

Evaluating Agricultural Carbon Markets



Sarah Sellars, Gary Schnitkey, Krista Swanson, and Jim Baltz

AAEA Extension Graduate Student Competition

August 1, 2021

farmdocDAILY

Our Team



Sarah Sellars
Graduate Research
Assistant and
Team Leader



Gary Schnitkey
Soybean Industry Chair
in Agricultural Strategy



Krista Swanson
Visiting
Research Specialist



Jim Baltz
Farmdoc
Webinar Manager

What is farmdoc?

Primary outreach method of **I ILLINOIS**

Agricultural & Consumer Economics

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& ENVIRONMENTAL SCIENCES

Mission: To provide U.S. Corn Belt
crop and livestock producers with
constant access to integrated
information and expertise to
better manage their farm
businesses

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Weekly Farm Economics

What Questions Should Farmers Ask about Selling Carbon Credits?

[Sarah Sellars](#), [Gary Schnitkey](#), [Krista Swanson](#), and [Nick Paulson](#)
Department of Agricultural and Consumer Economics
University of Illinois

[Carl Zulauf](#)
Department of Agricultural, Environmental and Development Economics
Ohio State University

April 13, 2021
farmdoc daily (11):59

Recommended citation format: Sellars, S., G. Schnitkey, C. Zulauf, K. Swanson and N. Paulson. "What Questions Should Farmers Ask about Selling Carbon Credits?." *farmdoc daily* (11):59, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 13, 2021.

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Agricultural carbon markets exist through privately and publicly owned companies with aim to reduce carbon emissions through trade of carbon units sequestered at the farm level. The sale of carbon credits presents an opportunity for farmers to receive financial benefits from changing to more environmentally beneficial agricultural practices, although carbon prices may not currently be high enough to cover the cost of switching practices. Information about carbon markets can be challenging to navigate because each company typically has a different structure for payments, verification, and data ownership. This article provides a brief background about carbon markets, information about the breakeven price for carbon sequestration practices, and some questions for farmers to consider about selling carbon credits.

Background

Greenhouse gases (GHG) change the natural balance between energy received from the sun and emitted from the earth by trapping energy from the Earth in the atmosphere, altering the climate and weather. Greenhouse gases emissions are either

Problem

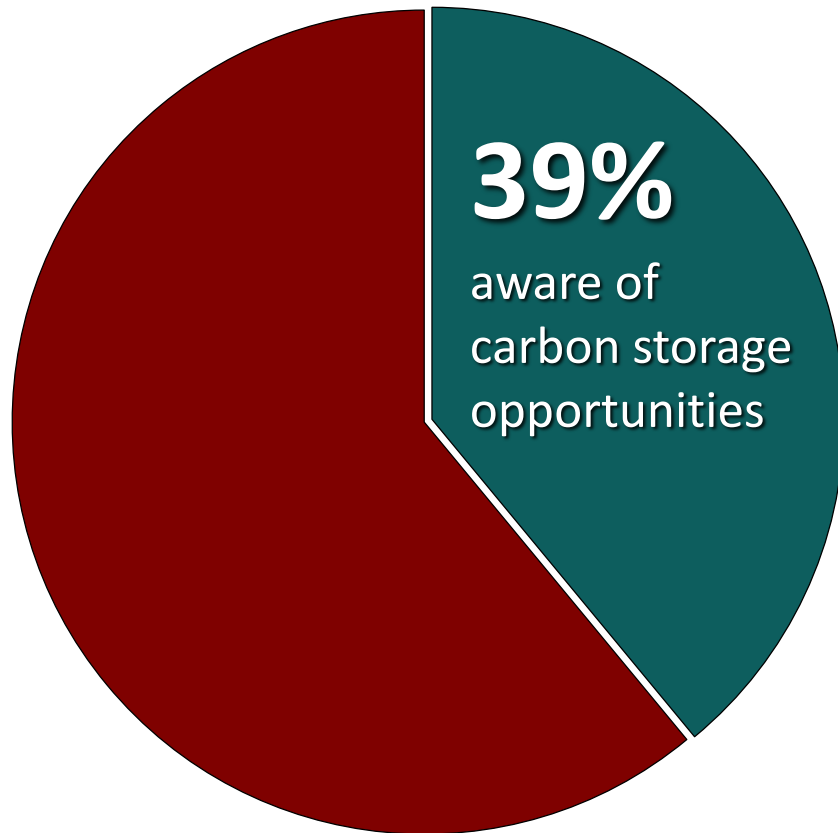
- Lack of **clear, unbiased, and reliable information** about carbon markets for farmers
- Newness of carbon markets

