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**U.S. Department of Agriculture**
**Natural Resources Conservation Service**

## NOTICE OF GRANT AND AGREEMENT AWARD

| 1. Award Identifying Number<br><br>NR233A750004G094 | 2. Amendment Number | 3. Award /Project Period<br><br>Date of final signature - 08/30/2028 | 4. Type of award instrument:<br><br>Grant Agreement |
|---|---|---|---|
| 5. Agency (Name and Address)<br><br>USDA Partnerships for Climate-Smart Commodities<br>c/o FPAC-BC Grants and Agreements Division<br>1400 Independence Ave SW, Room 3236<br>Washington, DC 20250<br>Direct all correspondence to FPAC.BC.GAD@usda.gov | | 6. Recipient Organization (Name and Address)<br><br>Texas A&M University, Kingsville (TAMUK)<br>700 University Blvd. MSC 201<br>Kingsville TX  78363-8202<br><br>UEI # SQ6VAWQ7YSZ4 | |

| 7. NRCS Program Contact<br><br>Sophie Parker | 8. NRCS Administrative Contact<br><br>Daniel Curtis | 9. Recipient Program Contact<br><br>Mark Alan | 10. Recipient Administrative Contact<br><br>Diana Luna |
|---|---|---|---|
| (b)(6) | | | |

| 11. CFDA<br><br>10.937 | 12. Authority<br><br>15 USC 714 et seq | 13. Type of Action<br><br>New Agreement | 14. Program Director<br><br>Elizabeth Staiger<br>(b)(6) |
|---|---|---|---|

15. Project Title/ Description:  Expands markets for climate-smart beef cattle across the contiguous United States and supports rancher implementation and monitoring of climate-smart practices.

16. Entity Type:  H = Public/State Controlled Institution of Higher Education

17. Select Funding Type

| Select funding type: | ☒ Federal | ☒ Non-Federal |
|---|---|---|
| Original funds total | $4,732,769.00 | $151,372.00 |
| Additional funds total | $0.00 | $0.00 |
| Grand total | $4,732,769.00 | $151,372.00 |

## 18. Approved Budget

| | | | |
|---|---|---|---|
| Personnel | $620,143.72 | Fringe Benefits | $118,624.80 |
| Travel | $69,234.60 | Equipment | $300,800.00 |
| Supplies | $225,492.00 | Contractual | $198,962.88 |
| Construction | $0.00 | Other | $3,199,511.00 |
| Total Direct Cost | $4,357,182.00 | Total Indirect Cost | $375,587.00 |
| | | Total Non-Federal Funds | $151,372.00 |
| | | Total Federal Funds Awarded | $4,732,769.00 |
| | | Total Approved Budget | $4,884,141.00 |

This agreement is subject to applicable USDA NRCS statutory provisions and Financial Assistance Regulations. In accepting this award or amendment and any payments made pursuant thereto, the undersigned represents that he or she is duly authorized to act on behalf of the awardee organization, agrees that the award is subject to the applicable provisions of this agreement (and all attachments), and agrees that acceptance of any payments constitutes an agreement by the payee that the amounts, if any, found by NRCS to have been overpaid, will be refunded or credited in full to NRCS.

| Name and Title of Authorized Government Representative<br><br>Katina Hanson<br>Acting Senior Advisor for Climate-Smart Commodities | Signature<br><br>KATINA HANSON | Date<br><br>Digitally signed by KATINA HANSON<br>Date: 2023.09.01 10:44:31 -05'00' |
|---|---|---|
| Name and Title of Authorized Recipient Representative<br><br>Diana Luna<br>Director, Contracts and Grants | Signature<br><br>Diana P. Luna | Date<br><br>Digitally signed by Diana P. Luna<br>Date: 2023.09.01 10:06:09 -05'00' |

### NONDISCRIMINATION STATEMENT

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW., Washington, DC 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

### PRIVACY ACT STATEMENT

The above statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. Section 522a).

# Statement of Work

## Purpose

The purpose of this agreement, between the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) and Texas A&M University, Kingsville (Recipient), is to build markets for climate-smart commodities and invest in America's climate-smart producers to strengthen U.S. rural and agricultural communities.

## Objectives

The objectives of this project are to support the production and marketing of climate-smart commodities by providing voluntary incentives to producers and landowners, including early adopters, to implement climate-smart agricultural production practices, activities, and systems on working lands; measure/quantify, monitor and verify the carbon and greenhouse gas (GHG) benefits associated with those practices; and develop markets and promote the resulting climate-smart commodities.

## Budget Narrative

The official budget summarized below and described in the attached Budget Narrative will be considered the total budget as last approved by the Federal awarding agency for this award.

Amounts included in this budget narrative are estimates. Reimbursement or advance liquidations will be based on actual expenditures, not to exceed the amount obligated.

TOTAL BUDGET     $ 4,884,141.00
TOTAL FEDERAL FUNDS     $ 4,732,769.00
PERSONNEL     $ 449,379.00
FRINGE BENEFITS     $ 85,960.00
TRAVEL     $ 50,170.00
EQUIPMENT     $ 300,800.00
SUPPLIES     $ 163,400.00
CONTRACTUAL     $ 144,176.00
CONSTRUCTION     $ 0.00
OTHER     $ 3,163,297.00 (Includes $ 1,835,230 in incentives)
TOTAL DIRECT COSTS     $ 4,357,182.00
INDIRECT COSTS     $ 375,587.00
Recipient has an approved Negotiated Indirect Cost Rate Agreement (NICRA) with a rate of 38 percent and a base of $ 988,385.00.

TOTAL MATCHING FUNDS     $ 151,372.00
OTHER     $ 151,372.00
TOTAL DIRECT COSTS     $ 151,372.00
INDIRECT COSTS     $ 0.00

## Responsibilities of the Parties:

If inconsistencies arise between the language in this Statement of Work (SOW) and the General Terms and Conditions attached to the agreement, the language in this SOW takes precedence.

RECIPIENT RESPONSIBILITIES

1. Perform the work and produce the deliverables as outlined in this Statement of Work and attachments.

2. Ensure Paperwork Reduction Act (PRA) clearance is obtained prior to conducting data collection from producers or other project participants, including data collection performed by subrecipients.

3. Comply with the applicable version of the General Terms and Conditions.

4. Submit reports and payment requests to the ezFedGrants system as outlined in the applicable version of the General Terms and Conditions. Reporting frequency is as follows:

a. Performance Reports: Quarterly

b. SF425 Financial Reports:  Quarterly

c. Detailed Progress Report: Quarterly  (The detailed progress report is in addition to the performance and financial reports referenced above and described in the general terms and conditions)

5. Ensure that equipment purchased with Federal funds is used until no longer needed as described in the General Terms and Conditions and 2 CFR 200.  If the residual value of the equipment is $5,000 or more at the time it is no longer needed, the recipient must request disposition instructions.  The disposition instructions may direct the recipient to:

a. Sell the equipment and return a proportionate share of the proceeds to the Federal agency.

b. Transfer title to another eligible entity identified by the Federal agency.

c. Keep the equipment if desired and compensate the Federal agency for its proportionate share of the value.

**Expected Accomplishments and Deliverables**

See attached Benchmarks Table and associated Project Narrative.

**Resources Required**

See the Responsibilities of the Parties section for required resources, if applicable.

**Milestones**

See attached Benchmarks Table and associated Project Narrative.

## GENERAL TERMS AND CONDITIONS

Please reference the below link(s) for the General Terms and Conditions pertaining to this award:
https://www.fpacbc.usda.gov/about/grants-and-agreements/award-terms-and-conditions/index.html

Attachments:

Budget Narrative

Project Narrative

Benchmarks Table

Climate-Smart Practices List and Limitations

Data Dictionary

Climate-Smart Specific Terms and Conditions

Budget Details for NR233A750004G094

| Item No | Payment Type | Expense Category | Description | Obligation Amount | Obligation Direct Cost | Obligation Indirect Cost | NICRA Rate % |
|---|---|---|---|---|---|---|---|
| 10 | Payment | Personnel | | $ 620,143.72 | $ 449,379.00 | $ 170,764.72 | 38 |
| 20 | Payment | Fringe | | $ 118,624.80 | $ 85,960.00 | $ 32,664.80 | 38 |
| 30 | Payment | Travel | | $ 69,234.60 | $ 50,170.00 | $ 19,064.60 | 38 |
| 40 | Payment | Equipment | | $ 300,800.00 | $ 300,800.00 | $ - | 0 |
| 50 | Payment | Supplies | | $ 225,492.00 | $ 163,400.00 | $ 62,092.00 | 38 |
| 60 | Payment | Contractual | | $ 198,962.88 | $ 144,176.00 | $ 54,786.88 | 38 |
| 70 | Payment | Other | | $ 35,190.00 | $ 25,500.00 | $ 9,690.00 | 38 |
| 80 | Payment | Other | Tuition | $ 49,256.00 | $ 49,256.00 | $ - | 0 |
| 90 | Payment | Other | Sub award 1 AGS with IDC | $ 34,500.00 | $ 25,000.00 | $ 9,500.00 | 38 |
| 100 | Payment | Other | Sub award 1 NO IDC | $ 318,986.00 | $ 318,986.00 | $ - | 0 |
| 110 | Payment | Other | Sub award 2 LCoc with IDC | $ 34,500.00 | $ 25,000.00 | $ 9,500.00 | 38 |
| 120 | Payment | Other | Sub award 2 LCoc | $ 864,525.00 | $ 864,525.00 | $ - | 0 |
| 130 | Payment | Other | Sub award 3 BRC with IDC | $ 27,324.00 | $ 19,800.00 | $ 7,524.00 | 38 |
| 140 | Payment | Other | Environmental Testing Incentive | $ 600,000.00 | $ 600,000.00 | $ - | 0 |
| 150 | Payment | Other | Animal GHG Testing Incentive | $ 591,750.00 | $ 591,750.00 | $ - | 0 |
| 160 | Payment | Other | Animal GHG Testing Incentive at LCoC | $ 315,000.00 | $ 315,000.00 | $ - | 0 |
| 170 | Payment | Other | Genotyping Incentive - Zoetis | $ 328,480.00 | $ 328,480.00 | $ - | 0 |

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Withheld pursuant to exemption

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of the Freedom of Information and Privacy Act

1 **Executive Summary**

2  **"Permanently reshaping the national beef herd through grass roots genetic**
3   **selection for climate-smart outcomes"**

4 This proposal proactively manages barriers in adoption of Climate-Smart Agriculture
5 and Forestry practices by effectively eliminating the interventions required by the cow-
6 calf producer from the onset. The intervention is applied in the seedstock breeder,
7 introducing genomic predictions for enteric Green House Gasses (GHG) into the
8 consideration set to inform selection and breeding decisions they are already making.
9 As the selected population (i.e., bulls) enter the commercial cow-calf sector, the
10 improvements in enteric GHG emissions transfer into the cow herd simply through
11 natural breeding activities and gene flow. This proposal also engages the producer at
12 the commercial level by making genomic testing for the genetics of GHG available for all
13 the industry through genetic testing, allowing for maximum genetic response and
14 qualifying their cattle for future marketing channels for climate sustainable beef.
15 Eliminating extra steps and avoiding new workflows or costs for the commercial cow-
16 calf producer helps to eliminate compliance as a constraint to progress.

17       Principal Investigator
18             Ann Staiger, MSc, PhD- Texas A&M University-Kingsville
19             Dr. Staiger is a young professor with experience leveraging exciting new
20             technology for phenotyping in genomic studies across livestock and
21             companion animal species. Her ultimate goal in research is to harness the
22             power of genetics to help farmers produce healthier and more sustainable
23             livestock animals.
24       Lead Project Manager
25             Mark Allan, MSc, PhD- LeMars, IA
26             Dr. Allan of Allan Genetic Solutions currently consults for the livestock
27             industry, focusing on producer profitability through the adaption of
28             management and genetic improvement technologies and practices. He
29             has a unique background from his early career as manager of beef
30             operations, to USDA ARS research geneticist, followed by development
31             and delivery of technology and programs directly to the commercial beef
32             and dairy sectors.
33       Project Partners
34             a. Texas A&M Kingsville, TX (HSI) - Texas A&M University - Kingsville
35                (TAMUK) located in south Texas, is a Hispanic Service Institution that is
36                recognized throughout Texas and nationally for livestock research
37                excellence and innovation. Through the Texas A&M University-Kingsville
38                Farm, TAMUK faculty prioritize student hands-on experience in the field
39                and place real-life career training at the forefront of the college educational
40                experience.

41        b. Leachman Cattle of Colorado, Fort Collins, CO – Leachman Cattle of
42           Colorado (LCoC) is a Fort Collins, CO-based multi-generational ranching
43           operation. Founded in 2003, and working through a network of 45
44           cooperator herds, LCoC annually breeds and markets over 4,500 bulls
45           and females that are considered the most superior in the Angus, Red
46           Angus, STABILIZER™ Composites, and Charolais breeds. The bulls and
47           females are produced through artificial insemination and advanced
48           breeding and selection using a proprietary genomic evaluation with more
49           than 1.4 million animals co-developed with Zoetis' Genetics Team.
50        c. Brahman Country Genetics & Brahman Country Beef, Wharton TX -
51           Brahman Country Genetics (BRC) is a Texas-based, fast-growing first-
52           generation Brahman breeding operation. As one of the most prominent
53           Brahman ranches in the US, BRC uses a combination of innovation and
54           tradition to supply sustainable genetics that are suitable and well-adapted
55           to the subtropical environments of the southern 1/3 of the United States.
56        d. Zoetis, Kalamazoo, MI – Is the largest and most innovative animal health
57           company, with one of the world's largest concentration of animal data
58           scientists and quantitative geneticists. Zoetis is the market leader in
59           developing innovations to predict, prevent, detect, and treat animal
60           illnesses and in the development and commercialization of genomics
61           solutions for sustainably improving livestock genetic gain.

## Background and Justification

63  Over the last 40 years, the beef cattle industry has made immense strides in increasing
64  edible protein per animal unit. Since 1960, beef produced per cow in the US has risen
65  from 250 pounds to over 660 pounds. During this same period, cow numbers have
66  declined by 35% from a peak in the 1970's of nearly 46 M head to the current
67  population of under 30 M head (USDA-NASS, 2022). This massive rise in production
68  per cow is a result of improvements across many facets of animal management –
69  health, reproduction, nutrition, and grazing management. The industry has also
70  benefitted from the development of national genetic improvement programs in major
71  beef breeds that served to drive greater genetic progress for traits under selection.

72  Importantly, the improvement in production and reduction of cow numbers was
73  responsible for reducing greenhouse gas (GHG) emissions per pound of beef produced.
74  From 1977 to 2007, for every billion pounds of beef produced, the emissions intensity
75  was reduced by 16.3% (Capper, 2011). Despite the environmental production
76  efficiencies achieved, enteric GHG production by the beef cow remains high and
77  accounts for 93% of the total GHG emissions from the cow, with the remaining 7%
78  attributed to manure (Place and Mitloehner, 2021). To meet societal goals of net zero
79  emissions by 2050 or earlier, the beef production sector of agriculture will have to look
80  to other interventions and new technologies to continue to accelerate the rate of
81  reduction of GHG levels (Place and Mitloehner, 2021). This will have to occur while

82 simultaneously increasing product quality and quantity to meet growing global beef
83 demand.

84 A number of approaches have been developed to help reduce enteric GHG emissions
85 in cattle, largely focused on nutrition. Practices, such as adding red macroalgae
86 (seaweed) to diets, have been shown to dramatically impact the amount of enteric $CH_4$
87 emission from cattle (Roque et al., 2021). It is clear that these types of management
88 practices will become part of GHG reduction models in the future. However, these
89 approaches, and others, have one major limitation - they only provide benefit during the
90 period in which the intervention is applied. In most cases, the cattle producer must,
91 each and every day, continue to apply the intervention. Once the intervention is
92 removed, the benefits are lost, and the animal returns to pre-intervention levels.

93 ***This proposal creates a permanent solution impacting enteric and fecal GHG***
94 ***emissions of the beef cattle through genomic selection for reduced feed intake***
95 ***and lower $CH_4$ emissions. This project will allow all producers access to a***
96 ***technology that only requires a tissue sample (DNA), that identifies animals that***
97 ***are genetically superior to reduce climate impact.***

98 This proposal brings together industry partners from academia (Texas A&M Kingsville),
99 animal health (Zoetis), Allan Genetic Solutions, and suppliers of beef genetics
100 (Leachman Cattle of Colorado and Brahman Country Genetics) to deploy genetic
101 selection technology for reduced GHG emissions. This technology will be available for
102 all producers throughout the industry well beyond the life of this grant. Genomics will
103 allow animals to be identified by any producer of any size, allowing for selection of
104 future generation of more efficient climate sustainable cattle and qualify animals and
105 operations for new developing markets. The goals for the project include:

106 • Developing phenotyping capacities that allow underserved producers, young
107    farmers, and small producers to find animals that emit less $CH_4$ within their
108    herds, while still excelling in traits that allow the commercial beef producer to be
109    profitable;
110 • Implementing genetic tools into the producers' programs that allow the
111    production of genetically climate smart cattle for genetic improvement  for the
112    commercial producer at the farm level; and,
113 • Enhancing established DNA testing and genomic selection tools adaption for
114    commercial beef producers to include insights related to GHG emission intensity
115    while maintaining and improving production traits related to profitability.

116 This proposal will leverage large resources and distribution networks already assembled
117 and that are already having a positive impact on the commercial beef producer.

118 According to the USDA's National Agricultural Statistics Service (NASS) 2017 census of
119 agriculture, the average age of the 3.4 million producers was 57.5 years. The same
120 survey showed that "beginning farmers" with fewer years of farming experience
121 accounted for a fast-growing 27 percent of U.S. producers. Their average age was 46.3,

122  and they tended to have higher percentages of minorities and multi-racial farmers.
123  Through this project, we propose to reach into this emerging demographic of younger,
124  first-generation beef cattle ranching start-ups to partner, mentor, and support. Examples
125  of such ranches are our proposed partners Williams Ranch (Turkey, Texas), Santa Cruz
126  Ranch (Victoria County, Texas), and La Estancia Ranch (Bastrop, Texas). We believe
127  supporting and growing these first-generation ranching producer operations will be
128  crucial to scaling climate-smart ranching solutions and the long-term growth and
129  sustainability of the US beef industry. That is why we are committing to identify 75 of
130  these first-generation, African-American, Latino-American, Asian-American, Native
131  American, young farmer, woman, veteran, and smaller operating producers for support
132  under the project. Outreach efforts will include a workshop series in the first two years
133  organized by TAMUK to target underserved producers in south Texas, along with
134  recruitment events at select breed organization meetings by project partners. We will
135  work with these selected producers with Zoetis to genomically profile their animals at a
136  cost to the project, which will yield immediate opportunities to sustainably improve the
137  management of their herds. We will also leverage the grant to provide financial
138  incentives, beyond genotyping to enroll the producers into NRCS, by creating a base
139  line of their current climate footprint with soil and manure testing and simulation
140  modeling. This grant will bring all practices together to validate the use of genomic
141  testing to show the impact of  a new tool to genetically select climate sustainable cattle,
142  and qualify these cattle and producer operations with future developing marketing
143  opportunities for climate sustainability. The program includes full traceability
144  technologies (DNA and Blockchain) to tell the story to the consumer about food
145  produced using climate smart practices. This grant will leverage the teams of partners
146  for producer recruitment, market awareness channel development, ultimately leading to
147  enhance financial opportunities for livestock producers in the future. In addition, Texas
148  A&M University – Kingsville will support the training, education, and showcasing of
149  these farms as model climate-smart ranches across the US.

150  **Why focus on Genetic Selection?**

151  Genetic selection in beef cattle has been extremely effective in driving change in the US
152  beef herd over last 40 years. A great example is the change in the percentage of
153  animals that graded USDA Choice or higher over the last 2 decades. High quality beef
154  is defined as animals that receive the upper two levels of the USDA Quality Grade;
155  namely Choice and Prime. The Quality Grade is determined by maturity of the animal
156  and the amount of intramuscular fat, referred to as marbling. Higher Quality Grades are
157  associated with a more favorable eating experience for the consumer. For that reason,
158  carcasses with higher grades receive a premium. In 1995, 49% of US harvested cattle
159  had quality grades of Choice or Prime. In 2016, the most recent National Beef Audit,
160  71% of the harvested cattle were Choice or Prime, an increase of 22%. By far, the
161  greatest contribution to this increase has been genetic selection for improvement of
162  marbling and other carcass traits in the seedstock cattle sector. Additionally, during the

163 same time period, carcass weight increased from an average of 746 lbs. in 1995, to 861
164 lbs. in 2016, a 15% increase (Boleman et al., 1998; Boykin et al., 2017).

165 By far, the greatest contribution to this increase has been genetic selection for
166 improvement of marbling and other carcass traits in the seedstock cattle sector. This is
167 a very important element because the intervention (i.e., genetic selection) occurred in
168 seedstock breeding programs and the flow of breeding stock (i.e., bulls) into the US
169 beef herd changed the genetic composition of the domestic cow herd. No additional
170 management intervention was required on the part of the commercial beef producer.
171 Arguably, the most valuable aspect of genetic selection to drive industry-wide change is
172 that it is permanent. Once we change the genetic composition of the herd, it does not
173 decay or diminish over time and, in fact, can be continuously improved with sustained
174 selection within the breeding population.

