



WOMEN  
CARING FOR THE  
LAND



Women Caring for the Land<sup>SM</sup>

Improving  
Conservation Outreach  
to Female  
Non-Operator  
Farmland Owners



Conservation Education Activities for Conservation Agencies,  
Not-for-Profit Organizations, and Community Groups

*Created by Women, Food and Agriculture Network, © 2012, 2013*

*Women Caring for the Land<sup>SM</sup>: Improving Conservation Outreach to Female  
Non-Operator Farmland Owners*

*Conservation Education Activities for Conservation Agencies, Not-for-Profit  
Organizations, and Community Groups.*

*Edited by Jean Eells, PhD, and Leigh Adcock. Designed by Kim Corbin.  
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## Acknowledgments

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This manual has been reviewed for accuracy and usability by staff members of USDA Natural Resources Conservation Service (NRCS), USDA Farm Service Agency, Drake University Agricultural Law Center, Iowa Natural Heritage Foundation, Conservation Districts of Iowa, and Agren, Inc. WFAN's board and staff are grateful for the input and assistance of this excellent team of reviewers, as well as the women farmland owners who also reviewed and improved this resource.

We welcome your input, as we intend to continue improving and revising the manual as more agencies and organizations make use of it and provide their feedback. You may contact us at [info@wfan.org](mailto:info@wfan.org), or 515.460.2477 with comments and suggestions. More resources for women landowners are available at [wfan.org/wcl](http://wfan.org/wcl).

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## Overview: Background, Methodology, and How to Use This Manual

Women, Food and Agriculture Network (WFAN) has been serving Midwestern women farmers and farmland owners since our founding as a non-profit project in 1997. The network was created to provide information, networking and leadership development opportunities to women working in sustainable agriculture and food systems development.

Women landowners now own about half of Midwestern farmland (acres) and make up about half of farmland owners (population). They have proven to be willing and capable conservation partners when effectively informed and supported.

Over the years, we have learned that women farmland owners express very strong conservation values, but often feel unsure of how to translate those values into action. Most of them are not the primary operators of their farmland; they lease the land to a tenant and rely on him to manage it using accepted best management practices for soil and water conservation. But an increasing number of women landowners are inheriting the land from their husbands and fathers, and as sole owners, these women have a strong interest in learning more about their rights as landowners, about best management practices, about communicating effectively

with their tenants, and about state and federal cost-share and loan programs available to help them.

Women in general consistently show a preference for informal, peer-to-peer learning models, sometimes called “learning circles.” Learning circles are flexible, peer-directed, facilitated learning experiences, built upon the idea that every member has something to contribute and that every member has something to learn. Research in adult education shows that adult learners of both genders are most likely to take action when information is offered in this setting, and when they feel comfortable asking questions and sharing information with one another, as opposed to traditional classroom presentation-style methods of information delivery. The learning circles methodology differs significantly from the more commonly used classroom-style, lecture-driven model. We have found that using the learning circles model is critical to gaining women’s trust so that they may find their voices and take action.

WFAN has developed a program called *Women Caring for the Land<sup>SM</sup>* (WCL), designed to serve female non-operator landowners who are interested in learning more about conservation and other land management topics. Of the 45 women who participated in the pilot project in eastern Iowa in 2009, half took at least one conservation action within the following year. (For more evaluation results, visit [www.wfan.org](http://www.wfan.org).) The program is successful, popular, and in increasing demand among both women landowners and agency partners such as NRCS and the Iowa Department of Natural Resources. This curriculum guide is our effort to share the methodology, rationale, and some of the activities and resources we use, with the broader conservation outreach community.

**We hope that using this manual will allow many users to plan and facilitate effective conservation meetings targeting women non-operator landowners, to provide them with the information and confidence they need to take action and work with tenants to improve soil and water conservation on their farmland. As women control an increasing percentage of land across the US, their informed cooperation on conservation will help protect our precious resources for years to come.**

This has given me some understanding of what my husband talks about. I came to this meeting with no understanding. I am excited about the projects possible to protect the Iowa soil and feel this meeting has helped me in beginning to learn about “farming.”

Lucas Co. participant  
4/1/11

### Result of 2009 *Women Caring for the Land<sup>SM</sup>* Pilot



## How to use this manual

This manual is intended to give users an **overview** of the rationale and methodology for targeting outreach to non-operator women landowners, particularly those 65 and older who now control a significant percentage of US farmland. (In Iowa in 2012, females owned 52 percent of the land owned by those over 65 years of age. Duffy and Jonanns, 2012.) It also provides a number of **conservation demonstration activities**, which range from very simple to more complex, both in concept and execution.

We acknowledge that many women landowners are extremely knowledgeable about soil, farming, and land management. However, our meetings tend to draw a very diverse group of women, including some who have little or no experience or knowledge of these topics, and who are just beginning their journey of learning. These less informed women are eager to learn from the more informed women, and some of the simplest activities in this manual are perfect for bringing them up to a basic level of understanding so that they are confident and ready to learn more.

Adult learners who are hesitant to ask questions are able to absorb important information through simple activities, and get answers to questions they may have felt would sound “dumb” if asked in the group. We often get comments from women landowners following meetings such as, “Thank you for explaining it in a way I can understand.”

### A note on resources:

Some of the informational resources listed for each activity are Iowa-specific. They may still be applicable in other states, but if they are not, they may help you identify comparable resources in your area.

### A note on using the *Women Caring for the Land*<sup>SM</sup> title and resources:

If you are holding your meeting in collaboration with WFAN, you are free to use the title *Women Caring for the Land*<sup>SM</sup> in publicizing it. If you choose to use some or all of the methodology or resources on your own (which we encourage), please mention WFAN as the source of the ideas and activities you choose to use from this manual. Here is a preferred credit line to use in written and verbal acknowledgements: “The learning circles method of conservation outreach to women farmland owners, and the activities used, were developed by Women, Food and Agriculture Network for its *Women Caring for the Land*<sup>SM</sup> program.”

## Why target conservation outreach to women landowners?

Women Farmland Owners



- A. Men Farmland Owners
- B. Women Farmland Owners under 65
- C. Women Farmland Owners, 65-75
- D. Women Farmland Owners, 75+

Rented Land



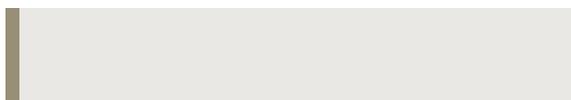
- A. Men own 39% of rented land
- B. Women own 61% of rented land (details page 9)

Women farmland owners are a vital and often under-served segment of the conservation partnership in Iowa and across the country. Women currently own or co-own nearly half the farmland in Iowa (47%), and make up half of farmland owners (49%). Significantly, the age of farm owners is also rising, which is likely to result in more women inheriting farmland over the coming decade from spouses and parents. *Seventeen percent of Iowa farmland is owned by widows.* In 2012, women over the age of 65 owned 24 percent of Iowa's farmland, a percentage expected to rise over the next decade. (Statistics taken from *Farmland Ownership and Tenure in Iowa 2012*, Iowa State University, PM 1983, Duffy & Johanns, 2014.)

These older women farmland owners typically have not participated in land management decisions in the past, leaving those decisions up to their husbands or tenant farmers. In other words, most are classified as **non-operator landowners**. However, based on our ongoing work with them, we find that a significant number of these landowners are eager for information and support in conservation planning, and will take action once these are provided.

The opportunity to reach this group of women will approach a high point over the next 10 years, as the demographics of farmland ownership change; farmers are aging, male farmers are passing away, and women in their 60s, 70s and 80s are inheriting family farms. Many of them are eager for information and support. They want to pass on the farm they love to a new generation of family farmers who will protect and preserve it by farming sustainably and implementing a full range of conservation

### Conservation Programs, 2012



**7%** of land in Iowa is enrolled in some type of conservation program

This meeting was exactly what I've been looking for to help make decisions. I'm very concerned about the health of our farmland... Thank you for this excellent opportunity.  
**Minnesota participant 2017**

practices. **If Midwestern conservation partners can more effectively serve this segment of landowners before the land transitions again over the next decade, the positive impact on our land, water and air will be tremendous.**

In our work with women landowners, Women Food and Agriculture Network has found that, although women have consistently indicated strong conservation values in surveys (Women, Land and Legacy<sup>SM</sup>, 2007), they report a lack of information and confidence in implementing conservation practices, and do not participate in conservation programs at any higher rate than men; only seven percent of land in Iowa in 2014 was enrolled in some type of formal conservation program (Duffy & Johanns, 2014). In fact, other research shows that women landowners participate in conservation programs at a much lower rate, in stark contrast to their stated values and beliefs (Eells, 2008).

In WFAN meetings, non-operator women farmland owners often report that they feel intimidated or ignored when they ask tenants or agency staff questions about land management or conservation. Some of this barrier could be attributed to their age and their lack of experience in participating in management decisions to date. Women often do not use or understand the language that agency staff or tenants use to describe land management issues. Eells also found that conservation materials in use by agencies do not appeal effectively to this demographic; none of the photos in the brochures are of older women, language tends to be technical and full of unfamiliar terms and acronyms, and the design and language are clearly aimed at a male audience.

**From the results of surveys and meetings, we can begin to build a picture of a typical female farmland owner in the Midwest:**

She is 65 years old or older. • *She is increasingly likely to be a widow.* • She may retain ownership of her farm for family or sentimental reasons. • *She probably rents her land to a tenant, using a cash-rent system, and relies on the tenant or a professional farm manager to make management decisions about her land.* • However, she is very strongly in favor of conserving the soil and water on her farm, and is eager for information on best practices, available programs, and how to communicate with her tenant on a conservation plan. • *She is more likely to attend an informal peer-to-peer meeting to obtain this information than to contact an agency or look on the internet, and more likely to take action after a meeting of this type than after a traditional “classroom-style” presentation.*

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## Other demographic data relevant to conservation outreach to women landowners emerge from *Farmland Ownership and Tenure in Iowa, 2012* (Duffy & Johanns, 2014):

- Female landowners are older than male farmland owners, on average. Sixty-two percent of the land owned by females is owned by those over 65 years of age, compared to 51 percent of land owned by males.
- Females own 52 percent of the land owned by those over 65 years of age.
- Twenty-seven percent of the land owned by women is owned by widows.
- Forty-one percent of the land owned by women is under professional farm management.
- More women are likely to own land for “family or sentimental reasons” than men: 25 percent vs. 20 percent of those surveyed (as opposed to long-term investment or income).
- Although males own 54 percent of all land, females own 61 percent of rented land. This follows the pattern of a national study finding ownership of leased farmland to be higher for females (1999 Agricultural Economics and Land Ownership Survey (AELOS) published by the USDA/NASS with data from the 1997 Census.)
- Females rent 77 percent of their leased acres using cash rent rather than crop-share or other arrangements.
- All farmland owners surveyed said they prefer personal interactions or postal mail when learning about land management options, as opposed to the internet.

### A note on this guide:

This guide will describe various elements of the *Women Caring for the Land<sup>SM</sup>* learning circles methodology, as well as provide conservation educational activities designed for women landowners, which any agency or non-profit may use in whole or in part to improve their conservation outreach to women farmland owners. If you choose to use some or all of the methodology or resources on your own (which we encourage), please mention WFAN as the source.

## Learning circles methodology

A “learning circle” is one way of describing the informal, peer-to-peer meeting format that women consistently say they prefer. Over time and across countries, civic organizations, neighborhood communities, trade unions, churches and social justice groups have used the idea of learning circles to empower their members to make choices and take action. *Women Caring for the Land<sup>SM</sup>* meetings are conversational meetings, facilitated by a woman, and are structured very differently from the traditional classroom-style meetings most agencies and organizations typically host.

Overall explanations were well laid out and motivate me to educate myself even further.  
Minnesota participant 2016

At a learning circle meeting, the women are treated as the experts on the history and future of their farmland. Before any information or resources are mentioned, each woman around the table is asked to take three to four minutes to describe her land or farm, her goals and dreams for the land, and any challenges she has faced related to soil and water conservation.

Just always thought of soil health as the chemical aspect. Very intrigued to think about structural and biological aspect.  
Iowa participant, 2016

The older, non-operator women landowners who typically attend WCL meetings have widely varying educational levels. Some have advanced college degrees; some may have finished their formal education after 12th or even 8th grade. The latter often are not confident readers or writers, making the informal, conversational format of a learning circle particularly useful for them as non-traditional learners. We observe differences between older women and younger women in engagement with technology, comfort asking questions when men are present, and in advocating for their own needs. At this time, because more land is owned by older women, we are directing the learning circles to meet their needs. We can adapt the meetings accordingly when no older women are present.

At a typical WCL learning circle meeting, a group of 12-20 women landowners from two to four contiguous counties gathers at a public meeting place. The meeting room is set up with tables in a circle so the women are able to face one another. A female staffer from the host organization facilitates and helps direct the discussion. The facilitator sits among the group rather than standing at the head of the room as a presenter would. The emphasis is on respectful listening, equal time for expressing thoughts and concerns, and sharing wisdom among the members of the group, including – but not limited to – the conservation professionals.

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## A note on women-only meetings

We have found it very important that, at least for the morning discussion portion of the agenda (see the appendix for a sample agenda), only women are in the room. This includes the host organization staff and other conservation professionals. No matter how helpful or low-key they are, the addition of even one gentleman to the mix will significantly alter the dynamic of the conversation, and make some women – particularly those 65 and older – very unlikely to speak up. We have observed this numerous times.

During or after the lunch, and during the afternoon field tour, male staffers from area agencies are welcomed into *Women Caring for the Land<sup>SM</sup>* meetings so that the women landowners can meet them and begin to develop a level of trust with the staffers. We believe this helps the women become more comfortable seeking out help at the county USDA office later on.

Although an agency may require printing a formal inclusivity statement on documents, most conservation professionals have readily understood the importance of providing a “safe space” for women to discuss land management and farming issues with their peers. If they (or the women’s male relatives, spouses or tenants) contact us to ask why they are not invited, we have simply tried to explain that women tend to be more forthcoming about their visions and challenges in the women-only format. If this remains a problem for anyone, it’s likely that the woman will not attend the meeting. Organizers and facilitators should be aware that this format is not appropriate for, nor accepted by, all women.

## The social element of landowner-tenant relationships

It is very important to remember that **informing** non-operator women landowners about conservation concepts and options is only one part of a successful outreach effort. Perhaps even more important is **empowering** her to take action based on her values and developing knowledge.

We have heard repeatedly at meetings that women feel uncomfortable talking to family members or tenants about making changes in farm management practices. Lack of knowledge of conservation terms and options is only part of

This was a very good program. I am ready for another one next week. I have several friends I can bring with me. Keep up the good work.

Cherokee, IA, participant  
5/12/11

This has given me some understanding of what my husband talks about. I came to this meeting with no understanding – I am excited about the projects possible to protect the Iowa soil and feel this meeting has helped me in beginning to learn about “farming.”

Lucas Co., IA, participant  
4/1/11

the challenge. The other issues are social and cultural. Women often “inherited” a tenant along with the farmland. The tenant may be a neighbor, friend, or family member, who goes to church with the landowner and is part of her community. There is tremendous social pressure to gloss over questions or problems that arise related to farm management. Women in particular are sensitive to the social ramifications of expressing or even implying criticism of the tenant. Gender and age discrimination also are definite factors in many landlady-tenant relationships. (We have also heard from some tenants who would like to manage land more sustainably and whose landladies or landlords discourage them, but this seems less common than the reverse.)

It is important to allow women to discuss this aspect of the issue when they are together at a meeting. They gain a tremendous amount of relief (“**I realized today that I’m not alone,**” said one woman) and self-confidence (“**This meeting has changed my life,**” said another woman, who attended a meeting shortly after the death of her spouse). This kind of mindset change means women are much more likely take action on conservation, and be successful when they do.

Here is a link to a page on the Drake University Agricultural Law Center's excellent new website, Sustainable Agriculture Land Tenure (SALT), related specifically to talking with tenants: [The Landowner's Guide to Sustainable Farm Leasing](#).

### The goals of the meeting:

We structure our meetings so that women who attend will:

- share their questions and plans for their farmland with a supportive group of peers
- begin to build a group of local peers who can continue to talk with them about conservation after the meeting
- receive a basic level of information about best management practices for soil and water conservation, appropriate to the topography and agriculture of their area
- feel more confident about beginning a conversation about management practices with their tenant(s)
- learn where to go for further information and support (e.g., the county USDA office, state agency, or conservation non-profit organization, as well as [wfan.org](http://wfan.org))

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## Potential partners

WFAN has collaborated on *Women Caring for the Land<sup>SM</sup>* meetings with staff members of NRCS, FSA, DNR, University Extension, local soil and water conservation districts, and a variety of non-profit organizations that may be active in the meeting areas. These local partners help us identify meeting facilities, arrange for area farms to tour, provide mailing lists of women landowners to invite, publicize and facilitate meetings, take RSVP calls, identify restaurants or caterers to provide meals, and other crucial tasks.

At the same time, our agency partners experience the difference a peer-to-peer meeting format can make in achieving more effective conservation outreach to women farmland owners. One Iowa Department of Natural Resources staff member, an 11-year conservation education veteran, attended some WCL meetings and subsequently wrote: "I was skeptical about the length of the meetings and the meeting format, but I am now a believer. I used to subscribe to the belief that people make decisions based on logic, and presenting accurate information was the most important thing you could do. I now know, however, that very few people make decisions based solely on logic. **Most of us have to be engaged at an emotional level to make a change.** The [learning circle] format is a great way of doing that."

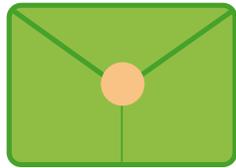
A staff member for a Nebraska non-profit partner who helped coordinate a set of meetings in her state advocated for a longer series of meetings, to accommodate the obviously strong desire on the part of the women to continue sharing with one another. She wrote, "The introductions take a long time and I think that is because you have given these women a platform/place in which they can FINALLY be heard! You can just see it in them, they are finally being listened to, and because of that, they like to share a lot, and I think that is fantastic."

### **A note on funding:**

Hosting a successful meeting doesn't have to cost much money. The largest investment is staff time for preparation and facilitation. Next most expensive is food, followed by postage for invitation letters, and renting a van or bus to transport women on the field tour. If you are able to fund these items out of your own budget, you can offer the meetings free of charge. If not, you may want to charge a modest fee for the meeting. You can cut costs by asking women to bring a sack lunch and/or drive themselves (or carpool) on the field tour, and by sending invitation postcards instead of letters (or relying entirely on free media for publicity). If you work for an agency or non-profit organization, explore grant funding, and consider asking local businesses with an interest in farming or conservation to sponsor all or part of the meeting.

## Publicizing the meetings

You will want to allow 3 to 4 weeks prior to the meeting date for publicizing the event and inviting participants. WFAN has tried a wide variety of methods of contacting women farmland owners to invite them to *Women Caring for the Land<sup>SM</sup>* meetings in their area. Here are some of the methods you may want to try, with a few tips gleaned through our experience:



### Direct mail:

Sending a letter of invitation to women landowners in the target area is the most effective method of outreach to farmland owners. If you are not part of a federal agency, try to partner with NRCS or FSA and ask them to use their mailing lists (they have the names of all landowners participating in federal commodity programs). Offer to pay for postage and printing and have the agency send out the mailing. (Due to privacy regulations, agencies may be unable to share these lists with outsiders.) A sample letter of invitation is in the appendices.



### Community

Create a news release (see appendix for a sample) and send it to as many of the daily and weekly newspapers in the target area as you can identify. The Iowa Newspaper Association website ([www.inanews.com](http://www.inanews.com)) has a member database that is searchable by city and county; other states should have a similar resource. **Don't forget to send your release to the free weekly shoppers: many rural residents are more likely to read the weekly shopper than the newspaper.**



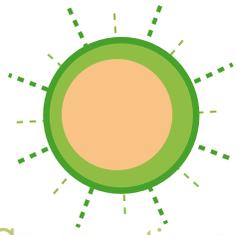
### Social media:

Facebook pages, Twitter, email newsletters, agency listservs, and other social media are all great ways to get the word out.



