to its winter hardiness and short life cycle. The high C:N ratio of cereal rye compared to legume or brassica cover crops results in a slow degradation of the residues; thereby, increasing the duration of weed suppression. This along with a greater biomass accumulation makes cereal rye an ideal cover crop candidate. Another non-chemical, cultural strategy to suppress weeds and complement herbicide efficacy is the use of narrow-row vs. wide-row soybean. Growers need research-based information on how to best integrate these two strategies for managing herbicide-resistant waterhemp in soybean.

A field study was conducted (2019-2020) at the ISU Research and Demonstration Farm near Ames, IA to quantify the impact of cereal rye cover crop and soybean row spacing (15 inch vs. 30 inch) on the glyphosate-resistant waterhemp seed bank. The previous crop was corn, with three levels of waterhemp control.

The three programs resulted in three different levels of weed seed production. After corn harvest, cereal rye was drill seeded (60 lb/acre) in the 2nd week of October, 2019. Soybean (Enlist E3 beans) was planted into the standing rye cover crop at a 30-inch or 15-inch row spacing on May 22, 2020. On the same day, cereal rye (at anthesis stage) was terminated with 32 fl oz/acre Roundup PowerMAX, and 27 fl oz/acre Dual II Magnum was applied to provide early-season residual control of waterhemp. Cereal rye biomass at the time of termination averaged 4600 lb/acre. To examine the potential of cover crop and narrow row soybean on waterhemp control, no POST herbicide was applied in the soybean phase of the study.

The aggressiveness of the prior year's corn herbicide program had a strong impact on waterhemp infestation in the soybean crop. Waterhemp emergence in soybean was reduced by 75% with the aggressive two-pass herbicide program (three sites of action) plus harvest weed seed control compared with the marginal herbicide program in the previous year. The rye cover crop reduced waterhemp emergence (density) by 30% and waterhemp growth (size and biomass) by up to 75% through July. Reducing the soybean row spacing from 30 to 15 inches reduced waterhemp emergence by 15% and waterhemp growth by 50%. The integration of these tactics resulted in a significant suppression of waterhemp even with limited herbicide inputs in the soybean phase of the rotation. For instance, an aggressive weed control program in corn followed by a rye cover crop and narrow-row soybean showed 87% less waterhemp emergence, compared with the treatment that had marginal weed control in corn, no cover crop and 30-inch soybean row spacing. Soybean yield will be recorded at harvest in the fall 2020 to determine the effects of cover crop, row spacing, and weed competition.

Disclaimer: This article is for education purpose only. Mention of a specific product should not be considered as approval, nor should failure to mention a product be considered disapproval. Read the product label before using any herbicide.

For the complete article go to <https://crops.extension.iastate.edu/cropnews/2020/08/using-cereal-rye-cover-crop-and-narrow-row-soybean-manage-herbicide-resistant>

LOW STRESS CATTLE HANDLING

Written by Grant A. Dewell, DVM, associate professor and extension beef veterinarian; Suzanne T. Millman, professor of veterinary diagnostic and production animal medicine; Rebecca L. Parsons, research associate in veterinary diagnostic and production animal medicine; and Renee D. Dewell, veterinary specialist with the Center for Food Security and Public Health at Iowa State University.

Low stress cattle handling has been advocated by many different groups and individuals within the beef industry. There are observed benefits to implementing low stress handling, including improved performance, animal welfare, and handling efficiency. However, there is some confusion about low stress philosophies and techniques advocated by different experts. Fundamentally, there are positive aspects of each system and different techniques may work better with some individuals or groups of cattle. Cattle responses to handling result from their innate and learned behavior. By understanding all of these aspects, cattlemen will be able to read different situations and adjust their handling techniques to lower stress for the animal.

Natural Behavior of Cattle

No matter what cattle handling philosophy you choose to implement, there are some innate cattle responses that are utilized when moving cattle. Cattle will respond primarily to visual cues. Due to eye position on the side of the skull, cattle see approximately 310 degrees around them with the only blind spot directly behind them. Since most of their vision is peripheral, they notice slight movements to which they respond readily. Their vertical vision is only about 60 degrees, so in order to see things above them they need to lift their heads up, which stops forward motion.

As a herd animal, cattle like to be moved in groups. Cattle will naturally form a herd structure with different social groups within that herd.

Principles for Handling Cattle

Reading each animal's responses will allow cattle to be moved with minimal fear and distress. Cattle have long memories so limiting negative experiences can be beneficial because cattle will remember these and become stressed when faced with similar situations. What each animal has learned from its previous handling experiences affects how it will respond in the future.

General principles of cattle handling are based on cattle avoiding or moving away from the handler. Cattle have a flight zone which is their personal bubble that when breached, causes them to respond by moving away. To influence cattle movement and direction, a good handler exerts pressure on cattle by working the edge of the flight zone (sometimes referred to as the working zone or pressure zone) and paying attention to the point of balance.

Once cattle are grouped you can move toward where you want the cattle to go. As you move into their work zone their first reaction will be to move in the direction that they are facing. If they are not facing where you want them to go then you will need to redirect them. Cattle will naturally follow you with their eyes and head as they want to keep you in their sight.

Facilities

The two most common designs for low stress cattle handling are the round tub and alley system popularized by Temple Grandin and the Bud Box system popularized by Bud Williams. Cattle can be successfully handled with minimal stress using either system, if they are designed and used properly. Both systems capitalize on visual perception and herding responses of cattle to focus their attention and direct them through the handling facility. Most facilities are constructed or modified to fit one or combination of these designs.