175 Enteric GHG emissions in cattle have been shown to be moderately heritable. This
176 confirms that there is genetic influence on different levels of $CH_4$ phenotypes when
177 measured on the beef animal (Donoghue et al., 2020). The heritability for $CH_4$ is similar
178 to values for feed intake, growth, and carcass traits. As a result, we can apply genetic
179 selection in breeding populations to drive favorable genotypes for sustainable
180 production into the domestic cow herd. Further, there are a number of technological
181 developments that will accelerate the path to doing so when compared to the last 4
182 decades of genetic improvement for other traits of merit.

183 • Over the last decade, improvements to the genetic evaluation system have
184   enabled producers to more accurately predict genetic merit in animals at a
185   younger age. This has been the direct result of individual animal genotype
186   information and a large improvement in models used to create genetic merit
187   values. The use of mixed models, specifically Best Linear Unbiased Prediction
188   (BLUP), has been the heavy lifter of the beef genetic evaluation systems
189   (Henderson, 1975). Advancements in the technology continue to develop with
190   the increase in computational capacities and the addition of genomic technology.
191 • In the early 2000's the industry began using selection indexes to select for
192   multiple traits that increase carcass value. Selection index theory uses multiple
193   traits from the genetic evaluation. Each trait used in the index is weighted based
194   on the economic impact of the trait in the overall value of the index (Hazel,1943).
195   Together the weighted traits are summed and expressed on a total dollar value.
196   Producers use an index in ranking parents to be used in mating decisions to
197   produce the next generation. Ultimately, this methodology enables simultaneous
198   selection for all traits of merit including performance, reproduction, health,
199   efficiency, and sustainability.
200 • The genetic improvement process is driven by the underlying phenotypes. As
201   such, data collection is paramount. Accurate measurement of feed intake and
202   enteric methane emissions in individual cattle is now practical utilizing
203   established and validated methods.

204

## Partners' Backgrounds

**Texas A&M University - Kingsville** (TAMUK), located in south Texas, is the oldest 4-year public non-land grant agricultural teaching and research Hispanic-serving institution in the nation. The university became a member of the Texas A&M system, the largest system of higher education in the nation, in 1989. The Texas A&M System provides oversight and leadership for 11 universities and eight state agencies, including the Texas A&M AgriLife Extension and Texas A&M AgriLife Research agencies.

Dr. Staiger (Assistant Professor of Animal Genetics) and Dr. Stanko (Professor of Reproductive Physiology, Texas A&M AgriLife Research) are faculty within the Department of Animal Science and Veterinary Technology (ASVT) at TAMUK, which is housed in the Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources.

The Kleberg College of Agriculture consists of three collaborative departments, two research intensive units, including the Caesar Kleberg Wildlife Research Institute, and the University Farm. The ASVT department is home to the renowned King Ranch© Institute for Ranch Management (the only Master of Science in Ranch Management program in the world) and is the largest academic department on the campus of TAMUK with 14 faculty, 15 graduate and approximately 500 undergraduate students (68% of the students are Hispanic). The department has well established working collaborations with V8 Ranch (Brahman cattle), La Paloma Ranch (Brangus cattle), Chaparrosa Ranch (Beefmaster, Black Angus, Red Angus cattle), King Ranch (Santa Gertrudis and Santa Cruz cattle), Brown Land & Cattle (Hereford, Akaushi, and Red Angus cattle), La Muñeca Ranch (Brahman and Simbrah cattle), and Armstrong Ranch (Santa Gertrudis cattle).

The TAMUK University Farm includes over 650 acres of native brush, improved pastures, and dry-land plots, and a separate covered livestock pavilion. The University farm has two animal handling facilities, one located at the farm and one at the livestock pavilion; each facility has a working head chute and individual sorting pens. The University Farm maintains a small commercial cow/calf beef operation that consists largely of Santa Gertrudis cows with some Hereford, Red Brangus, Black Brangus, and commercial crossbred cow influences.

**Dr. Mark Allan** of Allan Genetic Solutions currently consults for the livestock industry, focusing on producer profitability through management of existing and new technologies, including, but not limited to, genetic improvement. Before returning to graduate school, he established himself as an expert in beef production. Dr. Allan served as a Research Geneticist for the USDA ARS at the U.S. Meat Animal Research Center (2003-2008), where he led the R&D programs for the genomics of feed efficiency and reproduction in bovine. At the USDA he was a member of the team that developed the first livestock high density genomic chip. This technology has revolutionized the genetic selection in all

species of production livestock worldwide. From (2008-2011) he served as the Associate Director of Global Technical Services for Pfizer Animal Genetics, helping develop and launch the Angus HD50K and Dairy Clarifide products. In this role, Dr. Allan worked directly with producers to educate the how and why of adapting a new genomic technology to enhance profitability. From 2011-2020, Dr. Allan served as the Director of Marketing and Genetic Technology for Trans Ova Genetics, Sioux Center, IA. His passion is to help industry producers harness technology that enhance profitability for present and future generations. For this proposal Dr. Allan will direct the project toward accomplishment of the objectives of the project. Responsibilities include coordination of recruitment and marketing efforts, assisting producers with NRCS enrollment, environment baseline simulations, coordination of data sharing across all partners and vendors involved, ensure execution of key milestones and timelines, and assist with the completion of all required reports, including financial budget management.

**Brahman Country Genetics** (BRC) was founded in 2019 by husband-and-wife team, Brandon and Rachel Cutrer, to bring Brahman cattle ranching into a new era through a combination of innovation and tradition. The Brahman breed of cattle are well adapted to the subtropical environment of the southern 1/3 of the US. Located at 10406 FM 1301 Boling, Texas, Rachel, a 7th-generation Wharton County rancher, and Brandon, a Mississippi native, started their ranching enterprise with only 6 cows and no owned land. Over the last decade, they have gone from owning zero acres of land - to now owning over a section of land. They have also grown their cattle holdings to over 350 head of cattle.

Though they are a new and first-generation brand, their acceptance of technology and focus on sustainable practices have helped them achieve success. Dedicated to producing profitable genetics using current advanced technologies, Cutrer Ranch in 2019 teamed up with Zoetis to create their own genomic-enhanced genetic evaluation system. Their system includes over 8,000 animal pedigree with 12 production and carcass traits for Brahman and Brahman Cross cattle (Table 3). Together, the couple has rapidly turned BRC into one of the most prominent Brahman ranches in the United States, serving customers in the southern US and in over 20 countries. BRC sells approximately 100 head of Brahman cattle per year to ranchers in the US and abroad. They also export a large amount of their cattle's frozen genetics around the globe.

In 2019, BRC launched a ranch-to-table beef brand with their Brahman cattle. The brand has steadily grown, and in 2022 the Cutrer's opened a farm-to-table retail store in the historic square of their hometown. As the ranch expands to serve customers across the US and internationally, the Cutrer family remains committed to their hometown roots and to creating strong community bonds.

**Leachman Cattle of Colorado** (LCoC) was founded in 2003. LCoC is a multi-generational ranching operation, now involved in all sectors of the industry - seedstock, cow/calf, and feedlot. The operation is based at 2056 West CR 70, Fort Collins, CO.

285 Annually, LCoC markets over 2,500 bulls and 2,000 females, including breeds of cattle,
286 Angus, Red Angus, STABILIZER™ Composites, and Charolais. STABILIZER™ cattle
287 are genetically based on research done by the United States Department of Agriculture
288 at the US Meat Animal Research Center, at Clay Center, Nebraska. These cattle
289 consist of a blend of British and Continental breed inputs, including Angus, Red Angus,
290 Simmental, Gelbvieh and South Devon. The bulls and females are produced through a
291 network of cooperator producers. LCoC's cooperator network consists of forty-five
292 herds, comprised of over 12,500 breeding females. LCoC provides cooperators with
293 breeding, selection, and marketing services. Most LCoC cooperators have been in the
294 Leachman breeding program for over a decade. Over 75% of LCoC cooperator calf
295 crops are sired by using artificial insemination. An additional 15% are produced by
296 embryo transfer. Only the top 50% of cooperator male calves are sent to LCoC to be
297 performance tested and sold as bulls.

298 LCoC is committed to using the most advanced breeding and selection tools available
299 to raise cattle that are more profitable. Using science in building cattle, LCoC
300 established its own genetic evaluations in 2004. Currently, this evaluation includes and
301 animal pedigrees of 1.4 million cattle, with 21 traits and 3 indexes (Table 3). A primary
302 focus of LCoC has been the building the largest privately owned data base for individual
303 animal feed intake. Currently, this data base has 40,858 animals contributing feed
304 intake phenotypes, with over 1500 being added annually from the LCoC nucleus
305 progeny program and another ~1280 from outside of the nucleus. One of the primary
306 goals of LCoC is to produce cattle with reduced feed intake while continuing to produce
307 excellent carcass value. Additionally, LCoC strives to produce efficiency in the cowherd,
308 this requires a female base that fits a wide variety of environments

309 **Zoetis** is the world's leading animal health company with a 70 year history of innovating
310 ways to predict, prevent, detect, and treat animal illness. The company's leading
311 portfolio and pipeline of medicines, vaccines, diagnostics and technologies make a
312 difference in over 100 countries. The **Precision Animal Health** business unit at Zoetis
313 focuses on the development of technologies that digitize animal management and
314 provide insights that inform animal care. Component technologies include software
315 applications for cattle feeding and health records from Performance Livestock Analytics,
316 genomic solutions in ruminants, and data analytics for precision animal medicine.

317 As it pertains to this proposal, Zoetis will leverage existing infrastructure for genotyping
318 and genetic evaluation to help derive genomic predictions for sustainability outcomes.
319 This includes a ssBLUP pipeline that supports multiple genetic evaluations run on a
320 weekly basis such as the CLARIFIDE Plus evaluation for dairy cattle (>15M pedigree
321 records and 1 M genotypes), custom genetic evaluations for LCOC (>1.4 M animal
322 records and >66,000 genotypes) and BRC (>8100 animals and 566 genotypes), and
323 INHERIT in beef cattle 1.4 million animals and 129,000 genotype animals. Producers
324 are also equipped with web-based and mobile decision support tools to facilitate use of
325 genomic predictions in day-to-day management.

## Pilot Project Design

This proposal will fund three years of GHG phenotypic and environmental testing to promote the use of genetic selection for reduced GHG emissions in cattle by enrolling producers in NRCS program(s) with soil, manure and genomic testing for physical and genetic traits related to GHG emissions. We will assist the producer with developing a genetic selection plan for reducing GHG emissions in their cattle. These producers will apply defined climate smart practices (528-Prescribed Grazing and New Standard-Genetic Selection) such that the combined animal and environmental management practices will result in cattle with a more favorable carbon footprint relative to conventionally produced beef. Year 1 will focus on the purchase and installation of equipment, initiation of data collection, with outreach extension activities to educate, recruit and enroll producers. This program will use early adopters for the execution of phenotypic collection. Phenotypic collection of GHG emission traits will be done on two turns (each turn is 70-75 days) of animals at each location. The second year will continue phenotypic collection, deriving equations for prediction of $CH_4$ from correlated trait data and development of expected progeny differences (EPD) for GHG emissions from correlated data. Additionally, selection indexes will be updated to include GHG genetic merit values. Year 3 results in the production of the first bulls with EPD and updated indexes. Additionally, GHG phenotypes and indexes will be offered in the Zoetis Inherit Select replacement female product, providing broad access to the associated GHG selection tools across the industry well beyond the timeframe of this grant. Table 1 is a timeline for milestones to ensure success of this proposal.

Table 1. Timeline for milestones.

| Timeline for milestones | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Purchase equipment | X | | |
| Extension education & recruitment | X | X | |
| Collection of data | 2nd 1/2 | X | X |
| Prediction of GHG ($CH_4$) from existing data | 2nd 1/2 | X | |
| Development EPDs GHG Correlated traits | | X | |
| Index development | | X | X |
| Development trait variance components | | X | X |
| Genomic enhanced EPDs GHG | | | X |
| Genomic Female Inherit Select Product | | | X |

351 Collection of phenotypic data will be done at two locations. All subtropical adapted cattle
352 will have phenotypes recorded at TAMUK facilities located in Kingsville TX. These
353 facilities will be populated initially with bulls from qualifying climate-smart producers.
354 These facilities will include two pens, each with a 20-24 capacity. Individual feed intake
355 data will be collected using the SmartFeed bunk system (Figure 1). This system is
356 designed to record total daily feed intake from individual animals (C-Lock Inc, Rapid
357 City, SD). Additionally, the pen will also be equipped with the C-Lock Inc's GreenFeed
358 GHG measuring equipment (Figure 2). The GreenFeed system is designed to measure
359 gas fluxes of Methane ($CH_4$), and Carbon Dioxide ($CO_2$) from individual animals. The
360 system offers a small amount of pelleted treat to entice the cattle to visit multiple times
361 per day. As the animal enjoys the treat, the GreenFeed system records the gas
362 emissions from the animal. A second GreenFeed system designed for pasture-based
363 recording will also be installed. This GreenFeed unit will allow for an additional 20-24
364 animals to be measured on pasture high forage diets. Annual capacity will be 240 head
365 through the pen facilities with an additional 100 head annually through the pasture
366 facility.

367

368 Figure 1.  SmartFeed feed intake data          Figure 2.  GreenFeed GHG data
369            collection system                             collection system



370

371 The second phenotyping location is at LCoC's bull development facilities in Fort Collins
372 Colorado.  This facility currently has one-time capacity for phenotyping 256 young bulls
373 and supports 5 turns annually. Six Greenfeed units will be installed to collect individual
374 GHG animal phenotypes.

375 Table 2. Capacity for phenotypes generating GHG and Feed intake (FI) by year.

| Phenotypes Animals | Year 1 | Year 2 | Year 3 | Total |
|---|---|---|---|---|
| TAMUK-GHG[1] | 120 | 340 | 340 | 800 |
| LCoC - GHG[2] | 760 | 1400 | 1400 | 3560 |
| Total GHG | 880 | 1640 | 1640 | 4360 |
| | | | | |
| TAMUK- FI[3] | 100 | 240 | 240 | 580 |

| | | | |
|---|---|---|---|---|
| LCoC - FI[4] | 1280 | 1280 | 1280 | 3840 |
| LCOC - FI additional[5] | 2750 | 2750 | 2750 | 8250 |
| Total FI | 4080 | 4150 | 4150 | 12670 |

376 [1]Texas A&M Kingsville GHG phenotypes (50% will be from BRC), [2]Leachman Cattle of Colorado GHG
377 phenotypes
378 [3]Texas A&M Kingsville feed intake phenotypes (50% will be from BRC), [4]Leachman Cattle of Colorado
379 feed intake phenotypes
380 [5]Leachman Cattle of Colorado feed intake phenotypes from additional animals collected within the LCoC
381 system

382 Understanding correlations between $CH_4$ and feed intake and growth traits will be
383 important in understanding the potential to indirectly derive estimates of GHG emissions
384 from existing data. Correlated trait values coupled with existing pedigree and genomic
385 information will increase prediction accuracy and allow estimation of genetic merit for
386 GHG in animals without phenotypes for GHG traits. All diet information at both locations
387 will be included in the models to account for variation in energy density. Primary diets
388 being used are growing diets that are based on a higher roughage content. We will
389 collect information about feeding practices from producers to include in the model.
390 Previous studies have shown a strong correlation between an animal's feed intake
391 relative to the amount of enteric $CH_4$ produced. Correlations of 0.83 and 0.75
392 (Danoghue, et al.,2020; Bird-Gardiner et al., 2017) were observed. Slightly lesser, but
393 strong correlations of 0.52 and 0.60 were observed for growth traits of weaning and
394 yearling weight, respectively. These correlated traits will be used in conjunction with the
395 phenotypic GHG traits, this will add accuracy to the quality of the genomic test. The use
396 of correlated traits is well established in beef cattle genetic evaluation having been
397 successfully applied for ultrasound data for carcass traits (McNeil and Northcutt, 2008).

398 Table 3. Available traits and Indexes already produced in Zoetis evaluations.

| | Breeds* | Ped[1] | Traits | Prod[2] | Mat[3] | Man[4] | Car[5] | Geno[6] | Ind[7] | FI[8] |
|---|---|---|---|---|---|---|---|---|---|---|
| LCoC | AN,AR, CH, ST | 1.4 mm | 21 | 7 | 6 | 4 | 4 | 66,000+ | 6 | 40,858 |
| BRC | BR, BR-C | 8133 | 12 | 3 | 2 | | 4 | 566 | | |

399 *AN-Angus, AR-Red Angus, CH-Choralois, ST-Stabilizer, BR- Brahman, BR-C-Brahman Cross
400 [1]Ped-Animals in pedigree, [2]Prod- Production Traits, [3]Mat- Maternal Traits, [4]Man- Management Traits,
401 [5]Car-Carcass Traits, [6]Geno- Genotyped Animals, Ind-[7]Selection Indexes, [8]FI- Feed Intake
402

403 Both BRC and LCoC are contributing their current databases, supplying all of their
404 animal records, along with all the genotypes, including previous and new genotyped
405 animals, in the evaluations run in partnership with Zoetis. This represents a big
406 commitment and passion to positively impact climate and producer sustainability. An
407 additional strength in this proposal is the support and contribution of Zoetis. Currently
408 Zoetis partners with BRC and LCoC in producing genetic evaluations and indexes, 3

409 times annually for BRC and a weekly evaluation for LCoC. Currently the LCoC
410 evaluation is the backbone of a third Zoetis evaluation that allows the commercial
411 cattlemen to use the power of these technologies for their female selection. This is one
412 of the first genetic tools that allow the commercial cattlemen to harness the female
413 portion of the genetic equation.

414 These genetic evaluations are powered by the Zoetis Multi-Breed Evaluation (ZMBE), a
415 proprietary evaluation that generates results using methodology and software from the
416 University of Georgia (i.e., single-step Genomic Best Linear Unbiased Prediction;
417 ssGBLUP; Lourenco et al., 2020). This analysis of phenotype, pedigree and genomic
418 data simplifies evaluation processes as compared to conventional approaches and
419 yields superior accuracy, especially for non-parent animals. These data originated from
420 a variety of sources, but primarily included LCoC and associated cooperators as well as
421 Profit Share partners and Zoetis company-owned resources. Profit Share partners are
422 seedstock operations that contribute phenotypes and genotypes to the LCoC genetic
423 evaluation in order to receive EPD and indexes associated with the evaluation. This
424 adds another 44,000 animals with phenotypic records, representing more than 11
425 breeds of cattle annually, and continues to grow. Ultimately the profit partners
426 submitting data to the LCoC evaluation creates opportunity to integrate GHG trait
427 evaluation to their animals using pedigree, genotype and correlated trait data. This
428 creates a cascade of growth of improved GHG animals in the future giving additional
429 commercial producers access to the product.

430 **Detailed MMRV plan**

431 • *Measurement*
432     o The Climate Smart commodity for this proposal is livestock, beef animals.
433       The array of climate-smart practices that have been defined operate under
434       the assumption that all cattle managed under those conditions are created
435       equal. However, we know that these cattle differ with respect to feed
436       efficiency and GHG emission intensity due to genetic effects. GHG will be
437       measured directly from individual animals daily using all of the C-Lock
438       GreenFeed units at TAMUK and LCoC. Simulation models for GHG
439       emission will be generated from correlated traits (weight, dry matter
440       intake, sex) in addition to utilizing the phenotypic data generated as time
441       evolves in this project. Soil sampling and manure phenotyping will be used
442       to establish baseline GHG values on the producers' farms using simulated
443       programs. These simulations will allow estimation of GHG emissions in
444       herds of all sizes. Once development of GHG EPDs has occurred, this
445       project will result in genetic monitoring tools that estimate GHG emissions.
446 • *Monitoring*
447     o The development of the phenotypes will result in superior GHG animals
448       that will produce the next generation of beef cattle. These cattle will inherit
449       superior genetics for reduced GHG emissions. This cascade of

| 450 | improvement can be followed for all animals enrolled in the Blockyard |
| 451 | (Blockchain technology), additionally genotyping with the InheritSelect |
| 452 | product will allow for genetic confirmation of animals with reduced GHG |
| 453 | emissions. Dr. Mark Allan and Dr. Ann Staiger will assist enrolled |
| 454 | producers with their genetic selection monitoring plan based on initial |
| 455 | environmental screenings and animal testing results. For example, if a |
| 456 | producer enrolls their 100 herd animal with an average production of |
| 457 | 7,000 kg of $CO_2$ annually and elects for a 25% replacement heifer rate |
| 458 | based on a 10% reduced of $CO_2$, after one round of selection the total |
| 459 | $CO_2$ production of the herd with reduce by 17,500 kg. |

- 460 • *Verification*
  - 461 o Compliance criteria and verification methodology utilized will be grantee
  - 462 auditing, computer modeling, and AI. The generation of EPDs is a
  - 463 verification process that is standard in livestock animals. Additionally, the
  - 464 animals in the commercial sector will be sorted into high and low GHG
  - 465 EPDs to assist producers in their cull criteria, and the manure sample
  - 466 phenotypes will be used as a verification of the genomic selection
  - 467 technology for reduced GHG emissions through genetics. For producers
  - 468 that elect to implement additional climate-smart practices, we will also
  - 469 apply the Comet Planner to distinguish the GHG reductions that are due to
  - 470 those practices versus genetic selection.
- 471 • *Reporting*
  - 472 o All data collected by LCoC and TAMUK will be centrally located in the
  - 473 Zoetis R&D program. All partners will have access to all genetic
  - 474 InheritSelect data generated, housed, and accessible at Zoetis for this
  - 475 project. The project manager (Dr. Mark Allan), the lead grantee (PI Ann
  - 476 Staiger), and partners (LCoC, BRC, and Zoetis) will hold bi-weekly virtual
  - 477 meetings sharing of data and monitoring activities across the project. The
  - 478 partners have already established a Microsoft Teams, administrated by
  - 479 TAMUK, to share files, coordinate virtual meetings, and communicate. Dr.
  - 480 Mark Allan and Dr. Ann Staiger will be responsible for all USDA quarterly
  - 481 and other reports.

