

AG ECOSYSTEM CREDIT MARKETS

What Growers Should Know

Note: Information provided in this presentation may not cover everything on the development of agriculture ecosystem credit markets. These are still in development, changing regularly and are often proprietary.

Shelby Swain Myers
Economist
shelbym@fb.org
(317) 431-2127



Photo Credit: Getty Images



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BACKGROUND

- These are voluntary, incentive-based national markets designed to sell agriculture ecosystem asset credits
- Farmers who want to earn money selling credits on these new markets opt into data monitoring and measurement
- Payments are typically based on outcomes such as increases in soil carbon or improved water quality or practice
- Need to certify, quantify, and verify these outcomes into credits



SOME CONSERVATION PRACTICES

- Conservation Cover
- Cover Crops
- Crop Rotation
- Livestock Rotation
- No-till/ Strip-till
- Anaerobic Digesters
- Nutrient Management
- Buffer Strips
- Tree/Shrub Establishment

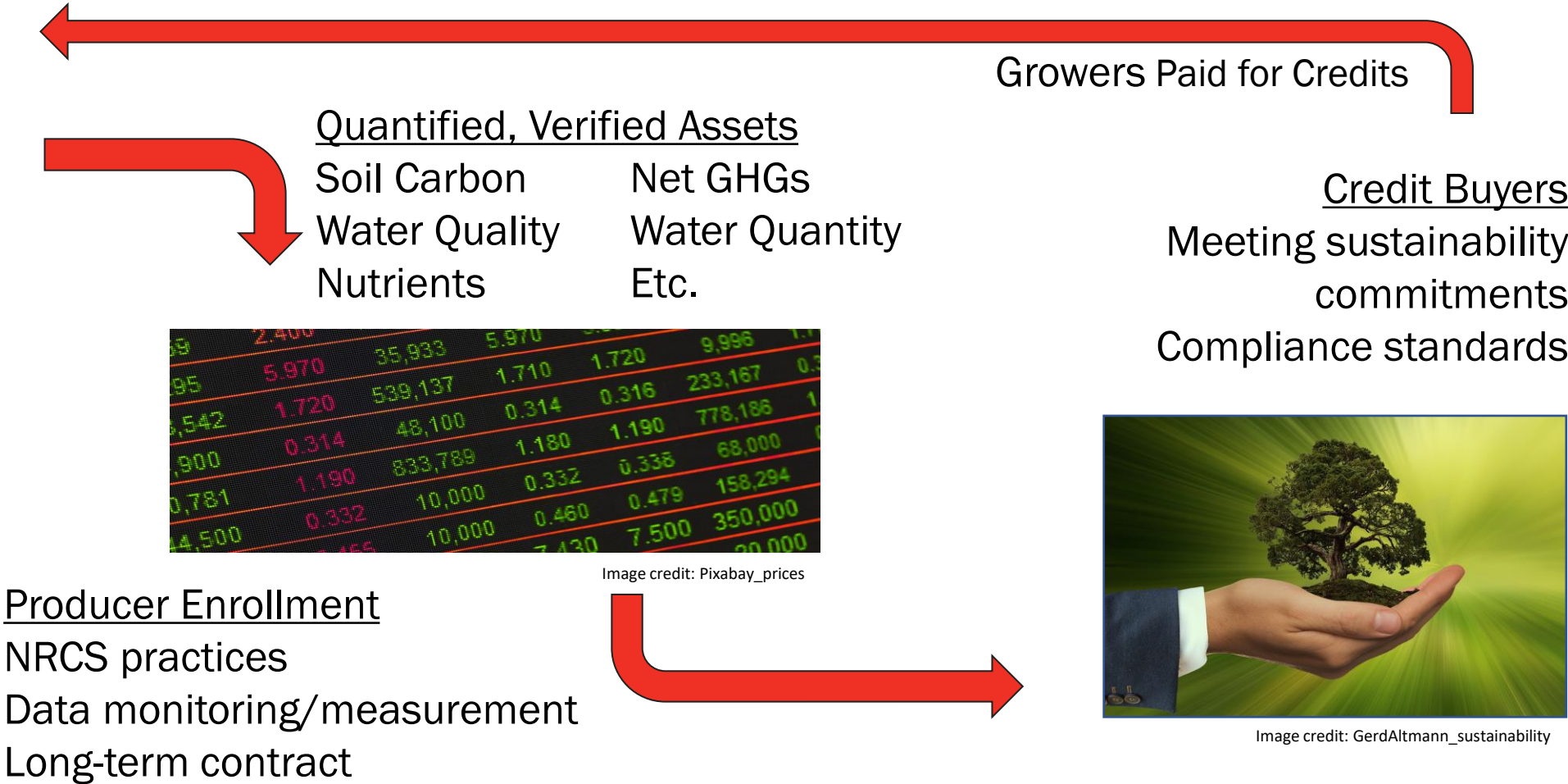


SUSTAINABILITY MARKETS' REVENUE POTENTIAL

Changes to Crop Systems Could Generate Additional Revenue



Image credit: Pixabay_field



WHAT

- Agricultural Asset Credits Generated:

- Carbon(CO₂) – the most common greenhouse gas & most common market platform
- Greenhouse Gases
- Water Quality
- Water Quantity
- Nutrients
- Etc.

- Credits purchased by:

- Corporations
- Agribusinesses
- Governments

- Credits applied in the form of:

- Input discounts
- Cash payment



WHO AND WHEN

- Public
 - Growing Climate Solutions Act
 - Food & Ag Climate Alliance has proposed Carbon Bank run through USDA Commodity Credit Corporation - November 2020
- “Programs”
 - Nutrien –2021
 - Land O’Lakes (Truterra)
 - Corteva (Granular)
 - GROWMARK
 - Soil and Water Outcomes Fund
 - Others – AFT, EDF, TNC, WWF
- “Market- Operators”/ Providers
 - Non-Profit
 - Ecosystem Services Market Consortium (ESMC) – 2022
 - Private
 - Indigo – June 2019
 - Nori – Sept. 2019
 - Farmers Business Network (Gradable)– Sept. 2020
 - Bayer Crop Science – Mid 2020



HOW SOME LEADING CARBON MARKETS COMPARE

To learn more about the tools, incentives and points of differentiation each of these carbon markets offer to farmers, visit:

