

USDA's \$3B bet on climate-smart markets relies on widely varying farmer incentives, requirements

A few projects would pay for emission reductions, not just practices

By Noah Wicks and Rebekah Alvey

Published by Agri-Pulse on August 7, 2024

View online version of the article (with paywall) here:

<https://www.agri-pulse.com/articles/21460-usdas-3b-bet-on-climate-smart-markets-relies-on-widely-varying-farmer-incentives-requirements>.

When South Dakota farmer Paul Casper first heard about a project that's growing climate-smart grain for sustainable aviation fuel, he was intrigued by the prospect of making extra money based on practices he's already using, including no-till farming.

He liked the idea of a three-tiered incentive offered by the biofuel company Gevo Inc., which aims to fuel airliners with SAF made from corn produced with a low carbon footprint.

With the help of \$30 million in USDA funding, Gevo promises to pay farmers a total of \$18 million for both the practices they install and the carbon intensity reductions expected from the use of those practices, according to the company's contract with USDA.

Better yet, farmers like Casper who already use these practices can qualify for payments; they are not only for farmers who implement them for the first time, which is the case with some other carbon credit programs.

The project also offers Casper the chance to try new techniques, including application of biological products; he also will benefit by further reducing soil erosion.

"Your money maker is your own soil," Casper said. "So why wouldn't you want to understand and learn more about how to preserve it?"

Hundreds of companies, nonprofits, state governments and universities have rolled out projects with aspirations similar to Gevo's \$46 million Farm-to-Flight program.

The efforts are part of the Biden administration's Partnerships for Climate Smart Commodities (PCSC) initiative, which combines \$3 billion in USDA funding with more than \$1 billion in investments by corporations, universities and non-profit groups. The projects will pay farmers to adopt climate-friendly practices and collect data to help guide future carbon reduction efforts with the goal of creating new markets.

But for what these projects share in ambition, their approaches vary widely and with differing levels of complexity, based on an *Agri-Pulse* analysis of 82 project agreements that are getting at least \$5 million in USDA funding. These 82 projects account for more than \$2.6 billion of the USDA funding for the initiative and \$982 million of the non-federal spending.

Most of the 82 projects simply provide payments to farmers for each acre on which they adopt a specified practice, or by using an equivalent unit of measurement. Others will pay based on expected outcomes, or in some cases, on measured reductions in carbon emissions.

One of the largest projects in the entire initiative, led by the Iowa Soybean Association but operating over 12 states, expects to pay farmers about \$40 per ton of reduced carbon emissions over the life of the project; farmers will be paid about \$33 an acre through the program.

Some projects, like Gevo's, will pay farmers for practices they already use. Others like the U.S. Cotton Trust Protocol's project offer payments only for new practices farmers undertake.

The size of the payments also varies widely.

A University of Missouri-led program will pay \$40 an acre for each year farmers use a relatively costly cover crop mix, with a \$15 bonus for terminating a cover crop later than usual. In a project led by the National Fish and Wildlife Foundation, farmers can get \$40 an acre — spread over three years. In a project led by the National Pork Board, historically underserved producers can get \$50 an acre annually for planting cover crops.

There's also a heavy reliance on two particular practices — cover crops and nutrient management — to reduce the carbon footprint of commodities. Of projects examined by *Agri-Pulse*, 111 different practices were offered in at least once while 63 included cover crops and 60 included nutrient management.

Critics see over-reliance on some practices, lack of comparisons

Researchers, environmentalists and farm groups all think the PCSC initiative holds a lot of potential. However, more than two years after the program's roll-out, there are still questions about how it will function, what separates it from existing conservation programs and, most importantly, whether enough farmers sign up and turn over data needed to fully evaluate the impact of their practices.

Some critics question whether projects rely too heavily on a small number of individual practices, some of which have unproven climate benefits, and don't go far enough to encourage a broader "systems" approach in which farmers carry out broad suites of practices simultaneously.

"We're always concerned that there's an overemphasis on a couple trendy practices, as opposed to encouraging holistic systems-thinking that yields the greatest carbon sequestration and environmental benefit writ large," said Jesse Womack, policy specialist for the National Sustainable Agriculture Coalition.

Cover crops can add biomass to the soil, which helps to pull more carbon out of the atmosphere. But in order to stop that carbon from returning into the air, that biomass has to stay in the ground, according to Ohio State University soil scientist Rattan Lal, a World Food Prize laureate who is considered one of the world's foremost experts on soil health.