482

## 483 Recruitment, extension outreach, education and marketing

484 This partnership brings together multiple networks that create opportunities to develop
485 and launch a new technology (genomic selection) for reduced $CH_4$ emissions in beef
486 cattle. LCoC has developed a network of field representatives that promote genetics
487 and technical service with current and perspective new clients for beef production, but
488 has not developed an evaluation for GHG emissions. This network includes 33 LCoC
489 representatives across the US, including 1 representative in Hawaii. Zoetis Precision
490 Animal Health has 22 beef sales and technical service reps in the US, supporting

491 products and technology implementation. BRC team takes a similar approach as LCoC
492 and through technical service and promotion in the southern region of the US. Texas
493 A&M Kingsville is a member of the Texas A&M extension system that serves Texas.
494 Within the system, there are 6 beef specialists that are valuable educational resources
495 in the adoption of new technologies. These 6 specialists support extension programs in
496 254 counties in the state of Texas. These teams will be used to help identify
497 underserved producers that will be enrolled in the program for Climate-smart practice(s)
498 that includes genotyping their beef animals. One of the early benefits to the producer
499 will be the baseline information of the soil and manure testing, plus the large number of
500 production and management EPD traits they will receive on their animals while the GHG
501 EPDs are being developed. The early information and enrolled in the Blockyard
502 (blockchain) system will yield immediate opportunities to sustainably improve the
503 management of their herds beginning in year 1 and 2 of the grant. This unique network
504 will be utilized to promote the GHG genetic program through education and outreach
505 across the US, which will create long term success for the climate -smart beef
506 commodities program described in this proposal.

507 TAMUK will provide four different 2-day education workshops every 6 months for up to
508 50 attendees to cover four broad topic areas that are presented by invited expert guest
509 speakers. The first symposium will cover genomic EPDs, the second sustainable cattle
510 production, the third on marketing cattle, and the fourth on how to feed cattle. A small
511 registration fee will be charged to cover refreshment costs, but if the producer
512 successfully enrolls in the grant process, the registration fee will be waived for future
513 symposium attendance. The location of the workshop will change to target producers
514 from different areas of south Texas. Online attendance will be an option to target
515 producers outside of Texas.

516 **Marketing channel development future branded programs**

517 All partners involved in the grant will work together to arrange opportunities to promote
518 premium value (i.e. branded programs) with the feeding, packing, and protein
519 distributors. Currently only a limited number of programs exist that are exploring
520 sustainable beef production to impacting GHG emissions as a branded premium
521 program. The teams will take an awareness marketing approach. The approach will
522 leverage the large network of existing relationships that the partners bring to this
523 project. These relationships include all levels of beef production; this includes consumer
524 retail, beef harvest, feeding, and commercial cow calf production. Additional
525 organizations that support the production of beef that will be explored include state and
526 national cattlemen groups, beef breed associations, bovine genetic companies,
527 marketing sales commercial cattle companies, meat quality branded companies, and
528 animal health companies. Presentations and materials, plus travel expense, if needed,
529 will be utilized with an organized tactic of candidates to be approached each year. The
530 primary commodity will be the breeding animals, however, all cattle that have GHG
531 genetic values will be automatically entered into Blockyard ™ (Zoetis's blockchain

532 program technology). This gives complete traceability of all animals throughout the
533 production chain.

534

535 **Incentives for producers to enroll for genomic testing for climate-smart outcomes**

536 Producers that successfully enroll in the grant program will be eligible for the incentive
537 program. The incentive program will be used to assist in the purchase of environmental,
538 animal, and genetic testing. The environmental testing incentive program will be used to
539 pay for the cost of two soil tests and random manure tests (based on number of cattle)
540 per farm. Once the producer has completed one soil test, they will be eligible for the two
541 practice incentives. This program will be set up as a supplementation voucher system
542 with oversight by TAMUK. Practice incentive 1 is genomic testing of beef animals.
543 Practice incentive 2 is an additional incentive that will either cover half or the full cost of
544 phenotypic GHG testing ($10 per animal) based on the number of producer
545 qualifications met. To be eligible for the full cost of phenotypic testing, the producer
546 must have a) completed initial environmental screening and CPA-52 form (successful
547 enrollment NRCS), b) have pedigreed animals with recorded phenotypes of birthweight,
548 weaning weight, yearling weight, and c) be an underserved producer (first generation,
549 young farmer, woman, minority, veteran, or small producer). To be eligible for half cost
550 of phenotypic testing, the producer must meet a and b criteria previously outlined.

551

552 **Genetic Selection process and long-term improvement for genetic gain**

553 Building a long-term genetic improvement program for GHG reduced emissions requires
554 the creation of an EPD for GHG traits and the incorporation of the EPDs into the
555 indexes. These traits than can be used for selection of superior animals with desired
556 phenotypes, and the identification of animals and producer operations that quality for
557 up-and-coming marketing opportunities in the future, as described in the pilot proposal
558 design section. This allows for young animals to be ranked by the index value, giving
559 commercial cattlemen the opportunity to select bulls and females with reduced GHG
560 production levels. A key to the long-term genetic gains in GHG emissions will be the
561 selection programs behind the production of the animals sold to the industry. Both LCoC
562 and BRC, like many seedstock producers, use traits and indexes to rank animals. The
563 elite young animals are then selected to be the parents for the next generation. It is the
564 mating of high index males to high index females that will produce the next generation
565 of improved individuals. By using these selection practices cattlemen will continually
566 move the average GHG EPD (ultimately moving the actual GHG emissions downward),
567 resulting in permanent improvement from generation to generation. Additionally, the
568 other traits in the index, like feed intake and carcass quality can be continually
569 improved.

570

## Project Outcome

This project seeks to establish a new Climate Smart Commodity – namely feeder cattle sired by bulls selected on the basis of enteric methane emissions and associated beef products. A commonly held assumption is that the average beef bull will sire 100 progeny in their productive lifetime. In a typical commercial cow-calf herd that retains its own replacement females and replaces 15-20% of the cow herd on an annual basis, we would expect that approximately 25% of lifetime progeny will be retained in the herd, embedding the more favorable genotypes into the gene pool, and 75% of the resulting progeny will enter the beef supply chain.

The benefits of selection for enteric methane emissions can be directly quantified from the EPD derived for the trait in the genetic evaluation. The very nature of EPD allow us to quantify the relative value of one sire's progeny vs. another sire's progeny as it relates to the trait of interest. As such, the outcomes of the genetic evaluation can be used to directly quantify the differences among cohorts of feeder cattle.

## Tracking Outcome and Impact

Clearly, if the subset of progeny entering the beef supply chain as feeder cattle do so via a traditional auction market and are comingled with other feeder calves that have not been sired by bulls with known propensity for enteric methane production, the benefit of the selection becomes undocumented and diluted by the animals of unknown value. To help mitigate this risk, calves from participating herds will be enrolled in Blockyard™, a blockchain based information management system from Zoetis. This platform enables the seamless tracking of genetic, health, and production data with individual animals as they move through the beef supply chain. Sire data or the individual animal's genomic information will be used to classify GHG production levels based on the EPD for enteric methane emissions, and that data will follow those animals throughout the balance of the beef production cycle – replacement female, stocker, feeder, and harvest. Use of this platform provides a direct mechanism by which participating producers can differentiate their calves on the basis of genomic Climate Smart outcome, market those calves via available tools in Blockyard to prospective buyers, and ensure that the underlying genetic information that distinguishes these calves relative to true commodity cattle persists throughout the remainder of the production cycle. Additionally, Inherit Select genotyping technology will allow producers to select replacement females that excel genetically for reduced GHG emissions. This product provides all commercial beef producers with access to the technology developed by this grant proposal. One of the beneficial outcomes will be the ability to calculate improvement in GHG emissions over time in the US beef herd.

To put into perspective in 2021, LCoC marketed over 2500 bulls and 2000 females to 804 commercial producers in 43 states. The first calf crop out of the bulls produced in year 3 of this proposal, would sire 83,250 progeny with ~16,650 of those being retained

611  for replacement females in the commercial herd (20% replacement rate). This set of
612  bulls will produce an estimated 250,000 progeny and leave around 50,000 females in
613  the commercial herd over their lifetime of production in the commercial sector. The non-
614  retained animals will be fed for high quality consumer beef. Holding the number of bulls
615  sold at 2500 head per year, LCoC GHG improved sires in the commercial beef sector
616  will produce 2.5 million head of GHG improved cattle with 0.5 million of those animals
617  as cows contributing to the commercial maternal population over a ten-year period.

618

619  **Summary**

620  This project brings together an extremely strong set of industry partners representing
621  academia, animal health, and elite genetic seedstock producers. The success is
622  ensured with the industry leaders, talent and already developed resources that are
623  being applied in-kind by all partners. Identifying and selecting animals for superior GHG
624  traits while increasing product quality creates a permanent long term solution that
625  continues to improve with each new generation of genetic selection. The success of this
626  pilot project will have lasting impact in the beef industry in the US and aboard.

627

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# Attachment – Benchmarks Table

| Benchmarks/Milestones | Year 1 | | | | Year 2 | | | | Year 3 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Total |
| **Required Benchmarks** | | | | | | | | | | | | | |
| Number of Producers | | | 30 | 30 | | 30 | | 30 | | | | | 120 |
| Number of Underserved Producers | | | | 25 | | 25 | | 25 | | | | | 75 |
| Number of Acres | 0 | 0 | 300 | 300 | 0 | 300 | 0 | 300 | 0 | 0 | 0 | 0 | 1200 |
| Number of Head | | | | 2605 | | | | 5210 | | | | | 7815 |
| Dollars provided to Producers | $317,500.00 | $ - | $107,268.00 | $107,268.00 | $418,243.00 | $53,618.00 | $53,618.00 | $53,618.00 | $563,243.00 | $53,618.00 | $53,618.00 | $53,618.00 | $1,835,230.00 |
| GHG Benefits (Metric Tons CO2 reduced) | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 20 | 20 | 20 | 20 | 120 |
| Number of New Marketing Channels Established | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 9 |
| Number of Marketing Channels Expanded | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 3 |
| Number of measurement tools utilized | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 32 |
| **Other Required Milestones** | | | | | | | | | | | | | |
| Outreach, Training & Technical Assistance | | | | | | | | | | | | | |
| TAMUK Symposium | | X | | X | | X | | X | | | | | |
| Training & Technical Assistance | | X | X | X | X | X | X | X | X | X | X | X | |
| MMRV and supply chain traceability | | | | | | | | | | | | | |
| Soil testing | | X | X | X | X | X | X | X | X | X | X | X | |
| Manure testing | | | X | X | X | X | X | X | X | X | X | X | |
| Measurements of Work related to marketing | | | | | | | | | X | X | X | X | |
| Engagement of Major Partners (Virtual Meetings) | X | | X | | X | | X | | X | | X | | |
| Project Manager visits TX & CO sites | | | X | | | | X | | | | X | | |
| Climate-smart technology employed | | | X | X | X | X | X | X | X | X | X | X | |
| **Other Milestones** | | | | | | | | | | | | | |
| Purchase equipment | X | X | | | | | | | | | | | |
| Collection of data | | | X | X | X | X | X | X | X | X | X | X | |
| Prediction of GHG (CH4) from existing data | | | X | X | X | X | X | X | | | | | |
| Development of EPDs GHG correlated traits | | | | | | | X | X | X | X | X | X | |
| Index development | | | | | | | | X | X | X | X | X | |
| Development of trait variance components | | | | | | | X | X | X | X | X | X | |
| Genomic enhanced EPDs GHG | | | | | | | | | X | X | X | X | |
| **Expense Estimates** | $1,519,694.75 | $166,848.25 | $257,797.75 | $205,160.25 | $640,163.75 | $229,686.25 | $223,118.75 | $161,900.25 | $758,340.75 | $207,366.75 | $216,007.25 | $146,684.25 | $4,732,769.00 |

# Texas A&M University, Kingsville

## Climate-Smart Practices and Limitations

Climate-Smart practices under this grant shall be limited to the following practices:

| NRCS Practice Code | Practice Name |
|---|---|
| 327 | Conservation Cover |
| 338 | Prescribed burning |
| 380 | Windbreak and Shelterbelt Establishment and Renovation |
| 420 | Wildlife Habitat Planting |
| 528 | Prescribed Grazing |
| 550 | Range Planting |

All practices applied under this grant will follow NRCS practice standards unless noted below:

| Practice Name/Code | Alternative Standard |
|---|---|
| TXAM001 Genetic Testing of Livestock | **DEFINITION**<br><br>Genetic variation management strategies that provide reduced greenhouse gas emissions in livestock.<br><br>**PURPOSE**<br><br>This practice is used to accomplish the following purpose:<br><br>• Reduce greenhouse gas emissions in livestock through genetic selection.<br><br>**CONDITIONS WHERE PRACTICE APPLIES**<br><br>This practice applies to livestock animals used in agricultural production.<br><br>**CRITERIA**<br><br>**General Criteria Applicable to Livestock Animals**<br><br>Implement genetic selection on livestock animals to reduce GHG emissions. Animals will be genotyped on a high density genomic chip and the genotypes submitted to a genetic evaluation program.<br><br>Provide an analysis that demonstrates reduced GHG emissions by 1% after one generation of selection by documenting the baseline emission values using environmental and animal testing.<br><br>Environmental testing will include soil and manure testing.<br><br>**Additional Criteria for Pedigreed Animals**<br>Individual animals have been tested for enteric GHG emissions using GHG measuring equipment, and have measures for correlated traits (i.e., feed intake). |

## CONSIDERATIONS

Feed additives may dramatically impact enteric GHG emissions in cattle while being fed. To evaluate the true impact of the genetics, feed additives should not be used during animal and manure testing.

Evaluate options that may improve reductions of greenhouse gas emissions after the genetic selection plan has been implemented including NRCS practice 528 Prescribed Grazing.

## PLANS AND SPECIFICATIONS

Prepare plans and specifications to meet the requirements of this standard. As a minimum, include—

- Goals and objectives clearly stated.
- Identification and description of current animal inventory
- Identification and description of current animal inventory with completed genetic testing, including identification of the genetic testing panel used.
- Description and timeline for genetic testing of current and future animal inventory.
- Criteria and actions to be used to remove animals from breeding program (cull criteria).
- Description of monitoring plan to assess the effectiveness of the selection based on genetic testing. This should include plan for individuals that will be tested for GHG emissions and feed intake, and locations of soil and manure tests.

## OPERATION AND MAINTENANCE

Prepare a site-specific operation and maintenance plan that is consistent with the purposes of applying genetic selection on a continuous basis, generation to generation to reduce enteric GHG emissions by a minimum of 1% of baseline levels. Utilize genetic merit values for GHG emission traits generated by the genetic evaluation program. At a minimum, include—

- Percentage of animals to be genetically tested each year.
- Cull criteria plan and timeline based on site-specific goals and objectives.

## SUPPORTING DATA AND DOCUMENTATION

### Field Data and Survey Notes

Provide the following:
1. An aerial map of the site showing the location of livestock enrolled in the genetic evaluation practice;
2. Identify on the map, location of where soil tests will be collected;

### Design Data

Record on the appropriate template for genetic selection practices and provide an operation and maintenance plan.

# Partnerships for Climate-Smart Commodities
# Data Dictionary for Recipients
February 2023
Version 1.0

# Table of Contents

# USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
## February 2023

## Overview of Reporting Requirements

Grant recipients are required to submit reports to document their performance under the *Partnerships for Climate-Smart Commodity* funding opportunity. These submissions will be required to use the Microsoft Excel workbook templates provided by USDA. The workbooks contain a series of worksheets that collect data in a standardized format to ensure data quality and allow for aggregation and summary of this information. The entire workbook must be submitted quarterly, with updates to all applicable worksheets. This guide is divided into three sections. The *Overview of Reporting Requirements* section summarizes the layout of the reporting workbook and presents the data elements included in each worksheet. It also describes additional documents that must be submitted to supplement the performance reports. The *Data Definitions* section provides descriptions and allowable response options for each data element. The guide also indicates whether each data element is required, applicable at times, or optional; as well as how frequently each data element must be updated. Finally, the *Appendices* contain practice and commodity lists that will be used for these reports. Reporting is necessary for USDA oversight of this effort. The data elements required for inclusion in the quarterly performance reports allow USDA to conduct selected audits to review whether producers are receiving federal funds from multiple sources for the same purpose; to determine whether GHG benefits from implementation of climate-smart agriculture and forestry (CSAF) practices are being estimated accurately; and for other purposes deemed appropriate by USDA.

The reporting worksheets collect information at four levels: project, partner, producer, and field. Descriptions of each level:

> **Project level**: Information about activities and impacts at a whole project/aggregate level (i.e., reflecting all activities under the grant agreement). Some project-level reporting is further subdivided by commodity type or a combination of commodity and CSAF practice(s) (commodity x practice).
> **Partner level:** Information about activities related to a single organization (recipient, subrecipient, contractor, or other partner) within a project.
> **Producer level**: Information about individual producers who have one or more farms enrolled in a project.
> **Field level**: Information about individual fields enrolled in a project.

Certain data elements are required to be reported for each producer and field enrolled in a project. In order to minimize the burden associated with data collection and to enable USDA to match data to existing records, these producer- and field-specific records must use the producer's established FSA Farm, Tract and Field IDs, and report the State and County associated with the Farm ID. Associated data entered in conjunction with these data elements, such as Producer Name, must match the data contained in the customer's Business Partner record, and the Farm Operating Plan in Business File for that Farm ID. Disclosure of this information is protected under Section 1619 of the Food, Conservation, and Energy Act of 2008 (PL 110- 246), 7 U.S.C. 8791. Additionally, Departmental Regulation 4370-001 provides USDA's policies for collecting demographic data, including race, ethnicity and gender. Providing demographic information is voluntary and at the discretion of the customer. Demographic information is used by USDA for statistical purposes only and will not be used to determine an applicant's eligibility for programs or services for which they apply.

**Note:** For purposes of this guide, "farm" refers to the operation from which climate-smart commodities are produced and may represent farms, ranches, forests or other operations. Similarly, "field" refers to the individual land units at which climate-smart practices are being implemented to produce climate-smart commodities and may represent lots, farmsteads or other units, depending on the type of operation and commodity. The use of "Farm", "Tract" and "Field" align with the FSA definitions; for example, "A field is a part of a farm that is separated from the balance of the farm by a permanent boundary, such as; fences, permanent waterways, woodlands, croplines in cases where farming practices make it probable that this cropline is not subject to change, and other similar features."

The following tables list the data elements included in each reporting worksheet, along with a brief description of each item.

Project Summary

These data will be collected about each project. Cumulative results are reported each quarter. Report last quarter's entry if there has been no change in this quarter.

Table 1. Project Summary elements

| Data element name | Description | Frequency |
|---|---|---|
| Commodity type | Type of commodity(ies) incentivized by the project | Quarterly |
| Commodity sales | Indicates sales of the commodity(ies) related to the project occurred this quarter | Quarterly |
| Farms enrolled | Indicates enrollment activities occurred this quarter | Quarterly |
| GHG calculation methods | Methods used to calculate greenhouse gas (GHG) benefits | Quarterly |
| GHG cumulative calculation | Method used to calculate cumulative GHG benefits | Quarterly |
| Cumulative GHG benefits | Whole project estimate of total GHG ($CO_2e$) emission reductions | Quarterly |
| Cumulative carbon stock | Whole project estimate of total carbon sequestration | Quarterly |
| Cumulative CO2 benefit | Whole project estimate of total $CO_2$ emission reductions | Quarterly |
| Cumulative CH4 benefit | Whole project estimate of total $CH_4$ emission reductions | Quarterly |
| Cumulative N2O benefit | Whole project estimate of total $N_2O$ emission reductions | Quarterly |
| Offsets produced | Amount of carbon offsets produced by project | Quarterly |
| Offsets sale | Name of marketplace where carbon offsets were sold | Quarterly |
| Offsets price | Price of carbon in offset sales | Quarterly |
| Insets produced | Amount of carbon insets produced by project | Quarterly |
| Cost of on-farm TA | Cost of on-farm technical assistance (TA) provided to producers | Quarterly |
| MMRV cost | Cost of measurement, monitoring, reporting, and verification (MMRV) activities | Quarterly |
| GHG monitoring method | Methods used by project to monitor GHG benefits (up to 5) | Quarterly |
| GHG reporting method | Methods used by project to report on GHG benefits (up to 5) | Quarterly |
| GHG verification method | Methods used to verify GHG benefits (up to 5) | Quarterly |

# Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
## February 2023

### Partner Activities

These data will be collected at the project level. Each row in this worksheet will represent one organization involved in the project, including the recipient and all contributing partners. A partner is any organization that is receiving project funds or providing matching contributions (funds or in-kind contributions) to the project. While the recipient must complete one row for their own organization, not all data elements apply to the recipient. These exceptions are noted in the detailed descriptions of the specific elements in the *Data Definitions* section of this guide. Data are reported cumulatively each quarter. Report last quarter's entry if there has been no change in this quarter.

