RIPE100: Federal Policy Proposal

Helping American Farmers Prosper
As They Invest in Our Climate and Environment

Wheat Producers Report

RIPE STEERING COMMITTEE:

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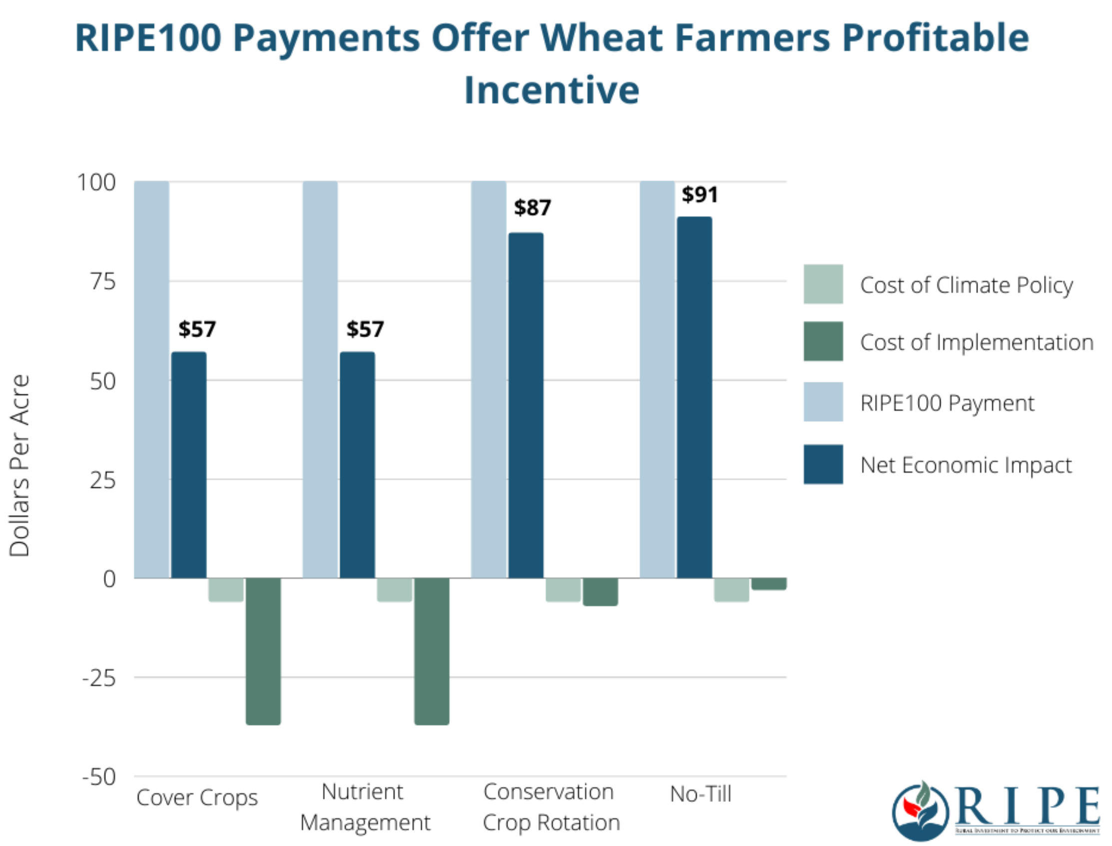
Executive Summary

Wheat farmers have a pivotal role to play in tackling climate change, but they shouldn't sacrifice their own prosperity in the process. Policies that support clean energy for its environmental benefits are designed to offer clean energy businesses a reasonable return, not a cost-share. Farmers should have the same opportunity. However, in existing and proposed climate programs, farmers are only offered cost-share options in the form of carbon farming or conservation reimbursements. At Rural Investment to Protect our Environment (RIPE), our producer-leaders are working to create a unique climate policy that is voluntary, works for farmers and benefits the environment. Our RIPE100 proposal would directly pay agricultural producers $100 per acre for voluntary land stewardship practices that benefit the public. RIPE proposes compensating farmers fairly for the **total public benefits** they deliver — reducing greenhouse gas emissions, improving soil health, cleaning and conserving water, mitigating floods, encouraging pollinators and biodiversity, improving recreation, and providing other environmental services. Farmers, public opinion and peer-reviewed research support this approach, which offers producers a reasonable incentive to adopt effective conservation measures.



Key Takeaways

- **Climate policy with carbon farming payments creates a net loss for wheat producers of around $22 per acre.** Carbon farming payments offer wheat producers about $5 per acre, but adopting relevant, climate-smart agricultural practices costs wheat farmers around $3-$37 per acre. Additionally, climate policy will increase wheat input costs of fertilizer and fuels by around $6 per acre.
- **RIPE100 offers $100-per-acre payments, allowing wheat farmers an average net profit of $73 per acre.** At $100 per acre, wheat farmers can cover the full cost of practice adoption (i.e., $3-$37 per acre) and full costs of rising inputs, such as fertilizer and fuels (i.e., $6 per acre), created by climate policy, delivering around $73 per acre in return. To address the fact that costs from inputs and policy will always fluctuate, USDA will have authority to recalibrate payments with an explicit requirement that the minimum payment surpass all climate policy costs. The US Energy Information Administration and USDA would jointly calculate the cost of climate policies on each sector of agriculture, which would serve as the minimum payment value. Climate-smart conservation practices that deliver public benefits above that value would be selected as qualifying practices.
- **Wheat producers' stewardship practices deliver $112-$762 per acre in environmental benefits.** Climate-smart wheat production practices deliver tremendous public environmental benefits, far beyond their greenhouse gas value. With a 5:1 benefit-cost ratio, this type of program investment delivers significant public benefits.
- **RIPE100 proposes environment-improving practices vetted by wheat farmers.** These include: cover crops, no-till and reduced-till, plus others listed below.
- **Voluntary, farmer-friendly, simple enrollment, open to early adopters and allows all producers to participate.**

Call to Action

Congress needs to hear from producer groups. We've talked to members of Congress in both parties, and they've told us their doors are open to our approach. However, they need to hear from farmers that this is what farmers want. Our farmer-led approach to building the RIPE100 policy has ensured that this proposal is favored by producers. In fact, a 2021 RIPE/Farm Journal poll found 78% of farmers support this policy direction. Please join the conversation about how RIPE100 can work for wheat farmers and farmers of all kinds across America by subscribing to our newsletter at www.RIPEroadmap.org/get-involved and contacting us to learn about opportunities to serve on RIPE's Farmer Advisory Network and steering committee.

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Introduction

About RIPE
RIPE is a farmer-led organization advancing a federal climate policy that would reward farmers with a reasonable return for voluntary stewardship practices. Our board of directors and steering committee include farmer-leaders serving in their personal capacity as well as: Arkansas Rice Federation, Minnesota Farmers Union, Minnesota State Cattlemen's Association, National Black Farmers Association, North Dakota Farmers Union and North Dakota Grain Growers Association. We are proud of the diverse and bipartisan nature of our organization and invite additional agricultural groups at the national and state levels to join the RIPE conversation.