Why Does this Problem Matter?



Center for Commercial Agriculture

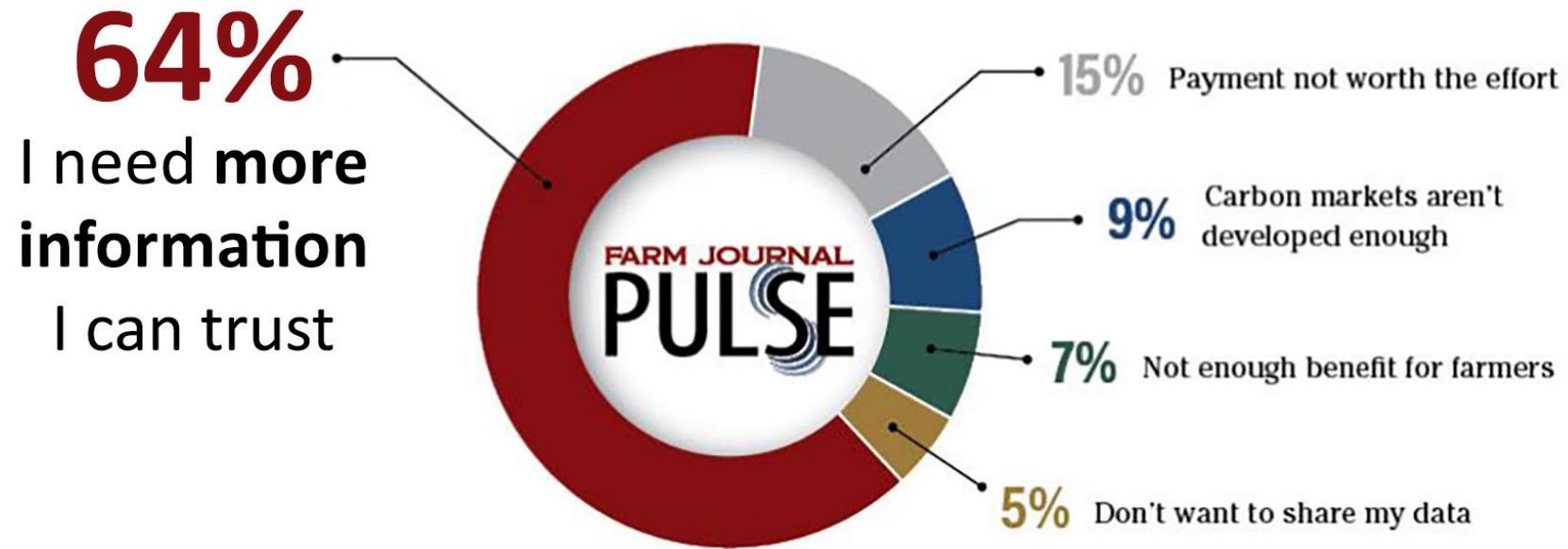
Purdue Ag Economy Barometer



Only
1%
have entered
a contract

Source: <https://ag.purdue.edu/commercialag/home/resource/2021/06/opportunities-and-challenges-associated-with-carbon-farming-for-u-s-row-crop-producers/>

Why Does this Problem Matter?



RESPONSES: 736

Why Does this Problem Matter?