Table 2. Partner Activities elements

| Data element name | Description | Frequency |
|---|---|---|
| Partner ID | Unique ID for each partner | One-time |
| Partner name | Name of partner organization | One-time |
| Partner type | Type of organization | One-time |
| Partner POC | Partner point of contact name | As applicable |
| Partner POC email | Partner point of contact email | As applicable |
| Partnership start date | Start of partnership on project | One-time |
| Partnership end date | End of partnership on project | As applicable |
| New partnership | Indicator for partner organizations that have no prior work with the recipient | As applicable |
| Partner total requested | Total amount requested to date by partner from recipient | Quarterly |
| Total match contribution | Total amount of match contribution by partner to date | Quarterly |
| Total match incentives | Total amount of match contribution by partner for incentives | Quarterly |
| Match type | Top 3 types of match contribution by partner, other than incentives | Quarterly |
| Match amount | Value of match contributions by type | Quarterly |
| Training provided | Top 3 types of training provided to the partner through project | Quarterly |
| Activity by partner | Top 3 types of activities provided by this partner to producers or other partners | Quarterly |
| Activity cost | Approximate cost per activity type provided by partner to producers or other partners | Quarterly |
| Products supplied | Names of products supplied to producers as part of project activities or incentives | Quarterly |
| Product source | Supplier or source of products supplied to producers as part of project activities or incentives | Quarterly |

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

<u>Marketing Activities</u>

These data will be collected at the project level. Each row in this worksheet will correspond to one commodity for which the project enrolls fields and one marketing channel used to sell that commodity by the project or producers enrolled in the project. Data are reported for the current quarter and are not cumulative. If no sales of the commodity were reported during a quarter, do not complete this worksheet for that quarter.

Table 3. Marketing Activities elements

| Data element name | Description | Frequency |
|---|---|---|
| Commodity type | Type of commodity incentivized by the project | Quarterly |
| Marketing channel type | Type of marketing channels used | Quarterly |
| Number of buyers | Number of buyers per marketing channel | Quarterly |
| Names of buyers | Names of buyers in the marketing channel | Quarterly |
| Marketing channel geography | Geography of marketing channel | Quarterly |
| Value sold | Value of commodity sold by marketing channel | Quarterly |
| Volume sold | Volume of commodity sold by marketing channel | Quarterly |
| Price premium | Price premium of commodity by marketing channel | Quarterly |
| Price premium to producer | Percent of price premium that goes to the producer | Quarterly |
| Product differentiation method | Top 3 types of product differentiation methods used | Quarterly |
| Marketing method | Top 3 types of marketing methods used | Quarterly |
| Marketing channel identification method | Top 3 ways marketing channel was identified | Quarterly |
| Traceability method | Top 3 types of supply chain traceability methods used | Quarterly |

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

Producer Enrollment

These data will be collected at the producer level about each farm enrolled in the project. In this worksheet, each row will correspond to one farm that has at least one field enrolled in the project. Data are reported when a producer first enrolls one or more fields in the project. If a producer is enrolled in the project for multiple years, review the farm characteristics each time a new contract is signed and provide any necessary updates. The quarterly submission should contain information about each farm initially enrolled in the project during that quarter and for updates to farms that have re-enrolled during that quarter, as applicable. If no farms are enrolled during that quarter, do not complete this worksheet for that quarter.

Table 4. Producer Enrollment elements

| Data element name | Description | Frequency |
|---|---|---|
| Farm ID | Unique Farm ID assigned by FSA | |
| State or territory | State name (must match FSA farm enrollment data) | |
| County of residence | County name (must match FSA farm enrollment data) | |
| Producer data change | Indicator that producer data was updated at re-enrollment | As applicable |
| Producer start date | Contract start date | Enrollment |
| Producer name | Name of primary operator | Enrollment |
| Underserved status | Indicator the primary operator is considered underserved and/or a small producer | Enrollment |
| Total area | Total area of enrolled operation | Annual |
| Total crop area | Total crop area in enrolled operation enrolled | Annual |
| Total livestock area | Total livestock confinement, pasture and rangeland in enrolled operation | Annual |
| Total forest area | Total forest area in enrolled operation | Annual |
| Livestock type | Top 3 types of livestock on enrolled operation | Annual |
| Livestock head | Total livestock currently managed (by type) | Annual |
| Organic farm | Indicator that part of the farm is certified or transitioning organic | Annual |
| Organic fields | Indicator that any of the enrolled fields are certified or transitioning organic | Annual |
| Producer motivation | Motivation for participation | Annual |
| Producer outreach | Top 3 types of outreach provided to producer | Annual |
| CSAF experience | Indicator of prior implementation of CSAF practices at this farm | Annual |
| CSAF federal funds | Indicator of prior receipt of federal funds for CSAF practices | Annual |
| CSAF state or local funds | Indicator of prior receipt of state funds for CSAF practices | Annual |
| CSAF nonprofit funds | Indicator of prior receipt of nonprofit funds for CSAF practices | Annual |
| CSAF market incentives | Indicator of prior receipt of market incentives for CSAF practices | Annual |

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

Field Enrollment

These data will be collected about each field enrolled in the project. In this worksheet, each row corresponds to one field x commodity combination enrolled in the project. Generally, data are reported once for each field, at its initial enrollment. The quarterly submission should contain information about each field initially enrolled in the project during that quarter. If no fields are enrolled during that quarter, do not complete this worksheet for that quarter. If a field is enrolled for multiple years, any relevant changes, such as a new ID number or changes to the commodity or practice combinations should be entered in this worksheet during the quarter it is re-enrolled, or as applicable.

Table 5. Field Enrollment elements

| Data element name | Description |
|---|---|
| Farm ID | Unique Farm ID assigned by FSA |
| Tract ID | Unique Tract ID assigned by FSA |
| Field ID | Unique Field ID assigned by FSA |
| State or territory of field | State name |
| Physical County of field | Physical county name must match FSA farm records |
| Prior Field ID | Previous Field ID when reconstitution of farm results in new Field IDs |
| Field data change | Indicator that field data has changed from initial enrollment |
| Contract start date | Start date of contract |
| Total field area | Size of enrolled field |
| Commodity category | Category of commodity(ies) produced |
| Commodity type | Type of commodity(ies) produced |
| Baseline yield | Average yield of commodity in 3 years prior to enrollment |
| Baseline yield location | Location for which baseline yield is provided |
| Field land use | Most common land use in field in past 3 years |
| Field irrigated | Most common irrigation type in field in past 3 years |
| Field tillage | Most common tillage in field in past 3 years |
| Practice past extent - farm | Extent of operation that implemented this practice prior to project enrollment |
| Field any CSAF practice | Indicator for prior CSAF practices in this field in past 3 years |
| Practice past use - this field | Indicator of prior use of this practice in this field in the past 3 years |
| Practice type | CSAF practice(s) that will be implemented in enrolled field (up to 7) |
| Practice standard | Organization that developed CSAF practice standard implemented in field |
| Planned practice implementation year | Year that practice is planned to be implemented |
| Practice extent | Area or number of animals for which practice is implemented |
| Follow-on questions | Follow-on questions by practice type (see Table 11) |

**USDA** Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

Farm Summary

These data will be collected about each farm enrolled in the project. In this worksheet, each row will correspond to one farm that has at least one field enrolled in the project. The quarterly submission should contain updates to any data elements that have changed for each farm enrolled in the project during that quarter. If there are no changes from the previous quarter, do not complete this worksheet for that quarter. Data are not cumulative.

Table 6. Farm Summary elements

| Data element name | Description | Frequency |
|---|---|---|
| Farm ID | Unique Farm ID assigned by FSA | |
| State or territory | State name | |
| County of residence | County name | |
| Producer TA received | Type of technical assistance provided to producer | Quarterly |
| Producer incentive amount | Total financial incentive provided to the producer | Quarterly |
| Incentive reason | Top 4 reason(s) for financial incentives provided to producer | Quarterly |
| Incentive structure | Top 4 units on which financial incentives are structured | Quarterly |
| Incentive type | Top 4 type(s) of financial incentives provided to producer | Quarterly |
| Payment on enrollment | Extent of payment provided to producer upon enrollment | Quarterly |
| Payment on implementation | Extent of payment provided to producer upon implementation of CSAF practices | Quarterly |
| Payment on harvest | Extent of payment provided to producer upon harvest or slaughter | Quarterly |
| Payment on MMRV | Extent of payment provided to producer upon reporting or verification | Quarterly |
| Payment on sale | Extent of payment provided to producer upon sale of commodity | Quarterly |

Field Summary

These data will be collected about each field enrolled in the project for a commodity x practice(s) combination. In this worksheet, each row will correspond to one field x commodity x practice(s) combination enrolled in the project. Data for each field will be reported quarterly and are not cumulative. Report data for any elements that have an update in that quarter. Greenhouse gas benefit estimates must be entered upon practice completion or annually, as appropriate. If there are no changes from the previous quarter, do not complete this worksheet for that quarter. This worksheet includes a section to report the "official" estimate of GHG benefits – amounts of greenhouse gas emissions reduced and carbon sequestered – for the field. These quantities refer to the estimates that are used to calculate the project's aggregate impact (reported in Table 1). Tables 8 and 9 are used to report alternate estimates of the field-level GHG benefits when additional methods are used to model (Table 8) or measure (Table 9) these impacts. Any field that can use COMET-Planner must submit those results, either as the official or alternate model.

Table 7. Field Summary elements

| Data element name | Description | Frequency |
|---|---|---|
| Farm ID | Unique Farm ID assigned by FSA | |
| Tract ID | Unique Tract ID assigned by FSA | |
| Field ID | Unique Field ID assigned by FSA | |
| State or territory of field | State name | |
| County of field | County name | |
| Commodity type | Type of commodity produced from field | Quarterly |
| Practice type | Type of practice(s) incentivized in field (up to seven) | Quarterly |
| Date practice complete | Date that practice implementation is certified complete | Quarterly |
| Contract end date | End date of contract | Quarterly |
| MMRV assistance provided | Indicator that MMRV assistance is provided to field | Quarterly |
| Marketing assistance provided | Indicator that marketing assistance provided for commodity from field | Quarterly |
| Incentive per acre or head | Indicator that a per acre/head incentives is provided for the CSAF practice(s) on this field | Quarterly |
| Field commodity value | Value of commodity produced from field | Quarterly |
| Field commodity volume | Volume of commodity produced from field | Quarterly |
| Cost of implementation | Total cost of practice implementation in field | Quarterly |
| Cost coverage | Percent of total cost of implementation of practice covered by project incentives | Quarterly |
| Field GHG monitoring | Methods used to monitor GHG benefits in field (up to 3) | Quarterly |
| Field GHG reporting | Methods used to report on GHG benefits for field (up to 3) | Quarterly |
| Field GHG verification | Methods used to verify GHG benefits for field (up to 3) | Quarterly |
| Field GHG calculations | Methods used to calculate GHG benefits for field | Quarterly |
| Field official GHG calculation | Method used to calculate official GHG benefits for field | Quarterly |
| Field official GHG ER | Official estimate of total GHG emission reductions for field | Quarterly |
| Field official carbon stock | Official estimate of total carbon sequestration for field | Quarterly |
| Field official CO2 ER | Official estimate of total CO2 emission reductions for field | Quarterly |
| Field official CH4 ER | Official estimate of total CH4 emission reductions for field | Quarterly |
| Field official N2O ER | Official estimate of total N2O emission reductions for field | Quarterly |
| Field offsets produced | Amount of carbon offsets produced in field | Quarterly |
| Field insets produced | Amount of carbon insets produced in field | Quarterly |
| Other field measurements | Indicator that field data was collected for reasons other than GHG benefit estimation | Quarterly |

GHG Benefits - Alternate Modeled

If greenhouse gas benefits are modeled for the same field using multiple methods, the results for the alternate models are reported in this worksheet. The "alternate" models refer to those model results that were not used in the calculation of the project's aggregate impact (as reported in Table 1). Any field that can use COMET-Planner must submit those results, either as the official or alternate model. These data will be collected about the modeled GHG benefits for each field x commodity x practice(s) combination. In this worksheet, each row will correspond to one field enrolled in the project. Data are not cumulative. Each quarterly submission should include information for all fields that have new modeled data. Greenhouse gas benefit estimates must be entered upon practice completion or annually, as appropriate.

Table 8.  GHG Benefits – Alternate Modeled elements

| Data element name | Description | Frequency |
|---|---|---|
| Farm ID | Unique Farm ID assigned by FSA | |
| Tract ID | Unique Tract ID assigned by FSA | |
| Field ID | Unique Field ID assigned by FSA | |
| State or territory of field | State name | |
| County of field | County name | |
| Commodity type | Type of commodity(ies) produced from the field (up to 6) | Annual |
| Practice type | Type of practice(s) incentivized in field (up to 7) | Annual |
| GHG model | Model used to calculate GHG benefits | Annual |
| Model start date | Start date of model run | Annual |
| Model end date | End date of model run | Annual |
| Total GHG benefits estimated | Estimate of total GHG benefits for field | Annual |
| Total carbon stock estimated | Estimate of total change in carbon stock for field | Annual |
| Total CO2 estimated | Estimate of total $CO_2$ emission reductions for field | Annual |
| Total CH4 estimated | Estimate of total $CH_4$ emission reductions for field | Annual |
| Total N2O estimated | Estimate of total $N_2O$ emission reductions for field | Annual |

GHG Benefits - Measured

Projects must report the results of any carbon stock or greenhouse gas emission measurements in this worksheet. These data will be collected at the field level. Each row will represent a separate measurement method used to calculate GHG benefits for a given field. Data are reported once per year of measurement and are not cumulative. Each quarterly submission should include information for any field for which there are new soil samples or new calculations of annual GHG benefits based on actual measurements.

Table 9. GHG Benefits - Measured data elements

| Data element name | Description | Frequency |
|---|---|---|
| Farm ID | Unique Farm ID assigned by FSA | |
| Tract ID | Unique Tract ID assigned by FSA | |
| Field ID | Unique Field ID assigned by FSA | |
| State | State name | |
| County | County name | |
| GHG measurement method | Method of measurement | Annual |
| Lab name | Entity that conducted analysis | Annual |
| Measurement start date | Start date of measurements | Annual |
| Measurement end date | End date of measurements | Annual |
| Total CO2 reduction calculated | Calculation of total CO2 reduction | Annual |
| Total carbon stock change calculated | Calculation of change in carbon stock | Annual |
| Total CH4 reduction calculated | Calculation of total CH4 reduction | Annual |
| Total N2O reduction calculated | Calculation of total N2O reduction | Annual |
| Soil sample result | Numeric result from soil sample | Annual |
| Measurement type | Type of analysis conducted | Annual |

## Additional Environmental Benefits

Projects that track additional environmental benefits (e.g., water quality improvements) from enrolled fields report results in this worksheet. These data will be collected about each field. Each row in this worksheet will correspond to an enrolled field. Data are not cumulative. Estimates of environmental benefits must be entered upon practice completion or annually, as appropriate.

Table 10. Additional Environmental Benefits elements

| Data element name | Description | Frequency |
|---|---|---|
| Farm ID | Unique Farm ID assigned by FSA | |
| Tract ID | Unique Tract ID assigned by FSA | |
| Field ID | Unique Field ID assigned by FSA | |
| State | State name | |
| County | County name | |
| Environmental benefits | Indicator that project tracks other environmental benefits | Annual |
| Reduction in nitrogen loss | Indicator that project tracks reductions in nitrogen loss | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |
| Reduction in phosphorus loss | Indicator that project tracks reductions in phosphorus loss | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |
| Other water quality | Indicator that project tracks other water quality improvements | Annual |
| Type | Type of water quality metric being tracked | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |
| Water quantity | Indicator that project tracks reduced water use | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |
| Reduced erosion | Indicator that project tracks reductions in soil erosion | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |
| Reduced energy use | Indicator that project tracks reductions in energy use | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |
| Avoided land conversion | Indicator that project tracks reductions in land conversion | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |
| Improved wildlife habitat | Indicator that project tracks improvements in wildlife habitat | Annual |
| Amount | Amount | Annual |
| Purpose | Purpose of tracking those co-benefits | Annual |

Supplemental Data Submission

Project MMRV Plan
*Definition of MMRV elements:*
**Measurement**: Quantification of the greenhouse gas benefits (reduction or capture) using mathematical models and/or direct physical measurements in the field
**Monitoring**: Ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time
**Reporting**: Documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization
**Verification**: Independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable.

Projects must submit an MMRV plan that includes details about how each of the following are addressed:
- Quantification approach, including:
  - GHG models used
  - GHG measurement plan (if applicable)
  - Approach to quantifying additional environmental benefits, if applicable (e.g., water quality, habitat)
- Verification approach:
  - Compliance criteria
  - Verification plan/methodology
- Approach to ensuring:
  - Additionality
  - Permanence
  - Leakage
  - Impacts of weather
- Plan for non-compliance

If the project is using a specific MMRV methodology or approach developed by the recipient, a project partner, or an outside organization, the project can submit documentation associated with the methodology as long as the documentation addresses each of the above categories.

If the project is tracking other environmental benefits (as reported in the *Additional Environmental Benefits* worksheet), include a description of the methodology and tools used to track and report on these benefits.

Field modeled GHG benefit reports
Results from any models besides COMET-Planner used to estimate GHG benefits must also be submitted as a separate report. This includes projects running COMET-Farm. The full results of any model can be submitted in the native/standard format generated by the modeling tool and must include the following Unique IDs in the report or in the file name: State, County, Farm ID, Tract ID, Field ID.

Field direct measurement results
For any direct physical measurements in the field, measurement results must be submitted as a separate report and must include the following Unique IDs in the report or in the file name: State, County, Farm ID, Tract ID, Field ID. Measurement results reports must include the name of the equipment used for sampling or data collection, the name of the lab that analyzed the data, and the analytical method used.

Sample report types include soil analysis reports, summarized results of portable emissions analyzers or flux towers, water quality analyses, and plant species counts. These could be collected for the purposes of determining GHG emission reductions or carbon sequestration amounts, for calibration of tools or models, for tracking other environmental benefits, or for other reasons.

Data Descriptions

This section provides descriptions and allowable response options for each data element. The guide also indicates whether each data element is required, applicable at times, or optional; as well as how frequently each data element must be updated.

