



# FARMERS FOR CLIMATE SOLUTIONS

Dear Senate Standing Committee for Agriculture and Forestry,

Farmers for Climate Solutions (FCS) is a coalition of 25 farmer organizations that together represent over 20,000 Canadian farmers and ranchers from coast to coast. We believe that agriculture must be part of the solution to climate change. In June 2021, FCS released a detailed plan to slash greenhouse gas emissions from Canadian farms, and to make our sector more resilient and profitable. This plan was part of our contribution to the development of the next Agricultural Policy Framework (APF), and focused on decreasing emissions, increasing carbon sequestration, and increasing resilience, and identified 19 priority beneficial management practices (BMPs) that should be widely adopted on Canadian farms. While the focus was on climate change mitigation, many of the BMPs identified would also produce numerous environmental and economic co-benefits, including improved soil health.

The following submission details the BMPs from our AFP report that have the greatest potential to improve soil health. FCS believes that the issues of climate change and soil health cannot be separated: any effective response to climate change must include a strong focus on soil health.

The technical reports that underlie these recommendations are available [on our website](#). We hope this submission is helpful, and are always available to discuss our findings in more detail.

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**FARMERS  
FOR CLIMATE  
SOLUTIONS**



Derek Axten and his daughter Kate  
Axten Family Farms in Minton, SK

## **Rooted in Climate Action**

**An ambitious roadmap for emissions reduction and  
resilience in the next Agricultural Policy Framework**

In November, 2021, federal, provincial and territorial ministers of agriculture issued the Guelph Statement outlining the high-level priorities of the next Agricultural Policy Framework (APF), which will guide public policy and spending in Canadian agriculture for the next five years. The ministers identified “ Tackling climate change and environmental protection to support GHG emission reductions and the long-term vitality of the sector...” as the number one priority for the next APF.

Farmers for Climate Solutions (FCS) is a national coalition of farmer-led and farmer-supporting organizations that believes agriculture must be part of the solution to climate change. Together our member organizations represent over 20,000 Canadian farmers and ranchers in every province and all production systems. FCS is in a unique position to offer realistic, farmer-centred recommendations to help Canadian governments achieve their climate change mitigation goals.

To this end, Farmers for Climate Solutions assembled a task force of farmers, researchers, economists and policy experts to examine how the next Agricultural Policy Framework (APF) could accelerate climate action in Canadian agriculture. This task force sought to identify beneficial management practices that can reduce greenhouse gas (GHG) emissions, increase carbon storage and increase resilience on Canadian farms, and to suggest policies and programs that will encourage the rapid adoption of these practices. This work complements the findings of [FCS's Business Risk Management Task Force](#), which completed its work in March 2022.

The APF Task Force had the following specific objectives:

- Identify a sector-wide target for GHG emissions reduction by the end of the next APF period in 2028.
- Identify practical and proven beneficial management practices (BMPs) that reduce GHG emissions or increase carbon storage on Canadian farms in order to meet that target.
- Quantify the GHG mitigation potential of each BMP.
- Determine the cost to farmers and governments to incentivize the adoption of these BMPs.
- Identify the policies and programs necessary to induce widespread BMP adoption across Canada.

This report summarizes the major findings and recommendations of the APF Task Force, and draws on data and analysis contained in three associated technical reports. The [FCS Emissions Report](#) includes emissions mitigation potential and evidence for each of the BMPs. The [FCS Economics Report](#) describes the farm-level costs and benefits of each BMP, proposes targets for BMP adoption, models the cost to induce BMP adoption, and calculates the mitigation cost per tonne of CO<sub>2</sub> equivalent (CO<sub>2</sub>e). The [FCS Policy and Programs Report](#) examines climate and agriculture policies and programs in other jurisdictions, describes



equity and inclusion considerations, and recommends program delivery models to encourage BMP adoption at scale in Canada.

The task force identified 19 beneficial management practices that have the potential to reduce GHG emissions, increase carbon sequestration, and increase resilience on Canadian farms. All of these BMPs are proven practices that are already in use in Canada, and all are supported by peer-reviewed studies or survey data that quantify GHG mitigation potential.