In essence, this means the overall climate benefit that can be gained by a cover crop could be reduced if farmers simultaneously use practices that break up the soil.

Some scientists see flaws in the process of tracking and analyzing the results of the projects. All of the projects were required to have plans for measuring and verifying the carbon impact. But they weren't required to set up control groups — groups of farmers who aren't implementing climate-smart practices — to compare with the project results.

“There's little evidence that I've seen that we're going to come up with that comprehensive level of information, if much information at all,” said Kent Messer, a professor of applied economics at the University of Delaware.

Top available NRCS practices

Each agreement lists the available NRCS practice codes producers can implement through the project. Among the 82 projects that Agri-Pulse analyzed, these are the top 15 available practices.

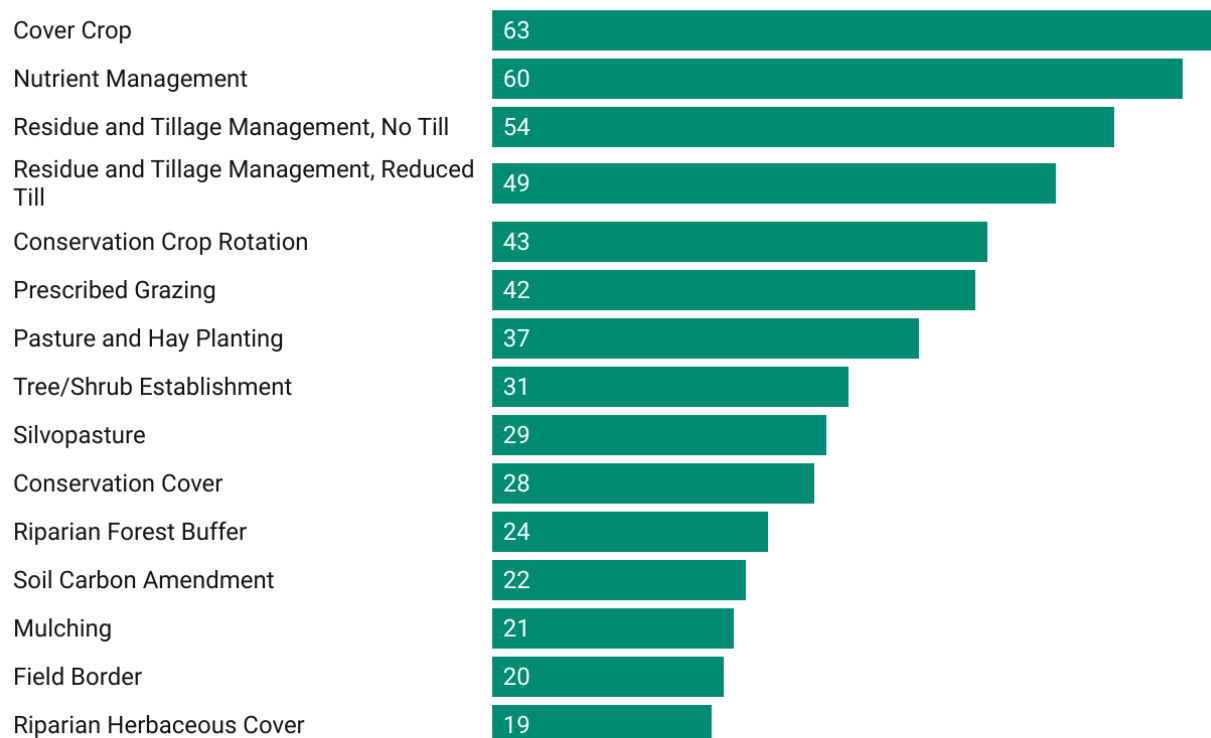


Chart: Rebekah Alvey for Agri-Pulse Communications • Source: Agri-Pulse analysis of PCSC agreements • Created with Datawrapper

Most practices employed in the initiative are offered under USDA programs such as the Environmental Quality Incentives Program and Conservation Stewardship Program.

A number of projects provide EQIP-like direct payments for practice implementation, although some projects take a different approach by paying farmers according to carbon reductions or overall climate outcomes the producers achieve.

Robert Bonnie, USDA undersecretary for farm production and conservation, said in an interview with *Agri-Pulse* that the initiative aims to scale climate-smart practices, improve monitoring and measurement of the impacts of those practices, and ultimately determine if there is a marketplace value for climate-smart commodities.