**USDA plans to
support producer
participation in
voluntary carbon
markets**



Target Audience



Farmers



Commodity Groups



Policy Makers

Extension Program Goals

Communicate what carbon markets and carbon credits are

Explain why carbon markets matter to farmers and policies related to carbon markets

Address the questions a farmer should answer before entering a carbon contract

Explore how carbon price affects farmers

Expected Behavioral Changes

- Farmers make an **informed decision** on whether to enter a carbon market
- A shift away from needing more information as a reason for not entering
- Commodity groups adopt policy stances on carbon markets

Learning Outcomes

What, why, and how
of carbon markets

Breakeven prices
for carbon credits

How carbon credits fit into
climate change policy

How to evaluate carbon contracts



Expected Use for Information Farmers

- Making **informed decision** about entry in carbon markets
- **Evaluate** carbon market opportunities



Expected Use for Information Commodity Groups

**Make policy
recommendations**



Expected Use for Information Policy Makers

**Inform policy
discussion**



Analytical Research Methods

- Literature Review
- Use of breakeven price and cost data from IFC International Report
- Analysis using Precision Conservation Management (PCM) data



Precision Conservation Management



What is



Precision Conservation Management



- Field-level data to understand how conservation practices impact farmer net returns
- 6 years of data
- 16 Illinois counties
- 10 Kentucky counties



CHECKOFF & MEMBERSHIP PROGRAMS

Soil Carbon: PCM Data

- **Field to Market** metric for soil carbon using USDA simulation modeling
- Unitless, relative, and crop-specific measure of probable directional change in soil carbon
- Output range of +1 to -1
- Use to explore carbon scenarios