**Together, these BMPs have the potential to reduce GHG emissions from Canadian farms by 10 million tonnes of CO<sub>2</sub> equivalent per year by the end of the next APF in 2028.**

**This represents a 14% reduction from current levels.** The recommended BMPs also have the potential to sequester an additional 6.2 Mt CO<sub>2</sub>e per year by 2030, for total mitigation of approximately 16.2 Mt CO<sub>2</sub>e per year. This mitigation potential is in addition to the projected mitigation from the current phase of the On-Farm Climate Action Fund (OFCAF). This level of mitigation will require rapid and widespread adoption of the identified BMPs, which will require substantial investment by governments and farmers.

## **14% REDUCTION IN ABSOLUTE AGRICULTURAL EMISSIONS BY 2028**

### **Absolute emissions reduction:**

*10,000,000 tonnes CO<sub>2</sub>e*

### **Carbon sequestration:**

*6,200,000 tonnes CO<sub>2</sub>e*

### **Total mitigation:**

*16,200,000 tonnes CO<sub>2</sub>e*

### **Mitigation cost:**

*\$40/tonne CO<sub>2</sub>e*

### **Total Cost:**

*\$2.1 billion*

Incentivizing the adoption of the BMPs identified in this report will require annual government investment of approximately \$642 million in 2028. Because spending is projected to ramp up over the next five years, the average annual expenditure over the life of the next APF will be \$414 million per year, for a total of \$2.1 billion during the five-year APF period. These expenditures do not include the cost of program administration and delivery. Federal, provincial and territorial governments must invest in capacity to manage, administer and coordinate the large and complex programs necessary to deliver these emission reduction benefits.

The cost per tonne of mitigation for the BMPs examined in this report is extremely competitive when compared to the government's pollution price and measures in other sectors. Average mitigation cost across all 19 BMPs is approximately \$40/tonne CO<sub>2</sub>e in 2028, compared to the government's minimum carbon price of \$170/tonne in 2030.

The government of Canada has set a target of 30% reduction in emissions associated with nitrogen fertilizer by 2030. It is important to note that the nitrogen fertilizer BMPs proposed in this report would achieve a 33% reduction in nitrogen fertilizer emissions.

The list of BMPs included in this report is not exhaustive. Other opportunities exist for additional GHG mitigation in Canadian agriculture. The task force did not consider BMPs related to on-farm fuel use, an area that produces substantial emissions.

<b>Practice</b>	<b>GHG Mitigation (Mt CO<sub>2</sub>e in 2028)</b>	<b>Average Abatement Cost (\$/tonne CO<sub>2</sub>e in 2028)</b>	<b>Total cost (\$/year in 2028)</b>
<b>Nitrogen Management</b> <ul style="list-style-type: none"> <li>• Quantitative determination of right rate</li> <li>• Precision nitrogen management</li> <li>• Enhanced efficiency nitrogen fertilizer</li> <li>• Elimination of fall nitrogen application</li> <li>• 4R management of manure</li> <li>• Improved crediting of organic N sources</li> </ul>	3.8	\$47	\$180 million
<b>Manure Storage and Handling</b> <ul style="list-style-type: none"> <li>• Synthetic impermeable floating covers</li> <li>• Acidification of liquid manure</li> </ul>	2.4	\$14	\$34 million
<b>Livestock Management</b> <ul style="list-style-type: none"> <li>• Increased legumes in pasture</li> <li>• Rotational grazing</li> <li>• Extended grazing period</li> </ul>	4.3	\$7	\$32 million
<b>Soil Management</b> <ul style="list-style-type: none"> <li>• Cover cropping</li> <li>• Intercropping</li> </ul>	4.3	\$80	\$341 million
<b>Wetland and Tree Management</b> <ul style="list-style-type: none"> <li>• Avoided conversion of wetlands*</li> <li>• Wetland restoration</li> <li>• Alley cropping</li> <li>• Silvopasture</li> <li>• Planting riparian trees</li> <li>• Avoided conversion of shelterbelts</li> </ul>	1.4	\$39	\$56 million
<b>TOTAL</b>	<b>16.2</b>	<b>\$40</b>	<b>\$642 million</b>

\* The program design considerations for this BMP are complex, and we have a lower level of confidence in the emissions mitigation potential of this proposal than the others.

## Beneficial Management Practices

The APF Task Force identified 19 BMPs across five categories that are practical, implementable and proven to provide cost-effective GHG mitigation. The following section summarizes the findings detailed in the emissions, economics and programs reports for each BMP.