Unique IDs

**Project ID:** Unique ID at the project level – "Award Identifying Number" shown on award documentation

**Partner ID**: Unique ID at the partner level – use EIN; if no EIN, a unique ID will be assigned for use in these reports

**State or territory of operation:** State or territory name

**County of operation:** Physical county name

**Farm ID:** Unique ID at the operation level assigned by Farm Service Agency (FSA)

**Tract ID:** Unique ID at the tract level assigned by FSA

**Field ID:** Unique ID at the field level assigned by FSA

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

<u>Project Summary</u>

## Commodity type

| | |
|---|---|
| **Data element name:** Commodity type | **Reporting question:** What climate-smart commodity types are produced by this project? |

**Description:** Type of commodity incentivized by the project. These commodities include those for whom farmers are directly receiving incentives or other types of marketing support. See full list of commodity options in Appendix B. List one commodity per row.

| | |
|---|---|
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:** FSA commodity list |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Commodity sales

| | |
|---|---|
| **Data element name:** Commodity sales | **Reporting question:** Did project activities result in sales this quarter of the commodity(ies) produced by this project? |

**Description:** Indicator of sales of commodity(ies) related to project activities. If sales are reported, complete the *Marketing Activities* worksheet (Table 3) as part of the quarterly performance report.

| | |
|---|---|
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Yes |
| | • No |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Farms enrolled

| | |
|---|---|
| **Data element name:** Farms enrolled | **Reporting question:** Did the project enroll any producers or fields this quarter? |

**Description:** Indicator that the project enrolled producers or fields. If enrollment activities occurred this quarter, complete the *Producer Enrollment* and *Field Enrollment* worksheets (Tables 4 and 5) as part of the quarterly performance report.

| | |
|---|---|
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Yes |
| | • No |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## GHG calculation methods

| | |
|---|---|
| **Data element name:** GHG calculation methods | **Reporting question:** What methods is the project using to calculate GHG benefits? |

**Description:** List the way(s) that GHG benefits are being measured and calculated by the project this quarter.

| | |
|---|---|
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Models |
| | • Direct field measurements |
| | • Both |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

## GHG cumulative calculation

| | |
|---|---|
| **Data element name:** GHG cumulative calculation | **Reporting question:** What method(s) was used to calculate the total cumulative GHG benefits reported here? |
| **Description:** List the method(s) that was used to calculate the total cumulative GHG benefits reported by the project this quarter. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** <br>• Models <br>• Direct field measurements <br>• Both |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Cumulative GHG benefits

| | |
|---|---|
| **Data element name:** Cumulative GHG benefits | **Reporting question:** What are the project's estimated total GHG emission reductions (CO2eq) to date? |
| **Description:** Total cumulative estimated greenhouse gas emission reductions from practice implementation. This is updated quarterly. If there are no changes, enter the same number as the previous quarter. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Cumulative carbon stock

| | |
|---|---|
| **Data element name:** Cumulative carbon stock | **Reporting question:** How much carbon has the project sequestered to date? |
| **Description:** Estimated total cumulative change in carbon stock based on practice implementation. This is updated quarterly. If there are no changes, enter the same numbers as the previous quarter. Conversion rate is one ton of carbon = 3.67 tons of $CO_2eq$. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Cumulative CO2 benefit

| | |
|---|---|
| **Data element name:** Cumulative CO2 benefit | **Reporting question:** What are the project's estimated total cumulative CO2 emission reductions to date? |
| **Description:** Estimated total cumulative carbon dioxide emission reductions based on practice implementation. This is updated quarterly. If there are no changes, enter the same number as the previous quarter. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Cumulative CH4 benefit

| | |
|---|---|
| **Data element name:** Cumulative CH4 benefit | **Reporting question:** What are the project's estimated total CH4 emission reductions to date? |
| **Description:** Estimated total cumulative methane reduction based on practice implementation. This is updated quarterly. If there are no changes, enter the same numbers as the previous quarter. Conversion rate is one ton of $CH_4$ = 25 tons of $CO_2eq$. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons CH4 reduced in $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Cumulative N20 benefit

| | |
|---|---|
| **Data element name:** Cumulative N2O benefit | **Reporting question:** What are the project's estimated total N2O emission reductions to date? |

**Description:** Estimated total cumulative nitrous oxide reduction based on practice implementation. This is updated quarterly. If there are no updated numbers enter the same number as the previous quarter. Conversion rate is one ton of $N_2O$ = 298 tons of $CO_2eq$.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons N2O reduced in $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Offsets produced

| | |
|---|---|
| **Data element name:** Offsets produced | **Reporting question:** How many carbon offsets have been produced in the project? |

**Description:** Total carbon offsets produced by enrolled project fields during the quarter. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Offsets sale

| | |
|---|---|
| **Data element name:** Offsets sale | **Reporting question:** To what marketplace(s) were carbon offsets sold? |

**Description:** Marketplaces to which carbon offsets produced by enrolled project fields were sold. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace. List each marketplace name. Separate names with commas.

| | |
|---|---|
| **Data type:** Text | **Select multiple values:** NA |
| **Measurement unit:** Name | **Allowed values:** Text |
| **Logic:** Respond if >0 to 'Offsets produced' | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Offsets price

| | |
|---|---|
| **Data element name:** Offsets price | **Reporting question:** What was the average price of carbon received for offsets? |

**Description:** Average price per metric ton paid for carbon offsets produced by enrolled project fields. Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Dollars per metric ton | **Allowed values:** 0-500 |
| **Logic:** Respond if >0 to 'Offsets produced' | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Insets produced

| | |
|---|---|
| **Data element name:** Insets produced | **Reporting question:** How many carbon insets have been produced in the project? |

**Description:** Total carbon insets produced by enrolled fields during the quarter. Insets are defined as having been verified and certified using an accepted standard and accounted for within Scope 3 emissions for a firm.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Cost of on-farm TA

| | |
|---|---|
| **Data element name:** Cost of on-farm TA | **Reporting question:** What is the total amount that has been spent to provide on-farm TA? |

**Description:** Total cost of any field- or practice-specific technical assistance provided by the project (by recipient or partners) to any producers. This is updated quarterly. If there are no changes, enter the same number as the previous quarter.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Dollars | **Allowed values:** $0-$50,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## MMRV cost

| | |
|---|---|
| **Data element name:** MMRV cost | **Reporting question:** What is the total amount that has been spent on MMRV activities? |

**Description:** Total cost of all MMRV activities paid for by the project (recipient or partners). MMRV components are defined as measurement (calculations or estimations of GHG emissions), monitoring (ongoing review and confirmation that the climate-smart practices have been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time), reporting (documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization), and verification (independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable). This is updated quarterly. If there are no changes, enter the same number as the previous quarter.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Dollars | **Allowed values:** $0-$50,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## GHG monitoring method

| | |
|---|---|
| **Data element name:** GHG monitoring 1-5 | **Reporting question:** How did the project monitor GHG benefits? |

**Description:** Up to the five most common forms of monitoring GHG benefits used this quarter as part of MMRV requirements. Monitoring is defined as ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG monitoring methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG monitoring methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | &bull; Drones |
| | &bull; Ground-level photos and videos |
| | &bull; On-farm visit |
| | &bull; Plot-based sampling |
| | &bull; Producer records or attestation |
| | &bull; Satellite monitoring or remote sensing |
| | &bull; Soil metagenomics |
| | &bull; Soil sensors |
| | &bull; Water sensors |
| | &bull; Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## GHG reporting method

| | |
|---|---|
| **Data element name:** GHG reporting 1-5 | **Reporting question:** How did the project track and report implementation of practices to reduce GHG emissions? |

**Description:** Up to the five most common forms of tracking and reporting on practice implementation used this year as part of MMRV requirements. Reporting is defined as documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG reporting methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG reporting methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Automated devices
- Email
- Mobile app
- Paper
- Third-party actors
- Website
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## GHG verification method

| | |
|---|---|
| **Data element name:** GHG verification method 1-5 | **Reporting question:** How did the project verify implementation of practices to reduce GHG emissions? |

**Description:** Up to the five most common forms of verifying practice implementation used this year as part of MMRV requirements. Verification is defined as independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable. Include up to 5 methods, based on which methods are most commonly used for this project. The worksheet provides five columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 5 GHG verification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG verification methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Artificial intelligence
- Audit by recipient
- Computer modeling
- Photos
- Record audit
- Satellite imagery
- Site or field visit
- Third-party audit
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

Partner Activities

**Unique IDs**

| Partner ID | Unique Project ID for each partner |
| --- | --- |

**Partner name**

| | |
| --- | --- |
| **Data element name:** Name of partner organization | **Reporting question:** What is the official name of the recipient or partner organization? |
| **Description:** Legal name of recipient or partner organization | |
| **Data type:** Text | **Select multiple values**: NA |
| **Measurement unit:** NA | **Allowed values:** Text |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Partnership initiation |

**Partner type**

| | |
| --- | --- |
| **Data element name:** Type of partner organization | **Reporting question:** What type of organization is this? |
| **Description:** Legal/financial structure of recipient or partner organization | |
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Commodity groups (501c5) |
| | • For-profit |
| | • Individual |
| | • Nonprofit |
| | • State or local agency |
| | • Tribal agency |
| | • University |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Partnership initiation |

**Partner POC**

| | |
| --- | --- |
| **Data element name:** Partner POC | **Reporting question:** Who is the point of contact for this project at the recipient or partner organization? |
| **Description:** Name of a point of contact for the recipient or partner organization | |
| **Data type:** Text | **Select multiple values**: NA |
| **Measurement unit:** NA | **Allowed values:** Text |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Partnership initiation; update as necessary |

**Partner POC email**

| | |
| --- | --- |
| **Data element name:** Partner POC email | **Reporting question:** What is the point of contact's email address? |
| **Description:** Email of the point of contact for the recipient or partner organization | |
| **Data type:** Text | **Select multiple values**: NA |
| **Measurement unit:** NA | **Allowed values:** Text |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Partnership initiation; update as necessary |

**Partnership start date**

| | |
|---|---|
| **Data element name:** Partnership start date | **Reporting question:** When did the partnership start? |

**Description:** Date that the partner organization and the recipient began formally partnering on the project

| | |
|---|---|
| **Data type:** Date | **Select multiple values:** NA |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023 – 12/31/2030 |
| **Logic:** No response for recipient | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Partnership initiation |

**Partnership end date**

| | |
|---|---|
| **Data element name:** Partnership end date | **Reporting question:** When did the partnership end? |

**Description:** Date that the partner organization and the recipient stopped formally partnering on the project

| | |
|---|---|
| **Data type:** Date | **Select multiple values:** NA |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023 – 12/31/2030 |
| **Logic:** No response for recipient | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Partnership end quarter |

**New partnership**

| | |
|---|---|
| **Data element name:** New partnership | **Reporting question:** Is this a new partnership? |

**Description:** A new partnership means that the recipient and the partner organization have not had a formal working relationship (under contract or on a grant) prior to the start of the project.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** No response for recipient | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Partnership initiation |

**Partner total requested**

| | |
|---|---|
| **Data element name:** Partner total requested | **Reporting question:** What is the total amount of funding the partner has requested to date from this project? |

**Description:** Cumulative (total) amount of funds that the partner has requested reimbursement for from the recipient from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus the amount of funds requested in the reporting quarter. If there are no changes, report the value from the previous quarter.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** NA |
| **Measurement unit:** Dollars | **Allowed values:** $0-$100,000,000 |
| **Logic:** No response for recipient | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

**Total match contribution**

| | |
|---|---|
| **Data element name:** Total match contribution | **Reporting question:** What is the total match value the organization has contributed to the project to date? |

**Description:** Cumulative (total) value of funds and in-kind contributions (e.g., staff time, inputs, equipment rental, marketing support) that the partner has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus match contributions in the reporting quarter. If there are no changes, report the value from the previous quarter.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** NA |
| **Measurement unit:** Dollars | **Allowed values:** $0-$100,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

**Total match incentives**

| | |
|---|---|
| **Data element name:** Total match incentives | **Reporting question:** What is the total value of match provided by this organization for producer incentives? |

**Description:** Cumulative (total) value of funds for incentive payments directly to producers that the partner has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. For each quarter's data entry, the value must be the sum of all previous entries plus match incentives in the reporting quarter. If there are no changes, report the value from the previous quarter.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** NA |
| **Measurement unit:** Dollars | **Allowed values:** $0-$100,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

**Match type**

| | |
|---|---|
| **Data element name:** Match type 1-3 | **Reporting question:** What types of match contributions has the organization provided to the project? |

**Description:** Types of match contributions *other than incentives* provided directly to producers by the organization from the start of the partnership to the end of the reporting quarter. Enter up to the top three (in dollar value) types of match contributions provided. In-kind staff time could be used for technical assistance, marketing assistance, or other support to producers. Production inputs include seed, fertilizer, pesticides, equipment and other inputs for use in the field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 match types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other match types as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Equipment rental or use |
| | • In-kind staff time |
| | • Production inputs (reduced cost or free) |
| | • Program income |
| | • Software |
| | • Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

**Match amount**

| **Data element name:** Match amount 1-3 | **Reporting question:** What is the value of the match contributions the organization provided to the project? |

**Description:** Cumulative (total) value of funds for each match type that the organization has provided as a project match contribution from the start of the partnership to the end of the reporting quarter. Enter amounts for up to the top three (in dollar value) match types. The worksheet provides three columns for this data element. Enter one value for each column. If fewer than 3 match types are used, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** NA |
| **Measurement unit:** Dollars | **Allowed values:** $0-$100,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

**Training type provided**

| **Data element name:** Training type 1-3 provided | **Reporting question:** What types of training has the organization provided to project partners? |

**Description:** Types of training provided to the project partner as a result of participating in the project during the past quarter. Training can come from the recipient, a project partner organization (including other divisions of their own organization, or an outside organization. Enter up to the top three (in dollar value) types of partner training provided. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 training types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other training types as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Data collection |
| | • Grant reporting |
| | • Marketing opportunities |
| | • Providing financial assistance |
| | • Providing technical assistance |
| | • Writing producer contracts |
| | • Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

**Activity by partner**

| **Data element name:** Activity 1-3 by partner | **Reporting question:** What types of activities has the organization provided to the project? |

**Description:** Types of activities that the recipient or partner organization has provided during the reporting quarter. Enter up to the top three (in dollar value) types of activities undertaken. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 activity types are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other activity types as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Marketing support |
| | • MMRV support |
| | • Producer outreach for enrollment |
| | • Technical assistance to producers |
| | • Training to other partner organizations |
| | • Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

## Activity cost

| | |
|---|---|
| **Data element name:** Activity cost 1-3 | **Reporting question:** What is the value of the activities this organization has provided to the project? |

**Description:** Cumulative (total) cost of each activity type that the organization has undertaken or offered from the start of the partnership to the end of the reporting quarter. Enter amounts for up to the top three (in dollar value) activity types. The worksheet provides three columns for this data element. Enter one value for each column. If fewer than 3 activity types are provided, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** NA |
| **Measurement unit:** Dollars | **Allowed values:** $0-$100,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

## Products supplied

| | |
|---|---|
| **Data element name:** Products supplied | **Reporting question:** What products or supplies were provided to enrolled fields? |

**Description:** Name(s) of products supplied to enrolled producers as incentives or matching contributions. Enter the name of each product, including its brand. Separate each product name with a comma. If no products or supplies were provided by the organization, leave the column blank.

| | |
|---|---|
| **Data type:** Text | **Select multiple values:** NA |
| **Measurement unit:** Name | **Allowed values:** Text |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

## Product source

| | |
|---|---|
| **Data element name:** Product source | **Reporting question:** Which companies provided the supplies? |

**Description:** Name of firm or company from which supplies were obtained.

| | |
|---|---|
| **Data type:** Text | **Select multiple values:** NA |
| **Measurement unit:** Name | **Allowed values:** Text |
| **Logic:** Respond if text entered for 'Products supplied' | **Required:** Yes |
| **Data collection level:** Partner | **Data collection frequency:** Quarterly |

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

Marketing Activities

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**Commodity type**

| | |
|---|---|
| **Data element name:** Commodity type | **Reporting question:** What type of commodity is produced by the farmers enrolled in this project? |

**Description:** List a single commodity produced or marketed through incentives from this project. If multiple commodities are produced by the project, use additional rows of the worksheet to report each commodity. Use the FSA commodity list in Appendix B and choose the commodity from the list.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** FSA commodity list |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

---

**Marketing channel type**

| | |
|---|---|
| **Data element name:** Marketing channel type | **Reporting question:** What type of marketing channel is used to sell this commodity? |

**Description:** List a single type of marketing channel used to sell the commodity produced by farmers enrolled in the project. If a single commodity is marketed through multiple channels, use additional rows of the worksheet to report each combination of commodity and marketing channel. If "other" is chosen, use the additional column to enter the other marketing channel type(s) as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Agricultural marketing board
- Biorefinery
- Commodity broker
- Direct to consumer
- Direct to institution
- Direct to restaurant
- Distributor (including grain elevators)
- Food hub or cooperative
- Food processor
- Non-food byproducts processor
- Retailer
- USDA
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

---

**Number of buyers**

| | |
|---|---|
| **Data element name:** Number of buyers | **Reporting question:** How many buyers are there in this marketing channel? |

**Description:** List the number of individual firms or buyers in this marketing channel.

| | |
|---|---|
| **Data type:** Integer | **Select multiple values:** No |
| **Measurement unit:** Count | **Allowed values:** 1-500 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

---

### Names of buyers

| | |
|---|---|
| **Data element name:** Names of buyers | **Reporting question:** What are the names of all of the buyers in this marketing channel? |
| **Description:** Provide the names of all buyers in this marketing channel. Separate each name with a comma. | |
| **Data type:** Text | **Select multiple values:** NA |
| **Measurement unit:** Name | **Allowed values:** Text |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

### Marketing channel geography

| | |
|---|---|
| **Data element name:** Marketing channel geography | **Reporting question:** What is the primary geography of the marketing channel? |
| **Description:** The primary geography of the type of marketing channel. Primary geography means the scale at which most of the activity of buying and selling happens. Local means within a single state or directly neighboring states. Regional means within a five-to-ten state area. National means across the United States. International means specific locations outside of the United States. Global means across the world or not to a specific international location. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Local<br>• Regional<br>• National<br>• Global |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

### Value sold

| | |
|---|---|
| **Data element name:** Value sold | **Reporting question:** What is the value of the commodity sold in this marketing channel? |
| **Description:** The dollar value of the commodity sold in this marketing channel this quarter (non-cumulative). | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Dollars | **Allowed values:** $1-$100,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

### Volume sold

| | |
|---|---|
| **Data element name:** Volume sold | **Reporting question:** What is the volume of the commodity sold in this marketing channel? |
| **Description:** The volume of the commodity sold in this marketing channel this quarter (non-cumulative). | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Number | **Allowed values:** 1-100,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

**Volume sold unit**

| | |
|---|---|
| **Data element name:** Volume sold unit | **Reporting question:** What is the unit of volume? |

**Description:** The unit associated with the volume of the commodity sold in the marketing channel. If "other" is chosen, use the additional column to enter the appropriate unit as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Bales (500 pounds)
- Bushels
- Carcass pounds
- Gallons
- Kilograms
- Linear board feet
- Liveweight pounds
- Metric tons
- Pounds
- Short tons
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

**Price premium**

| | |
|---|---|
| **Data element name:** Price premium | **Reporting question:** What price premium is received for the commodity sold in this marketing channel? |

**Description:** The price premium received for the commodity sold in this marketing channel this quarter. Price premium is the amount received above a 'business as usual' price.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Dollars | **Allowed values:** $0.01-$10,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

**Price premium unit**

| | |
|---|---|
| **Data element name:** Price premium unit | **Reporting question:** What is the unit for the price premium? |

**Description:** The unit associated with the price premium for the commodity sold in the marketing channel. If "other" is chosen, use the additional column to enter the appropriate unit as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Per bale (500 pounds)
- Per bushel
- Per carcass pound
- Per gallon
- Per kilogram
- Per linear board foot
- Per live pound
- Per metric ton
- Per ounce
- Per short ton
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Price premium to producer

| | |
|---|---|
| **Data element name:** Price premium to producer | **Reporting question:** What percent of the price premium is provided to the producer for the commodity sold in this marketing channel? |

**Description:** The percent of the price premium provided to the producer for the commodity sold in this marketing channel this quarter. Price premium is the amount received above a 'business as usual' price.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Percent | **Allowed values:** 0-100 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Product differentiation method

| | |
|---|---|
| **Data element name:** Product differentiation method 1-3 | **Reporting question:** What methods are used to differentiate climate-smart commodities in this marketing channel? |

**Description:** Provide the methods used to differentiate the climate-smart commodity in this market channel. Product differentiation methods are ways to distinguish or differentiate the climate-smart commodity in the marketplace. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 product differentiation methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other product differentiation methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

**Allowed values:**
- Certification/verification for internal insetting
- Farm certification
- Label or badge used on packaging or marketing
- Third party certification/verification
- Trademark
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Marketing method

| | |
|---|---|
| **Data element name:** Marketing method 1-3 | **Reporting question:** What methods are used to market climate-smart commodities in this marketing channel? |

**Description:** Provide the method(s) used to market this commodity in this market channel. Marketing method is the way that potential buyers of the climate-smart commodity are engaged by the project partners as the sellers or facilitators of sale. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 marketing methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other marketing methods as free text

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

**Allowed values:**
- Label or badge used on packaging or marketing materials
- Marketing partnership (e.g., promotion by buyer)
- Print marketing campaign
- Social media and digital marketing campaign
- Verbal marketing campaign (e.g., radio, word of mouth)
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Marketing channel identification method

| | |
|---|---|
| **Data element name:** Marketing channel identification method 1-3 | **Reporting question:** What methods are used to generate interest in climate-smart commodities in this marketing channel? |

**Description:** Provide the marketing channel identification method(s) used for this commodity in this market channel. Market channel identification methods are the ways that producers and project partners generate interest in purchasing the climate-smart commodity. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 marketing channel identification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other marketing channel identification methods as free text

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Educational tours for buyers<br>• In-person lead generation<br>• Negotiated contracts with buyers<br>• Partnership network or project partner<br>• Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

## Traceability method

| | |
|---|---|
| **Data element name:** Traceability method 1-3 | **Reporting question:** What traceability methods are used for climate-smart commodities in this channel? |

**Description:** Provide the traceability method(s) used for the climate-smart commodity in this market channel. Traceability methods are ways to trace the climate-smart commodity or the climate-smart claims through the supply chain. Include up to 3 methods, based on which methods are most commonly used for this project. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 traceability methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other traceability methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Barcode or unique ID<br>• Blockchain<br>• Book and claim<br>• Chain of custody<br>• Mass balance<br>• Recordkeeping<br>• Registry with certification<br>• Segregation<br>• Supply shed<br>• Volume proxy<br>• Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Quarterly |

<u>Producer Enrollment</u>

**Unique IDs**

| | |
|---|---|
| Farm ID | Unique Farm ID assigned by FSA |
| State or territory | State name (must match FSA farm enrollment data) |
| County of residence | County name (must match FSA farm enrollment data) |

**Producer data change**

**Data element name:** Producer data change

**Reporting question:** Is there new/updated information for a producer who is re-enrolling in the project?

**Description:** Indicates that there is new or updated information for a producer who had previously enrolled in the project and is re-enrolling.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Yes |
| | • No |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Re-enrollment |

**Producer start date**

**Data element name:** Producer start date

**Reporting question:** When did the producer enroll in the project?

**Description:** Date that the producer enrolled in the project by signing their first contract.

| | |
|---|---|
| **Data type:** Date | **Select multiple values:** NA |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023 – 12/31/2030 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

**Producer name**

**Data element name:** Producer name

**Reporting question:** What is the name of producer enrolled in the project?

**Description:** Name of the producer enrolled in the project; the name must match the name contained in the customer's Business Partner record and the Farm Operating Plan in FSA Business File for that Farm ID.

| | |
|---|---|
| **Data type:** Text | **Select multiple values:** NA |
| **Measurement unit:** NA | **Allowed values:** Text |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

## Underserved status

**Data element name:** Underserved status

**Reporting question:** Is this producer considered an underserved and/or a small producer?

**Description:** Underserved status of the primary operator of the enrolled operation. Underserved producers generally include beginning farmers, socially disadvantaged farmers, veteran farmers, and limited resource farmers; women farmers and producers growing specialty crops are generally also included in these categories. Small farms are generally those with less than $350,000 in annual gross cash farm income. Indicate whether this producer is considered underserved, a small producer, or both underserved and a small producer. Use "I don't know" if the producer declines to answer. Departmental Regulation 4370-001 provides USDA's policies for collecting demographic data, including race, ethnicity and gender. Providing demographic information is voluntary and at the discretion of the customer. Demographic information is used by USDA for statistical purposes only and will not be used to determine an applicant's eligibility for programs or services for which they apply.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Yes, underserved
- Yes, small producer
- Yes, underserved and small producer
- No
- I don't know