The RIPE100 proposal pivots from the cost sharing of current private carbon farming options and USDA conservation plans. Instead, it offers farmers a reasonable return that is greater than what the policy costs them and reflects the total public benefits that their conservation practices will bring, including greenhouse gas reduction, improved soil health and water quality, water conservation, flood mitigation and greater biodiversity. The plan creates a coalition of agricultural and environmental stakeholders with a common goal: improving the environment and agriculture.

RIPE proposes a pilot program and a nationally scaled program, which are outlined on our website and in our white paper.

The core policy principles of the RIPE100 plan are:

1. **Allows producers to receive a reasonable return**, with payment levels that surpass policy costs, including the full cost to implement voluntary stewardship practices plus indirect costs impacted by climate regulations, such as higher fuel and fertilizer prices. This payment is $100 per acre for the pilot and first phase of the program.
2. **Enables all farmers to participate with a farmer-friendly program that is simple and practical**. The list of qualifying practices includes practical options, such as using cover crops and nutrient management, on farms of all sizes and types. The simple enrollment program would not include ranked applications, ensuring all farmers can participate.
3. **Rewards early adopters and demonstrates greenhouse gas "additionality,"** allowing all farmers to be compensated for the environmental benefits they deliver regardless of when they adopted conservation practices.
4. **Compensates voluntary stewardship at levels that align with the combined environmental values delivered**, including mitigating climate change, conserving water and improving water quality, enhancing soil health, preserving biodiversity, protecting endangered species, mitigating floods and improving air quality.
5. **Promotes equity and inclusion** by addressing barriers that have often kept farmers of color, smaller diversified farmers, women farmers and beginning farmers from participating in agricultural programs.

6. **Does not compete for funds against existing safety net programs.** The program will be appropriated as part of new funding streams for climate change and environmental benefits, such as a new title in the Farm Bill or a climate bill. (A pilot or initial phase may be authorized and appropriated within standard funding vehicles.)
7. **Complements existing markets and programs by allowing stacking payments up to the public value delivered by the practice.** Program will leverage biofuel markets and other conservation programs and policies, such that producers may receive benefits from multiple programs so long as the total payment does not exceed the value the public receives from the practices.

Program Design

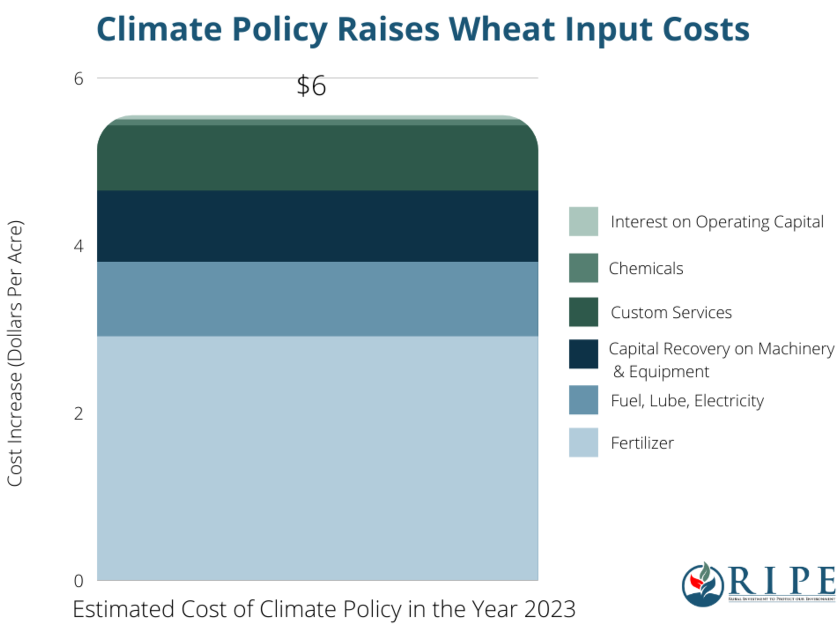
The simple, transparent policy design allows farmers to focus on farming rather than complex federal paperwork. To participate, farmers will:

1. **Select a practice from the menu of options.** Qualifying practices include measures for each farm type that deliver environmental benefits that surpass policy costs. Practices are widely applicable and include cover crops, no-till, and comprehensive nutrient management planning.
2. **Receive free technical assistance.** Farmers will attend a free workshop and take advantage of free technical assistance. Prior to second-year payments, participants will develop a tailored farm stewardship plan supported by free technical assistance.
3. **Self-verify with a simple process.** To verify, farmers will submit receipts and field notes. USDA will have the authority to audit 5% of participants to ensure proper use of public funds.
4. **Receive $100-per-acre payments without caps on acreage.** RIPE100's goal is to allow all farmers to enroll as many acres or animal units as they wish. Crop producers are generally compensated per acre and animal feeding operations are compensated per animal unit. A pilot program may include caps determined by program funding.
5. **Receive stewardship and equity premiums, if eligible.** Practices that deliver particularly high levels of environmental benefits will be eligible for premium payments. For farmers who confront historic barriers, including small farmers and farmers of color, equity compensation will be provided.

More details about the RIPE100 policy are available during our live webinars. Browse RIPEroadmap.org for upcoming dates and registration information.

Climate Policy Raises Input Costs

Through stewardship practices, farmers and ranchers can deliver tremendous value to shared natural resources by improving water, air, soil health, and biodiversity. However, they are unlikely to implement those practices or support comprehensive climate policy if it negatively impacts their bottom line. Wheat farmers, in particular, can implement conservation practices via tillage, irrigation and seeding systems. They can reduce wheat-related greenhouse gas (GHG) emissions using proven management techniques that offer millions of dollars in public environmental benefits.



