



CARBON MARKETS



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Disclaimer

- ➔ Carbon markets are currently unregulated, regulation could significantly change this process

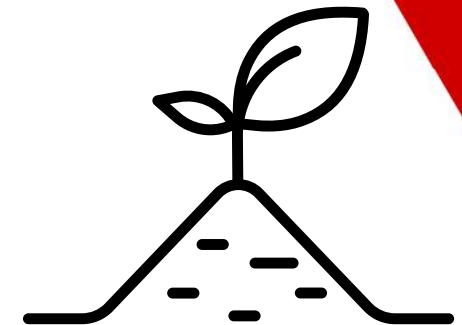


Carbon Sequestration

- ➔ Carbon sequestration = the process of capturing and storing atmospheric carbon dioxide
- ➔ Estimated that U.S. agriculture and forestry can provide **10-20%** of sequestration and emission reductions needed to reach net-zero emission by 2050

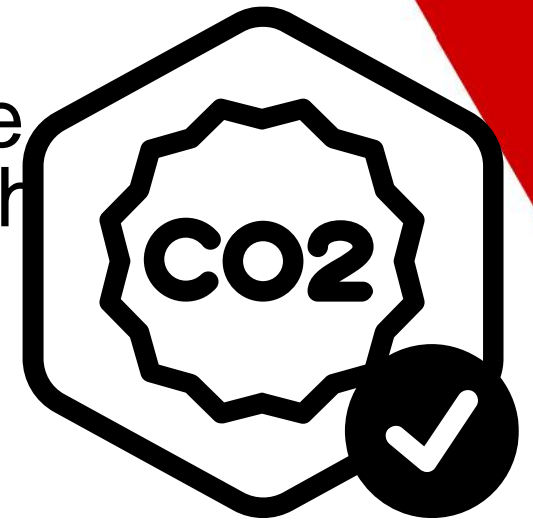


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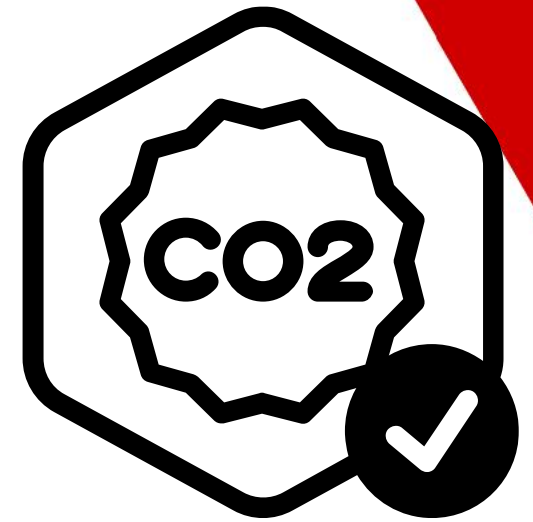
Carbon Credits

- ➔ **What are carbon credits?** Carbon credits are sometimes purchased by businesses that are being required to reduce their greenhouse gas (GHG) emissions.
- ➔ A carbon credit typically represents one metric ton of carbon dioxide (CO₂) and can be created by activities reducing GHG emissions.
- ➔ **What are agricultural carbon credits?** Foresters, ranchers and farmers can increase the storage of carbon from the air into the soil through improved forest, grassland and cropland practices.



Carbon Credits

- ➔ Capture and store (sequester) carbon through prescribed conservation practices
 - Cover crops, no-till or reduced tillage, diverse crop rotations, fertilizer reduction or nitrogen inhibitors, rotational grazing, land retirement
 - Many programs focus on new adoption of such practices, some may have “lookback” or vintage credits



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How Does Carbon Sequestration Take Place?

- ➔ Trapping carbon within plant material. The more vegetation that is present or the wider the window when plants are growing, the more CO₂ is potentially taken out of the air.
- ➔ Minimizing the mineralization of organic carbon already present in the soil or existing plant residue.
- ➔ Reducing soil erosion and keeping carbon trapped in the soil.