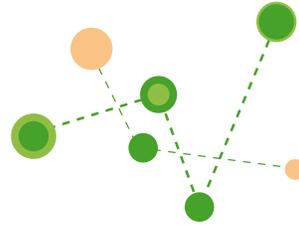
### Radio and TV:

If you can get your event on a local radio or TV community calendar or, better yet, a talk show, you will greatly increase your reach among this older demographic.



### Conservation and ag-related organizations:

Send your release to as many organizations as possible that have clients or members in the target area; ask them to share widely. Examples: University extension offices, county USDA offices, community college programs, land management companies, and the wide variety of farm organizations such as Farmers Union, Farm Bureau, etc.



### Other possibilities:

You can also create fliers or postcards and leave them in public places such as banks, libraries, etc.; send your announcement to area church bulletins, garden club newsletters, rural electric cooperative (REC) magazines, statewide newspapers, and other agricultural publications.

## Selecting a meeting facility

Choose a public, handicapped-accessible meeting place, with adequate parking, where women will feel comfortable chatting. Successful *Women Caring for the Land*<sup>SM</sup> meetings have been held at:

- library meeting rooms
- community centers
- county nature centers
- church meeting rooms
- college or community college classrooms

Set up the meeting room chairs and tables in a circle, so that women can comfortably take notes but can see one another for ease of conversation. We also find that windows letting in natural light significantly helps this.

### A note on timing of meetings:

We have found that the best months in which to hold a women landowner meeting in the upper Midwest are mid-February through mid-May, and mid-October through November. This is because weather tends to be manageable for driving, and area fields are relatively bare for field tour viewing before crops are too high and after they are harvested. Different climates and types of agriculture will suggest different times of year when your meetings can be successful. We find that an 8:30 - 3 timeframe works well, allowing for school child drop-off and pickup if necessary, and also often allows for school bus transport for our field tours, putting the buses back to school for their routes.

## Timeline for hosting a successful meeting:

### 4 weeks prior

- o Contact agency and non-profit partners; decide who will facilitate, help with outreach, etc.
- o Select meeting facility (rooms with windows are more pleasant)
- o Identify women landowners to invite
- o Identify who will take RSVP calls, let them know registration should be capped at 20
- o Arrange transportation for the field tour (van rental, school bus — try to keep group together in one vehicle)

### 3 weeks prior

- o Send invitation letters to women landowners, asking for an RSVP 2-3 days prior to meeting date (*see appendix for sample letter*)
- o Create agenda with your partners, Print contact info for resource professionals on the back
- o Identify field tour sites, identify and invite host who is familiar with the project's history and goals
- o Create evaluation form, if using
- o Publicize the meeting in area media (*see Publicizing the Meeting, page 14*)
- o Identify caterer, if using. We recommend a breakfast item with beverage, light lunch, and dessert to be served *after* the field tour and evaluations are completed (a bribe!)

### 2 weeks prior

- o Finalize field tour route. Bring step stool for older ladies to get on and off bus
- o Contact site owner for permission if needed (we usually ask area NRCS staff to plan and lead tour)

### 1 week prior

- o Visit meeting site, arrange to set up tables in circle
- o Make copies of resource sheets, evaluation forms, sign-in sheets, agendas with contacts
- o Purchase name tags & table tent cards
- o Count RSVPs, let caterer know final number including staff (2-3 days prior)
- o Hold a conference call two days prior with key people to clarify schedule, tasks, etc.

### Day of meeting

- o Arrive an hour early to check set-up (women often arrive 30 min. early)
- o Bring water jug and cups for field tour
- o Prepare coffee/tea and breakfast item (try to limit disposable tableware at all meals)
- o Set out name tags, table tents for first names, agendas, sign-in sheet
- o Take a deep breath, greet your participants, and have fun!

### Follow up

- o Collect and analyze evaluations, follow up with participants to provide further information and support as needed
- o Start planning your next meeting!

## Facilitation

In this section, we will share our recommendations for how to structure and facilitate a successful meeting.

Much of the success of a learning circle meeting depends upon the facilitator. The conservation professionals or organizational representatives responsible for facilitating the meeting should be prepared for a discussion that will operate in a much more informal and fluid way than you have probably experienced before. Plan to kick back, relax, model the introduction (see below), and listen through the other participants' introductions for things mentioned by more than one landowner, taking notes on what information you could offer either to them individually or collectively that they could share later when appropriate.

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You do not need to prepare a formal presentation, because you will be responding directly to the women's questions and those questions will fall into your normal service role -- or you'll be able to point them to where they can get answers or help. Most questions are very basic, reflecting the basic level of knowledge of most non-operator landowners (male or female).

1. At the beginning of the discussion, introduce yourself and welcome the women. Tell them you appreciate their taking time to attend the meeting, and their interest in conservation. If you plan to take pictures during your gathering, provide the women an opportunity to withhold permission for use of their photo; ask that they let you know their wishes. Your agency may have more specific policies regarding this. Set the informal tone by assuring them that there are no "dumb questions," that all will have a chance to speak, and that when a woman is speaking, the others will listen without interrupting. Note that women with different types of farming operations are sometimes very passionate about their choices (e.g., conventional vs. organic or alternative agriculture). It's important for the facilitator and other participants to be respectful of one another's' choices. All landowners have a stake in conservation, and all types of producers can benefit from more knowledge about their options.



2. Go over the agenda for the day, and tell them that topics will be explored in more depth throughout the day. Often a grant constrains discussion to a particular topic. In some regions women landowners may have a lot of interest in cover crops, in others pasture and woodland management or organic certification or land transitioning. The facilitator(s) will listen for common aspects that relate to the meeting topic and local resource professionals should be encouraged to follow up on other topics outside of the meeting.

3. Model this introduction by giving the first one yourself. Tell them who you are, where you're from, what you do as it relates to farming and conservation, whether you own farmland, and if so, what conservation issues you face. Then go around the room in order and give each woman a chance to tell her story. You may want to take notes for follow-up later! **Try to gently manage this discussion so that women who are hesitant to speak are encouraged to do so, and those who tend to dominate are not allowed to take more than their share of time.**

**One woman who participated in our eastern Iowa pilot program in 2009 wrote on her evaluation, “This has been so informative and helpful...I’m excited for the future of my father’s land.”**

This method of beginning the day with detailed introductions by the women is critical to the success of the learning experience, as it builds trust and confidence, allows them to find commonalities, and develops a sense of community and friendship among the women and the conservation professionals in the room. Our research shows that participants are then more likely to continue their conversations with friends and neighbors in the future, and to seek out help from agencies and organizations whose staff members they have met at the meetings.

One experienced WCL facilitator has this advice: “It’s best if the facilitation and introductions can be guided by a woman ‘like’ the participants. A woman who is involved in farming and conservation can relate her story and guide the introductions so each person gets a chance to share. The more personal information in the [facilitator’s] introduction, the more information elicited from the following participants. And a brief recap of the most important point, even posting it, gets the group thinking ... ‘Well, I should do that.’ or ‘I need to know more,’ or ‘I’ve done that too.’ It builds community.”

### **More discussion on topics of most interest**

Unless restricted to a specific grant topic, you can then choose two or three of the topics that arose more than once during the introductions, and guide a discussion about them. Some participants may have expertise to share; where you do not hear a relevant point from another participant, offer your knowledge and resources in a conversational way (no PowerPoint slide show!).

### **Lunch**

Around noon, take a break for lunch. You may want to float from table to table listening to the women’s conversations and answering any questions they have. Try to encourage them to ask their questions in front of the group; however, some will remain hesitant to do so, and will ask you their questions on the side. This is a time to encourage them to come to your office for a longer conversation if needed.

### **Field tour**

Following lunch, a *Women Caring for the Land*<sup>SM</sup> meeting usually includes an afternoon field tour. Most women typically stay for this portion, although one or

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two may leave after lunch. Ask the district conservationist for NRCS to plan and lead this tour. Whenever possible, rent a bus or van large enough to hold all of the women, so that the guide can talk about what they are seeing during the ride. A lot of additional learning takes place as women talk to the guide and one another about what they are seeing during the tour.

The tour should include sites that you feel will be of interest to women at the meeting. Because you're planning the tour before hearing their stories on meeting day, you will have to use your best guess, based on the type of agriculture in the area and the conservation challenges common to area farms. Some *Women Caring for the Land*<sup>SM</sup> tours have visited "star" conservation farms, where landowners are proud to show off their manmade or restored wetlands, wildlife habitat, windbreaks, buffer strips and acres planted to alternative or cover crops. Other sites may include problem areas to demonstrate issues women should be watching out for on their own land, NRCS erosion-control structures, managed timber, or a variety of other possibilities. The local conservation staff will have ideas for you.

**Make sure the sites are either highly visible from the road or easy to access on foot for older ladies.** Keep the tour to 90 minutes or so, to avoid overloading or fatiguing the participants. Keep the tone conversational; the guide should offer information on what the participants are seeing, but leave plenty of time for comments and questions. If appropriate, hand out information describing the practices the women are viewing. One great option is [Conservation Choices - Your Guide to 30 Conservation and Environmental Farming Practices](#), available from the NRCS. The guide can ask the women to turn to the appropriate page describing each practice they are viewing.

### **Closing and evaluation**

Close your meeting by thanking participants for taking time to come. Encourage them to take home printed resources on topics of interest (arrange these on a table in the room), and more importantly, to continue talking with their neighbors, family and tenants about conservation, including following up with conservation professionals they have met that day. You may want to consider asking them to take a "conservation pledge" (see appendix for a sample).

Ask them to fill out the written evaluation, if you are using one. At a minimum, ask for verbal feedback: suggestions for how to improve future meetings, other topics they are interested in learning about, whether they'd like to attend another meeting, etc.

Thank your funders, partners and resource persons. Make sure you tell women how to contact you for more information. (We often provide a dessert item at closing, too; it gives the ladies an incentive to stay!)

## Alphabet soup

**USDA**

United States  
Department of  
Agriculture

**FSA**

Farm Service Agency

**NRCS**

Natural Resources  
Conservation Service

**EQIP**

Environmental Quality  
Incentives Program

**DNR**

Department of

**Resources to provide to participants**

Conservation materials are available from the state offices of the USDA – NRCS, the USDA – FSA, state departments of natural resources and agriculture, and county soil commissions and conservation agencies, as well as private companies and non-profits such as land trusts, etc. We put these materials on a separate table for women to take as they see fit.

In Iowa, we offer the following additional resources to women landowners, which may be helpful in other states as well. If you are working in another state, you will want to compile a collection of similar resources that may be helpful to non-operator woman landowners.

[Sustainable Agriculture Land Tenure \(SALT\) – Drake Agricultural Law Center](#) (website); [Landowners' Options: Safeguarding Iowa's natural resources for the future](#) (52 pp. booklet published by the Iowa Natural Heritage Foundation); [Iowa State University](#)

[Ag Decision Maker: Lease Supplement for Obtaining Conservation Practices and Controlling Soil Loss](#) (website). Web addresses for these sites are listed in the appendix; if you are looking at this manual as a PDF, the links are live.) We also provide a list of WFAN and agency contacts on the back of the agenda.

**Evaluating the success of your meeting**

As mentioned earlier, some older women landowners are not confident readers or writers; some are reluctant to fill out surveys for privacy reasons, even when assured of their anonymity. These circumstances present special challenges for meeting sponsors who want to evaluate the effectiveness of the meeting format and content, and survey participants at intervals after the meetings to find out what actions they have taken as a result of their participation.

WFAN does ask participants to fill out a brief written evaluation at the end of the day. However, our most useful data comes from personal interviews, which are usually conducted by telephone at around six and 12-month intervals after the meeting date. This interval gives landowners time to have discussions with family and tenants, find more resources as needed, and make changes to management practices if they wish.

## What's Next?

If your meeting has gone well, women landowners will ask you to come back and host another one. Not surprisingly, WFAN has found that the highest percentage of behavior change and conservation improvement occurs among women who have attended more than one meeting. If your resources allow, consider holding annual, or even quarterly, meetings in the same area, offering information on various topics of interest identified by the women. In Iowa, the USDA has a program that helps set up a framework in counties where women want to continue to meet and visit about their farming interests. Women, Land & Legacy is a bottom-up, locally led program, coordinated by WFAN. See [womenlandandlegacy.org](http://womenlandandlegacy.org) for more information.



setting cash rental rates



managing wetlands, timber, or other non-crop



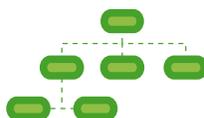
organic certification



alternative crops



small practices they can manage on their own (with tenant's help) to improve soil and water conservation without enrolling in a government



transitioning land to heirs



how to find and evaluate a new tenant



how to talk to their tenants about farm management

### A note on the history of WFAN's work with women

WFAN is indebted to the groundbreaking work of **Denise O'Brien**, a co-founder of the organization and its coordinator for 11 years, whose original meetings with women landowners in her home area of Cass County, IA, beginning in 2003 formed the basis for the *Women Caring for the Land<sup>SM</sup>* rationale and methodology. See a summary of the results of the Cass County pilot project at this link: <http://bit.ly/XXggEV>



# Conservation Activities

The set of activities included in this section of the guide are intended to communicate basic conservation concepts, stimulate meaningful discussion, or ideally, both. Most are intended to be used as conversation starters during a *Women Caring for the Land<sup>SM</sup>* meeting (the exception is Activity 4, which contains several sub-activities and can take most of a day), but may also be used by themselves in other meetings or venues at which women interested in conservation are present.

These activities vary in complexity, both in their preparation and execution, and in the conservation concepts they are designed to illustrate. We expect that some activities will be most useful for groups in which the basic level of conservation understanding among the women landowners is quite low. Other activities will allow participants with more familiarity with the concepts to delve a bit deeper into the topics. For groups that

include both types of participants, even a simplistic activity can be a good review for more knowledgeable participants, while allowing those new to the concepts to catch up with their peers in an interactive, non-threatening way.

These activities were designed by a team of professional conservation educators in Iowa, and most were field-tested with a group of Iowa women landowners during 2011. However, they are meant to be adapted, and should be considered suggestions and starting points for you. We hope that some of them can be modified for the different land forms and conservation issues in your area. You are welcome to use them as written, or adapt them as needed. We ask only that you acknowledge WFAN as the source of the original ideas (see page 6 for a credit line).

**Note:** Many of these activities are presented and designed using food items as a substitute for soil, so that they are accessible during all parts of the year (ie;

not frozen or under snow) and allow facilitators who may not have a strong background in soils to present the activities for the sake of opening discussion with participants. If you can substitute real local soil to illustrate the concepts explained, by all means do so. We do not wish to promote waste of food nor consumption of unhealthy foods, but included these activities because they illustrate concepts using



supplies commonly available throughout the year. They also illustrate concepts common across regions, independent of soil types and colors.

Activities that appear to be elementary in their style should not be presented in a patronizing or demeaning way. All of the activities have been field-tested with real adult women audiences and facilitated by introducing the fact that some women present may be very knowledgeable about conservation and soils, and others may be less experienced. The activity is presented as a way of making sure everyone present today has the same understanding of the concept so we can discuss how and why it matters on your land.

We may also say that some women present may have misunderstandings about the concepts and we find that showing the demonstration allows everyone to check their own understanding in a non-threatening way. The activities have produced lively discussions about soil and water conservation, which is the purpose of the learning circles.

If you have constructive feedback after testing these activities in your area, or develop entirely new activities which work well, we would appreciate hearing from you about them, and – with your permission – including them in future editions of this guide and/or on the *Women Caring for the Land<sup>SM</sup>* website, [www.wfan.org/wcl](http://www.wfan.org/wcl).

## **Agenda Flow**

The agenda of a learning circles meeting should be deliberately crafted to set up learning dynamics based on conversations rather than lecture. The introduction session is a vital part of the agenda, particularly when participants do not already know each other; but even if some do know each other, they may not have had the opportunity or motivation to discuss conservation topics with each other.

When several topics come up in participants' introduction stories, or there is evidence that some participants have a very low level of knowledge about soil and water conservation, using an activity can provide a focus for bringing information about the topic to the forefront for part of the time. The conservation professional women attending the meeting then have a chance to answer questions either during an activity or as part of the larger group discussion.

Great answers and advocacy for practices often come from participants. Share handouts that may answer particular questions which have come up. Breaks and lunch occur at natural breaks in the conversation.

The field tour portion of the day is highly rated and provides another opportunity for agency personnel to mix with participants and answer questions one-on-one or in small groups by topic. Local conservation issues and practices drive the arrangement of the tour; you might feature practices in a current program sign-up period, or on a particularly



# Women, Wildflowers and Wildlife: Restoring nature's bounty on your farm or homestead

*Created by Danielle Wirth, PhD, Environmental Educator*

## Keywords

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Prairie  
Savanna  
Habitat Restoration

## Concepts

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Many women non-operator landowners report that they value their farmland for many reasons other than the income it can generate. They often remember the greater diversity of plants and animals that populated the landscape as they were growing up. This makes them excellent conservation partners in promoting biodiversity, and preserving and restoring prairie, savanna, wetlands, and other natural spaces.

**Optimum group size:**

5-10

**Preparation time:**

15-20 minutes at a fabric or hobby store to purchase materials, 10 minutes to set up at the meeting site. Facilitator may also want to bring along a computer with internet access to help participants find the computer links, and a book display (see Resources section).

**Activity time:**

Allow 45 minutes for participants to create their tapestry.

**Activity description:**

Participants will conduct a verbal inventory of their farmland's natural spaces, and be introduced to: how to identify prairie and savanna remnants; how to conserve these places, including practices that reduce soil erosion and increase the soil's health; and how to locate the abundant resources to accomplish their dreams for their land.

**Materials you will need:**

NOTE: This list assumes each participant will create her own farmscape; divide the quantities below as suggested to provide enough materials for each woman. You may also have women work in groups of 2 or 3; materials needed would be reduced accordingly.

- Felt by the yard: approx. 1 sq. yd. of medium green per 3 participants (divide into thirds) for the base of the farmscape.
- 8" x 12" felt rectangles or scraps in different colors (see below); quantity will depend upon the number who register. These will be in a common pile for all to use, based on the following estimates.
  - Dark brown (fields) approx. 1 sq. per 3 people
  - Bright yellow – (prairie) approx. 1 sq. per 2 people
  - Bright orange – (fire) - approx. 1 sq. per 4 people
  - Black – (roadways) - approx. 1 sq./ 3 people
  - Dark blue – (ponds - approx. 1 sq./ 4 people
  - Light blue (other water features) - approx. 1 sq. per 3 people
  - Kelly green - large tree canopy (oaks and hickories) - approx. 1 sq. per 3 people
  - Four or five sets of squares of various other colors (approx. 1 sq. per 3 people) to represent any other features participants want to put into their dream landscape, such as houses and barns, flower beds, etc.
- Scissors – at least 1 pair per every 2 people
- Fabric glue to secure the felt onto the background –1 bottle/3 people
- Black yarn to represent fence lines or borders of the property – 1

## Activity directions

In this activity, women landowners will be “dreaming” their prairie and/or savanna homestead into being, using a felt background for their farm, and smaller felt pieces and yarn to add the natural features and buildings, roads, etc.

First, the facilitator should define “prairie” as the original grassland and wildflower plant community that covered nearly 75% of Iowa in pre-settlement times. Define “savanna” – sparsely spaced, open-grown oaks with spreading canopies almost as wide as the tree is tall. Under the oaks are specialized plants including wildflowers, grasses, sedges and ferns. The trees themselves also provide food and shelter for various plants and animals. The plant community thrives on dappled sunlight and periodic fire. In places where fire is not practical, mowing and/or grazing can be used to simulate the historic beneficial disturbances of grazing buffalo and fire.