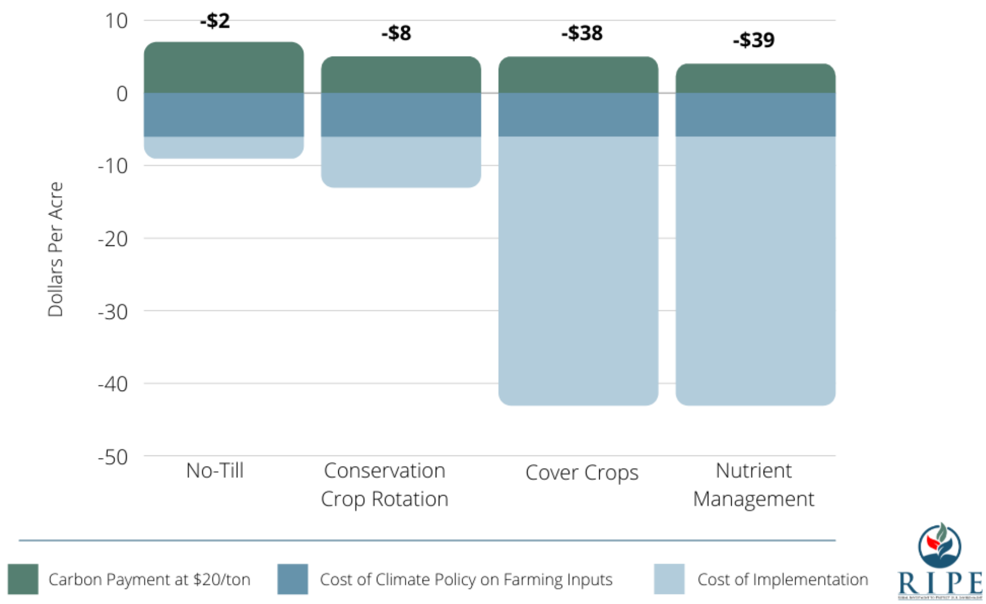
A risk to farmers from comprehensive climate policy is the extra financial burden it will impose on them through higher costs of inputs and possible regulations. RIPE commissioned World Agricultural Economic and Environmental Services (WAEES) to conduct an economic assessment of the cost of climate policy on agriculture, utilizing USDA Agricultural Resource Management Survey data from nine regions. We estimate that climate policies' impact on the national economy in 2023 would be equivalent to $20 per ton of GHG and $54 per ton in 2030.[1] The increased carbon price leads to higher cost of fertilizer, fuels and other inputs. The WAEES assessment analyzes the higher costs by commodity based on the input costs from USDA cost of production studies. It indicates wheat production costs will increase

[1] This estimate is used by comparing the Energy Innovation analysis of the House climate plan's level of GHG reductions to the Resources for the Future E3 Simulator that estimates carbon price impact on GHG reductions. Different perspectives exist on if the cost of climate policy by command and control, as is the House Democratic plan, will be higher or lower than a carbon price model predicts. Credible evidence can support both arguments. We offer this comparison as a rough estimate to illustrate the order of magnitude of impact, using the publicly available tools offered by Energy Innovation and RFF, which are leading think tanks in the field of climate policy.
www.rff.org/publications/data-tools/carbon-pricing-calculator

by around $6 per acre in 2023 and $15 per acre in 2030.[2] These figures present a worst-case scenario in terms of potential costs to farmers, since the model does not integrate likely advances in research and development nor changes by input providers that would reduce the GHG intensity of products. RIPE's payment model is designed to protect farmers from this worst-case scenario.

Current carbon farming options, which typically offer around $5 per acre for conservation practices, do not fully compensate for the costs of climate policy on top of the costs of implementing practices. **This leaves farmers with a net loss of around $22 per acre**.

Net Economic Impact of Climate Policy on Wheat Production with Payment Only for Carbon Farming



The Solution

RIPE100 addresses this challenge by including a fair return to agricultural producers for their voluntary investments in stewardship practices that deliver public benefits. We propose paying farmers in alignment with the stacked ecosystem service value of stewardship practices. This means wheat farmers would be compensated not just for their carbon, but also for the clean water, soil health, water conservation, pollination, biodiversity and other ecosystem services they provide. Our analysis indicates that these public environmental benefits average over $100 per acre, while compensating farmers for the climate benefits alone would be only about $5 per acre.

[2] Methodological details are provided in the appendix.

Stewardship Practices

RIPE defines qualifying practices as stewardship practices that deliver over $100 per acre in public benefits. Practices unique to wheat growers and additional practices that meet this criteria are listed below.[3]

Wheat Industry Practices

- Cover crops (NRCS practice code 343)
- No-till (329)
- Reduced-till (345)
- Nutrient management (590)
  - Incorporation or injection
  - Precision agriculture
- Conservation crop rotation (328)

Additional Practices

- Comprehensive nutrient management planning and implementation (102)
- Feed management (592)
- Prescribed grazing (528)
- Roofs and covers (367)
- Alternate wetting and drying (NRCS 449) for rice
- Dry seeding[4] (CARB Compliance Offset Protocol) for rice
- Post-harvest flooding (646) with early drainage (449) for rice
- Post-harvest flooding (646) with dry seeding (CARB) for rice
- Filter strips (393)
- Riparian herbaceous cover (390)
- Riparian forest buffer (391)
- Forage and biomass planting (512)
- Silvopasture (381)
- Maintaining grass cover on expiring Conservation Reserve Program contracts and historic native grasslands.

RIPE is actively working to expand the list of practices by compiling USDA and academic literature, and talking to farmers to identify what practices are important to them.

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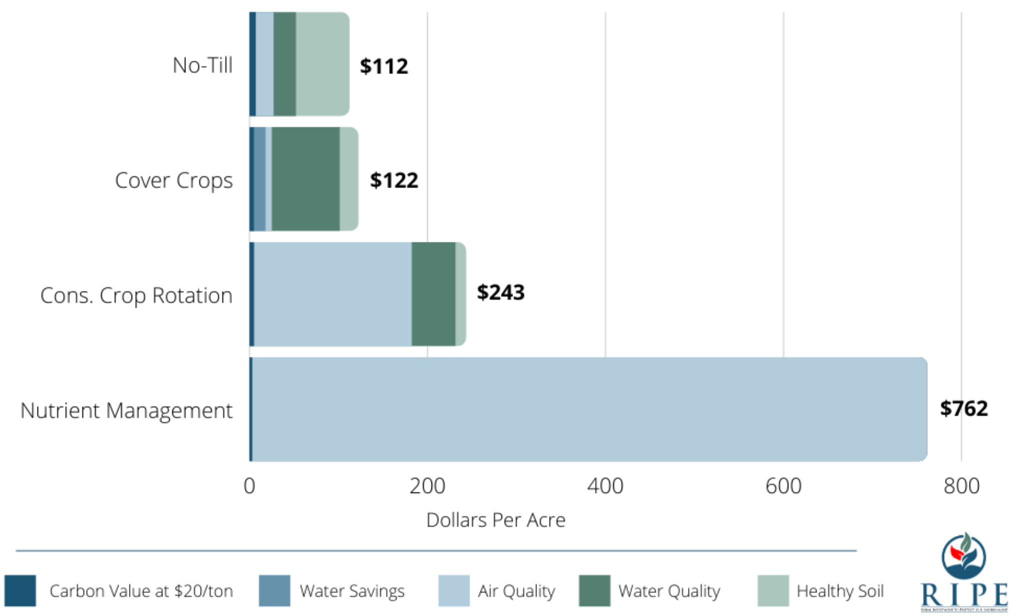
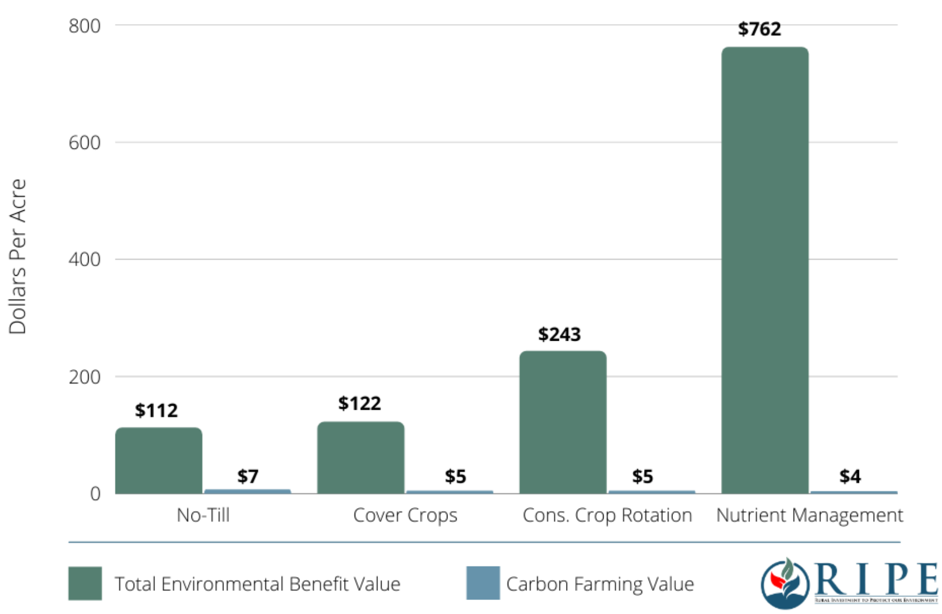
[3] Data on public benefit value is compiled mainly from USDA studies as well as academic sources, and methodological details are provided in the appendix and RIPE100 white paper.
[4] Following the compliance offset protocol established by the California Air Resources Board, dry-seeding activities may be eligible for payment only in the California rice-growing region.