AgWeb.com/carbon-markets

	BAYER	ESMC	FARMERS BUSINESS NETWORK	INDIGO AG	NORI	NUTRIEN
Market Launch Date?	2020	Fall of 2022	September 2020	June 2019	September 2019	2021
Acreage Enrollment Minimum	10 acres	No minimum	Various, but generally at least 200 acres	150 acres (a minimum of one field)	1,000+ acres	Target: 500 to 10,000 acres per producer.
Per-Acre Cash Payment to Farmers?	\$10 (producers will be paid by the acre, not by the amount of carbon sequestered).	Not specified. Producers will be paid annually for the amount of increased soil carbon sequestered, reduced GHG emissions, pounds of phosphorus and nitrogen and tons of sediment prevented from release into the watershed, and annual water savings from reduced irrigation (based on ESMC quantification, verification and third-party certification).	Payments are market and buyer dependent. Producers can receive anywhere from 30¢ per acre for research programs to more than 15¢ per bushel for identity preserved premium programs.	\$15 per carbon credit, with a guaranteed price floor of \$10 for growers who enrolled in the program beginning in 2020.	\$15 to date, which is based on current prices for producers generating and selling Nori Carbon Removal Tonnes (NRTs). Producers set the floor selling price for NRTs, which sell when buyers are willing to pay that floor price plus Nori's transaction fee.	Not specified. Carbon pricing is under development but is expected to be at a level to support the adoption of targeted agronomic practices by growers.
What Do Your Contracts Require Farmers to Do? What Are the Terms?	Bayer's carbon initiative pays producers for adopting climate-smart practices such as no-till, strip-till and the planting of cover crops. Producers are required to plant corn or soybeans, have an active FieldView Plus account and agree to share the data needed for the program.	<ul style="list-style-type: none"> ▶ The contract period is 10 years and includes cropland or rangeland. ▶ There is no contractual volume for producers; the producers' outcomes are calculated annually over the course of a 10-year crediting period, which can be renewed to a maximum of 20 years. ▶ Producers must register and enter required information for asset or credit generation, and certify information entered is accurate. ▶ Producers must show ownership of the assets to be generated to sell them into the market. ▶ No enrollment fee or requirement to purchase ag products. ▶ Implementing conservation could have associated costs. Producers might be responsible for practice implementation costs and expenses such as soil carbon testing. 	Producers share information with Gradable on their crop production practices (including planting, fertilizer applications, tillage and harvest), which is processed with artificial intelligence that leverages 240 million acre-events of farm data from FBN. Gradable validates and distills the practices into a single farm-level score, which allows farms to be rewarded for practices without having to share detailed practice information with buyers.	<ul style="list-style-type: none"> ▶ Producers dictate their own participation in Indigo Carbon and may choose to pilot on a handful or all of their fields in the first year. Growers can continue to enroll more eligible fields in subsequent years if they qualify. ▶ To be eligible for the program, a grower must contract at least one eligible crop field, hold exclusive operating rights to their land, have not cleared the land in the past 10 years and not receive payments for the land through another carbon credit program. ▶ Producers must commit to making at least one practice change on each enrolled field. There is no cap on the number of acres growers can enroll. ▶ Producers must submit three to five years of historical data depending on crop rotation as well as current season details about planting and harvest dates, tillage and fertilizer applications. When applicable, farmers must provide information on cover crops, organic amendments, irrigation and grazing. 	