Ask the participants to list some of the reasons for creating natural areas on their land, which may include:

- Beauty
- Increasing ecological services, such as erosion control, water filtration and retention, and flood mitigation
- Wildlife habitat
- Recreational value (hunting and fishing)
- Legacy value – leaving a beautiful piece of land for future generations
- Spiritual renewal, connecting with nature
- Creating and maintaining a place to walk, wander, and explore with family and friends



## Conservation Activities: Women, Wildflowers and Wildlife

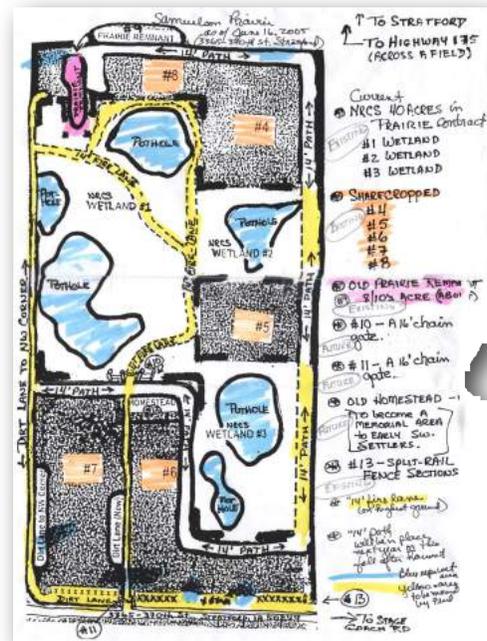


Invite the participants to talk about what natural features they currently have on their farm and what else they might want to see there. What would please them visually? What features, attributes or additions might encourage them to walk through their home landscape and share that land with others – maybe their grandchildren? Do they have any concerns right now that the resource people at the meeting might help them address?

If possible, show a completed felt tapestry depicting the vision a woman had of her land in post-restoration condition, from a prior meeting, or prepared by the facilitator for her own land. If possible, include an aerial photo of the property to help women visualize the correlation between the “dream” landscape and the one that exists now.

Provide each participant with her “field of dreams” (the green felt). Place the remaining materials (small felt squares, glue, yarn and scissors) in a central spot.

When most participants are finished, ask each participant to show her felt tapestry and talk about what she has created. Participants will encourage and appreciate one another's creations, and the resource persons present can answer related questions that may arise, such as how to do a land inventory, best management practices, state and federal programs to support restoration projects, etc. Consider taking photos of each woman with her “dream” landscape, and send her a copy of the picture along with a thank you for her participation and a list of further resources and/or contacts for other participants, if appropriate.



**Ruby enacted her vision of a tapestry of prairie on 80 acres of row-crop farmland, diagrammed above.**

**See Appendices for an extensive list of related resources.**



## Activity

# Measuring and evaluating crop residue for erosion control

*Created by Julie Sievers, Environmental Specialist,  
Iowa Department of Natural Resources*

### Keywords

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Soil  
Erosion Control  
Crop Residue

### Concepts

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Leaving crop residue on the soil surface in tilled fields can minimize surface runoff and soil erosion, improve water infiltration, and increase organic matter content. Most experts suggest that effective conservation tillage systems leave at least 30 percent residue cover after planting. Additional residue is recommended on soils with steeper slopes where the potential for erosion is greater.

Residue management is becoming an increasingly important issue, as the market for crop residue increases for cellulosic ethanol production and livestock bedding.

### Optimum group size:

This activity can be used with any size of group. You will need to adjust the total number of residue photographs for the size of the group, as the breakout groups need to be no more than 3 to 5 people so they each have an opportunity to look at the photos. If you have a small group, you may want to prepare a measuring rope for each participant (as described below).

### Activity time:

15 to 30 minutes, depending on the amount of discussion. The placemat/tablecloth portion should take no more than 5 minutes; breaking into small groups and review of the photographs should take not more than 10 minutes (be sure to tell the participants that up front), and the remainder for discussion.

### Materials you will need:

- Place-mats or tablecloths of different thicknesses (for example, a lace tablecloth, thin fabric placemat, and thicker quilted placemat)
- Photos showing close-ups of three or four different levels of crop residue in a harvested field. (This activity in Iowa featured photos showing corn and soybean residue levels ranging from 20% to 70%. These photos are available for your use at <http://wfan.org/wp-content/uploads/2013/07/Residue-photos.zip>. The facilitator should code the photos so she can tell the percentages but participants can't see the numbers. Each small group (3 to 5) of participants will need one full set of photos.
- Rope or measuring tape to demonstrate residue-measuring technique. If you are using rope, use 20-foot lengths marked in one-foot segments. If using a tape measure, it must be at least 20 feet long.
- A four-foot square of fabric with speckles or a multi-colored pattern to simulate field residues; alternately, the carpet or flooring in the meeting room can often be used for the demonstration. If using fabric, the material can be placed on the floor and the group stands around the outside of it when it is time to demonstrate measuring residue.

### Preparation time:

30 to 60 minutes to gather/purchase materials and to mark rope (if using)

### Activity description:

The focus of this activity is to use common household items and concepts to help women landowners understand the costs vs. benefits of allowing crop residue to be removed from their fields, and to teach them two simple methods of measuring the amount of residue in their fields (photo comparison and line transect). Recognizing the differences in erosion control related to the amount of residue is important for many reasons, including determining conservation compliance on highly erodible land (HEL) for farm subsidy programs.

## Activity directions

1. Introduce the concept of residue functions by discussing how place-mats and tablecloths protect a table. Ask them what happens if you spill a glass of milk on a table with nothing on it (splashes and runs off). This is like a field with no residue; rain will splash onto it and will run off after the ground is saturated. (Be aware that some people, especially older landowners, have been acculturated to like this “look”; it appears clean and tidy, with no trash showing – a standard from decades ago.)

Use a somewhat thicker placemat or tablecloth and have the same discussion; the placemat/tablecloth will hold some of the liquid, which is the same as a field with a little residue. Continue by briefly asking this question for each thickness. Participants will catch on rapidly to this simple introductory analogy.

2. Next, break the participants into small groups (3 to 5 are best). Distribute the photographs of fields with crop residues and ask them to estimate and jot down the percent of residue they think is on each field. Also ask for any thoughts on the benefits and disadvantages of different levels of residue. Allow 5 to 10 minutes for the groups to do this.

Bring the groups back together and lead a discussion of each photograph. During this discussion, tell them the actual amount of residue present in each photograph. You may want to print the percentages on cards and reveal them after the women give their estimates. Explain the differences in estimating residue for different crops (e.g., corn and soybeans).

3. Demonstrate the “line

transect” method of residue measurement, either in an actual field of residue or using the room’s flooring material or a piece of fabric to simulate the field. Give each participant or small group of participants a 20-foot piece of rope marked at one-foot intervals, or a measuring tape. Count the number of times a marked line intersects with a piece of residue. (If using flooring or fabric, identify the color of speckle that represents residue.) If in a field, stretch the tape (or rope) between two stakes placed diagonally (at a 45 degree angle) of the crop



rows. Looking directly from above the tape (vertically), count the number of times where a "foot" mark intersects with crop residue. Make consistent judgments--use only the left or right side of the foot mark on the tape (or rope) to avoid over-counting residue. Multiply the resulting number by five, and that is the percent of residue in the field. If you use a 50-foot rope, multiply the result by two; if you use a 100-foot rope, the number of intersections translates directly into the percent of residue—for example, 38 intersections means 38% residue. (Description adapted from Iowa State University's Integrated Pest Management website, 2002).

Mention that they should measure residue in the spring, when soils are particularly vulnerable to raindrop impacts and erosion, but residue may also be measured in the fall. The most accurate estimate will come from averaging several measurements over a span of time.

This activity demonstrates how simple it is to estimate or measure residue, but that landowners need to actually get into the field to do it and not just look from the car or compare it to the neighbor's field.

During the discussion, introduce the concepts of the benefits and hidden costs. For example, some operators are seeing removal as a benefit, as corn stalks from some corn varieties are not breaking down (decomposing) as fast as they used to, and operators are having to use more aggressive means to promote breakdown of the stalks. The hidden costs may include the need to use additional inputs and the impact on soil quality over the long term. Stalks removed for use as livestock bedding or feed typically come back to the land as manure or compost, whereas removal for other purposes removes the residue and its value for good.

Iowa State University and the ethanol company that is developing the cellulosic ethanol process ([POET](#), based in Sioux Falls, SD) have determined that removal of 25% (1 dry ton) of crop residue should leave enough residue remaining for acceptable erosion control. But landowners should evaluate their own land before making a decision, including its slope, soil quality, the potential need for additional inputs, and other factors. See the Resources section on p. 32 for decision-making tools.

**To end the discussion, ask the following or similar questions:**

- How has the discussion changed your thoughts about residue?
- Do you see residue as a benefit or asset for your land? Why or why not?
- What thoughts do you have now that you didn't have before regarding residue?
- What action or first step will you take as a result?

# 2

## Conservation Activities: Measuring and evaluating crop residue for erosion control

### Resources:

#### Handout from the Iowa Learning Farm on Economics of Residue:

[https://www.iowalearningfarms.org/files/page/files/Economics\\_of\\_residue\\_updated.pdf](https://www.iowalearningfarms.org/files/page/files/Economics_of_residue_updated.pdf)

#### Estimating a Value for Corn Stover:

<http://www.extension.iastate.edu/agdm/crops/pdf/a1-70.pdf>

#### Methods for Measuring Crop Residue:

<http://www.ipm.iastate.edu/ipm/icm/2002/5-13-2002/cropresidue.html>

#### Information from POET ethanol plants:

<https://poet.com/plants>

### Sample Residue Photos:

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Download the full-sized residue photos to print for this activity at:

<http://wfan.org/wp-content/uploads/2013/07/Residue-photos.zip>



notes



## Activity

# Saving Our Soils: Using tillage techniques and cover crops to minimize erosion

### Keywords

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Soil                      Grassland  
Erosion Control      Pasture

*by Karen Grimes, Information Specialist,  
Iowa Department of Natural Resources*

### Concepts

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Topsoil is the thin productive level of the soil, high in organic matter and nutrients, which is essential for efficient food and feed production. Midwestern topsoil has been developed over thousands of years. Estimates differ, but experts say it takes 50 to 500 years to produce a single inch of topsoil. However, agricultural states are losing topsoil at an alarming rate, due to decades of production of annual grain crops that leave the soil unprotected for much of the year. Without a healthy layer of topsoil, farmers must add expensive nutrients and inputs to produce a crop. The movement of topsoil from fields into waterways also creates sediment, a major water pollutant.

Sediment often carries other pollutants along with it, such as excess phosphorus and nitrogen, and pesticides, creating water quality problems; it clogs stream channels, destroys fish spawning grounds, silts in and covers the hatching areas for many aquatic species. Large influxes of nutrients cause algal blooms, which cause oxygen sags as the algae dies. Blue-green algae blooms can produce toxins that can cause rashes, severe respiratory effects and even death of people, pets and livestock.

### Optimum group size:

10-15

### Activity description:

This activity introduces the basic concepts of soil type, slope, and managing the farm to reduce erosion control by considering management practices such as tillage options, buffer strips, cover crops, etc.

### Preparation time:

45 - 60 minutes to gather materials and soil and residue samples, prepare pans, and download and print photos (if using).

### Activity time:

45 - 60 minutes

### Materials you will need

- Photo of raindrop hitting bare soil (may be downloaded at <http://wfan.org/wp-content/uploads/2013/07/raindropnracs.jpg>)
- 3 disposable foil 1-pound loaf pans; pinch notch in center of short end of all three pans for water to drain
- 3 empty, small (low) baby food jars that are shorter than the loaf pans to catch water coming from them. (You might want 3 larger clear jars to pour these into if you use a lot of water and the baby food jars get full.)
- 1 rectangular, low-sided 16-quart transparent plastic storage box. Should be wide enough to hold the three pans side-by-side, and long enough for a small jar to sit under the end of each pan – roughly 2 feet wide by 18 inches long.
- Locally obtained soil to fill the three loaf pans level full or just slightly above top of pan. Fill two with soil that has been tilled, either from a farm field or garden. Fill the third pan with un-tilled soil and living grass from a pasture or yard; grass may extend above top of pan. (Ideally all should be the same soil type – e.g., sandy, clay, etc.)
- Mulch, straw or corn stalk residue – enough to cover the soil in one of the loaf pans no more than 1/4-inch thick, leaving a few bare or sparsely-covered spots.
- Enough uniform wood or Styrofoam pieces to elevate one end of the loaf pans; 1X2 boards work well; should be at least an inch or two high and uniform in size, and short enough to fit in the storage box.
- A large watering can that sprays the water out in drops to simulate rain.
- Water – a gallon or less (for one demonstration, more if repeating it for another group).
- Paper or cloth towels to absorb water and clean up.

# 3

## Conservation Activities: Saving Our Soils: Using tillage techniques and cover crops to minimize erosion

### Optional materials

- Cocktail umbrellas on toothpicks to hand out as a reminder to put an umbrella over the soil over the soil
- 3 paint stir-sticks, painted white to stick in the three loaf pans, with a ruler to measure soil splash when the activity is finished
- Other photos of erosion from the NRCS website photo gallery (go to <http://photogallery.nrcs.usda.gov/res/sites/PhotoGallery/index.html>, then use advanced search to look for water erosion images for your state, illustrating different types of erosion (rain drop, sheet, rill and gully) and different erosion control management practices (no tillage, conservation tillage, terraces, strip crops, cover crops, contouring, stream buffers, field buffers, pasture, hay land, woodland).

### Activity directions

*Before activity begins:*

- Hang the large photo of a raindrop in a prominent place, or pass it around the room.
- Place all 3 loaf pans in storage box with one end elevated on the wood or Styrofoam pieces.
- Place an empty baby food jar under the notched end (lowest end) of the pans.
- Place one of the white paint sticks at the back (uphill) end of each loaf pan. (See photos.)



### Background information

The facilitator can introduce this activity by explaining that topsoil consists of small particles: a combination of the smallest particle (clay) to the next largest (silt) to the largest (sand). When a raindrop hits bare soil, it first sinks in and fills the spaces between soil particles. Once the soil is saturated, one tiny raindrop can throw the soil particles high into the air, as high as two feet and as far away as five feet. Once the soil particle is detached, the runoff from rainfall can carry it away, off the field where it belongs, and into our streams and lakes.

Soil erosion varies among soil types. The amount of soil that erodes and is carried away by water is affected by:

- The amount of rainfall: more rainfall means more erosion

### Conservation Activities: Saving Our Soils: Using tillage techniques and cover crops to minimize erosion

- The soil type: soils with large particle sizes like sand generally don't erode as easily. Each soil type has an "erosion factor" that indicates how likely it is to erode.
- Slope length: the longer the slope, the more likely it is to erode.
- Slope steepness: steep slopes are more erodible than relatively flat soils.
- Cover: the better the soil is covered with grass, plants or plant leaves, or crop residues, the less likely it is to erode.
- Farming practices: when tillage activities (such as plowing or disking) are done on the contour (around the hill, not up and down it), runoff is slowed down, reducing erosion. Adding terraces, grass strips, stream buffers, grassed waterways, and other erosion control features will also reduce soil loss. (The NRCS has good publications to help explain these practices: visit [www.nrcs.usda.gov](http://www.nrcs.usda.gov).)

**Of all these erosion factors, the only two that farmers can control are cover and farming practices.**

Protecting topsoil from erosion is simple in concept: keep it covered. Soil erodes most when it is bare and unprotected, usually after winter before the crop begins to grow. As crops grow, the plants put out leaves that act as mini-umbrellas, shielding the bare soil from the impact of raindrops and moving water. Farmers can protect bare soil by:

- Not tilling the soil before planting (called no-till) or conservation (minimum) tillage, in which the operator uses a piece of equipment that chisels through the soil and leaves a high percentage of the stalks and leaves on the surface.
- Putting the steepest, most erodible land in pastures or hay land, so that perennial grass or legumes like alfalfa continually cover the soil to prevent erosion.
- Planting cover crops (see photo, p. 40) and disking them in or killing them with an herbicide in the spring at planting time.
- Planting grass strips in between crops or at the bottom of slopes to catch soil before it leaves the field.

Explain that it's crucial to protect the soil through the winter months, spring rains and until the crop grows enough leaves to protect the soil from raindrops. During spring rains is the most vulnerable time of year for bare soil to erode.

# 3

Conservation Activities: Saving Our Soils: Using tillage techniques and cover crops to minimize erosion



## Discussion and Demonstration

**1. Discuss the erosion power of a single raindrop, while passing around the raindrop photo.**

Like a mini-bomb, each raindrop strikes bare soil at the speed of 20 to 30 feet per second. The energy when it hits is enough to throw soil as high as two feet into the air and five feet away

from where it hits. The soil that's detached by the force of the raindrop now moves more easily in water – and may go from being an asset for growing plants to being a pollutant in water.

If you have a bare spot next to your house, you can see muddy spots along the foundation after a rain. But some areas of the foundation will still be clean. Where would you expect to find those areas?

Participants will likely answer, "Anywhere there is grass or mulch."

**When the soil is dry, the rain first fills the spaces between soil particles, then it begins to detach the soil particles and carry them away. When the soil is wet or saturated, the raindrops can splash soil loose where it easily moves by gravity in flowing water.**

**Is there any way we can prevent the soil from being carried away? Grass and mulch work around a house. What about in a crop field?**

Depending upon the audience and the land uses common in the area, they may come up with pasture, hay land, woodland. Some will know about crop residue, strip-cropping, grassed waterways, terraces, cover crops, and stream or field buffers.

**So basically if we want to stop erosion, we want to put an umbrella over the land. Let's explore that idea a little by seeing what happens when we make it rain on these three "fields." What happens when raindrops hit bare soil?**

## **2. Invite everyone to gather around the demonstration where they can easily see.**

(Might keep them seated if there are more than 10 or 12 people, 15 maximum.)

**a)**

Slowly pour about 1/3 of the contents of the watering can as evenly as possible over all 3 loaf pans, being careful to catch the water in the storage box. Slowly is the key. Give the water time to soak into the dry soil and begin to run off. The bare soil should run off first, although if you have a lot of mulch/residue on the middle pan, water may run off because it doesn't even reach the soil.

Compare no tillage or conservation tillage to the middle box with the mulch or residue.

**b)**

Pour another third of the water can onto the loaf pans. Ask the audience to watch the runoff going into the small jars.

**What color is it? Which pan causes the darkest color of soil in the water? Which one has the least soil in the runoff?**

(Should be lightest with the grassed pan, darkest with the bare soil.)

This is a pretty simple concept: if you cover the soil with crop residue, grass or legumes, you protect it from erosion. But, with the high demand for our working lands to produce more and more food, fiber and fuel, some farm operators seem to have forgotten this simple principle. Have you seen where some are taking out grassed waterways, field borders and stream buffers to get more acres to farm? Unfortunately, this leaves the soil unprotected and vulnerable. You

# 3

## Conservation Activities: Saving Our Soils: Using tillage techniques and cover crops to minimize erosion

can see the resulting erosion in gullies, filled-in road ditches, and creeks, rivers or lakes where the water is cloudy with soil.

c)

Slowly pour the last 1/3 of the water in the can over the soil. Take the ruler and measure the height of the raindrop splash on the three white paint sticks at the back of each pan. Compare the splash height.

Take another look at the runoff. Iowa, as an example, has lost half of its topsoil. Just 150 years ago, Iowa's topsoil was 12 to 16 inches deep. Now it's six to eight inches deep. It takes 50 to 500 years to create one inch of topsoil, but we are losing soil at the rate of 5 to 15 tons per acre per year. Ten tons of soil per acre, although it sounds enormous, is almost impossible to see; from year to year, most of us won't notice the loss. **As you look out over a crop field, 10 tons of loss is a layer only about the thickness of a dime. Easy to miss, but still a lot of eroded soil.**

### What happens when our topsoil is gone?

Answers will vary: maybe costs will be higher; inputs like fertilizer will be much higher; crops will be more susceptible to damage because of drought or flooding, because the soil structure will be lost, etc.

**Midwestern soil has been called its "black gold." Can our state afford for the second half of our topsoil to disappear? Something I want everyone to think about for the rest of the day is, how can we protect this vital gift? How can we keep soil in its place? What can you do as a landowner to help that happen?**



Then hand out the cocktail umbrellas

### Cleanup

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Pour water from storage container and loaf pans onto a grassy area outdoors. Wipe up tables with paper or cloth towels. Empty water can. Empty soil back into garden or lawn, or dispose of at the site if there's a place where it won't be a problem. All the supplies except the watering can should fit inside the storage container for transporting or storing.

### Resources:

#### Iowa State University

Available from: <https://store.extension.iastate.edu/>

- [Iowa Soil Quality Card \(PM 2027\)](#)
- [Soil Erosion and Water Quality – Resource Conservation Practices \(PM 1901E\)](#)

***Dirt: The Erosion of Civilizations.*** 2007. David R. Montgomery. University of California Press. Dirt, soil, call it what you want--it's everywhere we go. It is the root of our existence, supporting our feet, our farms, our cities. This fascinating yet disquieting book finds, however, that we are running out of dirt, and it's no laughing matter. An engaging natural and cultural history of soil that sweeps from ancient civilizations to modern times, *Dirt: The Erosion of Civilizations* explores the compelling idea that we are--and have long been--using up Earth's soil.