**Logic:** None – all respond

**Required:** No

**Data collection level:** Producer

**Data collection frequency:** Initial enrollment

## Total area

**Data element name:** Total area

**Reporting question:** What is the total area of the farm?

**Description:** Total area of the farm associated with the Farm ID. Report total area of the farm, even if only a portion of the farm is enrolled in the project. If a producer is enrolled in the project for multiple years, review the total area each time a new contract is signed and provide any necessary updates.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Less than 1 acre
- 1 to 9 acres
- 10 to 49 acres
- 50 to 69 acres
- 70 to 99 acres
- 100 to 139 acres
- 140 to 179 acres
- 180 to 219 acres
- 220 to 259 acres
- 260 to 499 acres
- 500 to 999 acres
- 1,000 to 1,999 acres
- 2,000 to 4,999 acres
- 5,000 or more acres

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable

## Total crop area

| | |
|---|---|
| **Data element name:** Total crop area | **Reporting question:** What percent of the current operation is cropland? |

**Description:** Area of the total farm that is currently used as cropland. If a producer is enrolled in the project for multiple years, review the total crop area each time a new contract is signed and provide any necessary updates.

| | |
|---|---|
| **Data type:** Integer | **Select multiple values:** No |
| **Measurement unit:** Acres | **Allowed values:** 0-100,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable |

## Total livestock area

| | |
|---|---|
| **Data element name:** Total livestock area | **Reporting question:** What amount of the current operation is used for livestock (by area)? |

**Description:** Area of the total farm that is currently used for pasture, grazing, rangeland; or animal housing, feeding or milking. If a producer is enrolled in the project for multiple years, review the total livestock area each time a new contract is signed and provide any necessary updates.

| | |
|---|---|
| **Data type:** Integer | **Select multiple values:** No |
| **Measurement unit:** Acres | **Allowed values:** 0-100,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable |

## Total forest area

| | |
|---|---|
| **Data element name:** Total forest area | **Reporting question:** What amount of the current operation is forested (by area)? |

**Description:** Area of the total farm that is currently considered forest land use. Forest land use means that at least 10% of the land area is covered in trees that will be at least 13 feet tall when mature. If a producer is enrolled in the project for multiple years, review the total forest area each time a new contract is signed and provide any necessary updates.

| | |
|---|---|
| **Data type:** Integer | **Select multiple values:** No |
| **Measurement unit:** Acres | **Allowed values:** 0-100,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable |

## Livestock type

| | |
|---|---|
| **Data element name:** Livestock type 1-3 | **Reporting question:** What types of livestock are raised on the farm? |

**Description:** Up to top three types of livestock (by head count) on the farm. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 livestock types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other livestock types as free text. If a producer is enrolled in the project for multiple years, review the livestock type each time a new contract is signed and provide any necessary updates.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

Allowed values:
- Alpacas
- Beef cows
- Beefalo
- Buffalo or bison
- Chickens (broilers)
- Chickens (layers)
- Dairy cows
- Deer
- Ducks
- Elk
- Emus
- Equine
- Geese
- Goats
- Honeybees
- Llamas
- Reindeer
- Sheep
- Swine
- Turkeys
- Other (specify)

| | |
|---|---|
| **Logic:** Respond if 'Total livestock area' >0 | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable |

## Livestock head

| | |
|---|---|
| **Data element name:** Livestock head 1-3 | **Reporting question:** How many livestock (by type) are on this operation? |

**Description:** Average annual head count for each type of livestock. Enter amounts for up to the top three livestock types by number. The worksheet provides three columns for this data element. Enter one value for each column. If there are fewer than 3 livestock types, leave unnecessary columns blank. If a producer is enrolled in the project for multiple years, review the average annual head count each time a new contract is signed and provide any necessary updates.

| | |
|---|---|
| **Data type:** Integer | **Select multiple values:** NA |
| **Measurement unit:** Head count | **Allowed values:** 1-10,000,000 |
| **Logic:** Respond if 'Total livestock area' >0 | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable |

**Organic farm**

| | |
|---|---|
| **Data element name:** Organic farm | **Reporting question:** Is any part of the farm currently USDA-certified organic or transitioning to USDA-certified organic? |

**Description:** USDA-certified organic means that the farm has been certified by an accredited organic certifying agent or is transitioning to USDA-certified organic by not using any of the prohibited substances. Yes means that some or all of the farm is certified organic or transitioning to certified organic. No means that no part of the farm is certified organic or transitioning to certified organic. If a producer is enrolled in the project for multiple years, review the organic certification status of the farm each time a new contract is signed and provide any necessary updates.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** None – all respond | **Required:** No |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable |

**Organic fields**

| | |
|---|---|
| **Data element name:** Organic fields | **Reporting question:** Are any of the fields enrolled in the project currently USDA-certified organic or transitioning to USDA-certified organic? |

**Description:** USDA-certified organic means that the operation has been certified by an accredited organic certifying agent or is transitioning to USDA-certified organic by not using any of the prohibited substances. Yes means that some or all of the fields enrolled in the project are certified organic or transitioning to certified organic. No means that no part of the fields enrolled in the project are certified organic or transitioning to certified organic. If a producer is enrolled in the project for multiple years, review the organic certification status of the enrolled fields each time a new contract is signed and provide any necessary updates.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Organic operation' | **Required:** No |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment and subsequent enrollment(s), if applicable |

**Producer motivation**

| | |
|---|---|
| **Data element name:** Producer motivation | **Reporting question:** Which of the following was the primary reason the producer enrolled in this project? |

**Description:** Primary operator's motivation for enrolling in the project.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Financial benefit<br>• Environmental benefit<br>• New market opportunity<br>• Partnerships or networks<br>• Other |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

---

**Producer outreach**

| | |
|---|---|
| **Data element name:** Producer outreach 1-3 | **Reporting question:** What types of outreach were provided to producers? |

**Description:** Up to three most common types of outreach provided to producer prior to enrollment. Outreach activities are those focused on identifying and enrolling producers in the project. Outreach can come from the recipient or project partners. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 outreach types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other outreach types as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** Yes |
| **Measurement unit:** Category | **Allowed values:** |

- Commodity organizations
- Conferences
- Cooperative extension
- Digital communications and resources
- Education workshops, field days, and town halls
- Existing partner networks
- Farm visits and one-on-one meetings
- General advertising
- Peer referrals and producer groups
- Phone calls
- Print communications and resources
- Retailers
- State agencies
- Targeted messaging using proprietary data
- Technical service providers
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

---

**CSAF experience**

| | |
|---|---|
| **Data element name:** CSAF experience | **Reporting question:** Has the primary operator implemented CSAF practices in the last ten years anywhere on the farm? |

**Description:** Has this farm implemented climate-smart agriculture or forestry (CSAF) practices anywhere on the farm in the past 10 years or since the current primary operator took control (whichever time period is shorter)? CSAF practices are included in a list in Appendix A.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Yes
- No
- I don't know

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

## CSAF federal funds

| | |
|---|---|
| **Data element name:** CSAF federal funds | **Reporting question:** Were prior CSAF practices supported by federal funds? |

**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by federal funds? Federal funds are defined as being from programs including, but not limited to, those from the Natural Resources Conservation Service ((NRCS), including through Environmental Quality Incentives Program (EQIP), Conservation Stewardship Program (CSP), Regional Conservation Partnership Program (RCPP), or related programs), the Farm Service Agency Conservation Reserve Program (CRP), as well as funds from other USDA programs or other federal agencies.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'CSAF experience' | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

## CSAF state or local funds

| | |
|---|---|
| **Data element name:** CSAF state or local funds | **Reporting question:** Were prior CSAF practices supported by state or local funds? |

**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by state funds? State or local funds are those from state departments of agriculture or other state agencies, local water quality districts and other local agencies.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'CSAF experience' | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

## CSAF nonprofit funds

| | |
|---|---|
| **Data element name:** CSAF nonprofit funds | **Reporting question:** Were CSAF practices supported by nonprofit funds? |

**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by nonprofit funds? Nonprofit funds are those offered directly from a nonprofit organization to a producer.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'CSAF experience' | **Required:** Yes |
| **Data collection level:** Producer | **Data collection frequency:** Initial enrollment |

## CSAF market incentives

**Data element name:** CSAF market incentives

**Reporting question:** Were CSAF practices supported by market incentives?

**Description:** If this farm (under the primary operator) has implemented CSAF practices in the last ten years, was implementation supported by market incentives? Market incentives include premiums paid by a commodity buyer or by a consumer based on branding or labeling as a climate-smart commodity.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Yes
- No
- I don't know

**Logic:** Respond if yes to 'CSAF experience'

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Initial enrollment

## Field Enrollment

### Unique IDs

| | |
|---|---|
| Farm ID | Unique Farm ID assigned by FSA |
| Tract ID | Unique Tract ID assigned by FSA |
| Field ID | Unique Field ID assigned by FSA |
| State or territory of field | State name (must match FSA farm enrollment data) |
| County of field | County name (must match FSA farm enrollment data) |
| Prior Field ID, if applicable | Prior Field ID assigned by FSA if there has been reconstitution of the farm resulting in a new Field ID during the field's enrollment in the project |

### Field data change

**Data element name:** Field data change

**Reporting question:** Has the information previously reported for this field changed?

**Description:** Indicator that this entry is being used to report any relevant changes, such as a new Field ID number or changes to the commodity or practice combinations, for a field that has previously been enrolled in the project.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Yes |
| | • No |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Re-enrollment |

### Contract start date

**Data element name:** Contract start date

**Reporting question:** What is the start date of the contract with the producer that includes this field?

**Description:** Start date listed on the contract that enrolls the field in the project.

| | |
|---|---|
| **Data type:** Date | **Select multiple values:** NA |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023 – 12/31/2030 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

### Total field area

**Data element name:** Total field area

**Reporting question:** What is the total size of the enrolled field?

**Description:** Total size of the field enrolled with the project.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Acres | **Allowed values:** .01-500 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Commodity category

| | |
|---|---|
| **Data element name:** Commodity category | **Reporting question:** What category of commodity(ies) is (are) produced from this field? |
| **Description:** Category of commodity(ies) produced in field enrolled in the project | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Crops<br>• Livestock<br>• Trees<br>• Crops and livestock<br>• Crops and trees<br>• Livestock and trees<br>• Crops, livestock and trees |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Commodity type

| | |
|---|---|
| **Data element name:** Commodity type | **Reporting question:** What type of commodity is produced from this field? |
| **Description:** Type of commodity produced in field enrolled in the project. See full list in Appendix B. The worksheet provides a drop-down list of the allowed values. Choose the appropriate value. Enter additional commodities in subsequent rows. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** FSA commodity list |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Baseline yield

| | |
|---|---|
| **Data element name:** Baseline yield | **Reporting question:** What is the baseline yield of this field? |
| **Description:** Average annual yield of commodity in 3 years prior to enrollment. Provide yield for the enrolled field if possible. If not at field level, provide average annual yield for the specific commodity for the operation. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Production per acre or animal | **Allowed values:** .01-100,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

**Baseline yield unit**

| | |
|---|---|
| **Data element name:** Baseline yield unit | **Reporting question:** Baseline yield unit |

**Description:** Unit of average annual yield of commodity in enrolled field in 3 years prior to enrollment. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Animal units per acre
- Bushels per acre
- Carcass pounds per animal
- Head per acre
- Hundred-weights (or pounds) per head
- Linear feet per acre
- Liveweight pounds per animal
- Pounds per acre
- Tons per acre
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

**Baseline yield location**

| | |
|---|---|
| **Data element name:** Baseline yield location | **Reporting question:** For what portion of the operation is the baseline yield being reported? |

**Description:** Location of the reported average annual yield of commodity in 3 years prior to enrollment. If "other" is chosen, use the additional column to enter the appropriate location as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Enrolled field
- Whole operation
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

**Field land use**

| | |
|---|---|
| **Data element name:** Field land use | **Reporting question:** What is this field's land use history? |

**Description:** Prior to enrollment, what was the most common land use for this field in the past 3 years?

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Crop land
- Forest land
- Non-agriculture
- Other agricultural land
- Pasture
- Range

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

**Field irrigated**

| | |
|---|---|
| **Data element name:** Field irrigated | **Reporting question:** What is this field's irrigation history? |

**Description:** Prior to enrollment, what was the most common irrigation practice on this field the past 3 years?

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- No irrigation
- Center pivot
- Drip-subsurface
- Drip-surface
- Flood/border
- Furrow/ditch
- Lateral/linear sprinklers
- Micro-sprinklers
- Seepage
- Side roll
- Solid set sprinklers
- Supplemental
- Surface
- Traveling gun/towline
- Wheel Line
- Other

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

**Field tillage**

| | |
|---|---|
| **Data element name:** Field tillage | **Reporting question:** What is this field's tillage history? |

**Description:** Prior to enrollment, what was the most common tillage approach during the past 3 years?

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- None
- Conventional, inversion
- Conventional, vertical
- No-till, direct seed
- Reduced till, inversion
- Reduced till, vertical
- Strip till
- Other

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Practice past extent - farm

| | |
|---|---|
| **Data element name:** Practice past extent - farm | **Reporting question:** What percent of the farm has implemented this CSAF practice (combination) previously? |

**Description:** Prior to enrollment, on what portion of the whole farm had this (these) CSAF practice(s) ever been used by the primary operator? If multiple practices are planned to be implemented in this field, enter the value that best corresponds to the farm's prior experience with the planned set of practices.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Never used<br>• Used on less than 25% of operation<br>• Used on 25-50% of operation<br>• Used on 51-75% of operation<br>• Used on more than 75% of operation |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Field any CSAF practice

| | |
|---|---|
| **Data element name:** Field any CSAF practice | **Reporting question:** What is this field's prior experience with CSAF practices? |

**Description:** Prior to enrollment, have any CSAF practice or practices been used in this field in the past 3 years? CSAF practices are included in a list in Appendix A.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Practice past use - this field

| | |
|---|---|
| **Data element name:** Practice past use - this field | **Reporting question:** Have this CSAF practice (combination) been implemented previously in this field? |

**Description:** Prior to enrollment, had this (these) CSAF practice(s) been used in this field in the in the past 3 years? Enter yes if all of the practices had been used previously in this field; enter some if multiple practices are being implemented and one or more, but not all, of the practices had been used previously in this field; and enter no if none of the practices had been used previously in this field.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• Some<br>• No<br>• I don't know |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Practice type

| | |
|---|---|
| **Data element name:** Practice type 1-7 | **Reporting question:** What CSAF practice is being implemented in this field through the project? |

**Description:** Which CSAF practice or practices will be implemented on this field as part of enrollment in the project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** See list in Appendix A |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Practice standard

| | |
|---|---|
| **Data element name:** Practice standard 1-7 | **Reporting question:** What standard does the CSAF practice follow? |

**Description:** Is the CSAF practice being implemented on the field as part of enrollment in the project following a defined practice standard? The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • NRCS |
| | • Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Planned practice implementation year

| | |
|---|---|
| **Data element name:** Practice 1-7 implementation year | **Reporting question:** What year is the CSAF practice planned to be implemented? |

**Description:** Year that the CSAF practice is planned to be implemented on the field. Use 2022 for early adopters, defined as fields that have the practice actively implemented in 2022 (prior to contract being signed for this project). The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** Integer | **Select multiple values:** No |
| **Measurement unit:** Year | **Allowed values:** 2022-2030 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

## Practice extent

| | |
|---|---|
| **Data element name:** Practice 1-7 extent | **Reporting question:** To what extent is the practice implemented? |

**Description:** Total area, length, or head where the practice is being implemented in the field specified by the contract.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Extent | **Allowed values:** .01-100,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

| Practice extent unit | |
|---|---|
| **Data element name:** Practice 1-7 extent unit | **Reporting question:** Unit for extent of practice implementation |
| **Description:** Unit for extent of practice implementation on the field specified by the contract. If "other" is chosen, use the additional column to enter the appropriate unit. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Acres<br>• Head of livestock<br>• Linear feet<br>• Square feet<br>• Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Initial enrollment |

CSAF Practice Sub-questions

For certain practices, additional questions are asked that provide information necessary to estimate greenhouse gas benefits from implementation of the practice. See Table 11 in the *CSAF Practice Sub-questions* section for descriptions of individual questions to be answered depending on the CSAF practices selected.

Farm Summary

**Unique IDs**

| | |
|---|---|
| Farm ID | Unique Farm ID assigned by FSA |
| State or territory | State name (must match FSA farm enrollment data) |
| County of residence | County name (must match FSA farm enrollment data) |

**Producer TA received**

**Data element name:** Producer TA received 1-3

**Reporting question:** What types of technical assistance were provided to this producer?

**Description:** Did the recipient or any partner provide technical assistance (TA) to the producer this year? Technical assistance is any training, education, capacity building or other support provided by any project partner(s) directly to producers enrolled in the project. List up to the top three most common types of TA provided to this producer. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 3 TA types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other TA types as free text.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Demonstration plots
- Equipment demonstrations
- Group field days or in-person field workshops
- Hotline
- One-on-one enrollment assistance
- One-on-one field visits
- One-on-one producer mentorship
- Producer networks and peer-to-peer groups
- Retailer consultation
- Social media/digital tools
- Train-the-trainer opportunities
- Virtual meetings or field days
- Webinars and videos
- Written materials
- None
- Other (specify)

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

**Producer incentive amount**

**Data element name:** Producer incentive amount

**Reporting question:** What is the total value of financial incentives provided to this producer?

**Description:** Total incentive payment received by the producer from USDA project funds for the year (non-cumulative). Do not include incentive payments made with partner match funds.

**Data type:** Decimal

**Select multiple values:** NA

**Measurement unit:** Dollars

**Allowed values:** $0-$5,000,000

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

## Incentive reason

**Data element name:** Incentive reason 1-4     **Reporting question:** Why were incentives provided to this producer?

**Description:** List up to four reasons for producer incentive payments. List the top 4 based on total value of the incentive for each reason. The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 reasons, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other reasons as free text.

**Data type:** List     **Select multiple values:** No

**Measurement unit:** Category     **Allowed values:**
- Avoided conversion
- Conference or training attendance
- Demographics/equity payment
- Enrollment
- Foregone revenue
- Historic data collection
- Identity preservation (supply chain tracing)
- Implementation of practices
- MMRV (e.g., data collection, reporting)
- Passing audit
- Price premium on output
- Yield change
- Other (specify)

**Logic:** None – all respond     **Required:** Yes

**Data collection level:** Producer     **Data collection frequency:** Quarterly

## Incentive structure

**Data element name:** Incentive structure 1-4     **Reporting question:** What are the units for the financial incentives provided to this producer?

**Description:** List the structures (units) corresponding to the top 4 (by dollar value) incentive payments to producers. Production unit is weight or volume (bushel, kilogram, ton). The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 structure types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other structure types as free text.

**Data type:** List     **Select multiple values:** No

**Measurement unit:** Category     **Allowed values:**
- Flat rate
- Per animal head
- Per area
- Per length
- Per production unit
- Per ton GHG
- Per tree
- Other (specify)

**Logic:** None – all respond     **Required:** Yes

**Data collection level:** Producer     **Data collection frequency:** Quarterly

## Incentive type

**Data element name:** Incentive type 1-4

**Reporting question:** What type of incentives were provided to each producer?

**Description:** List the top 4 types of incentive payments to producers (based on dollar value). The worksheet provides four columns with a drop-down list of the allowed values. Choose one value for each column. If there are fewer than 4 incentive types, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other incentive types as free text.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Cash payment
- Equipment loan
- Guaranteed commodity premium payment
- Inputs and supplies
- Land rental
- Loan
- Paid labor
- Post-harvest transportation
- Tuition or fees for training
- Other (specify)

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

## Payment on enrollment

**Data element name:** Payment on enrollment

**Reporting question:** What portion of the financial incentive is provided to the producer upon enrollment in the project?

**Description:** Any incentive payment provided to the producer upon enrollment/signing a contract, and not related to any implementation, MMRV or sales activities. Full payment means the full incentive amount for any contract held by the producer is paid upon enrollment. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon enrollment. No payment means that none of the full incentive amount for any contract held by the producer is paid upon enrollment.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Full payment
- Partial payment
- No payment

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

## Payment on implementation

**Data element name:** Payment on implementation

**Reporting question:** What portion of the financial incentive is provided to the producer upon implementation of the practices?

**Description:** Any incentive payment provided to the producer upon implementing the practices included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon implementation. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon implementation. No payment means that none of the full incentive amount for any contract held by the producer is paid upon implementation.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Full payment
- Partial payment
- No payment

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

## Payment on harvest

**Data element name:** Payment on harvest

**Reporting question:** What portion of the financial incentive is provided to the producer upon harvest of the commodity?

**Description:** Any incentive payment provided to the producer upon harvesting or slaughtering the commodity included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon harvest. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon harvest. No payment means that none of the full incentive amount for any contract held by the producer is paid upon harvest.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Full payment
- Partial payment
- No payment

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

## Payment on MMRV

**Data element name:** Payment on MMRV

**Reporting question:** What portion of the financial incentive is provided to the producer upon completing MMRV requirements?