Summary

Both cattle and handlers develop predictable responses to handling situations based on their experiences. Different experts have popularized low stress handling techniques and facility designs. Often these systems employ similar principles of animal perception, herding motivation and flight responses. Cattlemen may benefit by investing in facility designs and cattle handler training that incorporate some or all of these features as relevant to the needs of the operation. To download the full article go to <https://store.extension.iastate.edu/product/15923>



Animal U for youth-directed learning

Whether at home, in the barn or even out in the pasture, 4-H youth can log on to Animal U (<https://www.extension.iastate.edu/animalu/>) and become better caretakers for animals. Through this online gaming platform, youth direct their own learning to gain knowledge and skills that apply to their livestock projects.



Animal U is designed to connect more young people to animal agriculture, whether they have or don't have an animal of their own. They learn about the relationship between animal agriculture and the science and technology that supports it in everyday life. In addition, they learn about potential careers associated with food production.

What's That Vine?

University of Wisconsin Extension

If you notice a vine which seems to spring up overnight, climbing shrubs and trees, the first inclination is to suspect an invasive species. But looking closely, it may actually be wild cucumber (*Echinocystis lobata*), a native annual vine in the cucurbit family. While not an invasive, it certainly does grow aggressively!

Flowers form in July - August. They are star-like, pale yellow-white, fragrant, and insect-pollinated. Both male and female flowers form on the same plant.

Enjoy this interesting plant if you don't mind where it's growing, but keep in mind it will self-sow and spread. If you don't like where it is, control is safest by pulling by hand. But take care if you value the plant under it, as wild cucumber's tough tendrils can tear the host plant's stems when forcibly pulled. Chemical control is rarely necessary for the home gardener, and could be damaging to the host plant growing beneath. Another option is to remove and dispose of the fruits well before they ripen to prevent further spread.



Fall Lawn Care

Richard Jauron, ISU Extension and Outreach Horticulturalist

When is the best time to apply a broadleaf herbicide to the lawn?

Fall (late September to early November) is the best time to control perennial broadleaf weeds in the lawn with broadleaf herbicides. In fall, perennial broadleaf weeds are transporting food (carbohydrates) from their foliage to their roots in preparation for winter. Broadleaf herbicides applied in fall will be absorbed by the broadleaf weed's foliage and transported to the roots along with the carbohydrates, resulting in the destruction of the broadleaf weeds.

Effective broadleaf herbicides include 2,4-D, MCPP, dicamba, triclopyr and others. The most effective broadleaf herbicide products usually contain a mixture of two or three herbicides, as no single compound controls all broadleaf weeds. Broadleaf herbicides can be applied as sprays or granules. (Sprays are generally more effective than granular products in controlling broadleaf weeds.) Before applying any herbicide, carefully read and follow label directions.

How long should I continue to mow the lawn?

Continue to mow the lawn until the grass stops growing in fall. The foliage of Kentucky bluegrass and other cool-season grasses usually stops growing in late October or early November in Iowa. Mow Kentucky bluegrass lawns at a height of 2½ to 3 inches in fall. When mowing the lawn, never remove more than one-third of the total leaf area at any one time. Accordingly, a lawn being mowed at a height of 3 inches should be cut when it reaches a height of 4½ inches.

When should I fertilize the lawn?

Mid-September and late October/early November (after the grass has stopped growing) are excellent times to fertilize Kentucky bluegrass lawns in Iowa. Mid-September fertilization helps the grass recover from stressful summer weather. An application of fertilizer in late October/early November promotes root growth and early green-up next spring. Apply no more than 1 pound of nitrogen per 1,000 square feet in a single application. Lawns also can be fertilized in spring (April to mid-May).

When should I aerate the lawn?



Early September is an excellent time to aerate lawns growing in heavy, clay soils and those subject to heavy foot traffic. Aeration relieves soil compaction, improves water and nutrient movement in the soil, and prevents thatch accumulation.

Aerate lawns with a core aerator. Core aerators have hollow metal tubes or tines that remove plugs of soil. Remove soil cores that are approximately three-fourths of an inch in diameter and 3 inches in length. When completed, properly aerated lawns should have 20 to 40 holes per square foot. This usually requires several passes of the core aerator. Lawns also can be aerated in April or early May.

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Butler County Extension Office
320 N Main St, Po Box 368
Allison, IA 50602

www.extension.iastate.edu/butler

Butler County Extension Staff

Adriane Carlson
Regional Director

Taylor Veldhuizen
County Program Coordinator

Andrea Hobson
County Youth Coordinator

Beth Heckman
Office Assistant

Area ISU Extension

Family Finance Specialist
Jeannette Mukayisire,
jeannet@iastate.edu
319-882-4275

Ag Engineer Field Specialist
Kapil Arora, pbtiger@iastate.edu
515-382-6551

Field Agronomist
Terry Bosol, tibasol@iastate.edu
641-435-4864

Farm Management Specialist
Kelvin Leibold, kleibold@iastate.edu
641-648-4850

Dairy Specialist
Jen Bentley, jbentley@iastate.edu
563-382-2949

Calendar of Events



SEPTEMBER

- 1 **4-H Club Leader Meeting**, Extension office, 7 pm
- 2 **Extension Council Meeting**, 7 pm
- 7 **Extension office closed**, holiday
- 9 **Private Pesticide Training-Last Chance**, Extension office, 1:30 - 3:30 pm
(registration highly recommended)
- 17 **4-H Leaders Training**, TBD
- 24 **4-H County Council Applications Due**
- 30 **4-H Record Books Due**
- 30 **4-H Project Award Application Due**

OCTOBER

- 21 **Roadside, Forest and Aquatic CIC**, 2,5,6,10, Extension office, 9 am
Reshow date: October 29, 9 am
- 28 **Mosquito and Public Health Pest Mgmt CIC**, 7D, 8, 10, Extension office, 9am
Reshow date: November 12, 9 am