#### USDA Natural Resource Conservation Service (NRCS)

##### Information about soil health

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>

##### A copy of your county's current soil survey, available from the NRCS website

<http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/>

##### From the Ground Down: An Introduction to Iowa Soil Surveys

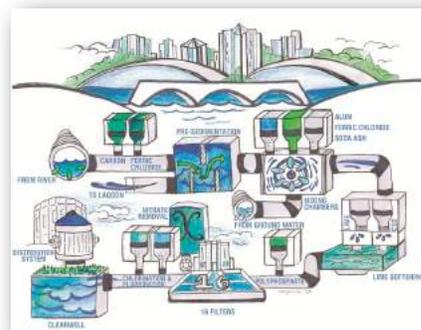
[http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_006038.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_006038.pdf)

##### USDA - NRCS guide to federal conservation assistance programs

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/>

### A note about nitrate removal

People living near Des Moines, IA, may bring up the issue of the Des Moines Water Works, which has the world's largest nitrate removal system, and point out that the filters are cleaned and nitrates returned to the river system. The system was last used in 2007. The important point for soil and water conservation is to keep the nitrates out of the river in the first place, and the Des Moines Water Works actively seeks ways to help upstream producers avoid losing the nitrogen used in their cropping systems so they do not need to use the system to protect drinking water. (See their website at [www.dmww.com](http://www.dmww.com) to read about their efforts.) Good soil conservation practices protect drinking water for urban and rural people alike.





## Activity “Sowing” Your Farmland Quilt: Conservation options that form the fabric of your land

*Created by Detra Dettman, Executive Director, and Shelly Gradwell Brennehan, Project Assistant, Pathfinders Resource Conservation and Development, Fairfield, IA*

### Keywords

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Erosion  
Soil Quality  
Conservation Planning  
Whole-Farm Planning

### Concepts

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Older women farmland owners with limited understanding of the language and concepts of conservation are likely to respond positively to illustrations that make use of the familiar language and objects of their households. This suite of activities is meant to engage women in a full day of discussion and learning of basic conservation concepts, including whole-farm planning, erosion control, and water quality.

**Optimum group size**

10-15

**Preparation time:**

2 hours

**Activity description:**

This activity is constructed around the theme of quilting. It contains seven distinct demonstration and discussion elements (labeled Parts A through G), which take a total of 1.5 to 2 hours to complete. Together, they provide participants with a framework for creating the beginnings of a whole-farm conservation plan.

*Note: Part B suggests that you ask the women, in the invitation letter or when they register for the event, to bring with them from home a quilted item made by them or a family member. If you choose not to ask this, the facilitator will want to bring one or two quilted items of her own to serve as discussion starters.*

**Activity time:**

1.5 to 2 hours for activity and discussion

**Materials you will need (also included under each part)**

**Part A:**

- Table, chairs, name-tags, and quilt pieces (see Part F)

**Part B:**

- Quilts or quilted items (or photos of them).

**Part C:**

- Aerial photograph of farm fields. Aerial photos are available from your local NRCS office. Ask them to provide an aerial photo on a scale that shows several townships in your area. A large, poster-size photo is ideal. However, any aerial photo that shows a variety of fields and land uses would be useful.

**Part D:**

- Lace tablecloth and heavy cotton or terry tablecloth.

**Part E:**

- Very coarsely crushed chocolate sandwich cookies (minus most of the frosting, so it mimics soil better) and powdered cocoa or hot chocolate mix; 5 pie tins; and samples of actual soil from: A: a continuous row-crop field; B: a pasture; C: native prairie.

## Part F:

○ Heavy cotton or terry tablecloth; large beige or brown tablecloth; and a collection of 20 to 40 8x10 labeled photos of the following land uses (1-2 photos of each): row crop corn; row crop soybeans (or use your state’s prevalent crops); conservation tillage; crop residue; corn planted on contour; CRP; rye cover crops in winter; rye cover crops in spring; rye and clover cover crops; stream with vegetation buffer; stream without vegetation buffer; pasture; grass waterway; alfalfa field; hay field on highly erodible land; woodlands; prairie; wetlands; soil erosion by wind filling ditch; soil erosion by wind on snow; soil erosion by water; gullies formed by soil erosion by water. (These labeled photos can be downloaded from the Women Caring for the Land<sup>SM</sup> website (<http://wfan.org/wp-content/uploads/2013/08/quilt-pages-compressed-photos.pdf>) and need to be printed on a color printer); a matching collection of 20-40 small pieces (at least 4 x 4 or 4 x 6) of quilting fabric. Each fabric piece should be matched up with one of the labeled photos. There are many fun ways to match fabric pieces with the photos. For example, a fabric with a “row” pattern could match up with the row crops. A fabric with a water pattern or blue color could match up with the wetland photos. A fabric with a tree pattern could match up with the woodland photos. If budget allows, there are many fabrics available with printed patterns of: corn, grass, trees, wetlands, cows on pasture, deer, ducks, wildflower meadows, hay bales, etc. You could also use “fat quarters” of fabric (18x22), fold them into smaller pieces for the activity, and later give them to the meeting participants as a memento for them to use in their own quilting or craft projects.

## Part G:

○ Ingredients for “dirt cup desserts” -- a clear plastic cup with two layers of pudding (vanilla and chocolate) topped with a crumbled chocolate sandwich cookie and a gummy worm on top to symbolize healthy soil; fact sheets on NRCS programs such as the Environmental Quality Incentive Program (EQIP), and on cover crops (see Resources section on p. 52 to download and print these fact sheets. It would be ideal to make a copy for each woman to take home to read more thoroughly and share with family members and tenants.) Idea for door prizes: Cover crop seed samples so that participants can experiment with cover crops in their vegetable or flower gardens before using them on the field-scale. You can wrap up handful-sized seed samples in fabric pieces and tie them at the top with some string. Or put the samples in baggies and write the seed type on the bag. Winter wheat, clover and rye are readily available at your local co-op or feed store.

## Overall activity directions

This activity helps groups of women landowners to find the common threads of conservation goals for each of their farms. It provides a great forum for women

landowners to share their goals, ideas, and interests as they support each other in their work to improve conservation on their farms for future generations.

The facilitator should seat all participants around a large central table. This table will be the center for all the activities. An additional side table or two will be needed to serve refreshments and display the soil examples and the quilt pieces that each group member will choose.

Sample introductory remarks: “When we are **sewing** a fabric quilt, we choose fabrics that provide the best weight, feel, color and pattern for that particular quilt. We spend a lot of time and energy to sew high-quality quilts that give our family members warmth and beauty for generations to come.

“Have you heard the saying, **fabric of the land**? When we look at Midwestern states from an airplane, our farms look a lot like quilts. Each field is a unique square in the fabric of our land. Making choices about our farmland is like choosing the patterns on the fabric of our quilts. Each year we decide what crop to plant or **sow** in each field: which fields will grow corn or beans or other crops; which fields will be in pasture; which fields will provide hay; and which fields are best suited for conservation practices. We ‘sow’ our farmland quilt much like we ‘sew’ our fabric quilts.”

## Part A:

### Welcome to the Table (5 minutes)

#### Materials needed

- Table
- Chairs
- Nametags
- Quilt Pieces

As they arrive, ask each woman to fill out a name tag and choose 1-3 (your choice based on group size) quilt pieces, which are displayed on the side table. Encourage them to take a seat at the table and look over their quilt pieces.

After everyone is seated, officially welcome the women to the table with an introduction like this: “The tables of our kitchens, dining rooms, workshops and local cafes are places where farming and conservation issues are discussed and decisions are made. Women are not always sitting at the table during those farming discussions. **Today, this table is just for you: a table for women to discuss your farmland and conservation.** This table will be a comfortable place to share stories and information with other women and ask any questions you would like to ask. The activities we do together today will be informal and conversational, much like sitting together at the kitchen table.”

## Part B:

### Sharing our Quilt Stories (20 minutes)

#### Materials needed

*One of the following*

- Quilts
- Quilted items (or photos of them)

Ask each group member to introduce herself, and share a brief story about a quilt in her family – showing it, if she has brought it along. Each person could share who made the quilt, for what occasion it was made, and how long it has or may continue to be in their family. Many of our great-grandmothers’ quilts were very warm, strong, and practical, made to last with excess

scraps of material from sewing the family clothes. Often these quilts have stories related to the farms where the quilter lived. (For a related activity, see the Davis County Barn Quilts information on the Resource list on p. 52). Try to limit each person to about 3 minutes maximum for these stories, since you will have several more activities that build on this one.

## Part

### A View of our Farmland Quilts (10 minutes)

#### Materials needed

Aerial photograph of farm fields. Aerial photos are available from your local NRCS office. Ask them to provide an aerial photo on a scale that shows several townships in your area. A large, poster-size photo is ideal. However, any aerial photo that shows a variety of fields and land uses would work.

Show the aerial photo to the group. Point out how the squares of farm fields look like the squares of a quilt. Point to specific fields that have different crops and land uses such as: crop fields, pastures, woodlands, wetlands, etc.

Ask the women to discuss some of these land uses and their benefits. For example: the crop fields give us crops for profit and feed for livestock; the pastures provide grazing for livestock and reduce erosion, as the grass is a year-round cover; the woodlands provide wood for timber sales, firewood, and habitat for wildlife species that are hunted for food, as well as providing a natural space for retreat and respite; the wetlands provide

habitat for wildlife and serve as a sponge to soak up flood waters and excess nutrients from fertilizers applied to nearby fields. (Some of the other activities in this guide can give you more background information for this discussion.)

**At this time, you will ask each woman to go to the side table, pick up 3 fabric quilting pieces of her choice, and hold them in her lap for the next activity.**

Part

Setting the Table: Protecting our family foundations (10 minutes)

Materials needed

- Lace tablecloth
- heavy cotton or terry

**“Wind and water erosion carry away a lot of soil each year. You can see soil blowing in dust storms in the fall; covering the snow in the road ditches in winter; and washing away in gullies during heavy spring rains.”**

Facilitator: “Our kitchen and dining room tables are one foundation of our family life. Often our tables are family heirlooms that have stood the test of time and have been the center of family life for many generations. Before we serve a family meal, we usually protect the wood of our tables with a tablecloth. After all, we want to keep the table in the same nice condition that it was in when given to us. We hope that our grandchildren will be able to sit around the same table with their grandchildren.

“We can think about our farmland in the same way. Our soils are the foundation of our farms. Healthy soil means healthy crops. We need to protect our soil much like our tables. We want to keep the soil healthy and in place so that our grandchildren’s grandchildren will have the same healthy soil that we had when we started farming this land.

“Wind and water erosion carries away a lot of soil each year. You can see soil blowing in dust storms in the fall;

covering the snow in the road ditches in winter; and washing away in gullies during heavy spring rains.”

Place the lace tablecloth on the table and show the group how it protects a lot of the table, but leaves a lot of table exposed through the holes in the lace. This lace tablecloth is like crop residue after harvest. The pieces of stalks and leaves and roots keep some of the soil covered and protected from erosion, but much of the soil remains uncovered and bare and could be carried away by wind or water. Show the labeled photos of crop residue from Part F (one or more of the participants may have chosen these photos, so ask them to show the group.)

Remove the lace tablecloth and replace it with a heavy cotton or terrycloth tablecloth. Show the group how this type of tablecloth covers the table completely. No part of the table is exposed.

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## Conservation Activities: “Sowing” Your Farmland Quilt: Conservation options that form the fabric of your land

“This type of tablecloth is like growing a cover crop or keeping a field in pasture. Some of the most common cover crops planted on Midwestern farms are winter wheat, clover and rye. These cover crops are planted in the fall by aerial seeding, after leaf drop but before harvest, or right after harvest by seeders or drills. Cover crop plants hold the soil in its place all through the fall, winter and early spring, when soil is most vulnerable to erosion. Cover crops also suppress weeds; reduce nitrogen loss (and in the case of clover, produce nitrogen for the row crops to use); increase soil organic matter; and improve overall soil quality. In mid to late spring, the cover crops are either tilled under or sprayed with herbicide before planting the row crops.”

### Part

## Getting our Hands in the Soil (5-minute introduction and 15-minute break time)

### Materials needed

- very coarsely crushed chocolate sandwich cookies (*minus most of the frosting, so it mimics soil better*)
- powdered cocoa or hot chocolate mix
- 5 pie tins
- samples of actual soil from:
  - A: a continuous row-crop field
  - B: a pasture
  - C: native prairie

Gather spade-full samples of soil from A (row-crop), B (pasture), and C (prairie). Your local NRCS office may be able to help you with this. Keep samples moist in plastic zipper bags and refrigerate to maintain quality.

Right before the meeting, set each A, B, and C sample in a pie tin and place a label of its soil type by each one.

Fill another pie tin half-full with crushed chocolate sandwich cookies (minus frosting) and place a label that says “Good Soil Structure” next to it. Good, healthy soil has many marble-sized pieces with air spaces, earthworms and organic matter (pieces of roots, leaves, etc.)

Fill the other pie tin half-full with powdered cocoa or hot chocolate mix and place a label that says “Poor Soil Structure” next to it. Poor, overworked soil has very tiny and fine pieces of soil, no air space, no earthworms and no organic matter.

As an introduction to break time, encourage each participant to stop by the display table during the break to get their hands on the soil examples. Ask the women to compare the crushed chocolate cookies and cocoa to be clear about what good and poor soil structure looks like. Then ask them to review each of the A, B, and C samples and rate them as good, ok, or poor soil structure (you can ask them to write down their rating next to each sample, or just make a mental note). This information will be useful in the discussions in Parts F and G.

Part

Piecing our Quilt: Choosing  
conservation options (40 minutes)

Materials needed

○ heavy cotton or terry tablecloth                      ○ large beige or brown tablecloth

○ collection of 20 to 40 8x10 labeled photos of the following land uses (1-2 photos of each): row crop corn; row crop soybeans (or use your state's prevalent crops); conservation tillage; crop residue; corn planted on contour; CRP; rye cover crops in winter; rye cover crops in spring; rye and clover cover crops; stream with vegetation buffer; stream without vegetation buffer; pasture; grass waterway; alfalfa field; hay field on highly erodible land; woodlands; prairie; wetlands; soil erosion by wind filling ditch; soil erosion by wind on snow; soil erosion by water; gullies formed by soil erosion by water. (These labeled photos can be downloaded at <http://wfan.org/wp-content/uploads/2013/08/quilt-pages-compressed-photos.pdf>, and need to be printed on a color printer. (FYI, the file is quite large.)

○ corresponding collection of 20 to 40 small pieces (at least 4 x 4 or 4 x 6-inch) of quilting fabric. There are many fun ways to match fabric pieces with the photos. For example, a fabric with a "row" pattern could match up with the row crops. A fabric with a water pattern or blue color could match up with the wetland photos. A fabric with a tree pattern could match up with the woodland photos. If budget allows, there are many fabrics available with printed patterns of: corn, grass, trees, wetlands, cows on pasture, deer, ducks, wildflower meadows, hay bales, etc. You could also use "fat quarters" of fabric (18x22), fold them into smaller pieces for the activity, and later give them to the meeting participants as a memento for them to use in their own quilting or craft projects.

**Note: There should be a few more photos than participants so they can all choose rather than just take what's left. The activity also can be done without the photos using just the quilt fabrics.**

Spread the photos on the table and ask the women to walk around the table and each pick up a photo that interest her or that represents a concern she has for her land or in general. If this is a good time for a break, ask them to leave their photo at their place and the facilitator can place fabrics that correspond with the photo at each place during break. If you choose to do the activity without the photo, spread out the fabrics on the table and ask them to each

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choose from 1-3 pieces that make them think of their land or of conservation practices.

Go around the table and ask each woman to briefly show the rest of the group her photo and/or quilt pieces and explain why she chose them. Some participants may choose an erosion photo because they have a concern for that; some may choose the crops and

practices of their farm currently; and some may choose conservation practices they are interested in learning more about and implementing on their land in the future.

Pull the heavy cotton tablecloth that is currently on the table into a bunch, to form a “hill” in the middle of the table. Then place the large beige or brown tablecloth over the top of the hill. This gives you a large open landscape with a hill in the middle. You could think of this as the “backing” of your quilt, similar to the soil of your farmland.

Then each participant will place their quilt fabric pieces (that are matched with the photos) directly onto the landscape on the table. Encourage the participants to place those pieces in ways that would “sow” a farm quilt that will conserve healthy soil for future generations. For example, they can place row crop pieces to be planted on the contour (horizontal side) of the hill instead of plant vertically up and down the hillsides. They may decide to plant hillsides in pasture or prairie or enroll them in the CRP Program. They may decide to plant trees and restore wetlands. They may decide to plant cover crops with funding support through EQIP (Environmental Quality Incentives Program). This activity will be as unique as the group members and is a good way for the women to ask each other and the leader questions and share ideas. This is a great time for the conservation professionals to place their own squares and strategically add information about effective contemporary practices or about out-of-date or harmful practices such as creek straightening without criticizing someone who has land that was altered years ago.



## Part G: — Dirt cup dessert, discussion and door prizes

### Materials needed

- Ingredients for “dirt cup desserts” (amount will vary depending on group size)
- clear plastic cup for each participant
- chocolate pudding
- crumbled chocolate sandwich cookies
- gummy worms
- fact sheets on NRCS programs such as EQIP, cover crops, etc. Make a copy for each woman.



**How to assemble the dirt cup desserts:** layer chocolate pudding into plastic cup, fill about 2/3 full; next, add layer of crumbled chocolate sandwich cookie, and add a gummy worm on top to symbolize healthy soil (see photo).

### Idea for door prizes

Cover crop seed samples so that participants can experiment with cover crops in their vegetable or flower gardens before using them on the field-scale. You can wrap up handful-sized seed samples in fabric pieces and tie them at the top with some string, purchase miniature muslin “feed bags” at a craft store, or simply put the samples in plastic baggies; write the seed type on the bag. Winter wheat, clover and rye are readily available at your local farm co-op or feed store.

### Discussion questions

This activity is an open discussion time to enjoy the dessert, review concepts, ask and answer discussion questions, and give away door prizes.

- How can you reduce soil erosion and improve soil quality on your farm?
- What are two kinds of cover crops commonly used on Midwestern farms; what are their benefits; when are they planted and when are they tilled or sprayed?
- How can NRCS and the EQIP program help you with your farming goals?

# 4

## Conservation Activities: “Sowing” Your Farmland Quilt: Conservation options that form the fabric of your land

### Resources:

#### **Pathfinders Resource Conservation and Development (RC&D)**

Technical Assistance  
www.pathfindersrcd.org  
641-472-6177

Link to labeled photos to download for activity:

<http://wfan.org/wp-content/uploads/2013/08/quilt-pages-compressed-photos.pdf>

#### **NRCS soil health resources**

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>

#### **EQIP (Environmental Quality Incentives Program)**

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>

#### **Cover crops**

Sustainable Agriculture Research and Education topic room

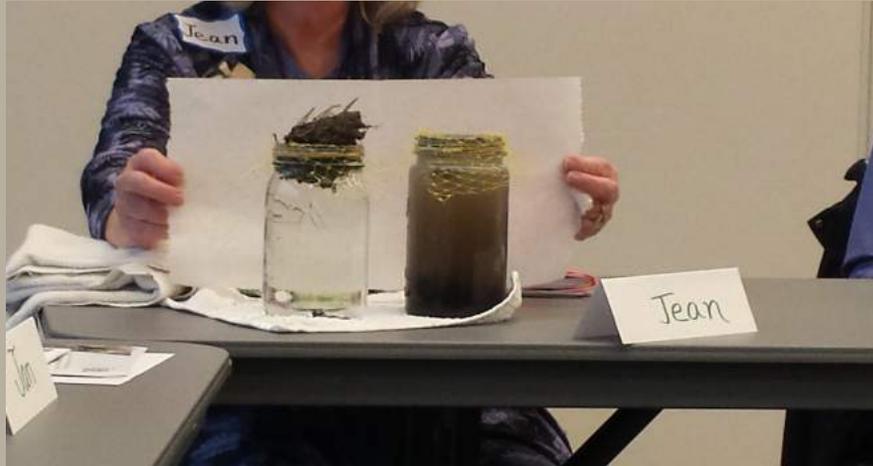
<http://www.sare.org/Learning-Center/Topic-Rooms/Cover-Crops>

Midwest Cover Crops Council

<http://www.mccc.msu.edu/>

#### **Dirt cup dessert**

[http://kidscooking.about.com/od/desserts/r/dirt\\_dessert.htm](http://kidscooking.about.com/od/desserts/r/dirt_dessert.htm)



## Activity

# Kitchen Test for Your Soil Structure

*Adapted by Jean Eells, PhD, county soil commissioner and conservation educator*

### Keywords

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Soil  
Soil Structure  
Erosion Control  
Grassed Waterways

### Concepts

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An understanding of soil structure (tilth) and the role of good soil structure in controlling erosion is a key to helping women farmland owners dialogue with their tenants about controlling erosion on their own farms.