*GHG research on a PEI potato farm. Photo: David Burton*





*Grazing cattle at Local Valley Beef in Fredericton, NB*

Ruminant livestock – such as cattle, sheep and goats – have microbes in their guts that produce methane. The emissions that come from the mouths of ruminant livestock are known as enteric methane, and are the largest single source of emissions in Canadian agriculture, with cattle accounting for the very large majority of enteric emissions. Improving diet quality can directly reduce enteric emissions, and can also lead to faster growth, better animal health and better reproductive success, all of which lower the emissions intensity of the animal products produced. Improved grazing practices can increase soil carbon sequestration, which reduces atmospheric carbon and provides numerous soil health benefits. The emissions reduction opportunities described in this section are extremely cost-effective.

The BMPs in this section can be “stacked”, meaning that the benefits of each BMP are additive. While most BMPs related to enteric methane can reduce emissions by 5 to 10%, adopting several BMPs simultaneously can increase emissions reductions. These recommended BMPs also lead to overall improvements in animal health and reproductive success, which can allow producers to operate with fewer breeding replacement animals and decrease the time to market of their animals, thus reducing the overall enteric emissions of their herd.

### **9. Increased legumes in pasture**

Introducing legumes such as alfalfa, sainfoin, clover and birdsfoot trefoil into grass-only forage stands at rates between 20 and 30% can improve forage quality, increase digestibility and reduce enteric methane emissions in the range of 10%. Legumes also fix atmospheric nitrogen, reducing the need for synthetic nitrogen fertilizer on pasture and reducing nitrous oxide emissions.

**GHG mitigation potential:**

*1,100,000 tonnes CO<sub>2</sub>e*

**Average Abatement Cost:**

*\$1/tonne CO<sub>2</sub>e*

**Total cost:**

*\$800,000/year*

The inclusion of legumes in tame pastures is a common practice in Canada, and topography and soil type make seeding legumes in some pastures very challenging, so the potential for increased adoption of this practice is somewhat limited. However, the mitigation cost is extremely low and the co-benefits should make this an attractive BMP for many producers. Maintaining legumes in forage stands requires ongoing expense and effort.

**Program recommendations:** We recommend a cost-share program for the cost of legume seed.

## 10. Rotational grazing

Rotational grazing describes a range of practices that include increasing stocking densities, decreasing the amount of time animals are allowed to graze in a given paddock, and increasing the interval between grazing events. This is in contrast to continuous grazing, where animals are grazed at low densities in the same paddock for months, or even the entire grazing season. Basic rotational grazing might involve dividing the range into three paddocks and moving animals once a month. More advanced systems often utilize temporary electric fences to create small paddocks where animals are allowed to graze for a day or less at very high densities before being moved to new grass, with pasture allowed to recover for an extended period before being grazed again.

**GHG mitigation potential:**

*2,500,000 tonnes CO<sub>2</sub>e*

**Average Abatement Cost:**

*\$5/tonne CO<sub>2</sub>e*

**Total cost:**

*\$7,600,000/year*

Rotation grazing improves the quality of forage over time which can reduce enteric methane emissions by over 10% when compared to continuous grazing, and increases rates of soil carbon sequestration. Rotational grazing also has co-benefits, such as increased stocking rates, improved animal health, reduced parasite loads, and increased biodiversity. These benefits lead to net economic gains for most producers, but high up-front infrastructure costs and increased labour requirements make adoption difficult for many.

**Program recommendations:** Rotational grazing is one of the BMPs being promoted by the On-Farm Climate Action Fund (OFCAF) through a cost share program that supports the creation of a grazing management plan and infrastructure costs such as fencing and water. This cost-share support should be expanded and continued through the next APF period.



## 11. Extended grazing period

Keeping grazing animals on pasture for a longer portion of the year has economic and environmental benefits. Strategies include swath grazing, bale grazing, grazing animals in the spring or fall, standing corn grazing and cereal residue grazing. Most extended grazing strategies have been shown to reduce enteric methane emissions, and can also reduce emissions from stored manure because more manure is deposited on pasture, rather than in confinement. Co-benefits include improved pasture quality, less handling of manure, and lower labour requirements than feeding and managing animals in confinement.

Extending the grazing period will have positive economic benefits for most producers, but up-front infrastructure costs (especially water) can be a deterrent to adoption.

**Program recommendations:** Extended grazing should be eligible for similar cost-share support to rotational grazing under OFCAF. Producers should have access to cost-share payments for planning and infrastructure. Extended grazing and rotational grazing are complementary practices and emissions benefits are additive, so increased support should be offered to producers who employ both.