Wheat Stewardship Practices Provide Robust Environmental Benefits in Addition to Carbon Value

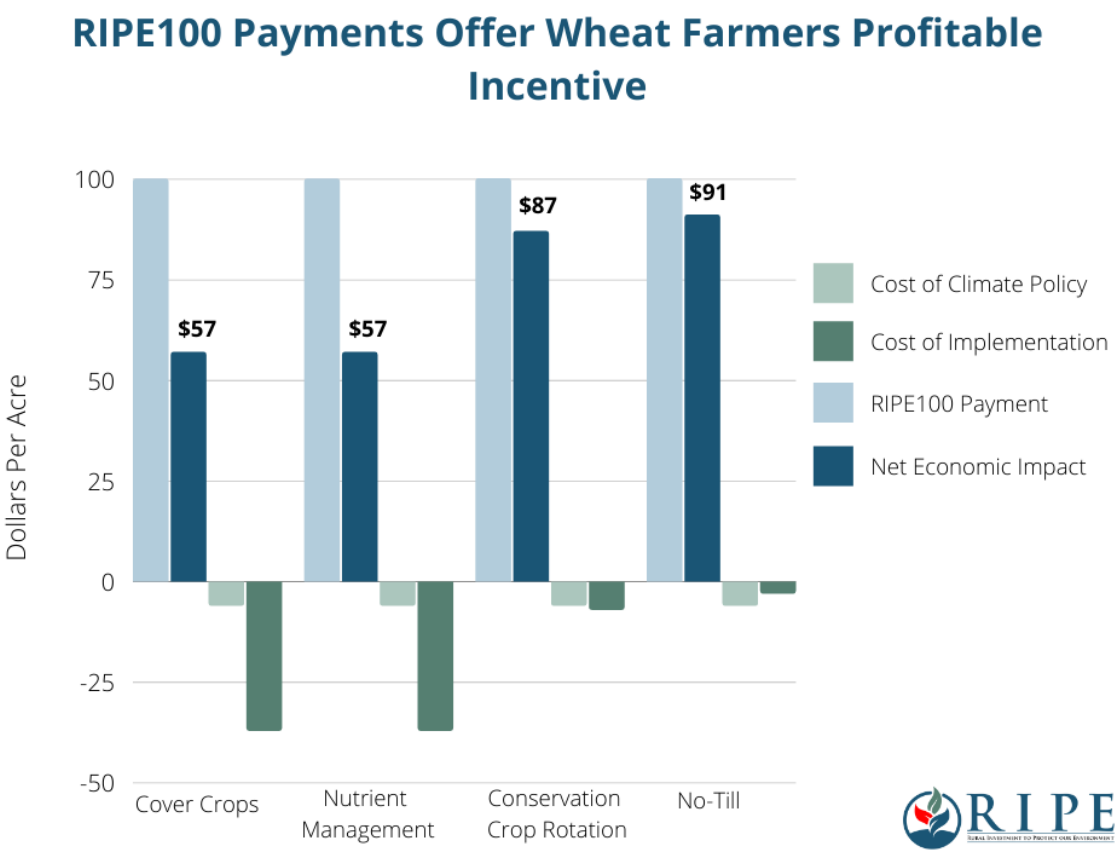


Wheat Stewardship Practices Provide Environmental Benefits that Surpass Carbon Farming Values



Net Economic Impact

RIPE100 offers farmers a payment of $100 per acre, fully covering costs associated with practice implementation and increased costs of inputs, such as fertilizer, from climate policy. And because it rewards farmers for the value of their ecosystem services beyond carbon farming, RIPE100's ecosystem service payments provide a profit incentive. The cost of climate policy and practices will fluctuate over time, so to protect farmers, the legislative language will specify that payment levels must always surpass policy costs.



For methodology and ecosystem services values, see appendix and the RIPE100 white paper at RIPEroadmap.org/research-and-policy.

Appendix and References

The following chart includes practices that provide at least $100 per acre of environmental benefit and cost under $100 per acre or animal unit to implement.