**Description:** Any incentive payment provided to the producer upon completing the annual MMRV requirements included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon MMRV being complete. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon MMRV being complete. No payment means that none of the full incentive amount for any contract held by the producer is paid upon MMRV being complete.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Full payment
- Partial payment
- No payment

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

## Payment on sale

**Data element name:** Payment on sale

**Reporting question:** What portion of the financial incentive is provided to producer upon sale of the commodity?

**Description:** Any incentive payment provided to the producer upon sale of the commodity included in the contract. Full payment means the full incentive amount for any contract held by the producer is paid upon sale. Partial payment means that only part of the full incentive amount for any contract held by the producer is paid upon sale. No payment means that none of the full incentive amount for any contract held by the producer is paid upon sale.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Full payment
- Partial payment
- No payment

**Logic:** None – all respond

**Required:** Yes

**Data collection level:** Producer

**Data collection frequency:** Quarterly

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

Field Summary

**Unique IDs**

| | |
|---|---|
| Farm ID | Unique Farm ID assigned by FSA |
| Tract ID | Unique Tract ID assigned by FSA |
| Field ID | Unique Field ID assigned by FSA |
| State or territory of field | State name (must match FSA farm enrollment data) |
| County of field | County name (must match FSA farm enrollment data) |

**Commodity type**

**Data element name:** Commodity type

**Reporting question:** What type of commodity is produced from this field?

**Description:** Type of commodity produced in field enrolled in the project. See full list in Appendix B. The worksheet provides multiple columns with a drop-down list of the allowed values. Choose one value for each column. Leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** FSA commodity list |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

**Practice type**

**Data element name:** Field practice type 1-7

**Reporting question:** What CSAF practice is being implemented in this field through the project?

**Description:** Which climate-smart agriculture or forestry (CSAF) practice or practices are being implemented in this project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** See list in Appendix A |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

**Date practice complete**

**Data element name:** Date practice complete

**Reporting question:** When did the project certify CSAF practice implementation as complete?

**Description:** Date that the project certifies that implementation of the CSAF practice is complete on the field. Use January of the year prior to contract year for early adopters, defined as fields that have the practice actively implemented in the year prior to a contract associated with this project is signed). The worksheet provides seven columns for this data element. Enter one value for each column, corresponding to the practice types entered in the previous columns. If there are fewer than 7 practices being implemented on this field through enrollment in the project, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** Date | **Select multiple values:** No |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023 – 12/31/2030 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Contract end date

| | |
|---|---|
| **Data element name:** Contract end date | **Reporting question:** Contract end date |

**Description:** End date listed on the contract that enrolls the field in the project. If contract end date changes, submit updated end date during the next quarter's reporting.

| | |
|---|---|
| **Data type:** Date | **Select multiple values:** No |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023 – 12/31/2030 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## MMRV assistance provided

| | |
|---|---|
| **Data element name:** MMRV assistance provided | **Reporting question:** Was MMRV assistance provided? |

**Description:** Was any MMRV assistance provided to the primary operator for this field? MMRV assistance includes in-field support for the use of technologies, consultation on data collection and input, and other support related to MMRV. MMRV is defined a measurement (calculations or estimations of GHG emissions), monitoring (ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time), reporting (documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization), and verification (independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable).

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Marketing assistance provided

| | |
|---|---|
| **Data element name:** Marketing assistance provided | **Reporting question:** Was marketing assistance provided? |

**Description:** Was any marketing assistance provided to the primary operator for the commodity(ies) produced from this field? Marketing assistance includes guaranteeing the sale of the commodity(ies), providing a platform for the sale of the commodity(ies), providing a label, branding, or other support related to marketing.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Incentive per acre or head

| | |
|---|---|
| **Data element name:** Incentive per acre or head | **Reporting question:** Is this field receiving a per-acre or per-head incentive? |

**Description:** Is this field receiving an incentive payment to implement a specific CSAF practice or set of practices on a per-acre or per-head (livestock) basis?

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Field commodity value

| | |
|---|---|
| **Data element name:** Field commodity value | **Reporting question:** What is the value of the commodity produced on the enrolled field? |

**Description:** The dollar value of the commodity produced on the enrolled field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Dollars | **Allowed values:** $1-$10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Field commodity volume

| | |
|---|---|
| **Data element name:** Field commodity volume | **Reporting question:** What is the volume of commodity produced on the enrolled field? |

**Description:** The volume of the commodity produced on the enrolled field

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Number | **Allowed values:** 1-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Field commodity volume unit

| | |
|---|---|
| **Data element name:** Field commodity volume unit | **Reporting question:** What is the unit of volume? |

**Description:** The unit associated with the volume of the commodity produced on the enrolled field. If "other" is chosen, enter the appropriate value in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Bushels
- Carcass weight pounds
- Gallons
- Head
- Linear feet
- Liveweight pounds
- Pounds
- Tons
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Cost of implementation

| | |
|---|---|
| **Data element name:** Cost of implementation | **Reporting question:** What is the cost of practice implementation in the field? |

**Description:** Total annual estimated cost per unit of implementing the practice(s) in the enrolled field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Dollars | **Allowed values:** $1-$10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

---

## Cost unit

| | |
|---|---|
| **Data element name:** Cost unit | **Reporting question:** What is the unit for cost? |

**Description:** The unit associated with the cost of implementing CSAF practices in the field. If "other" is chosen, enter the appropriate value in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Per acre
- Per bushel
- Per head
- Per linear foot
- Per pound
- Per ton
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

---

## Cost coverage

| | |
|---|---|
| **Data element name:** Cost coverage | **Reporting question:** What percent of the practice cost is covered by the incentive? |

**Description:** Estimated proportion of total annual cost of implementing the practice(s) that is covered by project incentives.

| | |
|---|---|
| **Data type:** Integer | **Select multiple values:** No |
| **Measurement unit:** Percent | **Allowed values:** 0-100 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

---

## Field GHG monitoring

| | |
|---|---|
| **Data element name:** Field GHG monitoring 1-3 | **Reporting question:** How were GHG impacts monitored in this field? |

**Description:** Up to the top three forms of monitoring GHG benefits as part of MMRV requirements. Monitoring is defined as ongoing review and confirmation that the climate-smart practice has been implemented according to the agreed upon standard and documentation of any changes in the site, implementation, or GHG emissions impacts over time. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG monitoring methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG monitoring methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- Drones
- Ground-level photos and videos
- On-farm inspection
- Plot-based sampling (e.g., soil, water)
- Producer records or attestation
- Satellite monitoring or remote sensing
- Soil metagenomics
- Soil sensors
- Water sensors
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

---

**Field GHG reporting**

| | |
|---|---|
| **Data element name:** Field GHG reporting 1-3 | **Reporting question:** How were GHG benefits reported for this field? |

**Description:** Up to the top three forms of reporting on GHG benefits as part of MMRV requirements. Reporting is defined as documenting and sharing monitoring and measurement results with project partners, the recipient, and any third-party verification organization. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG reporting methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG reporting methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:**<br>• Automated devices<br>• Email<br>• Mobile app<br>• Paper<br>• Third-party actors<br>• Website<br>• Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

**Field GHG verification**

| | |
|---|---|
| **Data element name:** Field GHG verification 1-3 | **Reporting question:** How was implementation of practices to reduce GHG emissions verified for this field? |

**Description:** Up to the top three of verification of GHG benefits as part of MMRV requirements. Verification is defined as independent confirmation that measurement, monitoring and reporting information are complete, accurate and reliable. Include up to 3 methods, based on which methods are most commonly used for this field. The worksheet provides three columns with a drop-down list of the allowed values. Choose one value for each column. If fewer than 3 GHG verification methods are used, leave unnecessary columns blank. If "other" is chosen, use the additional column to enter other GHG verification methods as free text.

| | |
|---|---|
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:**<br>• Artificial intelligence<br>• Computer modeling<br>• Recipient audit<br>• Photos<br>• Record audit<br>• Satellite imagery<br>• Site or field visit<br>• Third-party audit<br>• Other (specify) |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

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## Field GHG calculations

| | |
|---|---|
| **Data element name:** Field GHG calculations | **Reporting question:** What methods are used to calculate GHG benefits in this field? |
| **Description:** List the method(s) used to calculate GHG benefits in this field. If yes to direct physical measurements, submit result reports (see *Supplemental Data Submission – Field direct GHG measurement results*). | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** <br> • Models <br> • Direct field measurements <br> • Both |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Field official GHG calculation

| | |
|---|---|
| **Data element name:** Field official GHG calculation | **Reporting question:** What method was used to calculate the official GHG benefits in this field? |
| **Description:** List the method used to calculate the official GHG benefits in this field that are reported as part of the project's aggregate impact. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** <br> • Models <br> • Direct field measurements |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Field official GHG ER

| | |
|---|---|
| **Data element name:** Field official GHG emission reductions | **Reporting question:** What are the estimated total GHG emission reductions (CO2eq) in this field? |
| **Description:** Estimated greenhouse gas emission reductions from practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Field official carbon stock

| | |
|---|---|
| **Data element name:** Field official carbon stock | **Reporting question:** How much carbon has been sequestered in this field? |
| **Description:** Estimated total change in carbon stock based on practice implementation in this field. This data element can be reported in any quarter and is cumulative for the year. Conversion rate is one ton of carbon = 3.67 tons of $CO_2eq$. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2eq$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

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### Field official CO2 ER

**Data element name:** Field official CO2 emission reductions

**Reporting question:** What are the estimated total CO2 emission reductions in this field?

**Description:** Estimated total carbon dioxide emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

### Field official CH4 ER

**Data element name:** Field official CH4 emission reductions

**Reporting question:** What are the estimated total CH4 emission reductions in this field?

**Description:** Estimated total methane emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate. Conversion rate is one ton of $CH_4$ = 25 tons of $CO_2$eq.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons CH4 reduced in $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

### Field official N20 ER

**Data element name:** Field official N2O emission reductions

**Reporting question:** What are the estimated total N2O emission reductions in this field?

**Description:** Estimated total nitrous oxide emission reductions based on practice implementation in this field that are reported as part of the project's aggregate impact. This data element must be entered upon practice completion or annually, as appropriate. Conversion rate is one ton of $N_2O$ = 298 tons of $CO_2$eq.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons N2O reduced in $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

### Field offsets produced

**Data element name:** Field offsets produced

**Reporting question:** How many carbon offsets have been produced in this field?

**Description:** Total carbon offsets produced in the field during the quarter (not cumulative). Offsets are defined as having been verified and certified using an accepted standard and sold into the carbon marketplace.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Field insets produced

| | |
|---|---|
| **Data element name:** Field insets produced | **Reporting question:** How many carbon insets have been produced in this field? |

**Description:** Total carbon insets produced in the field during the quarter (not cumulative). Insets are defined as having been verified and certified using an accepted standard and accounted for within Scope 3 emissions for a firm.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

## Other field measurement

| | |
|---|---|
| **Data element name:** Other field measurement | **Reporting question:** Were data collected from the field for reasons other than GHG benefit estimation? |

**Description:** Direct physical measurements or data collection taken in the field for any reason other than GHG benefits estimation. These reasons could include calibration of GHG estimation tools or models, tracking other environmental benefits (see Field environmental benefits report), and other reasons. If yes, submit corresponding reports (see *Supplemental data submission - Field direct measurement results*).

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Yes |
| | • No |
| | • I don't know |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Quarterly |

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GHG Benefits - Alternate Modeled

**Unique IDs**

| | |
|---|---|
| Farm ID | Unique Farm ID assigned by FSA |
| Tract ID | Unique Tract ID assigned by FSA |
| Field ID | Unique Field ID assigned by FSA |
| State or territory of field | State name (must match FSA farm enrollment data) |
| County of field | County name (must match FSA farm enrollment data) |

**Commodity type**

**Data element name:** Commodity type 1-6     **Reporting question:** What type of commodity(ies) is produced from this field?

**Description:** Type of commodity(ies) produced in field enrolled in the project. See full list of commodity options in Appendix B. The worksheet provides multiple columns with drop-down lists of the allowed values. Choose one value for each column. Leave unnecessary columns blank

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** FSA commodity list |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Practice type**

**Data element name:** Practice type 1-7     **Reporting question:** What CSAF practice is being implemented by this project?

**Description:** Which CSAF practice or practices are being implemented in this project? CSAF practices are included in a list in Appendix A. The worksheet provides seven columns for this data element. Enter one value for each column. If there are fewer than 7 practices being implemented by the project, leave unnecessary columns blank.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** See list in Appendix A |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**GHG model**

| | |
|---|---|
| **Data element name:** GHG model | **Reporting question:** What model was used for alternate calculation of GHG benefits? |

**Description:** Select the model used for the alternate calculation of the field's GHG benefits.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |

- ACC Calculator
- Agriculture, Forestry and Other Land Use (AFOLU) Carbon Calculator
- AIRES
- APEX
- Bowen Ratio Energy Balance
- Carat-Calculator
- CArPE
- CDFA web-based calculator
- COMET-Farm
- COMET-Planner
- CoolFarm
- Cover Crop Explore
- CropTrak
- CultivateAI's FMIS
- DayCent-CR
- DNDC
- DSSAT
- Earth Optics
- EcoPractices
- EPIC
- Extrapolation based on literature
- FieldPrint
- Granular
- GREET
- gTIR
- IFSM
- IPCC default emissions factors & models
- itree
- Nitrogen Balance
- Nutrient Tracking Tool (NTT)
- RCD Project Tracker
- Revised Universal Soil Loss equation 2 (RUSLE2)
- RuFaS
- SAFE-Link
- SALUS (CIBO)
- SNAPGRAZE
- SquareRoots
- SWAT-C
- SYMFONI
- Truterra Sustainability Tool
- Verra
- WEPP
- YardStick
- Other (specify)

| | |
|---|---|
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

    

## Model start date

| | |
|---|---|
| **Data element name:** Model start date | **Reporting question:** For what time period are the GHG benefits modeled (model start date)? |
| **Description:** Date that the model parameters begin. | |
| **Data type:** Date | **Select multiple values:** NA |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/1950 – 12/31/2030 |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Model end date

| | |
|---|---|
| **Data element name:** Model end date | **Reporting question:** For what time period are the GHG benefits modeled (model end date)? |
| **Description:** Date that the model parameters end. | |
| **Data type:** Date | **Select multiple values:** NA |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023– 12/31/2030 |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Total GHG benefits estimated

| | |
|---|---|
| **Data element name:** Total GHG benefits estimated | **Reporting question:** What is the alternate estimate of the field's total GHG emission reductions? |
| **Description:** Total greenhouse gas emission reductions from practice implementation in the field estimated using an alternate model. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Total carbon stock estimated

| | |
|---|---|
| **Data element name:** Total carbon stock estimated | **Reporting question:** What is the alternate estimate of how much carbon has the field has sequestered? |
| **Description:** Total change in carbon stock based on practice implementation in the field estimated using an alternate model. Conversion rate is one ton of carbon = 3.67 tons of $CO_2$eq. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Total CO2 estimated

| | |
|---|---|
| **Data element name:** Total CO2 estimated | **Reporting question:** What is the alternate estimate of the field's total CO2 emission reductions? |
| **Description:** Total carbon dioxide emission reductions based on practice implementation in the field estimated using an alternate model. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Total CH4 estimated**

| | |
|---|---|
| **Data element name:** Total CH4 estimated | **Reporting question:** What is the alternate estimate of the field's total CH4 emission reductions? |

**Description:** Total methane emission reductions based on practice implementation in the field estimated using an alternate model. Conversion rate is one ton of $CH_4$ = 25 tons of $CO_2$eq.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons CH4 reduced in $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Total field N20 estimated**

| | |
|---|---|
| **Data element name:** Total N2O estimated | **Reporting question:** What is the alternate estimate of the field's total N2O emission reductions? |

**Description:** Total nitrous oxide emission reductions based on practice implementation in the field estimated using an alternate method. Conversion rate is one ton of $N_2O$ = 298 tons of $CO_2$eq.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons N2O reduced in $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If project calculates GHG benefits using multiple methods |
| **Data collection level:** Field | **Data collection frequency:** Annual |

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GHG Benefits - Measured

**Unique IDs**

| Farm ID | Unique Farm ID assigned by FSA |
|---------|-------------------------------|
| Tract ID | Unique Tract ID assigned by FSA |
| Field ID | Unique Field ID assigned by FSA |
| State or territory of field | State name (must match FSA farm enrollment data) |
| County of field | County name (must match FSA farm enrollment data) |

**GHG measurement method**

**Data element name:** GHG measurement method

**Reporting question:** What measurement method is used to calculate GHG benefits?

**Description:** Field-based measurement method used to calculate GHG benefits. If "other" is chosen, enter the appropriate value as free text in the additional column.

**Data type:** List

**Select multiple values:** No

**Measurement unit:** Category

**Allowed values:**
- Emissions measurement unit
- Flux towers
- Litterbags
- Plant measurements
- Portable emissions analyzers
- Soil flux chambers
- Soil samples
- Soil sensors
- Vehicle-mounted sensors
- Other (specify)

**Logic:** None – all respond

**Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field

**Data collection level:** Field

**Data collection frequency:** Annual

**Lab name**

**Data element name:** Lab name

**Reporting question:** What is the name of the lab that processed the measurement samples?

**Description:** Name of entity that received data and conducted analysis of samples.

**Data type:** Text

**Select multiple values:** No

**Measurement unit:** NA

**Allowed values:** Free text

**Logic:** None – all respond

**Required:** If applicable

**Data collection level:** Field

**Data collection frequency:** Annual

## Measurement start date

| | |
|---|---|
| **Data element name:** Measurement start date | **Reporting question:** On what date did the measurement start? |
| **Description:** Date that the measurements began. If it was a single point in time, use the same date for start date and end date. If multiple measurements took place over a time period, use the date that the measurements first began. | |
| **Data type:** Date | **Select multiple values:** No |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023 – 12/31/2030 |
| **Logic:** None – all respond | **Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Measurement end date

| | |
|---|---|
| **Data element name:** Measurement end date | **Reporting question:** On what date did the measurement end? |
| **Description:** Date that the measurements began. If it was a single point in time, use the same date for start date and end date. If multiple measurements took place over a time period, use the date that the measurements were completed. | |
| **Data type:** Date | **Select multiple values:** No |
| **Measurement unit:** MM/DD/YYYY | **Allowed values:** 01/01/2023– 12/31/2030 |
| **Logic:** None – all respond | **Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Total CO2 reduction calculated

| | |
|---|---|
| **Data element name:** Total CO2 reduction calculated | **Reporting question:** What are the total measured CO2 emission reductions? |
| **Description:** Total annual CO2 emission reductions based on practice implementation in the field calculated from in-field measurements. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$ | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If a project takes carbon stock or greenhouse gas emission measurements in this field |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Total field carbon stock measured

| | |
|---|---|
| **Data element name:** Total field carbon stock measured | **Reporting question:** What is the total amount of carbon sequestered based on repeat measurements in this field? |
| **Description:** Change in carbon stock based on practice implementation in the field calculated from repeat soil sampling in this field. (Results for initial field soil samples should be reported in the 'Soil sample result' and 'Measurement type" columns.) Conversion rate is one ton of carbon = 3.67 tons of $CO_2$eq. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If a project conducts soil samples or takes carbon stock measurements in this field |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Total CH4 reduction calculated**

| | |
|---|---|
| **Data element name:** Total CH4 reduction calculated | **Reporting question:** What are the total measured CH4 emission reductions? |

**Description:** Total annual methane emission reductions based on practice implementation in the field calculated from in-field measurements. Conversion rate is one ton of $CH_4$ = 25 tons of $CO_2$eq.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons CH4 reduced in $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Total N20 reduction calculated**

| | |
|---|---|
| **Data element name:** Total N2O reduction calculated | **Reporting question:** What are the total measured N2O emission reductions? |

**Description:** Total annual nitrous oxide emission reductions based on practice implementation in the field calculated from in-field measurements. Conversion rate is one ton of $N_2O$ = 298 tons of $CO_2$eq.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Metric tons N2O reduced in $CO_2$eq | **Allowed values:** 0-10,000,000 |
| **Logic:** None – all respond | **Required:** If a project conducts soil samples or takes carbon stock or greenhouse gas emission measurements in this field |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Soil sample result**

| | |
|---|---|
| **Data element name:** Soil sample result | **Reporting question:** What is the numeric result from this soil sample? |

**Description:** Results of measurement(s) taken to determine the carbon stock of a soil (the tons of carbon found in a specified volume of soil).

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** .00001-100,000 |
| **Logic:** None – all respond | **Required:** If a project conducts soil samples in this field |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Soil sample result unit

**Data element name:** Soil sample result unit      **Reporting question:** What is unit for the soil sample result?

**Description:** Unit for the corresponding soil sample result. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free text.

**Data type:** List

**Measurement unit:** Category

**Select multiple values:** No

**Allowed values:**
- Percent
- Ppm
- Grams
- Grams per cubic centimeter
- Other (specify)

**Logic:** None – all respond

**Data collection level:** Field

**Required:** If a project conducts soil samples in this field

**Data collection frequency:** Annual

## Measurement type

**Data element name:** Measurement type      **Reporting question:** What type of analysis was conducted for this soil sample?

**Description:** Type of soil analysis conducted. The worksheet provides a drop-down list of choices for this data element. If "other" is chosen, use the additional column to enter the appropriate yield unit as free text.