**GHG mitigation potential:**

*600,000 tonnes CO<sub>2</sub>e*

**Average Abatement Cost:**

*\$36/tonne CO<sub>2</sub>e*

**Total cost:**

*\$23,000,000/year*



## Soil Management

*Seeding winter cover crops of oats, rye, and radish at Axten Family Farms in Minton, SK*

Beneficial management practices for better soil management mitigate climate change by reducing the need for synthetic nitrogen fertilizer and increasing soil carbon sequestration. While FCS believes that emissions reduction should be prioritized over carbon storage, practices that draw carbon out of the atmosphere and increase soil organic matter are a vital tool to increase resilience and adapt to our changing climate, and provide numerous co-benefits to farmers.

### 12. Cover cropping

A cover crop is any crop that is grown to provide fertility or increase soil health, rather than for harvest. Cover crops are usually grown at times when cash crops are not being produced, such as after harvest or during a fallow period. Cover crops can “catch” excess nitrogen in the soil that would otherwise be lost as nitrous oxide, and can decrease the need for synthetic nitrogen when they include legumes. They also increase soil carbon sequestration and provide numerous co-benefits, such as erosion control, increased moisture retention, improved soil structure and increased biodiversity.

**GHG mitigation potential:**  
*2,700,000 tonnes CO<sub>2</sub>e*

**Average Abatement Cost:**  
*\$81/tonne CO<sub>2</sub>e*

**Total cost:**  
*\$216,000,000/year*

Cover cropping on the Canadian Prairies presents several challenges, including a short growing season and low soil moisture levels in the fall when post-harvest cover crops are usually sown. The task force targeted lower adoption levels on the Prairies than in the rest of Canada due to these constraints.

Cover crops provide net economic benefits to farmers, but these benefits usually accrue only after several years of continuous practice. The cost of seed, planting and termination make cover-cropping a costly practice for the first three to five years of adoption until the private benefits to the farmer begin to be realized, but public benefits, such as reduced GHG emissions and increased carbon sequestration, begin right away.

**Program recommendations:** Cover cropping is another BMP being promoted under OFCAF through a per-acre payment for new adoption. This support should be expanded and continued.

### 13. Intercropping

Intercropping is the practice of growing more than one crop in the same field at the same time, and usually involves growing a legume or pulse with a cereal. The two crops are separated after harvest. Intercropping can decrease the need for synthetic nitrogen fertilizer and increase soil carbon sequestration. Current adoption levels are low, but farmers and researchers have improved the practice in recent years and interest from new adopters has risen.

Intercropping can deliver positive benefits to producers because symbiotic effects between the two crops can mean total yield is higher than growing the two crops in separate fields. Producers may require special equipment for grain separation and storage after harvest, and the somewhat experimental nature of the practice makes some producers hesitant to adopt.

**Program recommendations:** Intercropping should be incentivized by per-acre payments, similar to cover cropping under OFCAF. Cost share support could also be offered for equipment purchase.

**GHG mitigation potential:**

*1,600,000 tonnes CO<sub>2</sub>e*

**Average Abatement Cost:**

*\$78/tonne CO<sub>2</sub>e*

**Total cost:**

*\$125,000,000/year*



## **Additional Costs**

The expenditures recommended in this report are annual costs to incentivize practice adoption in 2028. They do not include program design, delivery and administration costs, the cost to governments to increase internal staffing and capacity to administer the necessary programs, or the cost of enhanced data collection and analysis. Some of the policy recommendations listed below will also require additional investment, such as designing and delivering an enhanced Environmental Farm Plan or establishing a national set-aside program. The [FCS Economics Report](#) includes detailed information on how costs and spending recommendations were calculated.

## **Policy and Programs**

The Canadian Agricultural Partnership and previous iterations of the APF have tended to focus on the adoption of individual environmental BMPs, with limited resources devoted to BMP incentivization and little coordination between provinces. A much more ambitious, system-wide approach will be necessary if agriculture is to make a meaningful contribution to achieving Canada's goal of net-zero emissions by 2050. More attention must also be paid to ensuring that farmers from equity-deserving groups have access to programs and support. FCS is recommending a range of policy options – from traditional cost-share programs, to reverse auctions, to collective bonus payments – to incentivize and promote the adoption of climate-friendly BMPs that are detailed in the [FCS Policy and Programs Report](#), but it is important to highlight some broad policy objectives and themes.