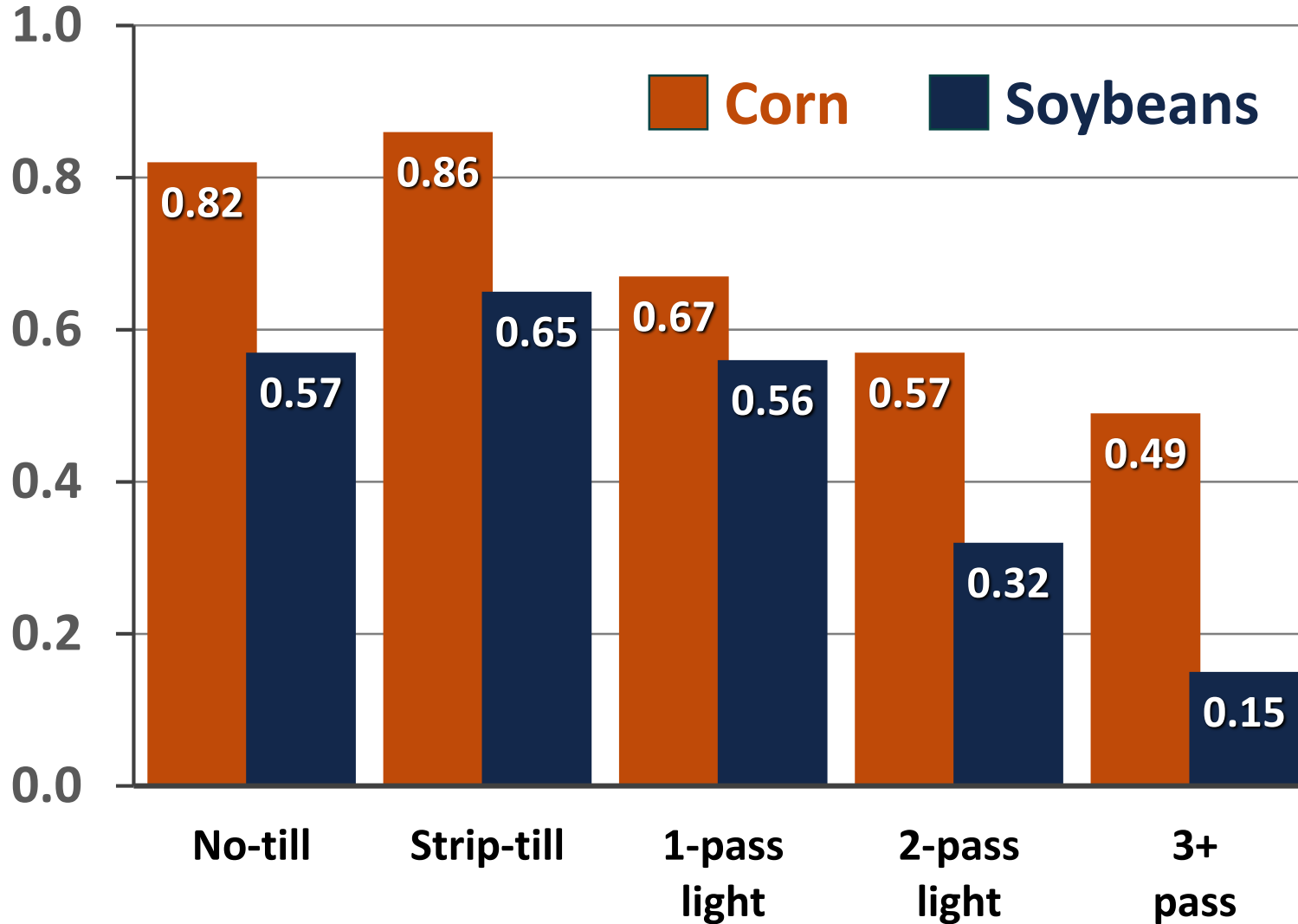


Field to Market[®]

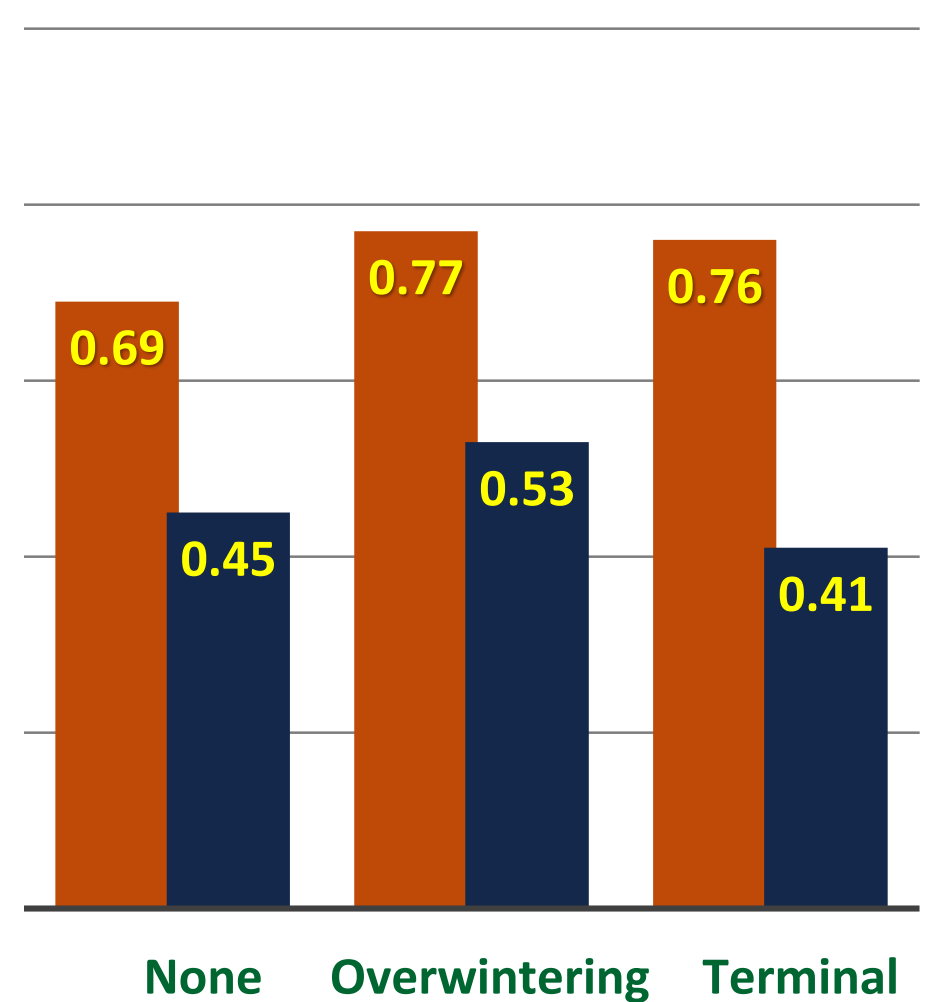
The Alliance for Sustainable Agriculture