RIPE100 Practices Provide Robust Environmental Benefits

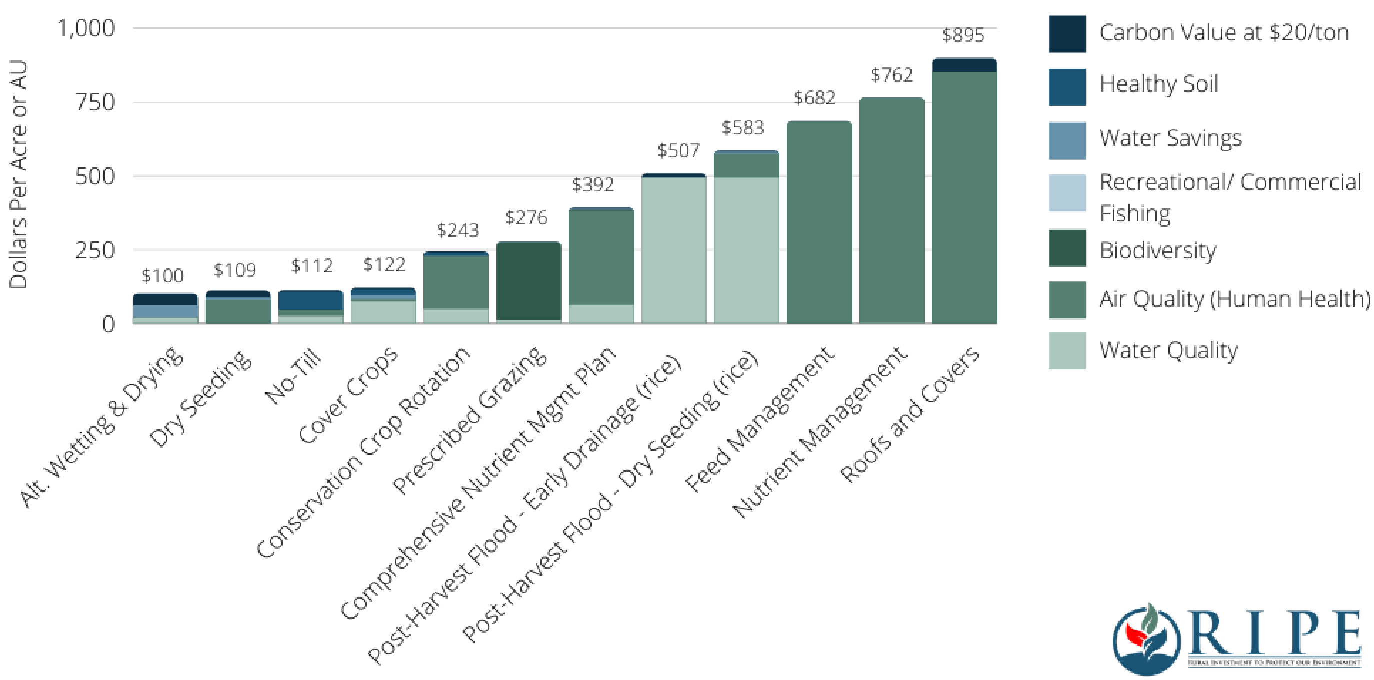
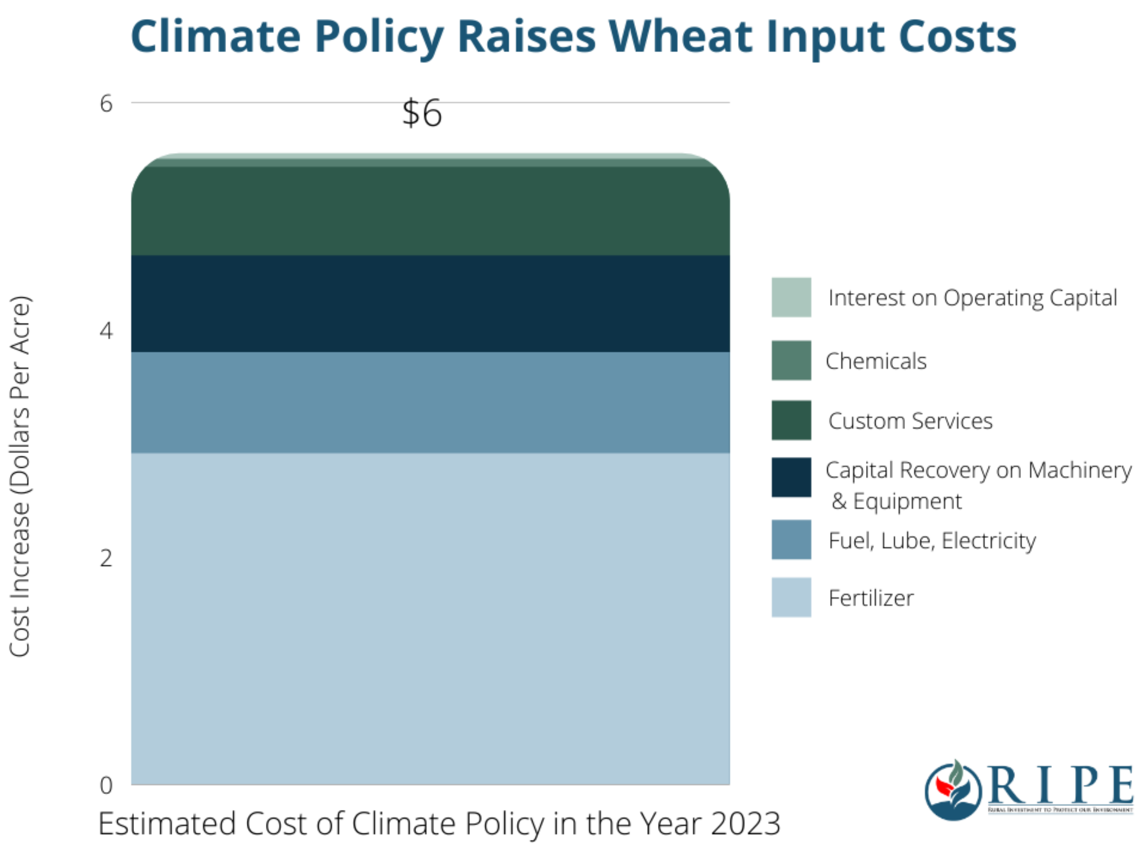


Chart 1: Climate Policy Raises Input Costs



Methodology for the development of costs in agriculture associated with potential climate policy scenarios is provided in the following report and associated models developed by World Agricultural Economic and Environmental Services (WAEES).

Kruse, J., 2020, "Measuring the Implication of a Fuel Carbon Pollution Fee for Agricultural Commodities." World Agricultural Economic and Environmental Services (WAEES). Report to RIPE.

WAEES analyzed the cost of production using USDA Economic Research Service data on 10 commodities, which used regional data from the nine USDA Agricultural Resource Management Survey regions. It applied a carbon price to each input to calculate the cost of climate policy on each commodity.

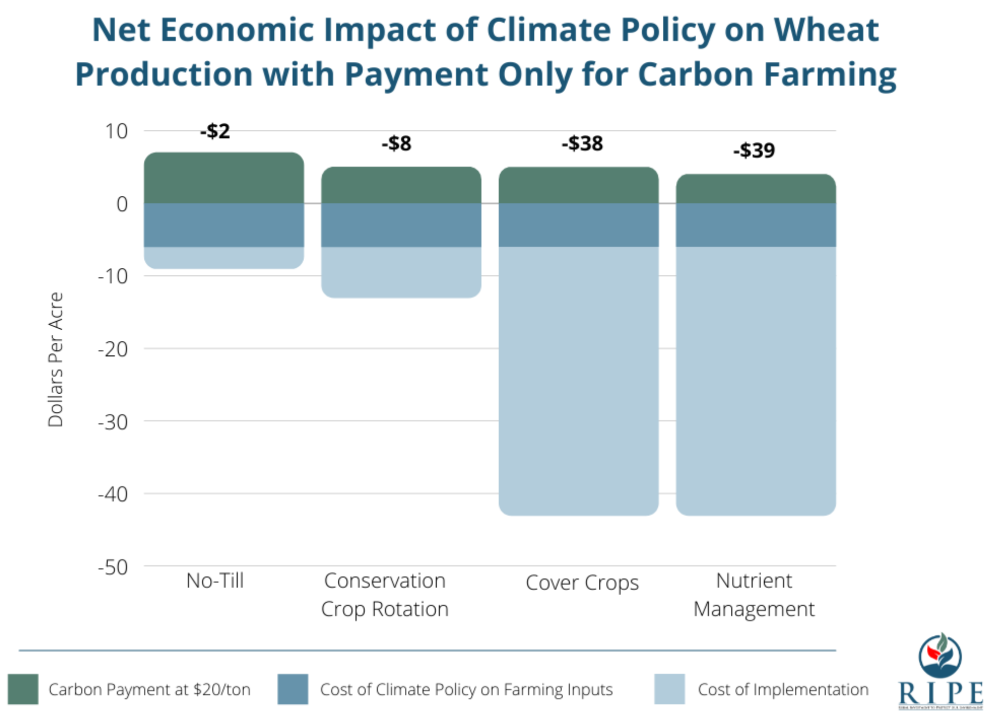
While Congress is not prioritizing a carbon price policy at this time, RIPE estimates the cost of the climate policies in these terms to allow for an approximate calculation of impact of climate policies of any kind on the agricultural sector. RIPE relied on the Energy Innovation analysis of the House Select Committee on the Climate Crisis's 2020 plan's level of GHG reductions and converted the GHG reductions to estimated equivalent carbon prices using the Resources for the Future E3 Simulator. Differing credible perspectives exist as to whether the cost of climate policy by command and control, as is the House Democratic plan, will be higher or lower than a carbon price model predicts. We offer this comparison as a rough estimate to illustrate the order of magnitude of impact, using publicly available tools offered by WAEES and Resources for the Future. The House plan approximates the equivalent of a carbon price of $20 per ton around 2023 and $54 per ton in 2030, so these are the two carbon prices applied to WAEES analysis and used throughout this paper.