<ul style="list-style-type: none"> ▶ The individual (producer) who signs the contract is signing a 10-year contract to make their best effort to retain carbon and report on data annually. ▶ To qualify, third-party verification costs are paid by the participating farmer. Verification must occur once every three years. ▶ The producer must receive assignment of authority from any landowners of farms they plan on enrolling in the Nori marketplace. ▶ Anyone who receives cash from credits sold must pay taxes on that income (taxes determined by the state in which the farmer lives). 	The program, which is activating through Nutrien Ag Solutions, is voluntary and will involve a producer program participation agreement, which requires producers to fulfill sustainable farming practice obligations to receive grower payments. Producers participating in the program will agree to start providing data and implementing practice changes shortly after signing up. Details of the program are still under development, including terms and conditions.
More Information	BayerCarbon.com	EcosystemServicesMarket.org	Gradable.com	IndigoAg.com/for-growers/indigo-carbon	Nori.com/for-growers	Nutrien.com



WHERE

- Nori
 - Pilot farms being used to gather cropping data and engaging with them to improve the Nori cropping soil carbon methodology to generate credits.
- Bayer
 - Indiana, Illinois, Iowa, Kansas, Wisconsin, North Dakota, South Dakota, Nebraska, Minnesota, Missouri, Michigan, Ohio, Arkansas, Mississippi, Louisiana, Maryland, and Delaware
- Indigo
 - Arkansas, Colorado, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, and Texas
- Nutrien
 - Pilot projects targeted in Illinois, Chesapeake Bay and Ohio
- ESMC
 - Protocol Adaptations Based on USDA Land Resource Regions and Crop Management Zones
 - Pilot Projects:
 - Pacific Northwest- Oregon
 - Great Lakes – Minnesota
 - Soy and Corn Belt – Missouri, Illinois, Iowa, Ohio, Kansas (still planning)
 - Southern Great Plains – Nebraska, Kansas, Texas
 - California/Western Region- in need of projects
 - Corteva - Illinois, Indiana and Iowa



WHY

- Promote healthy soils
- Maintain ecosystem functions
- Efforts in managing GHG emissions
 - Reduce new emissions
 - Remove past emissions
- Create impacts that benefit society
 - Improved water quality
 - Water use conservation
 - Biodiversity
 - Pollinator and wildlife habitat
- Diversified revenue streams



HOW

- Developing protocols for enrolled working agricultural lands that are reviewed and certified
- Developing processes to quantify and verify assets being generated
- Conducting pilot projects in major agricultural production systems to test and refine protocols and tools



QUESTIONS FROM GROWERS:

- How do we overcome barriers of entry?
 - Verification
 - Additionality
 - Early-adopters
 - Financial barriers
 - Technical support
 - Education
- How will farmers be paid?
- How will farmer data be protected?
- Who will regulate these?
- How long is a contract?
- What do contract terms actually mean?
- What is my liability/access?
- What's realistic to expect?
- Who can I trust?
- What about x, y, z?