### Optimum group size

Up to 25 (limited only by being able to see the jars on the table)

### Preparation time:

30-45 minutes to collect soil samples and prepare jars

### Activity time:

5-10 minutes for demonstration

### Activity description:

This activity provides participants with examples of various types of soil structure, explains the effect of tillage on soil structure, demonstrates that soil with good structure is less likely to erode, and introduces the concept of installing grassed waterways to reduce overall soil erosion.

### Materials you will

- 2 clear quart jars
- 2 rubber bands that fit snugly over the top of the jars
- 2 squares, about 5 inches square, of a large open mesh fabric, such as from purchased potato bags; fabric with ¼-inch openings is best for this activity
- fist-sized dry soil sample with poor soil structure
- fist-sized dry soil sample with good soil structure

### A note on collecting soil samples

Because you want an example of poor soil quality that really shows the most contrast with a good soil, go into a field near the field entrance to the end rows, where soil is most compacted. This provides the best comparison and contrast, and that's what's important about this activity. You are not showing one site with bad soil, but providing a benchmark against which landowners can make their own judgment about their own soils.

The sample of good soil structure can be obtained under any area of grass that has not been tilled, such as in a fencerow or yard. You don't need the big roots or grass plants, but you want the soil under the surface that shows how it holds together. This is the benchmark for the best soil structure in your area.

Both soil samples benefit from being dried, so collecting these ahead of time is helpful. Also the samples should be mostly in a clump or clod rather than completely loose, in order for the demonstration to work best.

## Activity directions

The facilitator can introduce this activity by saying: "One of the characteristics of good soil quality is good soil structure. Soil structure can be thought of as the texture of the soil, which can be compared and judged like many textures used in cooking. Simply put, soil that has been pulverized has lost its structure and is closer to the texture of cocoa powder rather than the texture of coarse breadcrumbs, which is much better.

"One effect of soil that has been broken down into fine particles is that it is much more likely to erode by wind and water. Without fine roots like those of small grains, for example, the soil particles dissolve quickly into water. This demonstration activity focuses on how good soil texture holds soil together, even in saturated conditions, whereas overworked soils dissolve into water rapidly and continue to drop pieces as long as the soil is in contact with water such as rain or snow melt.

"Evidence of declining soil structure is the annual formation of small gullies in fields where water has carried small soil particles away. While many of these gullies can be filled away in the spring, they are important evidence that something is going wrong with the soil or with the residue cover. Over time, significant amounts of soil can be lost from a field even though each year it doesn't look like much and the gullies seem to disappear once they are filled through." (See photo at right.)



**Field with gullies.**

## Tips for the demonstration

Participants will be able to see the demonstration best if the jars are on a light-colored surface and have a white or light-colored surface such as a white box, piece of paper, or wall behind them. Do the demonstration as close to the participants as possible, and leave it where they can watch it for a period of time.

## Prepare jars for demonstration

Before the meeting, place mesh over the top of the jar and push it down into the top of the jar, forming a basket about an inch deep; put a rubber band over the top of the jar to hold the mesh in place. The goal is to have each basket about the same depth. Then, fill each jar with water to within a half inch of the top, so the mesh baskets are in the water about a half-inch.

## Demonstration

Ask participants to comment on what they observe about the two soil samples. Things to note about the poor soil sample are that the particles are very tightly packed together, with few roots or pieces of organic materials visible. Also this sample lacks pore spaces for air or water to penetrate.

Discuss the characteristics of the good soil structure sample. Observations should include the presence of fine roots holding the soil together, and other aspects of the soil that make it more porous; mention that it coheres into pea-sized pieces more frequently.

Break off approximately equal walnut-sized chunks of soil from each larger soil sample and carefully place one chunk into the net basket in each jar, without letting them fall apart. The size of the chunks should fit down into the opening of the jar and into the water.

The soil without good structure will start to dissolve right away, and will continue to rain down particles for the entire time of the demonstration. The soil with good structure may have a few large particles fall into the water, but overall will resist dissolving; the contrast will be quite visible. (See photos.)



**Poorly structured soil dissolves readily in demonstration jars, just like it does in field conditions leading to gully erosion.**

## Discussion points

Tillage breaks up soil structure, and fine roots, such as those from small grains (oats, rye) or alfalfa, help rebuild it. Corn and soybean roots do not rebuild soil structure.

Poor soil structure in fields (not just in the end rows) leads to movement of soil in running water. This is becoming a greater problem on farms where small grains and pasture are not part of the crop rotation; soil erosion is now visible in fields where it did not occur in years past. Grassed waterways may be used in fields to capture this moving soil before it washes into ditches and streams.

Small gullies in fields may seem insignificant, and they are hidden in the spring by tillage and during the growing season by crops. However, this is just like a cake with frosting. If someone sneaks into the kitchen and steals a finger-full of frosting, you can smooth the frosting in that spot – disguising it cosmetically – and if the person steals frosting again in the same spot you may still be able to hide the loss of the frosting. Eventually, though, so much frosting will be gone that you won't be able to hide it anymore.

That's like the small gullies in fields; if you can see small gullies during the fall after crops have been harvested before any tillage is done, or if you can see them in the spring before tillage, take notice and check the soil structure in your fields. You may need to install grassed waterways to catch the soil particles moving off the field, or consider other options for improving soil structure and soil quality. See Resources for information on other best management practices for controlling erosion that women can discuss with their tenants.

## Resources

*Building Soils for Better Crops*, on-line version of the book is free.

<http://www.sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition>

## Clean-up

When the demonstration is over, you will need to empty jars that have water and some soil in them, so being able to dump them outdoors may be helpful.



## Activity No-Till Benefits Below the Surface

*Adapted by Jean Eells, PhD, county soil commissioner and conservation educator*

### Keywords

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Soil  
Tillage  
No-Till  
Soil Structure  
Erosion Control

### Concepts

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All forms of tillage disturb the soil and damage its structure. When soil loses structure, it comes to resemble flour rather than bread crumbs, and this fine structure makes it very susceptible to erosion from wind and water. No-till and minimum till are management options that can reduce damage to soil structure and help prevent erosion.

**Optimum group size**

10 - 15

**Preparation time:**

15 minutes to gather materials and prepare cereal.

**Activity time:**

5 minutes for demonstration, 10-15 for discussion

**Activity description:**

This activity uses common household items (cereals and milk) to demonstrate how the size of soil particles affects the soil's ability to resist erosion. (Actual soil samples may be used if available; this activity allows the demonstration to be done when soil is not available, such as when ground is frozen.)

**Materials you will need**

- 1 box of cocoa or rice cereal with approximately pea-sized pieces
- 1 pint of milk
- 3 glass pint jars

**Activity directions - Background information**

**No-till** and a closely related variation called **strip-till** are terms to describe two ways farmers can protect and enrich their soils with leftover crop residues. With these tillage methods, new crops are planted without removing the parts of the plants left after the previous harvest. Farmers save fuel and labor by eliminating trips across the field for tillage. The most common objections are that no-till fields look messy or trashy to people who grew up with smooth bare soil in the fields as the standard of good farming; and that in areas where soils stay wet and cool longer in the spring, the farmer has to wait extra days for the soil to dry and warm. Strip-till is a modification of no-till that clears residues from a narrow strip of soil in the row where the seed is planted; the soil in that strip warms more quickly to help seeds germinate and grow.

Benefits of no-till and strip till on the surface of the ground are easy to understand if you think about how the crop plant parts that are not harvested are like a blanket on the soil. The crop residues protect the surface of the soil from raindrop impacts that dislodge soil, which then can be carried off the field with rain that isn't absorbed. Residue also protects the soil surface from wind, which can also dislodge particles of soil that bounce along and dislodge still more soil particles and move off the field.

Soil below the surface benefits from no-till by developing pore spaces from decayed root channels and earthworm activity. The pore spaces allow water to soak into the soil rather than run off, and also allow the exchange of oxygen and other soil gases. Just like your lungs breathe and exchange oxygen, the soil breathes, too. Pore spaces allow air to escape while water fills the pores and goes down into the soil.

All tillage – including conservation tillage – interrupts the pore spaces by breaking them up, and allowing them to get filled in with fractured particles of soil. Tillage also breaks apart soil particles into very small pieces that resemble flour more than coarse breadcrumbs, and a predominance of flour-like soil slows water absorption. Air exchange is impaired and water stays on the surface and carries soil with it when it runs downhill. Corn and soybean roots do not rebuild soil structure very quickly, and fine, flour-like soil particles do not regain a breadcrumb texture. Small grains and legumes have fine root systems that can rebuild soil structure more quickly.

## Demonstration

1. Prepare cereal by taking 1/3 to 1/2 of the box and crushing it fine. This can be done by placing the cereal in a plastic bag and rolling it with a rolling pin or pounding it with a hammer, flat mallet, or smooth side of a meat cleaver. The plastic bag may become full of small holes from the crushing, so transfer the fine cereal to another bag or carrying container for the demonstration. Keep the uncrushed cereal separate from the crushed cereal. Jars may be prepared with cereal ahead of time or prepared in front of the group as you describe what each jar represents.

2. Introduce the basic principles of no-till and strip-till at the surface (see Background information, above) and explain that another benefit of limited tillage is better water infiltration and better air exchange. Pour each of the three jars half-full with whole cereal.

3. Leave one jar with only whole cereal, and explain that this is similar to **no-till**, where the soil structure has many pore spaces that develop as roots decay from the previous year's crops, and earthworms can create channels that are undisturbed by tillage.

4. To the second jar, add enough of the crushed cereal to partially cover the whole cereal, but leave some openings in the whole cereal visible from the



top. Explain that this is similar to **conservation tillage**, which leaves some residue on the top but rips through the upper layers of soil each year.

5. To the third jar, add enough of the crushed cereal to completely cover the surface of the whole cereal in a layer about a half-inch thick. This is similar to soil that is **plowed and disked** each year, which breaks down the pore spaces and pulverizes the soil.

6. Pour milk into the first jar (no-till) and explain that this is how easily rain can move down into the soil without carrying soil away in runoff water.

7. Pour milk into the second jar (conservation tillage); the milk will flow into the whole cereal below slightly more slowly. Some of the powder will be carried into the whole cereal, showing how the fine soil particles are moved into the pores below.

8. Pour milk into the third jar (plowing and disking). The layer of powder will stop the milk from flowing into the cereal below, demonstrating how soil that's been pulverized from tillage impedes the exchange of air and water; the air can't get out past the powder, so the water can't get in. Water on the surface flows with gravity, creating erosion where it may not have occurred historically and making small gullies in fields. Consider whether pulverized soils also contribute to ponding in some areas where ponds may drain more slowly.

### Discussion questions

What benefits of no-till or strip-till do you think are the most important in your area? There are many additional benefits that were not mentioned in the activity.

What objections you've heard to no-till or strip-till do you think are important? How would you respond to them, based on what we've talked about today?

### Clean-up

After the activity is complete, the "soil" samples may be composted.

### Resources:

**Building Soils for Better Crops**, SARE book, 294 pp., free PDF download at <http://www.sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition>

**Iowa Learning Farms**, <https://www.extension.iastate.edu/ilf/page/videos>

Several DVDs available. How-to video on-line: "Converting Your Planter for No-till Operation"



# Activity

## Picturing Our Connections to the Land

*Created by Detra Dettman, Executive Director, Pathfinders Resource Conservation and Development, Fairfield, IA*

### Keywords

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Personal Connections  
Landscape Planning  
Legacy

### Concepts

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Women landowners frequently say that they keep their family farmland for reasons other than economic ones—particularly for sentimental and legacy reasons. They love their land, and want to take good care of it. They want to leave it healthy, and make sure it passes to someone who will love and care for it as they have.

### Optimum group size:

5 - 20

Group size should be small enough so the group is able to see the photos you have, or you can scan photos to be projected onto a screen for a much larger group. Larger numbers of participants may break into small groups to share their observations with each other after the leader models the discussion.

### Preparation time:

15 - 30 minutes to gather photos and time to sketch out thoughts of what you will say about your connections to the land.

### Materials you will need

- Personal photos of the facilitator, showing connection to a particular farm (e.g., outdoor wedding photo from home farm, children in a prairie, tree planting, or pond that you may have established, etc.)

### Activity Directions

Share with the group a story about your strong connections to the land resulting from an experience you have had with it.

Here are some examples of stories:

- *I grew up on a diversified farm in northeast Iowa, where we had a dairy, raised hogs, and grew oats, hay and corn in rotation. Since its hilly there, we had small farm fields (to this day my Dad still uses a four-row corn planter). Some of the fields were bordered by oak trees. In addition, the creeks on our farm were lined with limestone outcroppings and oak timber.*
- *I grew up so strongly connected to the land that I chose to celebrate one of the biggest occasions of my life on that land—my wedding. (Show photo) I chose to be married here in this section of land called “the 80,” where the access road traveled back a half-mile off the gravel*

### Activity description:

The purpose of this activity is to demonstrate how conservation practices can create personal connections to the landscape, and how land management choices can foster or inhibit a person's connection to the land. The facilitator shares a story and personal photos that can generate discussion among audience members.

### Activity time:

10 - 15 minutes

- *road and traversed between farm fields, the creek and oak trees. The specific location was by a limestone outcropping overlooking the creek where I would go as child and teenager when I needed time alone and time to think. My husband and I both have a love for the outdoors, so it seemed to be the perfect place to get married.*
- *Now, I wonder how things would have been different for me if I was raised on land that was all row crops and no trees, no creeks, no habitat for wildlife. I suspect I would have not have had a "connection" if there were no wild places for me to roam.*
- *The choices we make for our land impact the experiences our children or grandchildren have. My husband and I have only had small parcels of land to work with, but we have done our best to create wild places on them to give our families the experience of being in nature.*
- *Our first home came with 5 acres. We immediately planted a windbreak to have more trees on the property, and also converted a 3-acre soybean field to tall-grass prairie (show photo). When we moved to where we are now, our home came with 10 acres. Again we planted windbreak and converted about 5 acres of scrubby pasture to tall-grass prairie. We also built a pond in a place where we had a large ravine opening up. The trees, prairie and pond have given us beautiful things to look at, wild places to enjoy and much more wildlife to view and hear compared to what was there when we moved there.*

### Concepts to review with the group after discussion

- Our choices in how we manage our land affect how people experience the land
- We can create lasting impact on large or small parcels of land

### Participants respond to the following questions

- How do you envision people (family, neighborhood, community) experiencing your land in the future?
- How have your management decisions gone toward or away from the vision you have for your land?

The facilitator then follows the conversation with suggestions for resources the women can use to begin moving closer to their visions for their land.

## Resources

**Sustainable Agriculture Land Tenure (SALT) website – Drake University Agricultural Law Center.**

<http://sustainablefarmlease.org/>

**The Landowners' Guide to Sustainable Farm Leasing (online booklet)**

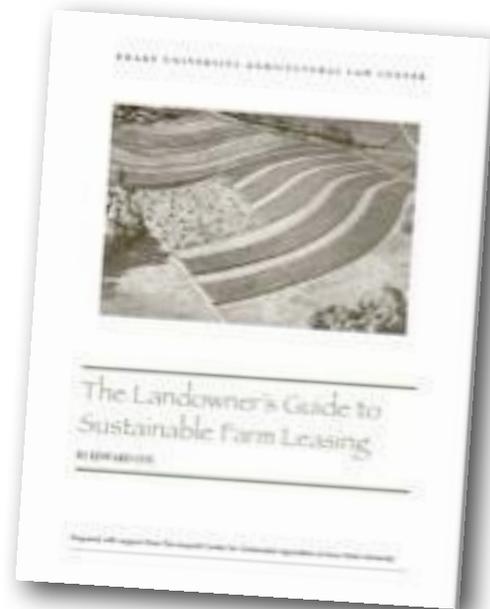
<http://sustainablefarmlease.org/the-landowners-guide-to-sustainable-farm-leases/>

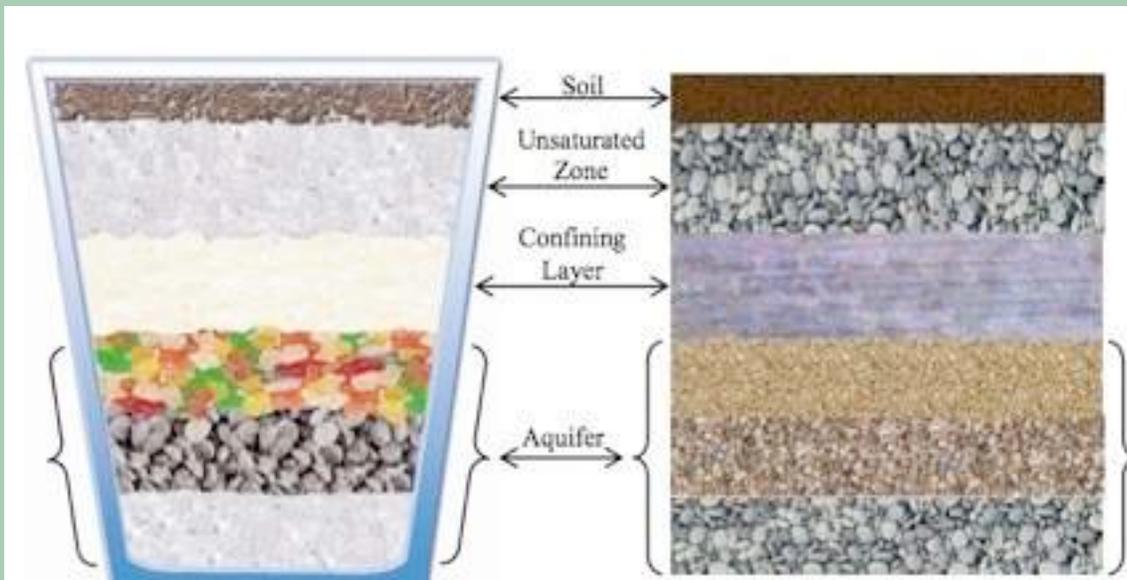
**Whole-farm decision making resources**

<https://attra.ncat.org/attra-pub/summaries/summary.php?pub=296>

**Land linking programs by state**

[http://www.cfra.org/resources/beginning\\_farmer/linking\\_programs](http://www.cfra.org/resources/beginning_farmer/linking_programs)





Graphic courtesy of Idaho Department of Environmental Quality.

# Activity

## Edible Aquifer: Illustrating groundwater contamination

*Adapted by Julie Sievers, Environmental Specialist, Iowa Department of Natural Resources*

### Keywords

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Groundwater  
Soil Structure  
Contamination

### Concepts

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Human activities such as agriculture have an impact on groundwater and the aquifer. Groundwater supplies all of the water for private drinking water wells, for livestock water, and for irrigation in the Midwest. Wells are drilled through soil and rock into groundwater aquifers to supply this water. Groundwater can become contaminated by improper use or disposal of chemicals such as fertilizers and household cleaners. Depending on the geology and depth of the wells, these chemicals can move down through the soil, sands, and gravel and into the groundwater, where it can cause health problems for people, livestock and wildlife.

### Optimum group size:

10-25

### Preparation time:

30 – 60 minutes to gather or purchase materials and prepare demonstration; if you decide to prepare the cups ahead of time, add prep time accordingly. Each participant should have a cup, so the more participants, the longer the prep time.