WAEES uses a cost-of-production model that aggregates the direct cost impacts of a carbon fee on energy costs with the indirect costs from inputs such as fertilizer, chemicals, machinery and customer services, estimated by the share of energy costs in the production of each of those inputs. The impacts on these embedded energy costs are calculated by using the U.S. Census Bureau's annual and five-year Survey of Manufactures data. This data measures gross receipts and detailed expenses for each industry as a whole, segmented by North American Industry Classification System code classifications. Based on this data, WAEES estimates the percent of total expenses that is accounted for by the various energy components including liquid fuels, natural gas and electricity. A carbon price that reflects each of those fuel types is applied, using the conversion factors from the Energy Information Administration and Environmental Protection Agency.

The findings presented in the report are intended to provide a sense of scale for the cost impact and are not intended as a definitive projection. A cost-of-production model assumes that farmers and agribusinesses will not adapt to the new prices and thereby presents the worst-case scenario of what climate policy could cost farmers. For this reason, we do not provide findings for years beyond 2030. The industry will adjust in ways we cannot predict. There are some costs that are not fully accounted for in the WAEES model, including seed cost changes. RIPE welcomes engagement and partnership with stakeholders to refine this methodology and develop updated research.

Access to the WAEES cost-of-production report and accompanying tool are available to RIPE partners. For partnership opportunities, please contact RIPE Agricultural Outreach Director Jamie Powers at JPowers@RIPEroadmap.org.

Chart 2: Net Economic Impact of Climate Policy on Wheat Production with Payment Only for Carbon Farming



Practice	Implementation Costs	Citation
No-Till	$3/acre	USDA - NRCS. Practice Scenarios. 2022.
Conservation Crop Rotation	$7/acre	USDA - NRCS. Practice Scenarios. 2022.
Nutrient Management	$37/acre	USDA - NRCS. Practice Scenarios. 2022.
Cover Crops	$37/acre	Myers et. al. "Cover Crop Economics Opportunities to Improve Your Bottom Line in Row Crops," SARE Technical Bulletin. 2019.

For methodology for the value of carbon payments at $20/ton, see Chart 3. For methodology for the average cost of climate policy on farming inputs, see Chart 1.

Chart 3: Environmental Value of Wheat Stewardship Practices

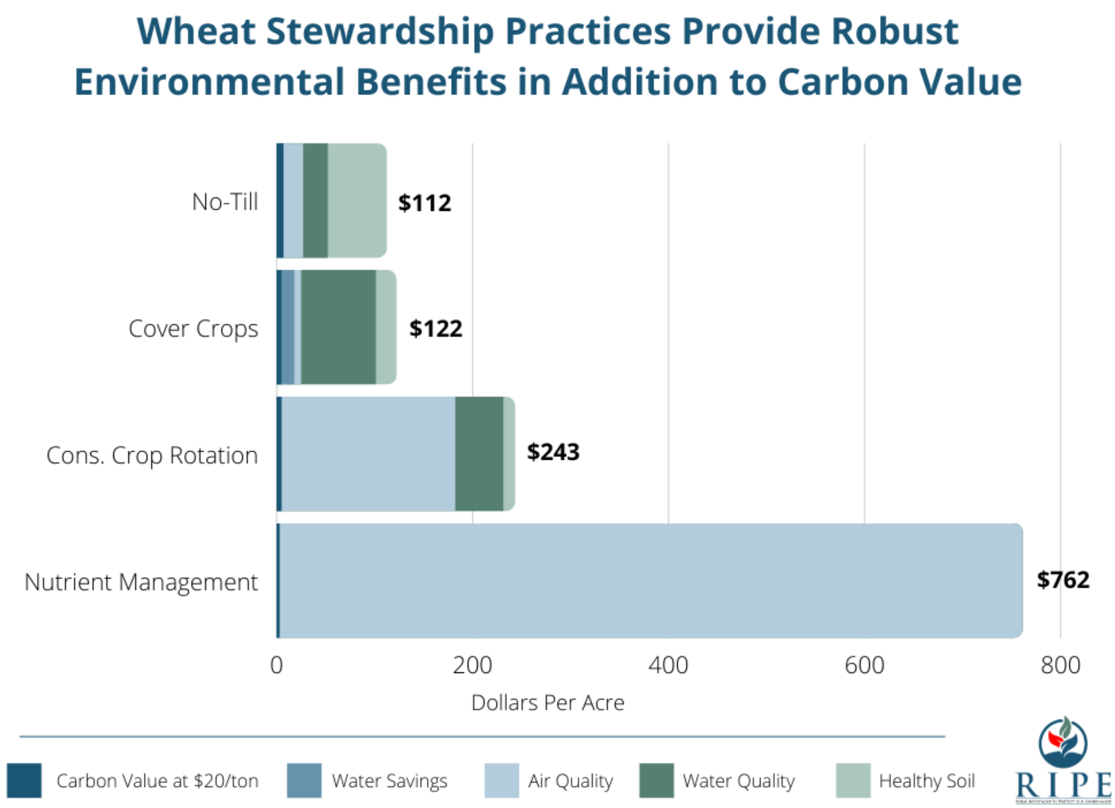


Chart 3, Column 1: No-Till

Ecosystem Service	$/Acre/Year	Citation
Carbon Sequestration	$7	The 2018 "Economic Assessment for Ecosystem Service Market Credits From Agriculture on Working Lands," report to the Ecosystem Services Market Consortium by Agribusiness Consulting indicates that the GHG value of no-till is $7/acre. On Page 15, it says that in 2017, 95,578,000 acres of field crops were already using no-till, and this reduces CO2e by 33,860,000 tonnes. This equals .35 t/acre, which when multiplied by $20/ton is $7/acre. Page 15 also cites 103 million acres of field crop area currently under conventional tillage could be converted to no-till, and this would reduce GHG emissions by another 37.5 million tonnes. This simplifies to .36t/acre, which also multiplies to $7/acre.
Air Quality	$20	Pimentel et. al. "Environmental and Economic Costs of Soil Erosion and Conservation Benefits." Science. Vol 267, Issue 5201, pages 1117-1123. 1995. Addresses wind erosion and associated health issues.