## **Equity and Inclusion**

Many farmers have been historically marginalized in Canadian agriculture and left out of government programs, but these same farmers have been some of the most progressive in adopting climate mitigation and adaptation measures on their farms. Young farmers, women farmers, farmers with disabilities, Black farmers, Indigenous farmers and food providers, farmers of colour, small-scale farmers, 2SLGBTQ+ farmers, and new Canadian farmers often experience additional and unique barriers to enter and succeed in our sector. Climate-related programming in the next APF must be accessible to all farmers. For example, cost-share programs should have an advance payment provision for equity-deserving farmers so that lack of up-front capital is not a barrier to participation. Minimum income requirements for cost-share programs should also be lowered or removed. The AgriDiversity program should be expanded, and financial support given to groups that represent equity-deserving farmers to help spread and support climate-friendly practices.

## **Systems Approaches**

The science is clear that much greater mitigation can be achieved through a systems approach that encourages the adoption of a suite of BMPs, rather than focusing on individual practices. For example, as described above, several individual practices can reduce enteric methane emissions from cattle by five to ten percent. However, complimentary practices can be “stacked” or adopted simultaneously to achieve emissions reduction in excess of 15%, and secondary impacts on animal health and reproductive success can push overall mitigation to 23%. Producers should be encouraged to adopt low-emissions farming *systems*, rather than individual BMPs.

In order to encourage such systems thinking, we recommend that producers who adopt a suite of climate-focused BMPs be given access to a bonus payment that could be delivered through AgriInvest. The FCS BRM Task Force recommended that AgriInvest be retooled to promote the adoption of climate-friendly practices. We recommend a tiered approach, with producers choosing from a menu of basic, intermediate and advanced practices that best fit their type of operation and region. Each tier of adoption would result in a higher matching payment through AgriInvest. Producers would still have access to cost-share or per-acre payments to help them adopt individual BMPs. This approach would help to incentivize producers to maintain practices once they are adopted, and reward early adopters, some of whom have been employing climate-friendly practices for many years.

The FCS Policy and Programs report includes recommendations on cost-share programs that will also contribute to systemic change, such as modifying and standardizing caps on program participation and giving farmers who lease land more access to cost-share programs. Consideration should also be given to providing collective adoption bonuses to encourage landscape-level adoption of BMPs. Producers would receive a bonus payment when a given proportion of producers in an area adopt a practice (a watershed or special agricultural zone, for example). This can be especially effective in environmentally sensitive areas.

## **The Environmental Farm Plan**

The Environmental Farm Plan (EFP) is an established framework that could be harnessed to drive systemic change and reduce emissions on Canadian farms. Minimum standards for the EFP should be established, including the addition of climate and nutrient management planning modules and standardized renewal periods, while giving provinces and territories flexibility to adapt the EFP to local conditions. The EFP could be a powerful tool to help farmers understand where their emissions are coming from and how they can be reduced. A complete and updated EFP should be a prerequisite for accessing cost-share and other

support through the APF, programs such as the On-Farm Climate Action Fund, and enhanced payments through AgriInvest.

## **Farmer Education and Extension**

Farmers need information and support if they are to embrace change on their farms. Creating and renewing Environmental Farm Plans offers an opportunity to connect individual producers with agricultural professionals and fellow farmers who can provide practical advice. The long-term erosion of public extension services in Canada needs to be reversed: this is an area where the proposed CFRA or similar body could play a role. In the short term, all sources of agricultural information need to be strengthened and supported, including farmer-to-farmer information sharing networks, independent agrologists and Certified Crop Advisors, farm organizations, and agricultural colleges and universities. Research shows that farmers learn best from other farmers: the creation and expansion of farmer mentorship programs and farmer-led research initiatives should be a priority. The creation of farm-level management plans with a trusted advisor or farmer mentor – such as nitrogen or nutrient management plans, grazing plans or forestry plans – should be eligible for cost-share support.

## **Program Coordination**

Canada is far behind its competitors in Europe and the United States when it comes to public spending on agri-environmental programs. However, the past two years have seen a proliferation of new programs aimed at reducing emissions and increasing resilience in Canadian agriculture, and a corresponding jump in public spending commitments. The federal government has pledged close to a billion dollars in new spending on climate change mitigation in agriculture over the next six years. This report is calling for approximately \$2 billion in additional investment over the five years of the next APF.