### Activity time:

15 minutes or longer, depending on discussion

### Activity description:

This activity is to demonstrate the general concept of groundwater contamination using common household items, and foster discussion of ways to prevent groundwater contamination through good agricultural management practices. Although this was originally an activity intended for children, it works well to illustrate basic groundwater contamination principles for adults. (We recognize that the final product may not, in fact, be considered edible by many adults; feel free to compost the materials when you are finished.)

### Materials you will need

The amount of materials will depend upon the number of participants at the meeting.

- Clear drinking cups (12 oz or larger), one per participant
- Crushed ice
- Clear soda pop (cold)
- Chocolate chips
- Butterscotch chips
- Crushed graham crackers
- Drinking straws
- Red powdered drink mix or gelatin mix (e.g., Kool-Aid™ or Jell-O™)

### Activity Directions

Prepare the cups as follows immediately before using; if prepared ahead of time, place in freezer. Prepare one cup for each participant. Alternatively, ask participants to construct their own aquifers as you demonstrate building your own. Provide enough containers full of materials for each participant to easily reach them on the table.



### Construct your “aquifers”

1. Construct each aquifer by filling a clear plastic cup half full with crushed ice. This represents the **gravels** that hold groundwater.
2. Add enough soda to just cover the ice. The soda represents **groundwater**.
3. Add a layer of chocolate and/or butterscotch chips on top of the ice. Vary the thickness of the chip layer and amount of each. This represents the **sand, gravels, and clays**. The differences in the amount and kinds of chips represent the differences in soils.
4. Add a layer of graham cracker crumbs to represent the **topsoil**.
5. Sprinkle small amount of the drink mix or

gelatin powder to the top of the graham cracker crumbs. This represents **contamination** from agricultural or household chemicals.

### Demonstration

1. Distribute one cup to each participant along with a drinking straw (or just pass out straws, if participants have built their own aquifers)
2. Using the straw, drill a “well” into the center of your aquifer. Do this by forcing the straw into the middle and to the bottom of each cup.
3. Slowly begin to “pump the well” by sucking on the straw. Watch the decline in the water table (the level of soda in the ice layer).
4. Watch as the red powder (contamination) gets sucked into the well area and eventually enters the groundwater.
5. Recharge your aquifer by slowly adding more soda, which represents a rain shower or snow melt.

## Possible discussion questions

1. What observations/results surprised you? What did not?
2. How did results compare among different aquifers? (Observe the differences between the cups and how the results varied with the differences in layers, the rate that the liquid was pulled out, and the amount of "rainfall," etc.)
3. What parts of the activity were most or least like what might happen with a real aquifer? Why?
4. What happens if all of the water is pumped out of an aquifer? Where does more groundwater come from? How long do you think it would take? Is there always more groundwater, or could we run out?
5. Do you think a contaminated aquifer can be cleaned? If so, how?
6. How can we protect groundwater (keep it clean)? (For these last questions, make use of materials in the Resources section, below.)

**Note:** You will need to have a plan for appropriately disposing of leftovers, which generally include liquid and ice and chocolate and butterscotch chips.

## Resources

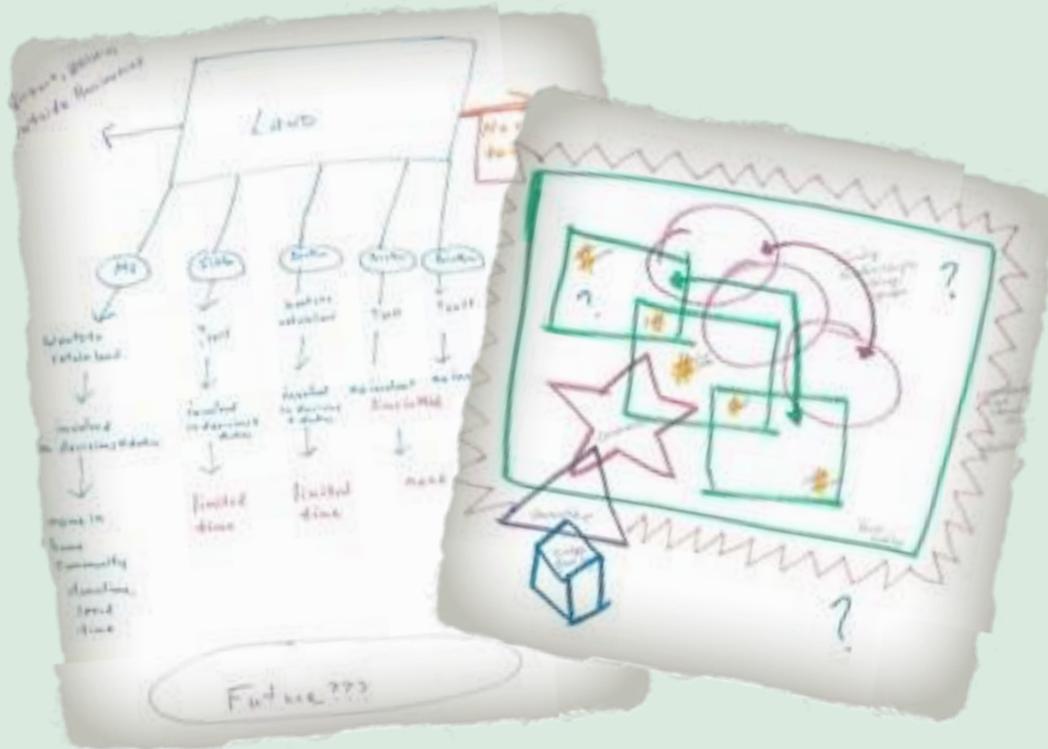
US Geological Survey National Water Quality Assessment Program (state maps)  
<http://water.usgs.gov/nawqa/>

Environmental Protection Agency (EPA) Water Where You Live program (national, regional and state-specific quality and program information)  
<http://water.epa.gov/type/location/>

EPA's Citizens Guide to Groundwater Protection  
[http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/upload/2007\\_11\\_29\\_sourcewater\\_pubs\\_citguid.pdf](http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/upload/2007_11_29_sourcewater_pubs_citguid.pdf)

The Groundwater Foundation: Get Informed  
<http://www.groundwater.org/get-informed/basics/groundwater.html>

*Water Quality Matters to Us All* booklet and other water conservation resources available from Iowa Learning Farm website  
[https://www.iowalearningfarms.org/files/page/files/Water\\_Quality\\_Matters\\_To\\_Us\\_All.pdf](https://www.iowalearningfarms.org/files/page/files/Water_Quality_Matters_To_Us_All.pdf)



# Activity Your Quality-of-Life Values and Your Land

*Adapted by Jean Eells, PhD, county soil commissioner and conservation educator*

## Keywords

\_\_\_\_\_

Values  
Goals  
Whole-farm Planning  
Transition

## Concepts

\_\_\_\_\_

Women farmland owners often mention how difficult it is to discuss their hopes and goals for their farmland with family members and – especially – with tenants. This social and cultural component of farmland ownership and management are rarely addressed in conservation education, but are important factors to consider and express. Identifying the values that define our quality-of-life goals can make our behaviors and the behaviors of others involved with the land much more transparent, and help us reach our goals more effectively and with a minimum of conflict.

**Optimum group size:**

10-20

**Preparation time:**

10 – 15 minutes to gather or purchase materials, plus time to create your own diagram to use as an example, if you wish.

**Activity time:**

15 – 30 minutes, depending upon group size and discussion time.

**Activity description:**

This activity leads participants through a mapping exercise, asking them to diagram the various (and sometimes competing) values that their land holds for them. This and the resulting discussion will help the women landowners evaluate management and transition options – and talk about them with family members and tenants – from a more informed and confident position.

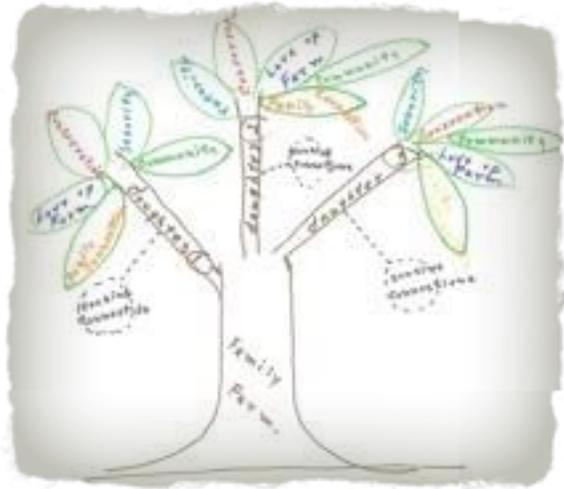
**Materials you will need**

- Provide one sheet of paper (at least 8.5 x 11"; larger is nice) per participant
- Markers or crayons enough for each participant to have at least one and share colors with others.

**Note:** You may want to create your own diagram to show participants as an example, or bring a sample from a prior meeting.

**Activity directions****Background for facilitator**

Tensions arise when people are unclear about their own values, which may be – or may feel like – they are in conflict with what others want based upon values that may be equally undefined or unclear. Discussions of what is to happen to our farmland in the future depend upon more than economic valuations. It seems that the only acceptable way to talk about land is based upon economics, and this dominance can be stifling to the many other values that can motivate our behaviors and inform our decision-making. When we examine the values that we hold about our land, and weigh our management and transition options from a clearer perspective, we are much more likely to achieve our goals.



## Process

Introduce the concept of **quality-of-life values**. These are values or ideas about what outcomes and conditions you find acceptable or unacceptable in various areas of your life. These include what you want from relationships with people, how you want to live (lifestyle), how you see yourself in your community, what's important to you about how the land is treated, and who you want to see in charge of your farmland

some day. You may be thinking of the future of your community's lifestyle and land uses. You may already be making a mental list of the things or people that are important to you.

If you have made an example map to share with the group, show it now, and share one or two items that help explain how you approached the task. You could also share diagrams made by women in prior meetings (with their permission) and briefly discuss them.

Distribute the paper and markers or crayons, and ask participants to spend 5 to 10 minutes constructing a diagram or map (see illustration) that includes all the aspects of their quality-of-life goals as described above. They might start with a circle or box representing their land in the center of the page, and draw lines to other boxes, showing the relationships and values that are important in their decisions. Participants don't have to identify or share anything that is too personal or private, and they aren't required to discuss anything on the diagram that they don't want to. The map or diagram is simply a device to stimulate and organize their thoughts about their values.

Encourage participants to work silently for the first few minutes; after that, they may share with their neighbors as they work, if they like.

When everyone is finished, the facilitator may lead participants through a discussion using these questions:



## Questions

1. Did the process of drawing out the relationships between ideas and people help you think of something new?
2. Did the drawing help you depict something about a relationship that has been a problem in some way (even very minor)?
3. What are some ideas you have about

new ways to approach managing your farmland? What resources (people and materials) are available to help you? (See Resources, below.)

## Resources

**Sustainable Agriculture Land Tenure (SALT) website – Drake University Agricultural Law Center.**

<http://sustainablefarmlease.org/>

**The Landowners' Guide to Sustainable Farm Leasing (online booklet)**

<http://sustainablefarmlease.org/the-landowners-guide-to-sustainable-farm-leases/>

**Whole-farm decision making resources**

<https://attra.ncat.org/attra-pub/summaries/summary.php?pub=296>

**Land linking programs by state**

[http://www.cfra.org/resources/beginning\\_farmer/linking\\_programs](http://www.cfra.org/resources/beginning_farmer/linking_programs)



## Activity 10 Mapping Our Connections: Using maps to provide new perspectives on watersheds

*Created by Jean Eells, PhD, Hamilton soil and water district commissioner; Michael F. Dahlstrom, PhD, assistant professor in the Greenlee School of Journalism and Communication at Iowa State University; Rachel Glaza, project officer, Watershed Improvement Section, Iowa Department of Natural Resources*

### Keywords Concepts

\_\_\_\_\_

\_\_\_\_\_

Maps  
Watersheds

Soil and water conservation are landscape-level issues, but most people tend to think about issues from the individual-level. Looking at maps can help landowners think at larger scales by showing how their land is interconnected and provide new perspectives on the impact of soil and water conservation. Using a watershed is a different way to define a community of neighbors, linked by where water flows; together they affect the quality and quantity of water that leaves their watershed.

## Optimum group

20 is a nice size for discussion. Time to prepare maps and individual packets ahead of the meeting may be the bigger constraint. This works best if most or all of the participants will be coming from one to a small number of adjacent watersheds.

## Activity

20 to 60 minutes.

## Preparation

A week before the meeting, collect the address of the participants and use that information to generate and print individualized maps showing the participants' land in relation to the larger landscape. (See example on p. 76.) We ask participants to preregister and give location information and their permission to access maps of their farms in order to prepare a folder for them. (Using a folder is not required, but is a good practice to allow them to protect private information if they wish.)

In addition, also generate and print maps showing concepts related to the larger watershed, such as boundaries, land cover, erosion or sediment rates. You can use any of the free map-related websites, such as Google Earth or MapQuest, to generate the individualized maps, and ask the DNR or NRCS to provide you with the larger watershed-level maps such as the ones on pp. 77-78.

## Activity

Participants will be given maps showing how their land is connected to the larger watershed and asked how this changes their perspective of the shared responsibility for soil and water quality. Participants will also be encouraged to take the maps home and share with friends and family.

## Materials you will need:

- o The various maps you generated during preparation time. One or two large poster-sized maps to hold up briefly to show how watersheds are nested within larger watersheds – such as showing the Mississippi River watershed on a US map, then a large tributary river of the Mississippi on a regional map before going to the smaller scale watershed that will be discussed. If large posters are not available, then print one or two to include in folders.

## Activity directions

Allocate the time for topics by spending as little time as possible on the definitions of watersheds and water quality and spend more time examining the maps for all that can be observed and discussed. The connections between land use and stream dynamics and the resulting water quality and quantity issues are more likely to be new information and much more easily understood with the maps.

You can give participants their prepared folders as they register, and they'll likely browse through them right away. When you are ready to begin, hold up the largest map of the largest watershed you wish to show, followed by a large map of a sub-watershed. Don't spend a lot of time on this, because it's more obvious than what will follow.

Explain that the term **watershed** is used to describe all the land from which water flows to a common point. Sub-watersheds are simply smaller divisions of land that shed water to a common point.

Everyone lives in a watershed, even when it might not be very noticeable if you live far from a creek or lake. Again, don't dwell on these points for long, as they will be reinforced enough later.

You may need to explain that in some places the differences in elevation of land may be very subtle, and in others the hills make it obvious where water will flow. You can show how water naturally flows to create meanders and sinuosity, and sometimes will cut off a big curve leaving an oxbow before the increased speed eventually creates meanders again.

Maps can show where humans have shaped land in ways that redirect the flow of water, such as creek straightening or digging ditches to create new drainage

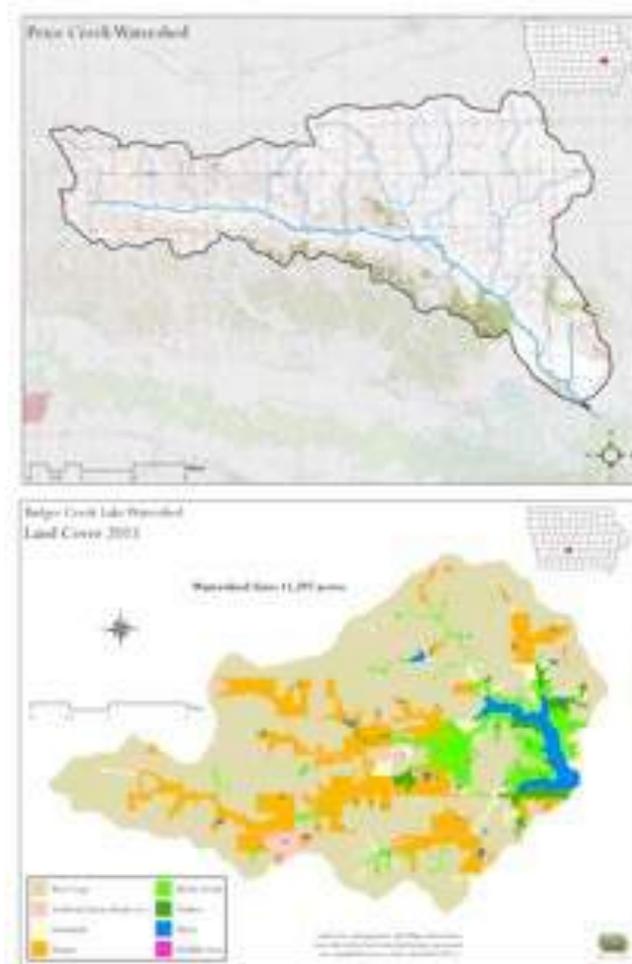


**Individual watershed maps with participants' farm boundaries outlined in yellow.**



ways. Stream straightening always increases the speed of the water, and the more energy in water, the more destructive it can be. It once was a common practice, and you can almost always find a section of a creek that has been straightened at one time; the results of the faster water often leave evidence downstream as strong meander curves and eroding banks. Activities that seem like solutions to problems within large rectangular property boundaries may cause other problems for your watershed neighbors.

Use the maps to describe and show details particular to your watershed. Focus first on the geographic features that can be observed, help participants find familiar landmarks on each map so they can find their own land in relation to the common stream outlet. Describe the technical maps in the folder one at a time; everything may not flow in a perfect order. Wait for participants to orient to each map, and explain what the map colors or markings mean. Don't assume everyone can read the map legend and interpret the information rapidly. Technical maps often have tiny print and confusing terms.



Explain that sometimes a watershed is identified as having poor-quality water leaving it, and it may be designated as being impaired. An impaired water body means the water isn't suitable for the purposes of that watershed, which might be for aquatic life, drinking water, or human contact such as swimming. Water needs to be clean enough for its uses; water that is never used for a drinking water source or for human contact may not meet the same standards as another watershed.

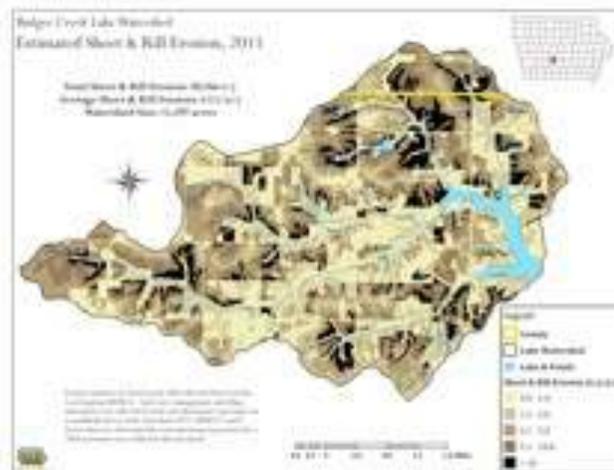
**The purpose of the activity is to keep the focus on the connection of the neighbors as a watershed community.** You can explain that people may think of themselves as part of a school community, a church community, or a business

community, and as community members they participate and share responsibilities. The participants may never have thought about themselves as a watershed community. Some watershed neighbors have land that is higher in the watershed and they may refer to themselves as being high and dry, lucky in a flooding year. Some watershed neighbors have unhappy experiences of a neighbor who made a change that caused more water to flow onto their land; they may be frustrated that they can't do anything about it. These are important stories, but try to steer the discussion towards the larger picture. Go from individual properties with rectangular boundaries towards the larger watershed and the total stream dynamics that occur in spite of political boundaries.

Managing water on agricultural lands is not a black and white issue, but a few principles bear discussion among members of the watershed community.

It's likely you will have a participant who lives near the lower end of the watershed where they've experienced damage to property from too much water coming at them too fast. There may also be a road structure such as a bridge or culvert that has been damaged because of increased flows that now exceed the capacity. Conditions that speed up water include hardening surfaces through paving, building, or packing soil tightly. Poor soil quality causes water to run off quickly instead of infiltrating. Also making pathways for water straighter, narrower by building up barriers increase water speed. Streams that are cutting deeper and deeper become confined by the banks further speeding water and leading to more cutting – a problem cycle.

Fixing problems at the bottom of a watershed are expensive and challenging, sometimes without an



economic benefit to the landowner. For example, a pasture with a meandering creek at the bottom of the watershed may receive so much water that the creek is deeply cut or incised and water flowing through that area of the creek may cause a lot of stream bank erosion. Pastureland usually has a lower economic value making protecting the stream banks expensive even though they are the source of a lot of sediment getting into the water. The landowner at the bottom of the watershed needs help from the up watershed neighbors. What can they do?