Results

Tillage Benchmark



Cover Crop Benchmark



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Background

Greenhouse gases (GHG) change the natural balance between energy received from the sun and emitted from the earth by trapping energy from the Earth in the atmosphere, altering the climate and weather. Greenhouse gases emissions are either anthropogenic or natural. Anthropogenic emissions are caused by human activities such as burning fossil fuels, and natural emissions are caused by such occurrences as volcanic eruptions, the Earth's orbit, the carbon cycle, and the sun's output. The effect of anthropogenic emissions is greater than the effect of natural emissions, with human activities suggested to be the main cause of global warming over the last 50 years. The major greenhouse gases are carbon dioxide (CO₂), methane (CH₄),

Webinars

Carbon Markets 101:
What Questions Farmers Should Ask

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5 Carbon Markets 101: Agricultural Carbon


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July 29, 2021
Maggie Cornelius and Husain Kurawadwala
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Overview of the Meatless Meat Industry
July 22, 2021
Maggie Cornelius
Introduction The emergent "meatless

Delivery Methods

A screenshot of a YouTube playlist page. The left sidebar shows navigation icons for Home, Explore, Subscriptions, Library, and History. The main content area features a video player for "What is a Carbon Credit?" with a "PLAY ALL" button. Below the player, the playlist title "Carbon Markets 101" is shown with 8 videos, 59 views, and a last update date of July 13, 2021. The channel name "farmdoc University of Illinois" and a "SUBSCRIBE" button are also visible. On the right, a list of 8 videos is displayed, each with a thumbnail, title, and duration. The videos cover topics such as "What is a Carbon Credit?", "Why Now?", "What is the Paris Agreement?", "Price & Cost Questions", "Agricultural Carbon Credit Contracts and Data Questions", "Breakeven Prices for Agricultural Practices", "Can carbon credits increase in price?", and "Challenges of Agricultural Carbon Markets".

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4 Carbon Markets 101: Price & Cost Questions
5:15
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5 Agricultural Carbon Credit Contracts and Data Questions
Carbon Markets 101
3:06
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6 Breakeven Prices: Agricultural Practices
Carbon Markets 101
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7 Can Carbon Credits Increase in Price?
Carbon Markets 101
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8 Challenges of Agricultural Carbon Markets
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Delivery Methods: Webinars and Meetings