For example, some projects may focus solely on carbon emissions reduction and developing a market value based on carbon credits. Others may focus on carbon intensity scores or biodiversity.

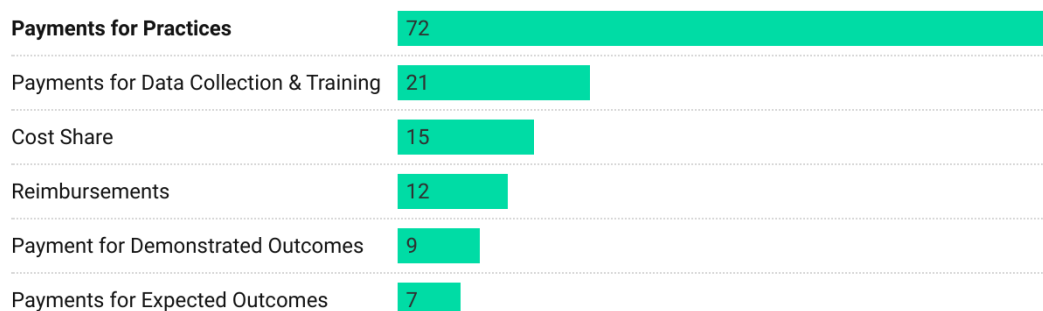
“The trick is that we get the science and the measurement right, so that the math is kind of similar, over all of those things,” Bonnie said.

While programs like EQIP and CSP already support climate-smart practices, PCSC is different in that it brings corporations and other outside entities, including farm groups, into the mix. In addition, the program emphasizes measurement, monitoring, reporting and verification, or what’s known in the business and research communities as MMRV.

Each project includes detailed requirements and methodology for MMRV. Some projects incentivize farmers by paying for training, tools and other technical support to collect data. Others rely on third parties.

How projects incentivize producers

Each agreement details how participating producers will be compensated. Some include multiple incentive types. Of 82 projects analyzed by Agri-Pulse, most offered payments for practice implementation.



Agri-Pulse was only able to categorize the incentives structures of 81 of 82 published agreements for projects totaling \$5 million or more. The agreement document for the 82nd project, sponsored by Land O' Lakes subsidiary Truterra, was heavily redacted, making it difficult to clearly discern what payment structure the project uses. Due to this, the TruTerra project is not included in this data.

Chart: Rebekah Alvey for Agri-Pulse • Source: Agri-Pulse analysis of PCSC agreements • Created with Datawrapper

Geographic, crop and operation diversity were priorities in selecting projects, Bonnie said. The agency also put a high premium, he added, on ensuring producers receive benefits either through payments, MMRV assistance or technical incentives.

In addition to agricultural production diversity, USDA selected projects that took different approaches to key elements of the program. There was no uniformity in how producers were paid or how measuring and monitoring would take place.

“We actually wanted to encourage different types of approaches as a learning exercise,” Bonnie told *Agri-Pulse*. “It’s not just the public and the participants. It’s actually USDA that is doing a lot of learning as part of this.”

In some respects, PCSC resembles USDA’s Regional Conservation Partnership program, which also awards money to groups to implement conservation projects they design in collaboration with the agency, though PCSC focuses on incentivizing and quantifying activities that reduce carbon or other greenhouse gas emissions. Unlike RCPP, PCSC projects also must tie into broader efforts to connect growers with companies willing to pay producers more for commodities grown using climate-smart practices such as cover crops or no-till.

Each PCSC project agreement also contains a list of USDA-recognized practice codes, which also are built into the framework of programs like EQIP or CSP. But Bonnie noted that some of the individual practices being funded through PCSC are not necessarily being deployed in the same way they would be through other USDA programs.

As one example, he pointed to the multiple ways the \$41 million University of Missouri project is handling cover crops, such as paying farmers if they plant cereal rye as a cover crop before soybeans, or if they terminate their cover crops after planting their cash crop.

“There are types of innovation that are happening in these projects, both on the practice side and on the measurement side, that are, frankly, new and it’s not the stuff we’re paying for every day,” Bonnie said, adding that while that “you can put together EQIP or RCPP to do stuff like this,” having to scale, measure and figure out how to market the practices makes PCSC “more unique.”