Water Quality	$25	Pimentel et. al. "Environmental and Economic Costs of Soil Erosion and Conservation Benefits." Science. Vol 267, Issue 5201, pages 1117-1123. 1995. Includes a table that compares different agricultural practices and their water runoff.
Healthy Soil	$60	Soil nutrients: Pimentel et. al. "Environmental and Economic Costs of Soil Erosion and Conservation Benefits." Science. Vol 267, Issue 5201, pages 1117-1123. 1995. Assumes a cost of $3 per ton of soil for nutrients. This was updated to 2020 dollars and used as a multiplier for values on no-till. Soil conservation: In "Environmental and Economic Costs of Soil Erosion and Conservation Benefits," Pimentel et. al (1995) stated that, "In the United States, an estimated 4,000,000,000 tons of soil are lost every year" on cropland. The study estimated the economic cost of specific types of erosion. In "The Value of the Reservoir Services Gained with Soil Conservation," Hansen and Hellerstein (2007) estimate the costs of erosion, stating that "a one-ton reduction in soil erosion provides benefits ranging from zero to $1.38 (in 2007 dollars)." Values were converted to 2020 dollars and compared to a $20/ton carbon price.
Total	**$112**	

Chart 3, Column 2: Cover Crops

Ecosystem Service	$/Acre/Year	Citation
Carbon Sequestration	$5	The IHS Markit report commissioned by the Ecosystem Service Marketplace Consortium finds that cover crops reduce GHG emissions by 0.25 tons/acre. Priced at a carbon payment of $20/ton of GHG, this GHG reduction is valued at $5/acre. Source: "Economic Assessment for Ecosystem Service Market Credits from Agricultural Working Lands." IHS Markit. Ecosystem Service Marketplace Consortium. 2018.
Water Quality	$76	According to Sustainable Agriculture Research and Education, cover crops reduce soil erosion by 20.8 tons/acre on conventional-till fields, 6.5 tons/acre on reduced-till fields and 1.2 tons/acre on no-till fields, or an average of 9.5 tons/acre. In "Final Benefit-Cost Analysis for the Environmental Quality Incentives Program (EQIP)," NRCS (2010) values the water quality benefits of reduced soil erosion at $8/ton in 2020 dollars. 9.5 tons of soil/acre multiplied by $8/ton of soil yields a water quality value of $76/acre.
Air Quality	$7	USDA/NRCS's report, "Final Benefit-Cost Analysis for the Environmental Quality Incentives Program (EQIP)" (NRCS, 2010) identified benefits and their transfer values from EQIP practices and identified which stewardship practices led to different categories of benefits. Cover crops were identified as a practice that led to improvements in "sheet and rill water erosion, and air quality." The air quality value identified in this report was $5.71/acre/year, which was converted to 2020 dollars.
Healthy Soil	$21	This number is an average taken from two papers: Pimentel, et al. "Environmental and Economic Costs of Soil Erosion and Conservation Benefits." Science, Vol 267, Issue 5201, 24 Feb. 1995, pages 1117-1123., doi:10.1126/science.267.5201.1117.; and USDA/NRCS, Final Benefit-Cost Analysis for the Environmental Quality Incentives Program (EQIP), May 10, 2010. The USDA article valued the reduction of loss of nutrients from planting cover crops at $11.92/acre/year, which was converted into 2020 dollars. Pimentel, et al. calculated a cost of $3/ton of soil for nutrients, which was converted into $28.50/acre/year.

Water Savings	$13	In the economic tool "Cover Crop Economics" version 3.1, USDA lists a 5.41 acre-inch water efficiency gain/year with the use of cover crops, which is valued at $10.30/acre in 2007 dollars. Updating this value to 2020 dollars yields a water conservation value of $13/acre.
Total	**$122**	

Chart 3, Column 3: Conservation Crop Rotation

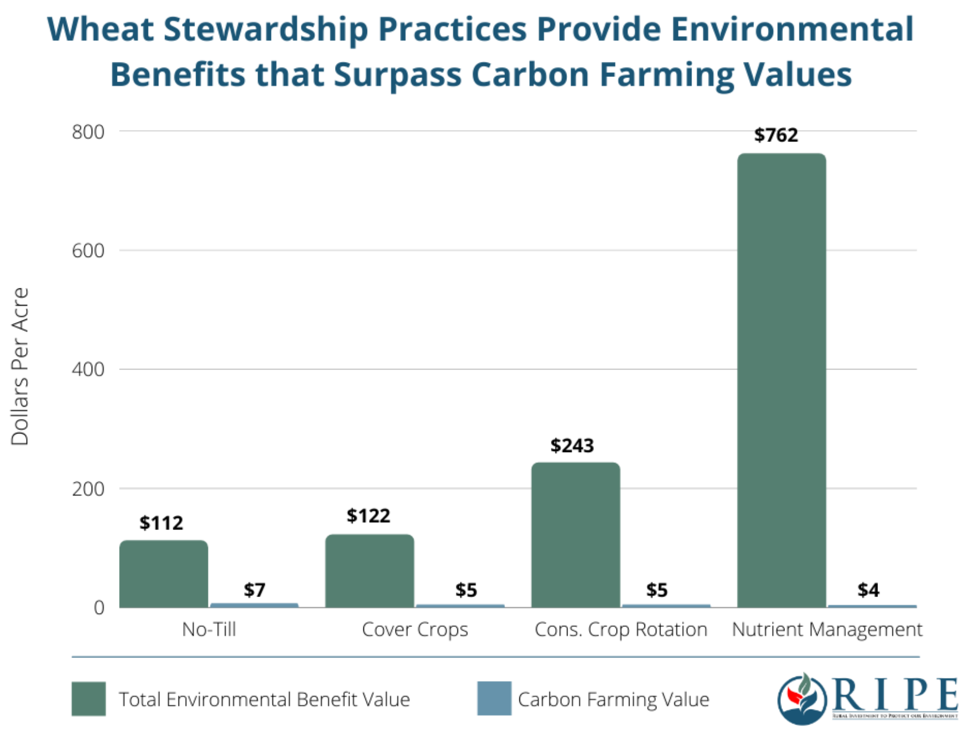
Ecosystem Service	$/Acre/Year	Citation
Carbon Sequestration	$5	USDA COMET-Planner indicates an average GHG reduction value of .23 metric tons/acre for conservation crop rotation. Priced at a carbon payment of $20/ton of GHG, this GHG reduction is valued at $5/acre.
Reduced Soil Erosion (water quality benefits)	$39	According to a report from the Union of Concerned Scientists (2017), Conservation Crop Rotation reduces erosion by 9.5 tons of soil/acre, valued at $39/acre in water quality benefits.
Reduced Herbicide (water quality benefits)	$10	Conservation Crop Rotation reduces herbicide application by 25-51%, or an average of 38% (Union of Concerned Scientists, 2017). The baseline herbicide application is 1kg/acre (Hunt et al., 2017), meaning conservation crop rotation reduced herbicide by .38kg/acre. The value of herbicide reduction is $27/kg (Pimental 2005).
Air Quality	$177	Conservation Crop Rotation reduces fertilizer use by 50% (Union of Concerned Scientists 2017). An average of 84.5 pounds of nitrogen/acreis used for corn, cotton, soy, and wheat (USDA). Conversion to ammonia is an average of 50 pounds NH3 reduced/acre (Goebbes et al., 2003; Mikkelsen, 2009; Dari et al., 2019; Jones et al., 2020). A 50% reduction equals 8.5 pounds ammonia is reduced/acre. The average social cost of ammonia is $21/pound (Hansen, NASA, 2014; Heo, et al. 2016).
Healthy Soil	$12	According to a report from the Union of Concerned Scientists (2017), Conservation Crop Rotation reduces erosion by 9.5 tons of soil/acre, valued at $1.27/ton of soil according to the USDA report "Economic Measures of Soil Conservation Benefits" (2008).
Total	**$243**	