Carbon Markets 101: What Questions Farmers Should Ask

April 28, 2021

Staff of National
and State Corn
Growers
Associations
91 attendees

June 10, 2021

National Corn
Growers
Association
Carbon Task
Force
6 attendees

July 13, 2021

National Corn
Growers
Association
Access Teams
70 attendees

July 28, 2021

Farm Credit
Illinois Meeting
50 attendees



Team Roles



Sarah Sellars



Dr. Gary Schnitkey



Krista Swanson



Jim Baltz

Writing farmdoc daily articles

Filming YouTube videos

**Managing webinars,
Producing YouTube
videos**

**Presenting the
breakeven costs
and questions
farmers should ask
at webinars**

**Covering the
background and
economics of
carbon markets at
webinars**

**Covering the advice
for evaluating
carbon markets and
policy at webinars**

Delivery Challenges

Carbon market information changes frequently

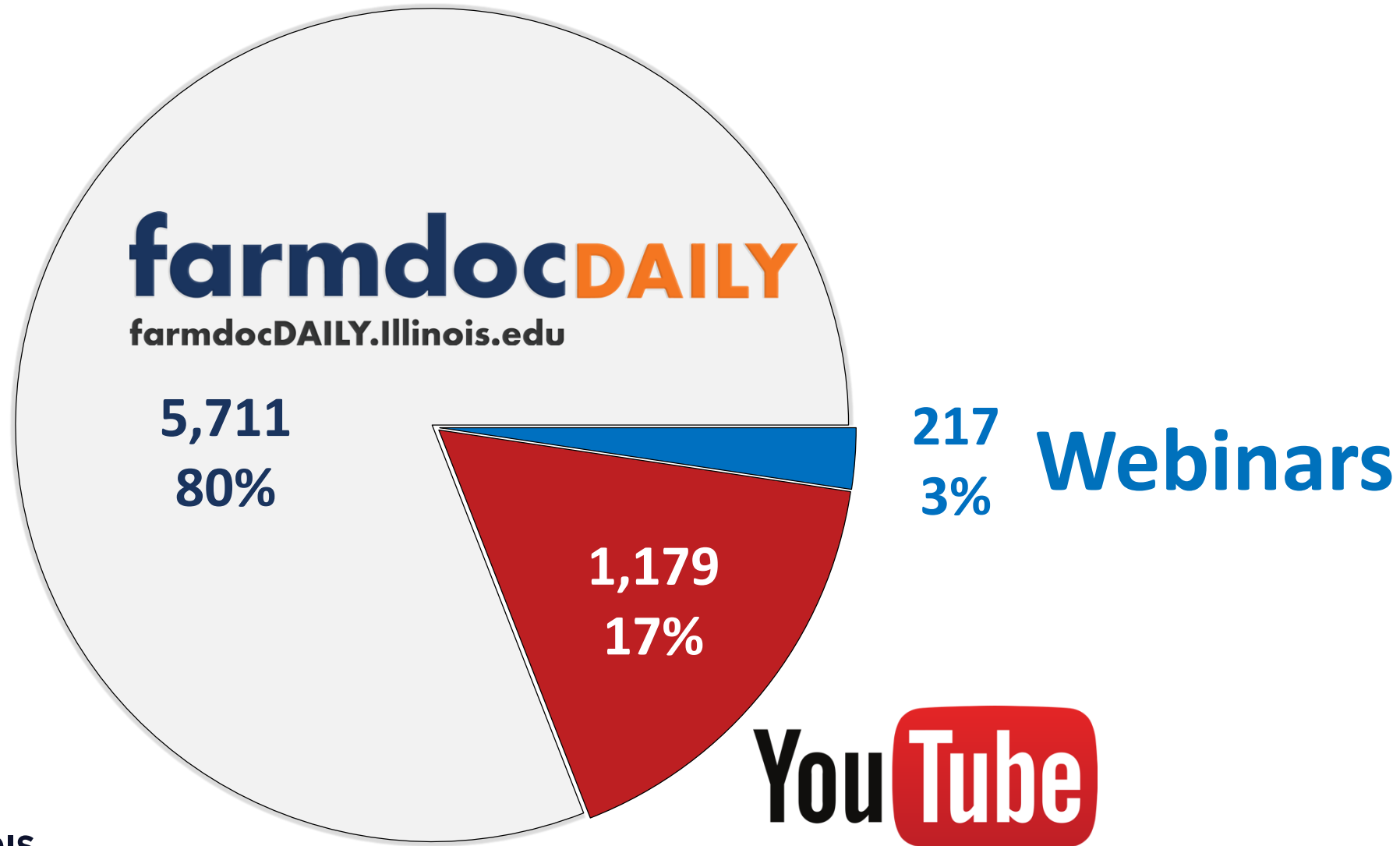
Solution: Follow news closely, update slides and videos **frequently**