Individual projects, Bonnie said, encourage participants to “stack” or use a combination of practices. But decisions about types of practices and the combination of practices farmers should use were left to project sponsors based on geography and the commodities involved, he noted.

USDA conservation programs encourage farmers to adopt multiple practices at the same time by offering higher payments for practice “bundles.” CSP’s “climate smart advanced soil health” bundle includes integrated pest management, reduced tillage, extended crop rotation and multiple crop types, for example.

Only one of the 82 projects reviewed by *Agri-Pulse* explicitly listed NRCS bundle codes in its agreement. Others do offer enhancements or alternatives to these standard practice codes.

Anne Schechinger, Midwest director for the Environmental Working Group, said it remains to be seen whether the program will offer benefits that aren't already offered by programs such as EQIP and CSP. Carbon measurement could be where the initiative distinguishes itself, she said.

The projects' diverging approaches and wide slate of practices offered could contribute to a more complete understanding of greenhouse gas reduction benefits of individual practices than what could be gleaned from a program like EQIP, where producers may favor implementing more popular practices over some of the more underused ones, she said.

Advocates say paying for practices, not outcomes, simplifies program

Of the 82 agreements *Agri-Pulse* analyzed, 72 pay farmers based on the practices they carry out, such as employing cover crops, reducing tillage or planting trees, rather than for the reduction in greenhouse gas emissions that the practices are designed to achieve.

Matt Durler, managing director of a National Sorghum Producers-led project that aims to help sorghum qualify for a valuable new clean fuels tax credit known as 45Z that takes effect in 2025, said the group sees the practice-based approach as the "cleanest and the simplest to implement, while also allowing for incremental decarbonization."

Payments vary according to practices they implement, though the average payment will be between \$40 and \$50 per acre, according to the agreement. Multiple practices could be used on each acre. Program contracts last for one year but producers can re-enroll each year, he said.

The project, whose entire budget is \$349 million, including the value of equipment and infrastructure provided by farmers, aims to implement practices including cover crops, nutrient management, no till, reduced till, conservation crop rotations, field borders and filter strips on 1 million acres of sorghum-producing land across five years.

The University of Missouri also pays based on practices farmers implement.

Number of projects available to commodities

Each project listing includes what commodities are eligible to participate. Among the 82 projects that are receiving over \$5 million in total funds, these are the top 15 commodities with the most projects available.