With all this new spending and programming comes an increased administrative burden and the risk of duplication, poor coordination and confusion in the sector. It is imperative that federal, provincial and territorial governments take proactive steps to ensure that climate change mitigation efforts are coordinated and streamlined. FCS strongly recommends that Agriculture and Agri-Food Canada (AAFC) create a central office or agency to coordinate planning and delivery of agri-environmental and climate related programs. This entity could take the form of a Canadian Farm Resilience Agency (CFRA), modeled on the former Prairie Farm Rehabilitation Administration (PFRA).



## **Voluntary Set-Aside Programs**

Several of the livestock-related BMPs recommended in this report have the co-benefit of increasing grazing productivity. If these practices are adopted at scale, producers might be motivated to convert pasture they no longer need to crop production. This could have the unintended consequence of increasing emissions. To avoid this situation, we recommend the creation of a national grassland set-aside program. This program would not have a direct emissions reduction outcome, but would help avoid the conversion of grasslands to annual crop production. Producers would receive an annual payment for a fixed term (perhaps five to ten years), with requirements for pasture preservation and maintenance. Lands in the reserve could be used as a strategic hay or forage reserve in years of extreme drought. This program should only be open to producers who adopt productivity-enhancing BMPs such as rotational grazing.

Consideration should also be given to creating a national cropland set-aside program that would pay farmers to retire marginal cropland, as these areas tend to have the highest intensity of emissions and lowest economic returns for farmers.

## **Data Collection and Standardization**

Environmental programs in Canadian agriculture have a history of poor data collection and inadequate assessment of program outcomes. Robust data collection and analysis requirements need to be built into every aspect of the APF to better identify emissions sources and mitigation strategies. The National Inventory Report (NIR) does not accurately account for all agricultural emissions sources, and in some cases fails to capture significant mitigation practices: this must change as quickly as possible. The BMPs recommended in this report result in well-documented emissions reduction, but most of them are not currently captured in the NIR.

<b>Practice</b>	<b>GHG Mitigation (Mt CO<sub>2</sub>e in 2028)</b>	<b>Average Abatement Cost (\$/tonne CO<sub>2</sub>e in 2028)</b>	<b>Total cost (\$/year in 2028)</b>
<b>Nitrogen Management</b>			
Quantitative determination of right rate	1.1	\$66	\$74 million
Precision nitrogen management	0.4	\$44	\$16 million
Enhanced efficiency nitrogen fertilizer	1.8	\$46	\$86 million
Elimination of fall nitrogen application	0.2	\$8	\$2 million
4R management of manure	0.08	\$4	\$0.3 million
Improved crediting of organic N sources	0.2	\$11	\$2 million
<b>SUBTOTAL</b>	<b>3.8</b>	<b>\$47</b>	<b>\$180 million</b>
<b>Manure Storage and Handling</b>			
Synthetic impermeable floating covers	0.9	\$13	\$7 million
Acidification of liquid manure	1.3	\$20	\$27 million
<b>SUBTOTAL</b>	<b>2.4</b>	<b>\$14</b>	<b>\$34 million</b>
<b>Livestock Management</b>			
Increased legumes in pasture	1.1	\$1	\$0.8 million
Rotational grazing	2.5	\$5	\$7.6 million
Extended grazing period	0.6	\$36	\$23 million
<b>SUBTOTAL</b>	<b>4.3</b>	<b>\$7</b>	<b>\$32 million</b>

<b>Practice</b>	<b>GHG Mitigation (Mt CO<sub>2</sub>e in 2028)</b>	<b>Average Abatement Cost (\$/tonne CO<sub>2</sub>e in 2028)</b>	<b>Total cost (\$/year in 2028)</b>
<b>Soil Management</b>			
Cover cropping	2.7	\$81	\$216 million
Intercropping	1.6	\$78	\$125 million
<b>SUBTOTAL</b>	<b>4.3</b>	<b>\$80</b>	<b>\$341 million</b>
<b>Wetland and Tree Management</b>			
Avoided conversion of wetlands	1.0	\$77	\$45 million
Wetland restoration	0.02	\$400	\$5 million
Alley cropping	0.14	\$18	\$1.6 million
Silvopasture	0.13	\$20	\$1.6 million
Planting riparian trees	0.14	\$23	\$2 million
Avoided conversion of shelterbelts	0.03	\$37	\$0.65 million
<b>SUBTOTAL</b>	<b>1.4</b>	<b>\$39</b>	<b>\$56 million</b>
<b>TOTAL</b>	<b>16.2</b>	<b>\$40</b>	<b>\$642 million</b>



# Task Force Members

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