Information targeted toward corn and soybean farmers

Expand information to include livestock farmers and possibly other crops

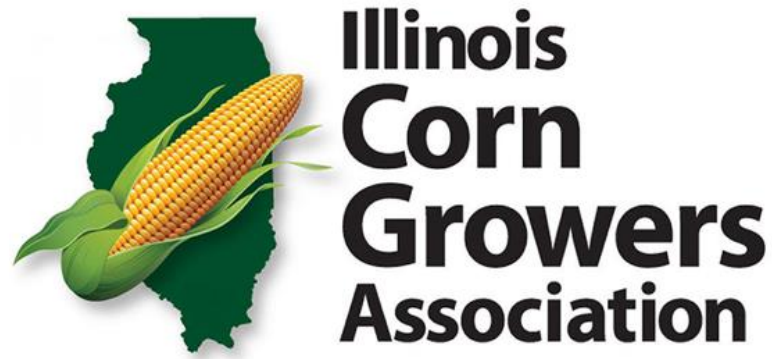
Program Reach

Total Outreach: 7,107 people as of 7/21/21



Evaluating Program Effectiveness

- Extension Program Advisory Committee
- Evaluation based on clarity of materials, effectiveness of the materials related to our goal, and content relevance



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Evaluation

How relevant is the content in our Evaluating Agricultural Carbon Markets Extension program? *

	1	2	3	4	5	
Not Relevant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Relevant

Are there other topics you would like to see discussed in our content related to agricultural carbon markets?

Your answer

Please rate the effectiveness of our Extension program related to our goal of giving farmers clear, direct, and valuable information to help them make decisions about the carbon market. *

	1	2	3	4	5	
Not Effective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Effective

Do you have any ideas about how we can increase the effectiveness of our Extension program?

Your answer

Are the materials in our Extension program clear? *

	1	2	3	4	5	
Not Clear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Clear

Do you have any ideas about how we could improve the clarity of our materials about agricultural carbon markets?

Your answer

Which outlet is the most effective way of communicating carbon market information to farmers? *

- ☐ Farmdoc Daily Articles
- ☐ Webinars
- ☐ YouTube Videos
- ☐ All of the above
- ☐ Other: _____

Do you have any other comments you would like to share about our extension program?

Your answer

Future Extension Activities



- Agricultural Carbon Markets: A Case Study of Alberta
- Analysis of Carbon Markets Using PCM Data
- Policy Articles



- What practices are companies paying for?
- What is the Growing Climate Solutions Act?
- Advice for farmers evaluating carbon markets
- How do carbon credits impact grain farmers?
- How do carbon credits impact livestock farmers?

Webinars

- **August 6, 2021:** Minnesota Corn Growers Association
- **October 21, 2021:** Georgia Crop Production Alliance

Farmdoc Webinars:

- Agricultural Carbon Markets: Information for Evaluating
- Agricultural Carbon Markets and Government Policy

Thank You!

The screenshot shows the farmdocDAILY website. At the top, there's a navigation bar with the Illinois logo, 'Our Sites: farmdoc farmdocDAILY Farm Policy News', and a search icon. Below this is the 'farmdocDAILY' logo over a green field background. A secondary navigation bar lists: Market Prices, Authors, By Month, Categories, Series, Tools, Webinars/IFES, Sponsors/Donate, and About Us. Underneath, it says 'EDUCATIONAL PARTNERS: Dept of ACE FBFM EXTENSION'. A 'Subscribe for Daily Email Updates' button is present. Social media links for Twitter, Facebook, Instagram, YouTube, and LinkedIn are shown. A section titled 'farmdoc's coverage of the Coronavirus and Ag' is visible. Below this, the 'Latest Article' section features the title 'Consumer Preferences and the Meatless Meat Industry' by Maggie Cornelius and Husain Kurawadwala, dated July 29, 2021. A 'Read the Article' button is at the bottom of this section. To the right of the article, there's a grid of sponsor logos including TIAA, COMPEER FINANCIAL, FARM CREDIT ILLINOIS, GROWMARK, and www.ilcorn.org. A 'See all sponsors' link is at the bottom of the grid. At the very bottom of the screenshot, there's a button that says 'See the Latest News on Social Media'.



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