Methods of Sequestering Carbon

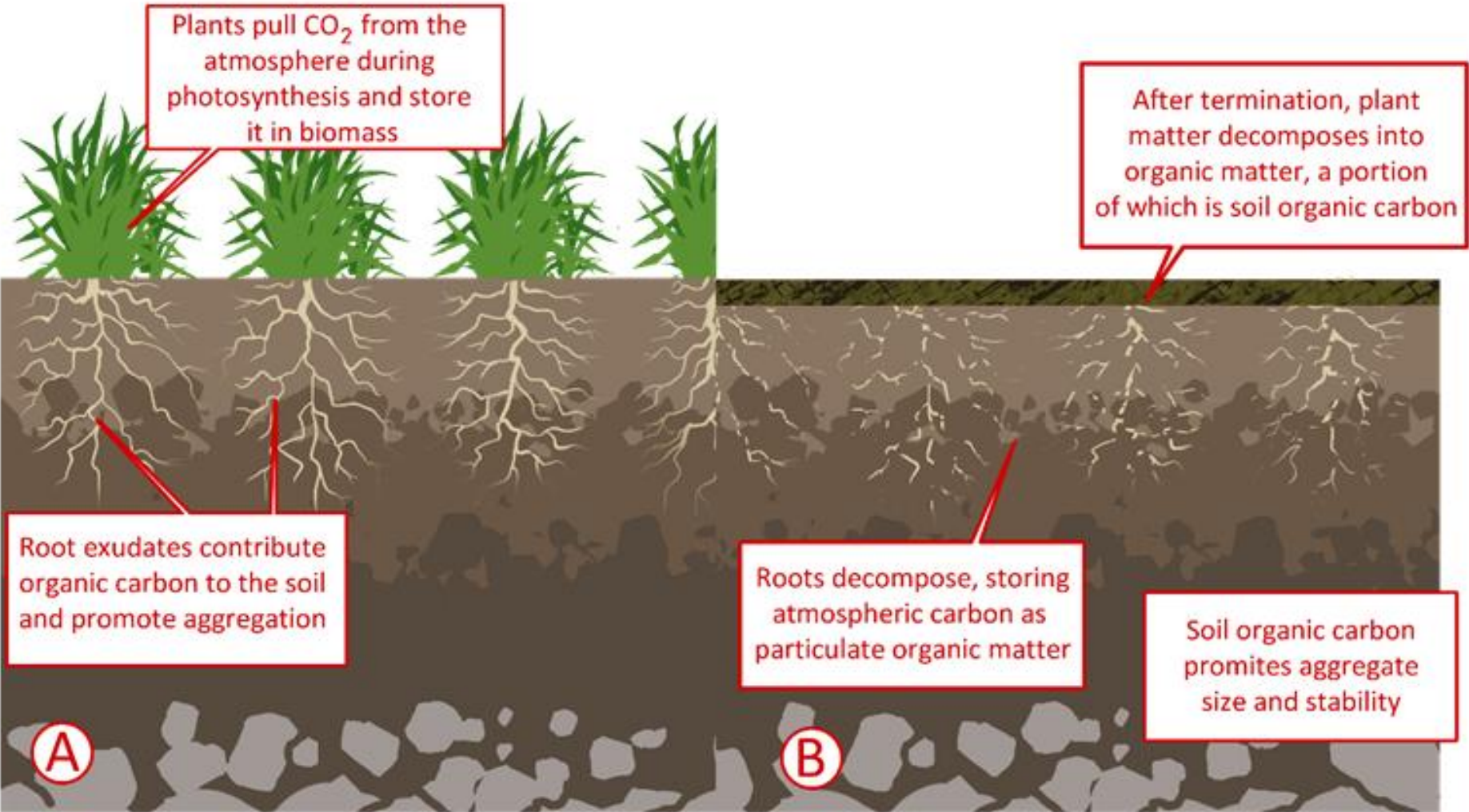
- ➔ Using Reduced Tillage, Strip-Till, or No-Till
- ➔ Planting Cover Crops
- ➔ Improved Fertilizer Management
- ➔ Implementing Higher Carbon Crop Rotations
- ➔ Installing Vegetated Buffers
- ➔ Converting Marginal Acres to Perennial Crops

Reduced Tillage, Strip-Till, or No-Till



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Cover Crops and Carbon Sequestration



Benefits of Sequestering Carbon

- ➔ Even if payments are low, farming practices that result in sequestered carbon have the benefits of:
 - Improved soil structure
 - Improved water holding capacity
 - Reduced soil erosion from water and wind
 - Improved soil health
 - Reduced nutrient loads in environment

Carbon Markets

- ➔ **Seller** – farmer, rancher, or landowner
- ➔ **Buyer** – private companies or brokers who buy carbon credits to “offset” carbon emissions

- ➔ **Aggregator** – entities who facilitate the transactions between buyers and sellers
 - Also called: project managers, owners, services providers
- ➔ **Project developers** – design and execute project
- ➔ **Third party verifiers** – validate, certify carbon credit with registry
- ➔ **Carbon registries** – develop carbon protocols and standards followed by the project.