Sustainability Markets, Part 1: Agricultural Ecosystem Credit Markets – The Primer



Sustainability Markets, Part 2: Common Land-Use Practices Under Consideration for Conservation Adoption



Credit: Preston Kiers, USD

AFBF Market Intel

<https://www.fb.org/market-intel>

Sustainability Markets, Part 3: Barriers to Participation in Ag Ecosystem Credit Markets



Sustainability Markets, Part 5: Good Business Practices for Farmers Participating in Agriculture Ecosystem Credit Markets



Credit: iStockPhoto

Sustainability Markets, Part 4: Is Carbon a Commodity?



Credit: iStockPhoto



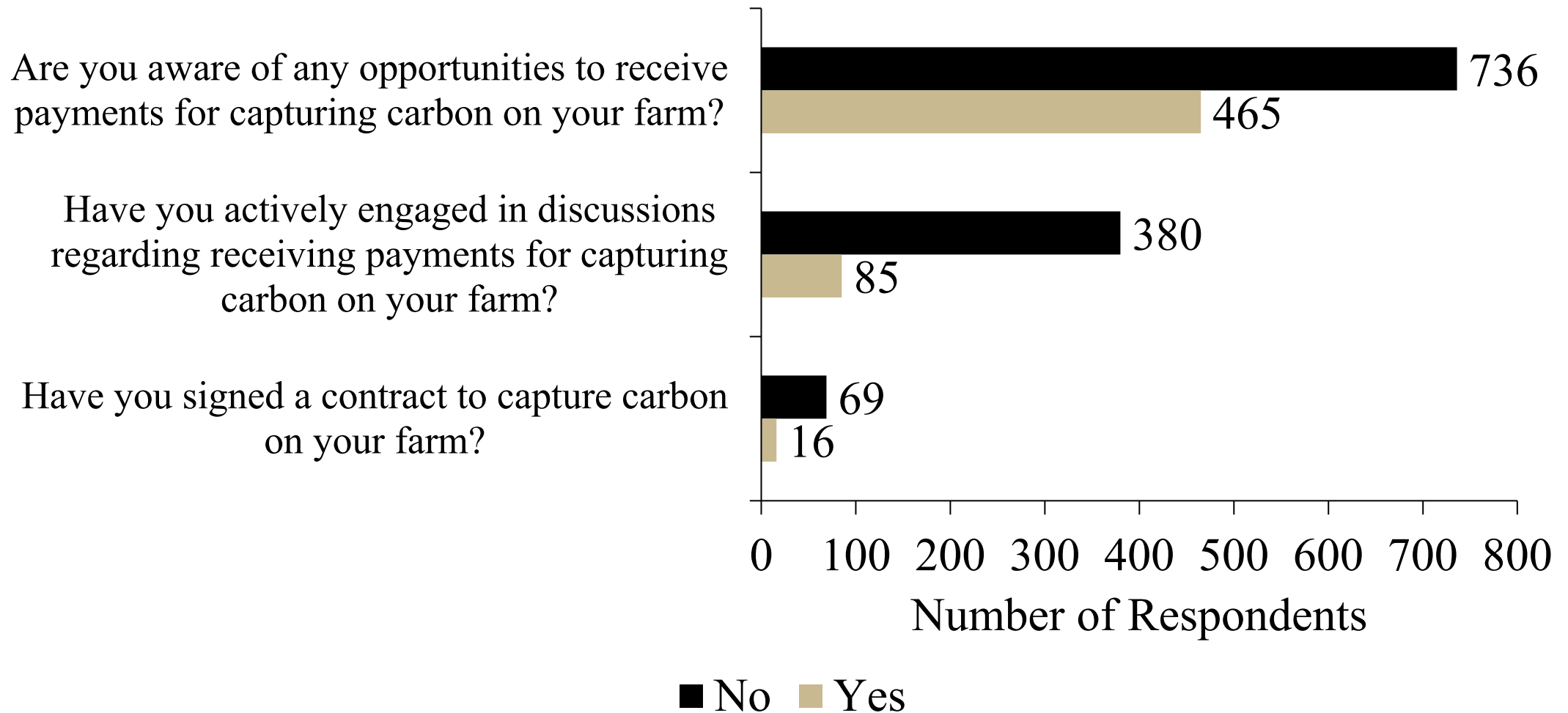
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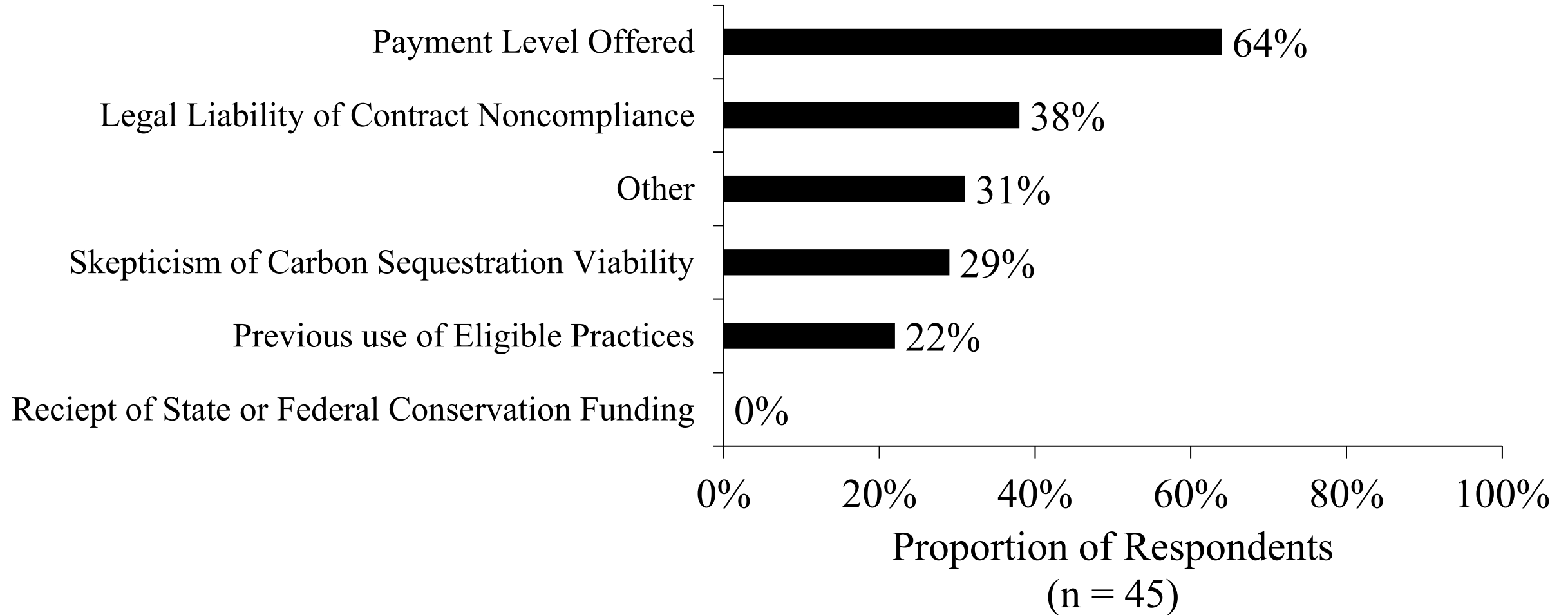
Carbon Markets for US Row Crop Producers: Opportunities and Challenges