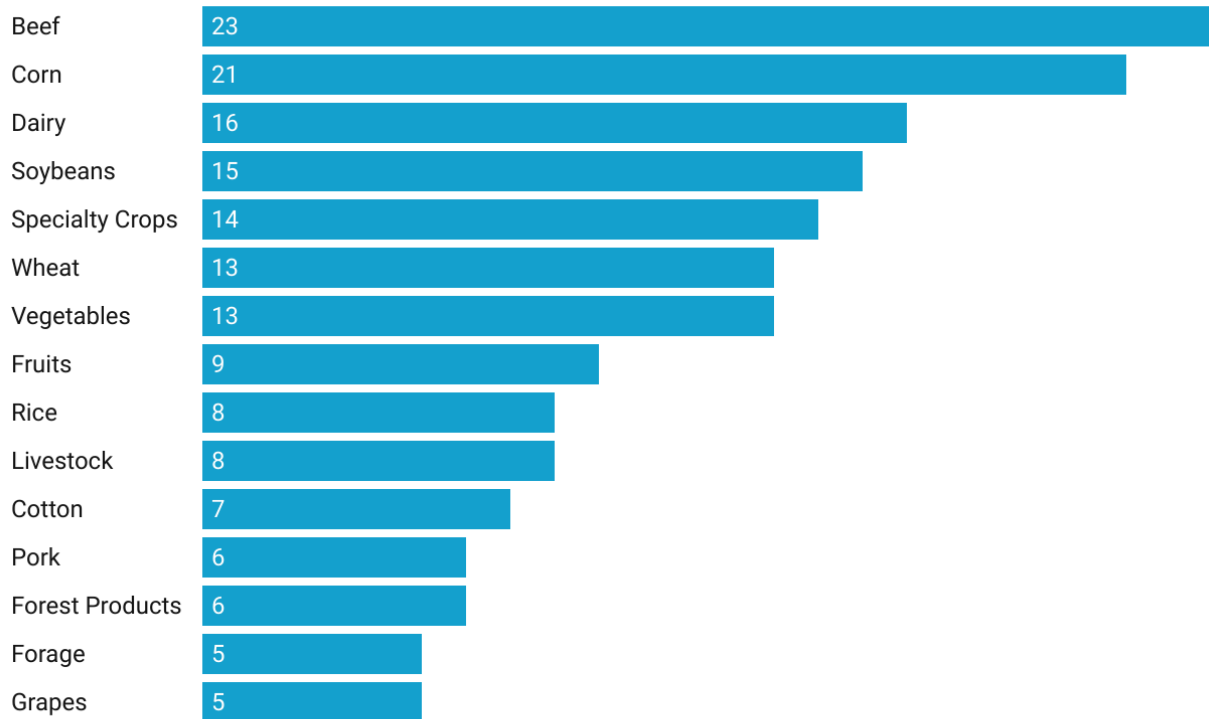


Chart: Rebekah Alvey for Agri-Pulse Communications • Source: Agri-Pulse analysis of PCSC agreements • Created with Datawrapper

Rob Myers, director of Missouri’s Center for Regenerative Agriculture, noted that a report from USDA’s Sustainable Agriculture and Regional Education program found it costs an average of about \$37 an acre to adopt the use of cover crops. He said EQIP payment rates for the practice can often reach \$50 an acre or more depending on the state, and that payments can be even higher for mixes of two or more species.

“Depending on where you’re at and what they’re doing, somewhere around \$30 to \$40 is generally the right minimum,” Myers said. “A higher rate can, of course, be even more motivational.”

Farmers can earn \$30 per acre planting cereal rye before soybeans and \$40 an acre to plant a high biomass cover crop mix through the University of Missouri’s program. Terminating cover crops late can earn an additional \$15 per acre, and farmers can get an extra \$20 per acre from grazing cover crops. The idea is to get farmers to use cover crops several ways.

Other projects — including ones led by the National Pork Board and the National Fish and Wildlife Foundation — similarly provide farmers a per-acre payment for cover crops. NFWF's \$97.8 million Farmers For Soil Health project will pay farmers “transition incentive payments” of a combined \$40 per acre across three years to plant cover crops and \$2 per acre in “signing incentive payments” to submit data into a measuring, reporting and verification platform.

The Pork Board's \$35.1 million project offers \$40 per acre of cover crops planted by most producers and \$50 per acre for those planted by historically underserved producers, according to [the project agreement](#). “As a purely volunteer, incentives-based program, it is hard to predict exactly how many underserved producers will ultimately partake,” the agreement says.

Practice-based payment amounts may differ based on the nature of the practice. For example, the Missouri project is also paying farmers to integrate trees into their grazing systems, [a practice NRCS recognizes as silvopasture](#).

Doing so often takes a higher upfront cost than cover crops due to the high price of tree saplings, though later payments are not necessary since the trees will remain in the ground. The project is offering \$250 per acre for silvopasture, though farmers are only receiving money for parts of a pasture where trees are being planted, Myers said.

Twelve of the projects analyzed by *Agri-Pulse* reimburse farmers for costs they incur rather than practices they implement. Those include a \$15 million project operated by the International Fresh Produce Association. Another 15 projects share costs for installing practices with farmers while 21 projects paid farmers for sharing data or going to training events.

Farmers participating in IFPA's project are reimbursed for up to 90% of their direct costs, though payments are capped at \$10,000 per grower per year. Farmers can choose from an array of practices, including managing irrigation and drainage systems. The project also includes other, more niche practices like filter strips, grassed waterways and riparian forest buffers.

Seven of the projects analyzed by *Agri-Pulse*, including the one led by the Iowa Soybean Association, are paying farmers for their estimated carbon reductions, while another nine pay farmers after the actual carbon reduction has been documented.

An Archer-Daniels-Midlands Co. project is paying farmers who track and submit information on their practices a premium between \$12 to \$36 per acre based on a model estimating the amount of carbon they are expected to sequester. This model, [according to the summary](#), analyzes sequestration per crop and practice.

A project led by Cooperative Regions of Organic Producer Pools is paying farmers \$20 per metric ton of sequestered carbon for practices they implement, but only after project staff verify that they did, in fact, implement the practice, according to [the project summary](#).

Farmer: Gevo's ‘common sense’ approach appeals to farmers

From South Dakota, Gevo is trying to kick-start a market for low-carbon-intensity corn needed to create ethanol stocks for sustainable aviation fuel, an industry fed by the promise of tax credits.