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Verification

- ➔ Provide current and/or historical data
- ➔ Third-party verifier audits
- ➔ Not consensus on how to measure a carbon credit
 - Could require multiple soil tests to measure organic carbon and bulk density at multiple depths



How much will you be paid?

➔ It depends

- Signing bonus
- Per acre for adoption of practice
- Verified carbon capture on a per ton basis

- \$10 to \$20 per metric ton of CO₂
 - “The farmer may have to pay the fees, or the company may keep a portion of the payment or percentage of carbon credits to cover the fees, so the actual amount the farmer gets is typically less than the price listed. “



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Value of Carbon Credits

- ➔ **How much are carbon credits worth?**
- ➔ Other examples on the value of a carbon credit:
 - **Bayer:** \$10/acre; must have active FieldView Plus data account & agree to share some data
 - **CIBO Impact:** \$20/acre; will have retained ownership option where CIBO gets 20% sales commission
 - **EMSC:** annual payments based on amount of soil carbon sequestered, tied to carbon mkt price, 10-year contracts
 - **Indigo Ag:** \$15/ton, for long-term regenerative producers

Carbon Credit issues

- ➔ **Are there issues with generating carbon credits on leased land?**
- ➔ One issue with agricultural carbon credits on cropland is that after the carbon contract expires the land can be plowed up and the stored carbon released.
- ➔ Issue may not be nearly as great for forests or grasslands.
- ➔ ***Due to this concern - this has led to long-term ag carbon contracts, 10-20 years or longer.***
- ➔ Shorter contracts may be available depending upon the market.

Source: Dave Aiken, Cornhusker Economics: Ag Carbon Credits (2021)



When will you be paid?

- ➔ It depends, more than 1 year
 - After verification
 - Could be contingent on sale of credit

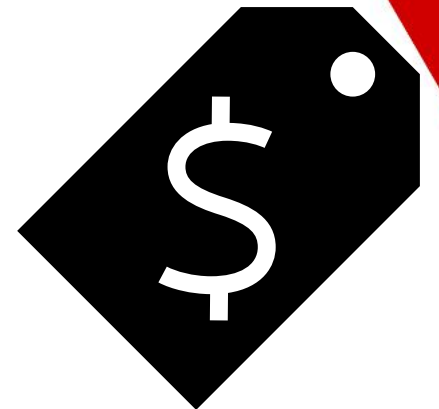


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What costs are there?

➔ It depends

- Expense of implementation
 - Seed, equipment, data collection and data management
- Verification expenses such as third-party audits or soil analysis
- Penalties for not meeting contract specifications



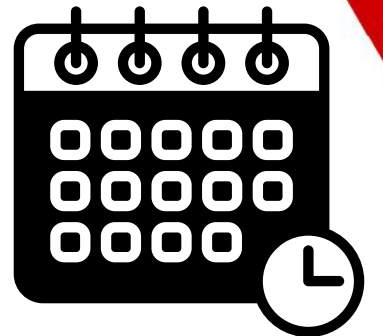
How long is the contract?

➔ It depends

- Ag related contracts 10-20 years
- Creates challenges for rented land



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What contract clauses should I be aware of?

- ➔ There are no “standard” contracts
- ➔ Minimum acreages
- ➔ Contract termination
- ➔ Penalties
- ➔ Limits on number of credits
- ➔ Right to file a lien on the land as security for contract performance, and to secure payment of any penalties for contract nonperformance



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QUESTIONS



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Resources

<https://cap.unl.edu/carbon>

- ➔ Ag Carbon Credit Contract Checklist by Dave Aiken, June 25, 2021
- ➔ Carbon Markets 101, Nebraska Corn Growers Association
- ➔ What Questions Should Farmers Ask about Selling Carbon Credits? Sellars, Schnitkey, Swanson and Paulson, April 13, 2021 <https://farmdocdaily.illinois.edu/2021/04/what-questions-should-farmers-ask-about-selling-carbon-credits.html>
- ➔ Considering Carbon, David Ripplinger, January, 24, 2022, <https://www.ndsu.edu/agriculture/sites/default/files/2022-01/Ripplinger%20Carbon%20Credits.pdf>



Reminders:

➔ Center for Agriculture Profitability
cap.unl.edu

- Weekly Webinar – Thursdays at 12:00 PM CT
- Virtual Workshops
- Ag Budget Calculator, custom rates, rental rates, articles, recorded workshops

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