Nathan Thompson
Department of Agricultural Economics
Purdue University

Farmer awareness, engagement, and participation in carbon markets

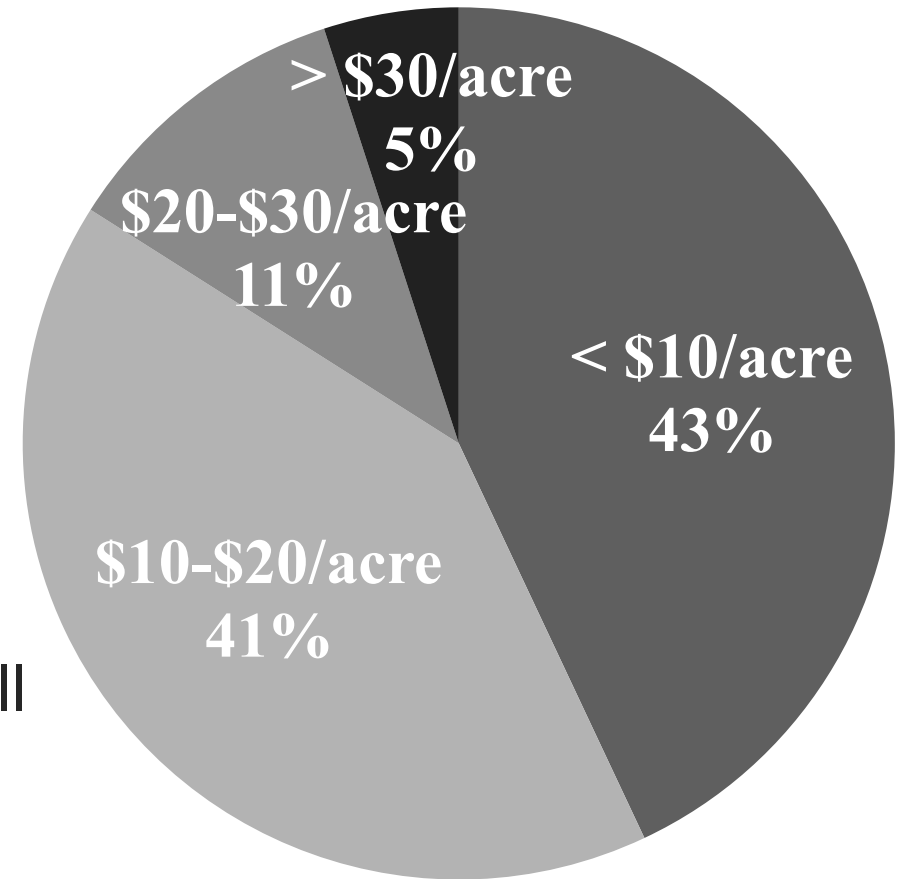


Why are farmers choosing not to participate in carbon markets?



How much will I get paid?

- Price is determined by supply and demand
 - Supply is lagging demand
 - Price and demand may vary with quality of offsets
- Current prices seem to be in the range of \$10-\$20/MT of carbon
 - In per acre terms, that is probably \$5-\$10/acres (at 0.5 MT/acre sequestered)
 - \$40/acre est'd. cost to switch from conv. till to no-till (Gramig and Widmar, 2018)



What are my contractual obligations to continue the practice?

- Soil carbon sequestration is reversible (impermanent)
 - Example – tillage to eliminate field ruts, weeds, etc.
 - How would carbon contracts handle these situations?
- How long are contracts?
 - 1-20 years
 - Australia's Emissions Reduction Fund – 100-year contracts
 - 25-year contracts available, but at reduced price

Do I qualify if I am already using eligible production practices?

- Generally, no.
 - They are not “additional.”
 - Some opportunities for short “lookback” payments from some firms
 - Typically, less than 5-year “lookback”

Other important questions

- Who pays for verification?
- Can I get paid for carbon stored on leased acres?
- What is government's role?

Thank you!

Nathan Thompson, thomp530@purdue.edu

Visit www.purdue.edu/commercialag for a white paper and webinar on carbon markets.