The Colorado-based company plans to build a 65-million-gallon plant near Lake Preston, where Casper farms, to convert corn ethanol into jet fuel, but still needs to secure a consistent supply of feedstocks whose carbon intensities can be traced back to the farm level.

That's where the PCSC initiative comes in.

"We all see what the SAF market could be when this thing grows up," said Travis Deppe, Gevo's senior manager of strategic alliances. "But the work has got to start somewhere."

Gevo's project offers a three-tier system that pays farmers at varying points in the year. First, there's a payment for each acre of land they apply a microbial or bio-stimulant to, use biochar on, apply soil genomics testing to, or a GIS data collection upgrade. Then, using a point system assigning values to different practices, GEVO calculates a payment of between 4 cents and 8 cents for each bushel of corn grown on an enrolled field.

At the end of the year, farmers receive yet another per-bushel payment of between 8 and 22 cents based on a model that compares their estimated carbon intensity reductions with a Midwest average. Farmers' diesel fuel usage, fertilizer applications, cover crop seeding rates, pesticide applications, planting dates, electricity use for irrigation and a slew of other data points are used to calculate the final payment.

Since the program operates on a year-to-year basis, farmers who enroll can choose to leave if they feel it does not work for them. If they like it, they can choose to re-enroll the next year.

This all sounded good to Casper, who was one of the original farmers to sign up. He recalled the original pitch Gevo representatives made during a visit: "We want to pay you the value based on your farming practices and implementation of these different micronutrients and biologics, and then you just keep going forward and getting better and better."

It's a message that resonated with farmers in the area, he said.

"A little bit of common sense in there."

For more news, go to www.agri-pulse.com.

Methodology: How we analyzed the PCSC projects

Agri-Pulse analyzed agreement documents for 82 projects with \$5 million or more in overall funding that USDA posted on its website, encompassing hundreds of pages, and compiled a dataset that includes totals for federal and non-federal funding for each project, the amount of money in each project's budget devoted to producer incentives, the practices producers would implement under each project, and the commodities the projects cover.

Our analysis groups 81 of the projects into 12 categories based on the types of incentives they provide, including payments for practices, payments for expected outcomes, payments for demonstrated outcomes, cost reimbursements, cost-share payments and payments for research. Several projects fall into multiple incentive categories.

The agreement document for the 82nd project, sponsored by Land O' Lakes subsidiary Truterra, was heavily redacted, making it difficult to clearly discern what payment structure the project uses. *Agri-Pulse* was unable to determine the amount of non-federal funding for producer incentives in a \$35.3 million project led by Maple Hill Creamery due to redacted information.

For this project we analyzed agreements published on the USDA site. We specifically looked at projects with \$5 million or more total funding for which agreements had been released by USDA. While there are 10 additional projects of \$5 million or more within the PCSC program, agreements for these projects have not yet been released by USDA, so they were not included in our analysis.

Federal, non-federal funding and producer incentive amounts, participating states, practice codes and commodity types were pulled directly from USDA data and project documents.

To determine the type of incentive we followed these general definitions:

- Payments for practices: Projects in this category paid farmers to implement individual conservation practices, which may include planting trees, growing cover crops or crafting nutrient management plans. This category also includes projects that pay farmers to implement practice bundles, which include a variety of individual practices.
- Payments for expected outcomes: These are payments for practice implementation based on estimated carbon reductions. Payments are weighted by practices with greater carbon reductions, but the partner is not tracking the actual reduction to determine payments.
- Payments for demonstrated outcomes: These are determined by the actual documented carbon reduction. For example, one project will give farmers a voluntary incentive payment of \$100 per ton of CO₂e emissions reduced based upon the implementation of NRCS conservation practices.
- Reimbursements: Projects in this category reimburse farmers for some or all of their costs following the implementation of certain practices. These projects generally include paperwork or inspection requirements that let administrators confirm the activity took place before making payments to producers.
- Cost share: Both partners and participating farmers share responsibility for costs. For example, partner groups in one project would put some money toward purchasing manure management technology, but farmers would be required to pay the remaining costs.
- Payments for data collection and training: These support farmers going to training events or conferences to implement certain conservation practices, or to support conservation data collection. This also applies to agreements that pay farmers for sharing data and research.

Some projects did not detail how producer incentives would be determined or included payment types that fell outside these categories.