Chart 3, Column 4: Nutrient Management

Ecosystem Service	$/Acre/Year	Citation
Carbon Sequestration	$4	The Duke University report "Greenhouse Gas Mitigation Potential of Agricultural Land Management in the United States: A Synthesis of the Literature" indicates that improved manure land application can reduce N2O emissions by .32 tonnes/acre. https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_r_10-04_3rd_edition.pdf Farming for Our Future (Rosenberg & Lehner) indicates that improved synthetic fertilizer management can reduce GHG emissions by 0.11 tonnes/acre.

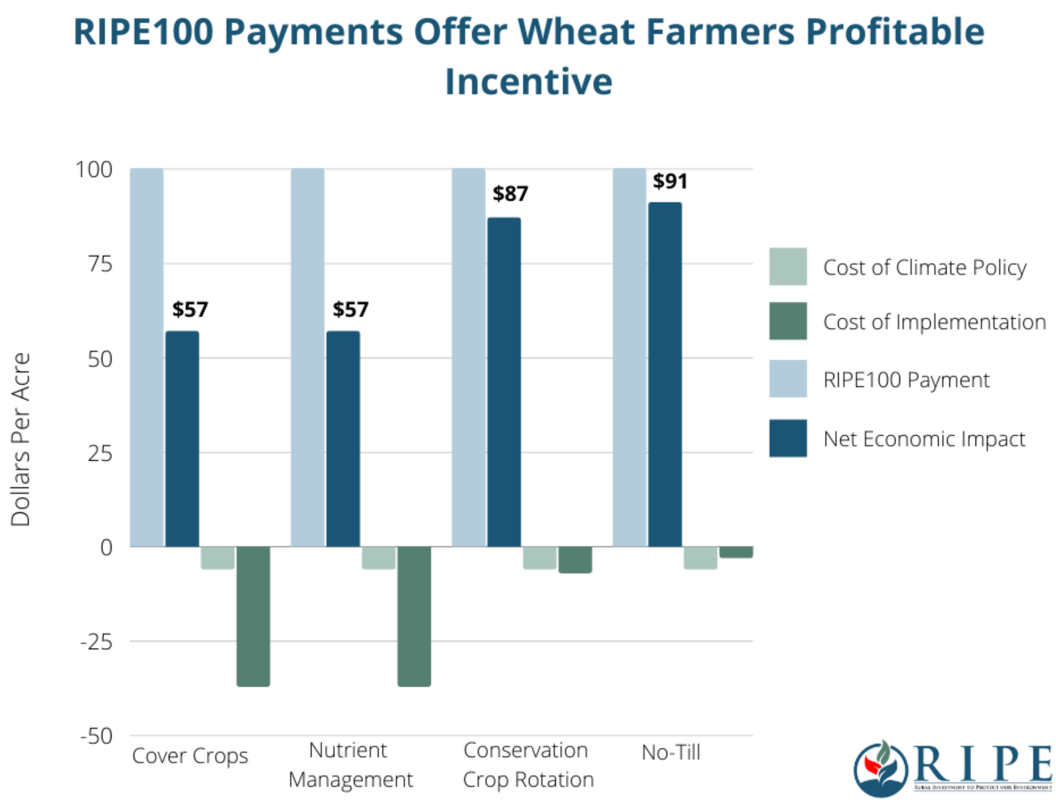
		The USDA COMET-Planner tool indicates that applying organic material to land reduces GHG emissions by 0.2 tonnes/acre, and that reducing N fertilizer application by 15% has neutral impacts on GHG emissions. The value of GHG reduction is $20/metric ton.
Air Quality Benefits (Human Health)	$758	A number of studies indicate that closed-slot manure injection typically reduces ammonia emission by over 90% (e.g., Thompson et. al. 1987, Weslien et al. 1998, Pote et al. 2011, Dell et al. 2012 (reduction of 19 kg NH3/acre), Carozzi et al. 2013, and Kulesza et al. 2014). Another study indicates that incorporation reduces ammonia emissions by 14 kg NH3/acre (Sutitarnnonntr, P., E., et al). The public cost of ammonia is $48,565/ton NH3 (Heo, et al. 2016).
Water Quality Benefits	<$1	A long-term study conducted by Iowa State University researchers found that reduced poultry manure application rates reduced Nitrate loss to water sources by nearly 10 kg/ha/year, or 4.02 kg/acre/year (Nguyen et al., 2013). Incorporation and injection are found to reduce N loading by an average of 10% in the Chesapeake Bay (Chesapeake Bay Program, 2016). Manure land application on average loses 486 kg of nitrate/ha/yr, or 197 kg/ac/yr, to water sources (UC Davis, Nitrogen Sources and Loading Groundwater, 2012). http://groundwaternitrate.ucdavis.edu/files/139110.pdf Keeler et al. (2016) found the social cost of nitrogen pollution in water to be on average $0.005/kg nitrate, based on water treatment costs.* *This is a low-end estimate and excludes potential health, recreational, or aesthetic values. More comprehensive estimates of the public cost of Nitrate in water sources would yield a higher water quality value for nutrient management.
Total	$762	

Chart 4: Wheat Stewardship Practices Provide Environmental Benefits that Surpass Carbon Farming Values



For the methodology for the total environmental benefit values and carbon farming values, see Chart 3.

Chart 5: RIPE100 Payments Offer Wheat Farmers Profitable Incentive



Practice	Implementation Costs	Citation
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