Finding places higher in the watershed to hold water back by letting it infiltrate or be absorbed into the soil helps reduce the volume and speed of water leaving the watershed. Look for places where water could be held back to benefit everyone.

Holding water back can be done with prairie (deeply rooted native plants), wetlands, or if necessary through constructed ponds (although by definition they are always full already). Prairie functions like a sponge on the landscape. There may be places where prairie can absorb water into the ground where it will take a longer time to reach the stream. Improved soil quality can make a large impact on reducing run off. Reducing or eliminating tillage can start improving soil quality and using cover crops further increases the soil's ability to hold water.

There are many conservation practices that can help address these problems and solutions. Understanding that the problems and solutions are greater than the property boundaries includes understanding how to be responsible watershed neighbors and in particular the ways in which upstream neighbors must help downstream neighbors within the same watershed.

We're all in this watershed together.

## Questions

1. How does seeing the watershed boundary change how you think about the watershed community? Did you know the area already?
2. Do you see places where water maybe could be held back, or maybe should be?
3. What else would you want to know about the watershed as a neighborhood, or about your land specifically

## Resources

Contact your state NRCS office and US Geological Survey office for info and maps. Here is a link to find your state NRCS office's website:

<http://www.nrcs.usda.gov/wps/portal/nrcs/sitenav/national/states/>



# Activity 11 Managing Wildlife and Hunting Rights

*Created by Jean Eells, PhD, Hamilton soil and water district commissioner*

## Keywords

Wildlife  
Hunting  
Habitat

## Concepts

Women landowners struggle with the “right” way to manage their land to provide habitat for animals they want to share their property, and manage populations of those they don’t. They also tell us that dealing with people who come to them wanting to hunt or trap on their property is one of the hardest issues they face as landowners. This activity allows women landowners the opportunity to clarify their feelings about wildlife and hunting, learn about their rights under the law as landowners, and think about ways they can enhance habitat for native species with plantings and land management practices.



## Introduction

Few conservation topics inspire as much spirited discussion among landowners as issues surrounding hunting rights on private property and whether the common wildlife for the area are viewed favorably or as problems.

Because hunting rights involve legal matters, you will want to have law enforcement personnel present at your meetings – preferably female. Further, people hold many wildlife myths that are best addressed with rational and calm discussion with a wildlife biologist – another valuable resource person to include.

Discussion topics will likely include protecting livestock or domestic pets from predators; over- or under-abundance of game species; how to stop trespassers, including landowner liability and fear of retribution; who has rights to hunt land legally; and what to do about damage done to crops and property by wildlife.

Not many older ladies hunt, but many are conditioned to expect that game species are the most important to discuss. Broadening the topics beyond game species creates a much richer discussion and expands the reasons to manage land for healthy habitat for a variety of species. Many women think of their land as a locus of their personal community, and many welcome the idea that it can support a diverse community of wildlife as well.

Field tours to follow the discussion can show habitat improvement programs funded by government or non-profit organizations, public vs. private land, and areas along waterways or lakes.

### Optimum group size

A small number of ladies can generate so many questions that as few as five can fill two hours with discussion. But a group of 15 to 20 ladies is optimum.

### Activity time

We suggest this topic be the focus of an entire half-day learning circle plus a 2-hour tour.

### Preparation time

Coordinating participation of resource people, gathering outreach materials, and planning the tour route (2 to 4 hours minimum).

Although the landowners and sponsors are most familiar with the lecture format, complete with projected pictures and a set list of content to be covered, the peer-to-peer discussion format offers greater opportunities for ladies to learn from

each other about what works best for them locally. Preparing the conservation professionals to attend and respond to questions rather than delivering a “presentation” is essential. (No PowerPoints!)

Because the opening discussion involves an introduction by the conservation professional, it’s helpful to ask her to share something personal about her connection with wildlife, and to help broaden the diversity of wildlife discussed that day by telling about a non-game species in her experience.

Invite the conservation professionals to bring business cards or copies of their contact information, and copies of relevant publications to share.

### Activity description

This is a facilitated discussion of wildlife and hunting, followed by a field tour to view quality habitat and learn which habitat features benefit different species of wildlife. In heavily agricultural areas, be sure to include sites showing waterway protection options that benefit wildlife and aquatic species.

### Materials you will need

Broaden the discussion beyond common game species by showing paper photographs of non-game species. Find books or magazines with large clear photos of wildlife such as turtles, salamanders, mussels, or frogs – all of which depend upon good water quality – or lesser-known birds such as the American woodcock (at left), or grassland birds like bob-o-links, which older ladies may remember were once common in pastures.



Provide attendees with hard copies of the state-published hunting regulations. These should be available from the state Department of Natural Resources.

**Extension Wildlife Biologist Rebecca Christoffel finds that having props such as pelts, shed snake skins, or even puppets of animals helps stimulate questions and dispel myths. Meetings in nature centers where props are available or on display can be a great opportunity for the ladies to drive the conversation they want to have about holistic management that includes all species.**





## Activity directions

During the opening discussion portion of the meeting, ask everyone to tell what experiences they had with wildlife as a child, or describe an animal they'd like to know more about. To keep game species from dominating the discussion, conservation professionals and the facilitator can give examples of uncommon or non-game species in their own introductions.

The challenge of managing the opening discussion is that these stories, perhaps more than at any other meeting, can take off and result in a lively discussion, with the conservation professionals and other ladies answering and asking questions immediately. You will have to judge whether this is desirable, or if you need to ask for questions to be noted and answered after everyone has had a chance to speak at least once. It can also be difficult to manage the discussion if a woman emphatically tells a story laden with many myths and inaccurate information. It may work to note the experience and say, "We'll have more to say about that one later that you might find interesting," to validate that she had the experience and suggest there may be more to the story.

Once all participants have weighed in, conservation professionals can take turns answering groups of similar questions or addressing concerns and comments. Facilitating this discussion may involve watching all the participants to see if they are still fully engaged, so the group doesn't spend too much time on one type of question or topic. You will know from the opening comments whether more time needs to be spent on law enforcement issues or on managing wildlife damage, for example, or if you need to work on diversifying the discussion of wildlife beyond the common and dominant species. Once uncommon species or diversity is introduced to include turtles or bats or pollinators as evidence of the highest quality of healthy land, some ladies present will always be intrigued with these topics.

For the field tour, try pausing at each stop long enough to allow the conservation professionals present to "read" the landscape out loud for the ladies, to draw attention to what they are seeing through their trained eyes. Ask them to point out where they are looking, rather than just using the scientific terms or generally indicating "prairie" or "brushy area" and assuming all participants are seeing the same thing. Ask them to get specific about where their eyes go – to which tree or sloped area – to make a judgment about the health or quality of the area.

What areas cause them concern, such as invasive species or an area where a few brown branches in a windbreak signal potential disease or damage from wildlife? Discussions of how to read the landscape can help the land come alive for everyone on the tour. Participants familiar with the area may also have historic knowledge that adds greatly to the tour, and may point out areas where they played and noted populations of wildlife.

## Questions & wrap-up discussion

Make sure to point out that contact information is printed on the back of the agenda for the conservation professionals and their colleagues. If a wrap-up discussion is needed, ask what aspects of the day were most valuable or what the ladies are planning to do after the day, if anything, to tell others or make changes on their land.

## Resources

Most states have wildlife management programs; search the internet for yours. The following resources are specific to Iowa. A very good general resource is the Wild Farm Alliance, <http://wildfarmalliance.org/>

**Wildlife on Your Land** – booklet created by WFAN and ISU Greenlee School of Journalism and Communication especially for women landowners, downloadable from [wfan.org/wcl](http://wfan.org/wcl) (funding provided by the Iowa Resource Enhancement and Protection Conservation Education Program, grant# 12-21).

**Attracting Iowa Wildlife on Private Land** – 36-page booklet downloadable from Iowa Department of Natural Resources website:

<http://www.iowadnr.gov/Conservation/Wildlife-Landowner-Assistance>

Include hunting rights information in farm leases – available from

<http://sustainablefarmlease.org/the-landowners-guide-to-sustainable-farm-leases/>

Iowa DNR website link to hunting regulations

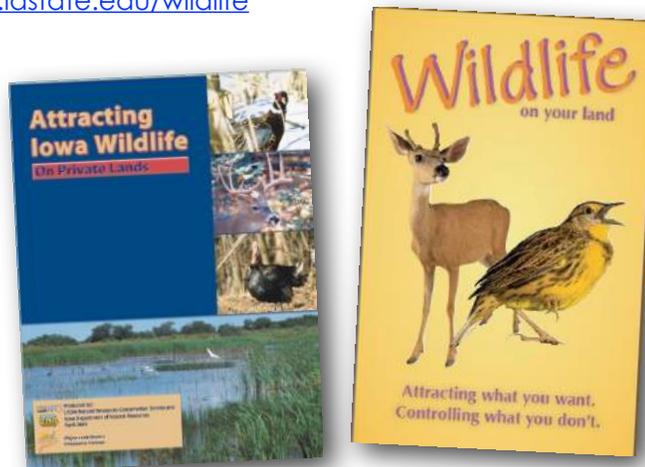
<http://www.iowadnr.gov/Portals/idnr/uploads/Hunting/huntingregs.pdf>

Iowa DNR website link to non-game newsletter or department

<http://www.iowadnr.gov/Conservation/Iowas-Wildlife>

Iowa State University Extension Wildlife Service

<http://www.extension.iastate.edu/wildlife>





## Activity 12 A Soil Health Check-Up

*Created by Jean Eells, PhD, Hamilton soil and water district commissioner*

### Keywords

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Soil health  
Soil testing  
Tillage  
Cover crops

### Concepts

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High-quality soil health addresses more topics of concern expressed by women landowners than nearly any other topic. It is a pathway to long-term profitability and sustainability for future farming generations; it can improve the ability of the soil to infiltrate water, reducing run-off and potentially reducing flooding and protecting crop yields during droughts; and it can help farmers cut down on expensive chemical inputs that women worry harm their families, water and wildlife.

## Optimum group size

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20 can adequately see the size of demonstrations proposed. Larger groups will need multiple demonstrations or a way to project the demonstration on a screen.

## Activity time

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60 to 90 minutes.

## Preparation time

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30 minutes to gather soils and equipment. Some soils perform more reliably if they are completely dry, others may need to be very slightly damp. Test ahead of time.

## Introduction

Soil health has three components: **soil chemistry** or nutrients, **soil structure**, and **soil biology**. Information is readily available about fertilization and soil testing to promote plant growth, so we don't address that topic in this activity.

The **structural component** to soil includes its physical properties. Soil biology includes all the living things in the soil, from bacteria to fungi, microbes to night-crawlers. In this activity, we focus on the structural and **biological** components, impacts of tillage, and the potential for cover crops to improve the structure and biology of the soil.

You will need to have current cover crop information available for the participants, or include experts at your meeting who can address technical questions not covered in this general soil health activity. (Not covered in this manual are the specific seeding rates, costs, and mixes of cover crops used, nor specific management practices such as timing of seeding or termination unique to your area, as these vary widely.)

The field tour component of a soil health meeting should include a visit to fields where you can compare soils that have had cover crops or been in continuous no-till to conventionally tilled soils. Take spades to dig in the fields, and give everyone a chance to use the spade themselves, handle the soil and feel the textural differences, and look for worms and other life.

Other equipment might include a **penetrometer**, or rod, to push into the ground to feel compaction, or a field test for **infiltration** (well known by conservationists) that employs coffee cans open at both ends driven into the ground, and times how long it takes water to infiltrate. Put the tools in the ladies' hands – don't just demonstrate for them. Soil cores can be wonderful teaching tools also. Round out

your visuals in the classroom and/or the field with samples of cover crops grown in a clear tube showing root development, or cover crop seeds in jars.

## Soil Health

Historically, we have judged farmers to be “good farmers” based on the visual cues of straight rows, no weeds, and if the place looks kept up nicely. Over time, the effects of farming on the land and water have changed; we need to change the visual cues of how we judge whether a farmer is doing a good job of conservation. Many of us have adapted to the “messier” look of crop residue left in the fields, and know that fields plowed black or completely turned over means soil is probably entering our waterways.



**Cereal rye cover crop in soybean field.**

## Soil Structure

To spark discussion about the changes to soil structure and demonstrate how one soil type can vary in physical properties under different land use treatments, it helps to set up the **Kitchen Test for Soils** (activity number 5 in the curriculum manual). After showing that demonstration (the slake test), you can show an infiltration test like the one at this link:

[https://www.youtube.com/watch?v=cx\\_hmse9Se8](https://www.youtube.com/watch?v=cx_hmse9Se8) (infiltration test starts at 2:40).

Discussion points for each of these tests to translate them to field scale include:

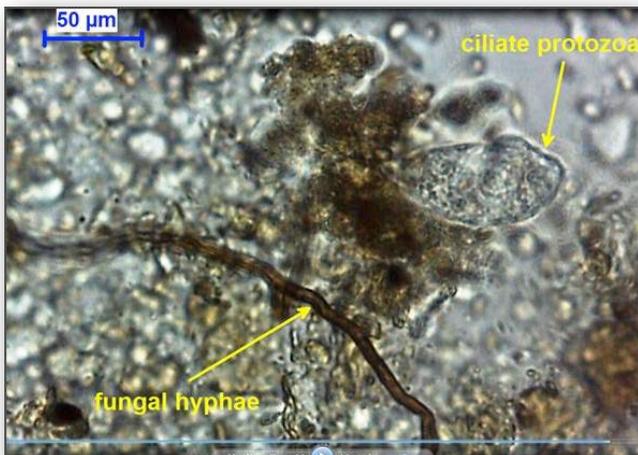
- The presence of ephemeral gullies (shallow gullies that can be concealed by a tillage pass) in fields during the time crops are not obscuring the soil surface. Ephemeral gullies are like a cake with frosting – and someone takes a finger full of frosting from the middle of it. You can cover the loss of the frosting by re-spreading it with a knife, but eventually there is no longer enough frosting to redistribute. Like the frosting on the cake, the topsoil lost in ephemeral gullies is gone – washed into your waterways. Seeing even small ephemeral gullies in your fields should spark a conversation about how to fix that right away. Grassed waterways, prairie strips, or improved soil structure are some solutions you can talk about.
- Raindrop splash can dislodge soil particles that are only weakly held together, as opposed to particles in healthy soil that are glued together by plant root exudates (carbohydrates leaked from plant roots). No-till (or never-till) helps keep soil protected (although it may not be enough to keep the soil from crusting over even a small amount and creating sheeting run-off. Never-till is an important step towards better soil health, however).

- A handful of soil with good structure looks like coarse breadcrumbs or mellow like chocolate cake or cottage cheese, a fresh biscuit broken open, or granola. A handful of soil with poor structure is more like cocoa powder or flour, dusty when it is dry.
- The soil with good structure does two things that seem opposite – it holds more water available to plants, which is critical during the last part of the season when crops are filling seeds to capacity; and it has more pores, to drain excess water away efficiently (rain infiltrates rather than pools).

## Soil Biology

Your discussion of soil biology should include the microscopic bacteria and microbes living in the soil on the surface of the plant roots; the soil fungi that live in association with plant roots; and the insects or fauna that burrow and dig in the soil, loosening it and creating channels like earthworms do.

If you choose to project any images of this, many videos are available on the internet showing magnified bacteria swimming in the aqueous film on plant roots,



and also night filming of earth worms pulling plant residue such as corn leaves towards their holes/burrows (middens).

An alternative to projecting images (which takes valuable time) is using your arm to “be” a plant root bathed in soil bacteria that live and poop and die and provide nitrogen for the plant. You can use your own other hand or have the person next to you reach toward your plant root arm and “be”

a soil fungus living with the root and delivering nutrients and water to the plant (as illustrated in the cover photo for this activity). These are fast visuals and get the point across as well as a projected image does. We sometimes set up a laptop with the short video to run during lunch for any who are interested in seeing this topic in more detail.

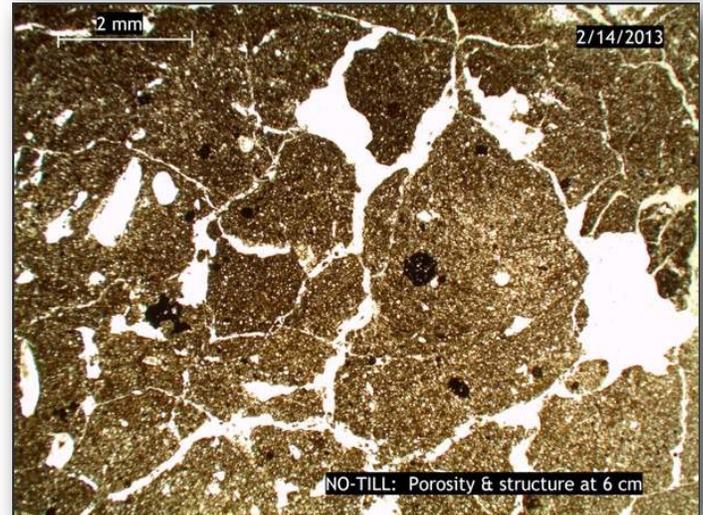
Discussion points about the soil biology include:

- Soil fungi and earthworms don't thrive when there is tillage.
- Cover crops with living roots feed the soil during the part of the year when crops are off the fields, and keep the biological activity going longer

- A true rotation of more than two crops helps feed the soil biology and can help keep pests at bay by disrupting pest life cycles for everything from crop damaging insects to species of damaging nematodes (some nematodes prey on other nematodes, so not all are harmful to crops).



- Consider that we don't yet know all of the effects of anhydrous ammonia fertilizer (a salt), fungicides, and glyphosate herbicide (registered as an antibiotic) on soil biology. You may feel these chemicals are necessary in your farming operation to improve yields in the



short term, but you may also want to consider that a longer-term investment in soil health can reduce the need for these chemicals. These are choices only you can balance; soil health is an investment benefiting the land and future producers, whereas annual yield is a cash flow consideration benefiting the producer and his/her ability to pay rent or maintain an income year to year. If you are the landowner, remember that steps to build soil health do not need to come at the expense of producer income, but should be part of the conversation with your tenant that may not be happening yet.

- If you have a residue problem, you have a biology problem – meaning the soil biology is not vibrant enough to process and break down the crop residue that builds up. This is a problem with some newer corn varieties that resist pests, and can be a reason some farmers are reluctant to use no-till methods. Remember that residue is plant material that can help build the fertility of your soil, if the soil is healthy enough to break it down.

## Cover Crops

Cover crops are a natural topic to discuss after soil health, because they can play such an important role in building soil health, as well as providing many other benefits. Each state and region has its own approach to cover crops, and local experts must be part of any cover crops discussion.

The next section of this activity is a big-picture view of cover crops that may be used anywhere, and has been tested successfully in meetings across the Midwest to help women who are not knowledgeable learn enough that they could successfully attend any cover crops event in their area and learn more.

Cover crops are planted and grown during parts of the year when cash crops are not growing and covering the land. Historically, once the cash crop is harvested, the land is mostly bare for several months, leaving it exposed to wind



**Winter rye seeded into cornfield after harvest.**

and water that cause erosion and carry away valuable nutrients. Cover crops can protect the soils, hold nutrients in the upper layer of soil to be available for crops, improve the soil structure (tilth), and improve drainage. Cover crops are valuable as forage when grazing livestock are part of the operation.

Sometimes a single species of a cover crop is planted, which is the recommended way for farmers to start learning to use cover crops. More experienced farmers have learned how to manage multiple species of cover crops in one mix (sometimes referred to as a “cover crop cocktail”), which provides additional benefits. Growing a cover crop should be taken as seriously as growing a cash crop.

Two main categories of cover crops include those that winter-kill (grow until there is a hard frost) and those that live through the winter and must be killed using other

means in the spring. In cold climates, examples of cover crops that winter-kill are oats and oil-seed radishes or turnips. Cover crops that must be killed in the spring include cereal rye, winter wheat, and clovers.

Cover crops that are killed in the spring are typically killed using one of three methods.

- Some producers use an herbicide such as glyphosate or change the timing of a normally planned herbicide application to be earlier to kill the cover crop prior to the cash crop emerging from the ground.
- Producers might use a light, shallow tillage pass and follow up with herbicide on bits of the cover crop that weren't killed.
- Organic growers may let the cover crop get tall enough that the stems become crispy (such as when cereal rye has the flower stalk nearly ready to emerge) so they can be killed by a roller-crimper that rolls down the cover crop; the cash crop is then planted in the direction the cover crop has been rolled down. Here is a video from University of Wisconsin Extension showing the use of a roller-crimper in an organic soybean field: [https://www.youtube.com/watch?v=Aiocr\\_icrfw](https://www.youtube.com/watch?v=Aiocr_icrfw).

Cover crops are seeded using a variety of methods that are rapidly changing and improving. Some are seeded by an airplane and a pilot who is trained in crop dusting techniques, who can fly low and drop the seed into the standing cash crop just as it is starting to die prior to harvest. If a crop is harvested earlier in the season, the cover crop may be drilled into the field, such as when seed corn is harvested, or silage or a vegetable crop is removed. Newer methods include equipment that is adapted from the tall sprayers that can be used in standing corn, or robots that roll down rows, or combine harvesting equipment that spreads seed at the same time the crop is harvested. The general advice is to get the cover crop seeded early enough that it can get established, and as with any other seeding – hope for rain!



A farmer starting to use cover crops is encouraged to start on a small number of acres, whatever “small” means in their operation – maybe 5 to 20 acres. It may take multiple years for them to figure out how best to manage cover crops in their system, so they need encouragement and support from many sources (including their landlady). They are also encouraged to start with a single species of cover crop, although a winter-killed mix of oats and oil-seed radish may a reasonable way to start for some. They also must learn or be knowledgeable of how to plant successfully into heavier plant residue. That usually means slight adjustments to

their planters and the need to get off their planter after a few feet and check that they are getting good seed-to-soil contact.

## Ways Landowners Can Promote Soil Health

- Start the conversation! Talk to your tenant and let him/her know you're willing to support adoption of cover crops, never-till, or the addition of more crops in the rotation. They may have wanted to take these steps already, but worried you would not tolerate mistakes they might make while learning – “mistakes” such as weeds or visible residue, or possible loss in yield that affects landowners who are crop-sharing. (Make sure to mention that properly managed, cover crops are either neutral to, or increase, yields. First-time users should try cover crops when going from corn to soybeans, as there is little risk to soybean yield.)
- Lower the rent. Consider lowering the rent on the acres that will be cover-cropped to help lower the financial risk the producer is taking.
- Split the cost of cover crop seed or the application cost of the cover crop seed.
- Extend your rental contract. Consider contracting for 3 or 5 years to a tenant who commits to improving your soil health. Tenants do not have an incentive to improve your soil because they rightly fear the loss of access to that land at a future date after they've made any investments to improve conservation that accrue over a longer term. They may recognize the benefits of conservation improvements to their own operations, but without assurance in writing that they will have access to your land long enough to benefit from the investments, they may – understandably – be reluctant to make the changes.
- Put soil testing into your written rental contract. Write soil health improvement measures into your contract with your tenant. Work together to set reasonable targets that can be measured to both your satisfaction. Soil testing that measures organic matter can help set a benchmark before you start – and soil tests are evolving that will take into account more than just the nitrogen and phosphorus tests typically done now. The Haney test is one that is becoming more available, and it will show the soil health improvements made by cover crops. Improving soil health will take time, even though some benefits can be seen the first year – testing may not show the improvements for 5 or more years even if your producer may notice tillth, yield, weed suppression, or pest suppression sooner. Every farm is different – work together.



## Resources

The USDA Natural Resources Conservation Service (NRCS) has developed a website on soil health that contains a wealth of informational resources on the topic. The main portal is here:

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>

Rick Haney, the USDA soil scientist who developed the Haney test referenced above, developed a PowerPoint presentation to explain the test in detail. It is on the NRCS website at this link:

[http://www.nrcs.usda.gov/wps/PA\\_NRCSConsumption/download?cid=stelprdb1245206&ext=pptx](http://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=stelprdb1245206&ext=pptx)

The Midwest Cover Crops Council maintains a resource-rich website with information on the most up-to-date research and tools on cover crops for the upper Midwest region. Visit <http://www.mccc.msu.edu/>.

Farmer members of Practical Farmers of Iowa have conducted many cover crops research trials. Their reports and other resources are available at

<http://practicalfarmers.org/member-priorities/cover-crops/>

### Photos

Go to the link to download a PDF page with the three soil photos included in this activity.

<http://www.wfan.org/wp-content/uploads/2016/01/PHOTOS-to-use-with-Activity-12.pdf>

### Video

Soil Food Web Institute: "Bacteria, Fungi, Protozoa and Nematodes from soil" (2:46)

<https://www.youtube.com/watch?v=RY-JY-D4v7I>

*Material for this activity is based upon work supported by the Natural Resources Conservation Service, U.S. Department of Agriculture, under NRCS Conservation Innovation Grant 69-3A75-13-236, and by a Division of Soil Conservation grant from the Iowa Department of Agriculture and Land Stewardship.*

# Appendices

## Sample news release for media



*growing together*

NEWS

**10/1/2017– FOR IMMEDIATE RELEASE**

**CONTACT: Tracy Church , 641-732-5504 with Mitchell Soil & Water Conservation District or Carol Schutte, 641-430-2540 with Women, Food and Agriculture Network**

### **WOMEN LANDOWNERS IN MITCHELL AND SURROUNDING COUNTIES INVITED TO FREE SOIL HEALTH MEETING IN OSAGE, OCTOBER 25**

**MITCHELL COUNTY, IA** – Women who own or manage farmland in Mitchell and surrounding counties are invited to participate in a free conservation discussion focused on soil health on **Wednesday, October 25** at the Milton R Owen Nature Center, 1879-3 HWY 9 in Osage. The program, sponsored by Women, Food and Agriculture Network, is called *Women Caring for the Land<sup>SM</sup>*.

Registration and resource sharing start at 8:30 a.m. with the meeting beginning promptly at 9. Lunch will be served, and during an afternoon field tour participants will travel via bus to a nearby farm to see conservation practices and watch a demonstration of soil testing. The tests will measure for soil structure, stability and infiltration. Participants will walk a short distance into a field, so please wear or bring appropriate clothing and footwear. The meeting will end with dessert and wrap-up at the nature center by 3 p.m.

Maintaining healthy soil is the key to productivity and environmental health for our farmland. Nearly half the farmland in Iowa is currently owned or co-owned by women. Current practices of farming are changing rapidly. Some common practices are harming the land and water, and there are more options available to you than in the past. The informal atmosphere of this meeting allows discussion with women conservation professionals who can help with landowners' management goals. Women landowners who attend this meeting will learn to assess and improve the health of their soils through practices such as cover crops.

Women, Food and Agriculture Network is a non-profit, educational organization celebrating 20 years of providing networking, information and leadership development opportunities to women involved in all aspects of agriculture. Learn more at [www.wfan.org](http://www.wfan.org), or by calling 515-460-2477. This response from one recent attendee is typical of our landowners' experiences: *"This has given me some understanding of what my husband talks about. I came to this meeting with no understanding – I am excited about the projects possible to protect the Iowa soil and feel this meeting has helped me in beginning to learn about farming."*

Space is limited. Please RSVP by Monday, October 23 at [wfan.org/osage/](http://wfan.org/osage/) or to Tracy at [641-732-5504, ext 3.](tel:641-732-5504)

This program is funded in part by a Natural Resources Conservation Service (NRCS) grant. The USDA & Mitchell County Soil & Water Conservation District are Equal Opportunity Providers, Employers, Lenders. If you need special accommodation to participate, please contact Carol at the information above.



## Sample landowner invitation letter with institutional partners

April 18, 2018



Dear

Women who own or manage farmland in Winneshiek and surrounding counties are invited to participate in a **free** discussion focused on soil health on Wednesday, May 9, 2018. We will meet at the Winneshiek Wildberry Winery located at 1966 337th St, Decorah, IA 52101. The program, sponsored by the Winneshiek County Soil & Water Conservation District, FSA, NRCS, Prairie Rivers of Iowa and Women, Food and Agriculture Network is called *Women Caring for the Land<sup>SM</sup>*. One past attendee states, "If I'd known it would be this much fun, I'd have asked my friend to come!" If you know a female friend or family member who might benefit from attending, please share this information.



Registration, coffee and resource sharing start at 8:30, with the meeting beginning promptly at 9 a.m. Free lunch is provided. Interactive activities and discussion will focus on how your local professionals can assist you with soil health and conservation planning for your operation. During an afternoon field tour participants will travel to a nearby farm to observe simple soil tests you can use to start a conversation with your farmer about profitability and conservation. There will be a short walk into a field, so please wear or bring appropriate clothing and footwear. We will return to the winery for dessert and wrap-up, and end the meeting by 3 p.m.

Maintaining healthy soil is the key to productivity and environmental health for our farmland. We know you are interested in preserving Iowa's soil and improving water quality. Nearly half the farmland in Iowa is currently owned or co-owned by women; you **can** make a difference! *Women Caring for the Land<sup>SM</sup>* offers a peer-to-peer, informal discussion format to allow women landowners to talk about their farm management goals, facilitated by women conservationists. This response from one attendee is typical of our landowners' experiences: "I came to learn what I can, so I can contribute to conversations about the farm. If you don't know, you don't have a voice."

Space is limited. To be sure we have the right amount of food, please RSVP by Monday, May 7<sup>th</sup> at [wfan.org/Decorah-2018/](http://wfan.org/Decorah-2018/) or to [carol@wfan.org](mailto:carol@wfan.org) or 641-430-2540.

Sincerely,

A handwritten signature in black ink that reads "Carol W. Schutte".

Carol W. Schutte  
WCL Programming Coordinator

Learn more about WFAN at [www.wfan.org](http://www.wfan.org), or by calling 515-460-2477.

I can't attend this meeting, but please keep me in the loop!



## Additional resources for conservation demonstration activities

### Soil Erosion resources

**Losing Ground: interactive report of soil loss in Iowa, released by the Environmental Working Group, spring 2011**

<http://www.ewg.org/losingground/>

**Losing Ground 5-minute video overview**

<http://www.youtube.com/watch?v=ehIUKkw69Dg>

### Water Quality resources

**A Citizen's Guide to Ground Water Protection (U.S. EPA Web site)**

[http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/upload/2007\\_11\\_29\\_sourcewater\\_pubs\\_cit\\_guid.pdf](http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/upload/2007_11_29_sourcewater_pubs_cit_guid.pdf)

**The Groundwater Foundation: Get informed**

<http://www.groundwater.org/get-informed/basics/groundwater.html>

### Conservation Lease resources

**A Landowner's Guide to Sustainable Farm Leases**

<http://sustainablefarmlease.org/>

### Web Resources

#### Ion Exchange

<http://ionxchange.com/>

Ion Exchange, Inc. is a native wildflower and prairie grass nursery located in northeast Iowa, founded in 1988. They grow premium wildflowers and grasses for prairies, wetlands, and savannas. They sell to architects, landscape designers, homeowners in both rural and urban areas. Contact them with any questions relating to your native perennial needs, or join their Earthy-Talk social network (similar to Facebook).

#### Iowa Department of Natural Resources

<http://www.iowadnr.gov/Environment/Forestry.aspx>

A significant source of information about managing private forested and prairie landscapes. Technical services to the landowner including timber stand improvement, wildlife habitat restoration and Conservation Reserve Programs with cost/share potential. Their web site also has links to the Forestry Bureau's Prescribed Fire program.

#### Iowa Native Plant Society

[iowanativeplants.org/](http://iowanativeplants.org/)

The Iowa Native Plant Society is a forum for plant enthusiasts, gardeners, and professional botanists to exchange ideas and information, and to work together to: encourage conservation and ethical use of Iowa's plants; promote education about Iowa's plants, their habitats and cultural habits, and the preservation of these plants and their environment; appreciate and enjoy Iowa's native flora.

#### Iowa Prairie Network

<http://www.iowaprairienetwork.org/>

The Iowa Prairie Network is a grass-roots, volunteer, non-profit, organization that is dedicated to the preservation of Iowa's prairie heritage. IPN was formed in 1990 by Iowans concerned that our prairie heritage was disappearing. People needed an organization that would bring those that know about prairie together with those that wanted to learn, to form a network of advocacy for Iowa's natural heritage.

### **Plant Iowa Native**

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

Plant Iowa Native can help you find the information, resources, and service providers to make it happen. From backyard landscaping to landowner habitat restoration programs, it's a great place to start. Links to information about native plants, sources for seeds and plants, tips on landscaping, and incentive programs for landowners. Also links to educational resources and organizations. Perhaps best of all, find professional service providers for everything from site preparation, installation and management, including prescribed (Rx) fire.

### **Prairie Moon Nursery**

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

Prairie Moon Nursery began as a joint endeavor with members of a community land cooperative, which was organized in 1976, rooted in collective land stewardship, social justice and consensual decision – making. Since their very first plantings, Prairie Moon continues to grow the ecotypes collected by the original members, as well as a wide range of ecotypes from the Upper Midwest. Prairie Moon Nursery is dedicated to a tradition of learning, quality service, teaching and spirited dedication to native ecology. For information on plants, seedlings, seed, seed mixes, books and other products, please visit the web site.

### **Timberhill**

<http://www.siosa.org/blog/>

Sibylla and Bill Brown have spent nearly two decades restoring an oak savanna

in Decatur County, IA. The diversity of plants and wildlife is significant. In the spring, the Brown's enjoy an array of rare wildflowers – including Yellow Lady's Slippers. You can enter their blog with the link above. If you join the Native Plant Society, you'll receive all of Sibylla's posts – including wonderful pictures of the savanna and the opportunity to follow along with Sibylla's research on the interesting and diverse members of this burgeoning land community.

### **Books**

Clemants, Steven and Carol Gracie (2006). *Wildflowers in the Field and Forest: A Field Guide to the Northeastern United States*. Oxford University Press, New York.

Helzer, Chris (2010). *The Ecology and Management of Prairies in the Central United States*. University of Iowa Press, Iowa City, IA.

Kurtz, Carl (2001). *A Practical Guide to Prairie Reconstruction*. University of Iowa Press, Iowa City, IA.

Ladd, Doug (1995). *Tallgrass Prairie Wildflowers*. Globe Pequot Press. Helena, MT.

Runkel, Sylvan & Dean Roosa (2009). *Wildflowers of the Tallgrass Prairie: The Upper Midwest, 2nd Edition*. University of Iowa Press, Iowa City, IA.

Runkel, Sylvan & Alvin Bull (1979). *Wildflowers of Iowa Woodlands*. University of Iowa Press, Iowa City, IA.

Shirley, Shirley (1994). *Restoring the Tallgrass Prairie: An Illustrated Manual for Iowa and the Upper Midwest*. University of Iowa Press, Iowa City, IA.

Smith, Daryl & Dave Williams, Greg Houseal, Kurt Henderson (2010). *The Tallgrass Prairie Center Guide to Prairie Restoration in the Upper Midwest*. University of Iowa Press, Iowa City, IA.

Stevens, William (1995). *Miracle Under the Oaks: the Revival of Nature in America*. Pocket Books, New York.

Tallamy, Douglas (2007). *Bringing Nature Home*. Timber Press. Portland, OR.

Williams, Dave (2010). "The Tallgrass Prairie Center Guide to Seed and Seedling Identification in the Upper Midwest." University of Iowa Press, Iowa City, IA.

### Sample WCL meeting agenda

**8:30am**

Coffee and sign-in, browse resources.

**9:00am**

Welcome, brief introduction of facilitator(s), expectations for the meeting.

**9:15am**

Learning circle discussion; each participant will have about 3 - 5 minutes (depending on the number of participants) to introduce herself and give a brief description of her land and her conservation goals and challenges; facilitator goes first and models.

**10:15am.**

Break.

**10:30am**

Conservation activity/conversation starter (see activities beginning on p. 22), more in-depth discussion of top two or three topics mentioned earlier.

**11:15am**

Review of resource materials available

related to those topics and others that may come up. Include full contact information for conservation professionals on the agenda.

**11:30pm**

Lunch.

**12:15pm**

Clean up, load bus for conservation sites nearby.

**12:30pm**

Guided conservation field tour (generally led by an agency staffer familiar with the area, and conducted in a rented van or bus).

**2:30pm**

Return to meeting location, brief break, offer dessert (optional).

**2:45pm**

Discussion recap, fill out evaluation forms.

**3:00pm**

Meeting ends.

## Sample conservation pledge

# Cover Crop Pledge

Detach and mail and we'll send you more information on cover crops and a free gift!

- I will talk to my family about cover crops and protecting our family roots.
- I will test the benefits of cover crops on a few acres of my land.
- I will protect all of my crop land by using cover crops.

Name \_\_\_\_\_

Return Address

Street \_\_\_\_\_

City/State \_\_\_\_\_

Zipcode \_\_\_\_\_

Phone \_\_\_\_\_

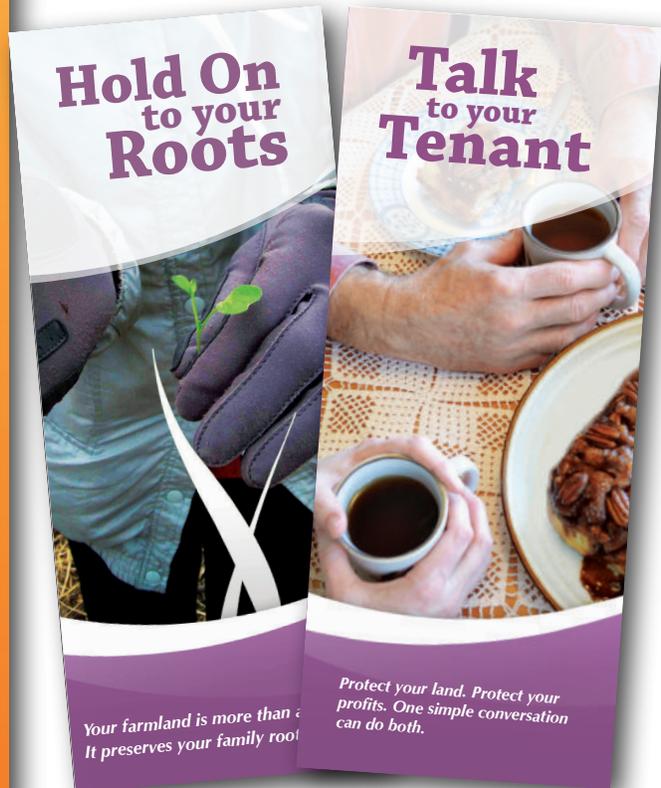
Email \_\_\_\_\_

*Roots are nature's way of holding onto what's important. Talk to your family about taking the cover crop pledge.*

*Your farmland is more than a business – it preserves your family's roots.*

This is an example of a conservation pledge card you may want to ask landowners to sign after a learning circles meeting.

This particular card relates to cover crops, and is part of a set of two brochures on the topic designed specifically for women non-operator farmland owners. You can download samples of the brochures at [www.wfan.org](http://www.wfan.org).



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Eells, Jean; Dahlstrom, Michael; Ritland, Raeann. "Maps help landowners think beyond human scale." *Journal of Soil and Water Conservation*, Sept/Oct 2012, Vol. 67, No. 5: 145A-147A; doi:10.2489/jswc.67.5.145A.  
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Visit our website for women landowners  
for more information and resources.

[www.wfan.org](http://www.wfan.org)



Resource Enhancement and Protection Program (REAP): Invest in Iowa, our outdoors, our heritage, our people. REAP is supported by the state of Iowa, providing funding to public and private partners for natural and cultural resource projects, including water quality, wildlife habitat, soil conservation, parks, trails, historic preservation and more. Visit <http://www.iowadnr.gov/Environment/REAP.aspx>.



[www.wfan.org](http://www.wfan.org)

The Women Caring for the Land<sup>SM</sup> program and curriculum guide have been recognized with the following awards:

- Iowa Chapter Soil and Water Conservation Society - Friend of Conservation Award (2013)
- National Association for Interpretation, first place, Annual Media Awards, curriculum category (2013)
- Governor's Iowa Environmental Excellence Award, Special Recognition in Environmental Education (2013)