**Data type:** List

**Measurement unit:** Category

**Select multiple values:** No

**Allowed values:**
- Organic matter
- Total organic carbon
- Bulk density
- Other (specify)

**Logic:** None – all respond

**Data collection level:** Field

**Required:** If a project conducts soil samples in this field

**Data collection frequency:** Annual

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Additional Environmental Benefits

**Unique IDs**

| | |
|---|---|
| Farm ID | Unique Farm ID assigned by FSA |
| Tract ID | Unique Tract ID assigned by FSA |
| Field ID | Unique Field ID assigned by FSA |
| State or territory of field | State name (must match FSA farm enrollment data) |
| County of field | County name (must match FSA farm enrollment data) |

**Environmental benefits**

| | |
|---|---|
| **Data element name:** Environmental benefits | **Reporting question:** Are environmental benefits other than GHGs being tracked in the field? |
| **Description:** Tracking of environmental benefits other than greenhouse gas emission reductions and carbon sequestration in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** None – all respond | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Reduction in nitrogen loss**

| | |
|---|---|
| **Data element name:** Reduction in nitrogen loss | **Reporting question:** Are reductions in nitrogen losses being tracked in the field? |
| **Description:** Tracking reductions in nitrogen losses in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Reduction in nitrogen loss amount**

| | |
|---|---|
| **Data element name:** Reduction in nitrogen loss amount | **Reporting question:** How much reduction in nitrogen losses have been measured in the field? |
| **Description:** Total amount of reduction in nitrogen losses that is measured and reported in the enrolled field. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Reduction in nitrogen loss' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduction in nitrogen loss amount unit

| | |
|---|---|
| **Data element name:** Reduction in nitrogen loss amount unit | **Reporting question:** What is the unit for how much reduction in nitrogen losses have been measured in the field? |

**Description:** Unit for the total amount of reduction in nitrogen losses that is measured and reported in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Kilograms<br>• Metric tons<br>• Pounds<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduction in nitrogen loss' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduction in nitrogen loss purpose

| | |
|---|---|
| **Data element name:** Reduction in nitrogen loss purpose | **Reporting question:** What is the purpose of tracking reduction in nitrogen losses? |

**Description:** Purpose of tracking reduction in nitrogen losses in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Commodity marketing<br>• Producing insets<br>• Producing offsets<br>• I don't know<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduction in nitrogen loss' | **Required:** Yes |
| **Data collection level:** Project | **Data collection frequency:** Annual |

## Reduction in phosphorus loss

| | |
|---|---|
| **Data element name:** Reduction in phosphorus loss | **Reporting question:** Are reductions in phosphorus losses being tracked in the field? |

**Description:** Tracking of reductions in phosphorus losses in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduction in phosphorus loss amount

| | |
|---|---|
| **Data element name:** Reduction in phosphorus loss amount | **Reporting question:** How much reduction in phosphorus losses have been measured in the field? |

**Description:** Total amount of reduction in phosphorus losses that is measured in the field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Reduction in phosphorus loss' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Reduction in phosphorus loss amount unit**

| | |
|---|---|
| **Data element name:** Reduction in phosphorus loss amount unit | **Reporting question:** What is the unit for the reduction in phosphorus losses measured in the field? |

**Description:** Unit for the total amount of reduction in phosphorus losses that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Kilograms<br>• Metric tons<br>• Pounds<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduction in phosphorus loss' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Reduction in phosphorus loss purpose**

| | |
|---|---|
| **Data element name:** Reduction in phosphorus loss purpose | **Reporting question:** What is the purpose of tracking reductions in phosphorus losses? |

**Description:** Purpose of tracking reduction in phosphorus losses in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Commodity marketing<br>• Producing insets<br>• Producing offsets<br>• I don't know<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduction in phosphorus loss' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Other water quality**

| | |
|---|---|
| **Data element name:** Other water quality | **Reporting question:** Are other water quality metrics being tracked in the field? |

**Description:** Project tracking of other water quality metrics in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Other water quality type

| | |
|---|---|
| **Data element name:** Other water quality type | **Reporting question:** What type of other water quality metric have been measured in the field? |

**Description:** Type of other water quality metric (besides nitrogen loss and phosphorus loss reductions) that is measured in the field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Sediment load reduction<br>• Temperature<br>• Other (specify) |
| **Logic:** Respond if yes to 'Other water quality' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Other water quality amount

| | |
|---|---|
| **Data element name:** Other water quality amount | **Reporting question:** How much reduction in other water quality metrics have been measured in the field? |

**Description:** Total amount of reduction in other water quality metrics that is measured in the enrolled field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Other water quality' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Other water quality amount unit

| | |
|---|---|
| **Data element name:** Other water quality amount unit | **Reporting question:** What is the unit for the reduction in other water quality metrics measured in the field? |

**Description:** Unit for the total amount of reduction in other water quality metrics that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Degrees F<br>• Kilograms<br>• Kilograms per liter<br>• Metric tons<br>• Pounds<br>• Other (specify) |
| **Logic:** Respond if yes to 'Other water quality' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Other water quality purpose

| | |
|---|---|
| **Data element name:** Other water quality purpose | **Reporting question:** What is the purpose of tracking other water quality benefits? |

**Description:** Purpose of tracking other water quality benefits in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Commodity marketing<br>• Producing insets<br>• Producing offsets<br>• I don't know<br>• Other (specify) |
| **Logic:** Respond if yes to 'Other water quality' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Water quantity

| | |
|---|---|
| **Data element name:** Water quantity | **Reporting question:** Is water conservation being tracked in the field? |

**Description:** Tracking of water conservation or reduction in use in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Water quantity amount

| | |
|---|---|
| **Data element name:** Water quantity amount | **Reporting question:** How much water conservation has been measured in the field? |

**Description:** Total amount of water conservation or reduction that is measured in the field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Water quantity' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Water quantity amount unit

| | |
|---|---|
| **Data element name:** Water quantity amount unit | **Reporting question:** What is the unit for the amount of water conservation measured in the field? |

**Description:** Unit for the total amount of water conservation or reduced use that is measured and reported in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Acre-feet<br>• Cubic feet<br>• Other (specify) |
| **Logic:** Respond if yes to 'Water quantity' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

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**Water quantity purpose**

| | |
|---|---|
| **Data element name:** Water quantity purpose | **Reporting question:** What is the purpose of tracking water conservation? |

**Description:** Purpose of tracking water conservation or reductions in water use in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Commodity marketing<br>• Producing insets<br>• Producing offsets<br>• I don't know<br>• Other (specify) |
| **Logic:** Respond if yes to 'Water quantity' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Reduced erosion**

| | |
|---|---|
| **Data element name:** Reduced erosion | **Reporting question:** Is reduced soil erosion being tracked in the field? |

**Description:** Tracking of reduced soil erosion in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Reduced erosion amount**

| | |
|---|---|
| **Data element name:** Reduced erosion amount | **Reporting question:** How much erosion reduction has been measured in the field? |

**Description:** Total amount of erosion reduction that is measured in the enrolled field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Reduced erosion' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Reduced erosion amount unit**

| | |
|---|---|
| **Data element name:** Reduced erosion unit | **Reporting question:** What is the unit for the amount of erosion reduction measured? |

**Description:** Unit for the total amount of erosion reduction from enrolled fields that is measured and reported by the project. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Tons<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduced erosion' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduced erosion purpose

| | |
|---|---|
| **Data element name:** Reduced erosion purpose | **Reporting question:** What is the purpose of tracking reduced erosion in the field? |

**Description:** Purpose of tracking reduced erosion the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Commodity marketing<br>• Producing insets<br>• Producing offsets<br>• I don't know<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduced erosion' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduced energy use

| | |
|---|---|
| **Data element name:** Reduced energy use | **Reporting question:** Is reduced energy use being tracked in the field? |

**Description:** Tracking of reduced energy use in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduced energy use amount

| | |
|---|---|
| **Data element name:** Reduced energy use amount | **Reporting question:** How much energy use reduction has been measured in the field? |

**Description:** Total amount of energy use reduction that is measured in the enrolled field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Reduced energy use' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduced energy use amount unit

| | |
|---|---|
| **Data element name:** Reduced energy use unit | **Reporting question:** What is the unit for the energy use reduction measured in the field? |

**Description:** Unit for the total amount of energy use reduction that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Kilowatt hours<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduced energy use' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Reduced energy use purpose

| | |
|---|---|
| **Data element name:** Reduced energy use purpose | **Reporting question:** What is the purpose of tracking reduced energy use in the field? |

**Description:** Purpose of tracking reduced energy use in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Commodity marketing<br>• Producing insets<br>• Producing offsets<br>• I don't know<br>• Other (specify) |
| **Logic:** Respond if yes to 'Reduced energy use' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Avoided land conversion

| | |
|---|---|
| **Data element name:** Avoided land conversion | **Reporting question:** Is avoided land conversion being tracked in the field? |

**Description:** Tracking of avoided land conversion in the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits. Land conservation means land use changing from agricultural uses to non-agricultural uses.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Yes<br>• No<br>• I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Avoided land conversion amount

| | |
|---|---|
| **Data element name:** Avoided land conversion amount | **Reporting question:** How much avoided land conversion has been measured in the field? |

**Description:** Total amount of avoided land conversion that is measured in the enrolled field.

| | |
|---|---|
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Avoided land conversion' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Avoided land conversion amount unit

| | |
|---|---|
| **Data element name:** Avoided land conversion unit | **Reporting question:** What is the unit for the amount of avoided land conversion measured in the field? |

**Description:** Unit for the total amount of avoided land conversion that is measured in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:**<br>• Acres<br>• Other (specify) |
| **Logic:** Respond if yes to 'Avoided land conversion' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Avoided land conversion purpose

| | |
|---|---|
| **Data element name:** Avoided land conversion purpose | **Reporting question:** What is the purpose of tracking avoided land conversion in the field? |
| **Description:** Purpose of tracking avoided land conversion in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Commodity marketing |
| | • Producing insets |
| | • Producing offsets |
| | • I don't know |
| | • Other (specify) |
| **Logic:** Respond if yes to 'Avoided land conversion' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Improved wildlife habitat

| | |
|---|---|
| **Data element name:** Improved wildlife habitat | **Reporting question:** Are improvements to wildlife habitat being tracked in the field? |
| **Description:** Tracking of improvements to wildlife in and around the enrolled field. Tracking means at a minimum using some form of monitoring and reporting that can quantify benefits. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Yes |
| | • No |
| | • I don't know |
| **Logic:** Respond if yes to 'Environmental benefits' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Improved wildlife habitat amount

| | |
|---|---|
| **Data element name:** Improved wildlife habitat amount | **Reporting question:** How much improved wildlife habitat has been measured in the field? |
| **Description:** Total amount of improved wildlife habitat that is measured in and around the enrolled fields. | |
| **Data type:** Decimal | **Select multiple values:** No |
| **Measurement unit:** Amount | **Allowed values:** 0-1,000,000 |
| **Logic:** Respond if yes to 'Improved wildlife habitat' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

## Improved wildlife habitat amount unit

| | |
|---|---|
| **Data element name:** Improved wildlife habitat unit | **Reporting question:** What is the unit for the amount of improved wildlife habitat measured in the field? |
| **Description:** Unit for the total amount of improved wildlife habitat that is measured in and around enrolled fields. If "other" is chosen, enter the appropriate value as free text in the additional column. | |
| **Data type:** List | **Select multiple values:** No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Acres |
| | • Linear feet |
| | • Other (specify) |
| **Logic:** Respond if yes to 'Improved wildlife habitat' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

**Improved wildlife habitat purpose**

| | |
|---|---|
| **Data element name:** Improved wildlife habitat purpose | **Reporting question:** What is the purpose of tracking improved wildlife habitat in the field? |

**Description:** Purpose of tracking improved wildlife habitat in the enrolled field. If "other" is chosen, enter the appropriate value as free text in the additional column.

| | |
|---|---|
| **Data type:** List | **Select multiple values**: No |
| **Measurement unit:** Category | **Allowed values:** |
| | • Commodity marketing |
| | • Producing insets |
| | • Producing offsets |
| | • I don't know |
| | • Other (specify) |
| **Logic:** Respond if yes to 'Improved wildlife habitat' | **Required:** Yes |
| **Data collection level:** Field | **Data collection frequency:** Annual |

CSAF Practice Sub-questions

For some CSAF practices, there is an additional set of questions that are unique to each practice. Responses to these questions are needed to verify estimated GHG benefits of these practices. If a field is implementing a CSAF practice with an NRCS CPS code in Table 11, answer the follow-up questions listed next to the relevant practice name in the table. Use the *Supplemental Reporting Workbook – CSAF Practice Sub-questions* to report the required information.

Table 11. Follow-on questions for select CSAF practices

| Practice name and code | Follow-up question | Options (select one) |
|---|---|---|
| Alley Cropping (CPS 311) | Species category (select most common/extensive type if using more than one) | Coniferous trees<br>Deciduous trees<br>Shrubs |
| | Species density (number of trees planted per acre) | 1-10,000 |
| Anaerobic Digester (CPS 366) | Waste storage system prior to installing anaerobic digester | Aerobic lagoon<br>Anaerobic digester (complex mix) with energy generation<br>Anaerobic digester (plug flow) with energy generation<br>Anaerobic lagoon<br>Composting<br>Covered lagoon (no energy generation or flaring)<br>Covered lagoon with energy generation<br>Covered lagoon with flaring<br>Daily spread<br>Deep bedding pack<br>Deep pit<br>Dry lot<br>Dry stacking/solid storage<br>Pasture/range/paddock<br>Poultry with bedding<br>Poultry without bedding (e.g., high rise)<br>Slurry tank/basin |
| | Digester type | Covered lagoon with energy generation<br>Covered lagoon with flaring<br>Covered lagoon (no energy generation or flaring)<br>Complex mix with energy generation<br>Plug flow with energy generation<br>Other (specify) |
| | Additional feedstock source (select most common if using more than one) | Food waste<br>Straw or bedding<br>Wastewater<br>Other (specify) |

| | | |
|---|---|---|
| Combustion System Improvement (CPS 372) | Fuel type before installation | Coal<br>Diesel<br>Electricity<br>Gasoline<br>Kerosene<br>Liquified petroleum gas (LPG)<br>Natural gas<br>Propane<br>Wood<br>Other (specify) |
| | Fuel amount before installation | 0-1,000,000 |
| | Fuel amount unit before installation | Cubic feet (natural gas)<br>Gallons (diesel, gasoline, propane, LPG, kerosene)<br>Kilowatt-hours (electricity)<br>Pounds (wood, coal)<br>Other (specify) |
| | Fuel type after installation | Coal<br>Diesel<br>Electricity<br>Gasoline<br>Kerosene<br>Liquified petroleum gas (LPG)<br>Natural gas<br>Propane<br>Wood<br>Other (specify) |
| | Fuel amount after installation | 0-1,000,000 |
| | Fuel amount unit after installation | Cubic feet (natural gas)<br>Gallons (diesel, gasoline, propane, LPG, kerosene)<br>Kilowatt-hours (electricity)<br>Pounds (wood, coal)<br>Other (specify) |
| Conservation Cover (CPS 327) | Species category (select most common/extensive type if using more than one) | Brassicas<br>Grasses<br>Legumes<br>Non-legume broadleaves<br>Shrubs |

| | | |
|---|---|---|
| Conservation Crop Rotation (CPS 328) | Conservation crop type | Brassica<br>Broadleaf<br>Cool season<br>Grass<br>Legume<br>Warm season |
| | Change implemented | Added perennial crop<br>Reduced fallow period<br>Both |
| | Conservation crop rotation tillage type | Conventional (plow, chisel, disk)<br>No-till, direct seed<br>Reduced till<br>Strip till<br>None<br>Other (specify) |
| | Total conservation crop rotation length in days | 1-120 |
| Contour Buffer Strips (CPS 332) | Strip width (feet) | 1-100 |
| | Species category | Grasses<br>Forbs<br>Mix |
| Cover Crop (CPS 340) | Species category (select most common/extensive type if using more than one) | Brassicas<br>Forbs<br>Grasses<br>Legume<br>Non-legume broadleaves |
| | Cover crop planned management | Grazing<br>Haying<br>Termination |
| | Cover crop termination method | Burning<br>Herbicide application<br>Incorporation<br>Mowing<br>Rolling/crimping<br>Winter kill/frost |
| Critical Area Planting (CPS 342) | Species category (select most common/extensive type if using more than one) | Grass<br>Grass legume/forb mix<br>Herbaceous woody mix<br>Perennial or reseeding<br>Shrubs<br>Trees |
| Feed Management (CPS 592) | Crude protein (percent) | 0-100 |
| | Fat (percent) | 0-100 |
| | Feed additives/supplements | Chemical<br>Edible oils/fats<br>Seaweed/kelp<br>Other (specify) |
| Field Border (CPS 386) | Species category (select most common/extensive type if using more than one) | Forbs<br>Grasses<br>Mix<br>Shrubs |

| | Strip width (feet) | 20-1,000 |
|---|---|---|
| Filter Strip (CPS 393) | Species category (select most common/extensive type if using more than one) | Forbs<br>Grasses<br>Mix<br>Shrubs |
| Forest Farming (CPS 379) | Land use in previous year | Forest<br>Multi-story cropping<br>Pasture/grazing land<br>Row crops<br>Other agroforestry |
| Forest Stand Improvement (CPS 666) | Purpose for implementation | Maintain or improve forest carbon stocks<br>Maintain or improve forest health and productivity<br>Maintain or improve forest structure and composition<br>Maintain or improve wildlife, fish, and pollinator habitat<br>Manage natural precipitation more efficiently<br>Reduce forest pest pressure<br>Reduce forest wildfire hazard |
| Grassed Waterway (CPS 412) | Species category (select most common/extensive type if using more than one) | Flowering Plants<br>Forbs<br>Grasses |
| Hedgerow Planting (CPS 422) | Species category (select most common/extensive type if using more than one) | Grasses<br>Shrubs<br>Trees |
| | Species density (number of trees planted per acre) | 1-10,000 |
| Herbaceous Wind Barriers (CPS 603) | Species category (select most common/extensive type if using more than one) | Forbs<br>Grasses<br>Mix<br>Shrubs |
| | Barrier width (feet) | 1-1,000 |
| | Number of rows | 1-100 |
| Mulching (CPS 484) | Mulch type | Gravel<br>Natural<br>Synthetic<br>Wood |
| | Mulch cover (percent of field) | 0-100 |

| | | |
|---|---|---|
| Nutrient management (CPS 590) | Nutrient type with CPS 590 | Biosolids<br>Commercial fertilizers<br>Compost<br>EEF (nitrification inhibitor)<br>EEF (slow or controlled release)<br>EEF (urease inhibitor)<br>Green manure<br>Liquid animal manure<br>Organic by-products<br>Organic residues or materials<br>Solid/semi-solid animal manure<br>Wastewater |
| | Nutrient application method with CPS 590 | Banded<br>Broadcast<br>Injection<br>Irrigation<br>Surface application<br>Surface application with tillage<br>Variable rate |
| | Nutrient application method in the previous year | Banded<br>Broadcast<br>Injection<br>Irrigation<br>Surface application<br>Surface application with tillage<br>Variable rate |
| | Nutrient application timing with CPS 590 | Single pre-planting<br>Single post-planting<br>Split pre- and post-planting<br>Split post-planting |
| | Nutrient application timing in the previous year | Single pre-planting<br>Single post-planting<br>Split pre- and post-planting<br>Split post-planting |
| | Nutrient application rate with CPS 590 | 0-20,000 |
| | Nutrient application rate unit with CPS 590 | Gallons per acre<br>Pounds per acre |
| | Nutrient application rate change | Decrease compared to previous year<br>Increase compared to previous year<br>No change |
| Pasture and Hay Planting (CPS 512) | Species category (select most common/extensive type if using more than one) | Cool-season broadleaf<br>Cool-season grass<br>Warm-season broadleaf<br>Warm-season grass |
| | Termination process | Grazing<br>Haying (i.e., cutting and baling)<br>Other (specify) |
| Prescribed Grazing (CPS 528) | Grazing type | Cell grazing<br>Deferred rotational<br>Management intensive<br>Rest-rotation |

| | | |
|---|---|---|
| Range Planting (CPS 550) | Species category (select most common/extensive type if using more than one) | Forbs<br>Grasses<br>Legumes<br>Shrubs<br>Trees |
| Residue and Tillage Management – No-till (CPS 329) | Surface disturbance | None<br>Seed row only |
| Residue and Tillage Management – Reduced Till (CPS 345) | Surface disturbance | None<br>Seed row/ridge tillage for planting<br>Shallow across most of the soil surface<br>Vertical/mulch |
| Riparian Forest Buffer (CPS 391) | Species category (select most common/extensive type if using more than one) | Coniferous trees<br>Deciduous trees<br>Shrubs |
| | Species density (number of trees planted per acre) | 1-10,000 |
| Riparian Herbaceous Cover (CPS 390) | Species category (select most common/extensive type if using more than one) | Ferns<br>Forbs<br>Grasses<br>Legumes<br>Rushes<br>Sedges |
| Roofs and Covers (CPS 367) | Roof/cover type | Concrete<br>Flexible geomembrane<br>Metal<br>Timber<br>Other (specify) |
| Silvopasture (CPS 381) | Species category (select most common/extensive type if using more than one) | Coniferous trees<br>Deciduous trees<br>Forage<br>Shrubs |
| | Species density (number of trees planted per acre) | 1-10,000 |
| Stripcropping (CPS 585) | Strip width (feet) | 1-1,000 |
| | Crop category (select most common/extensive type if using more than one) | Erosion resistant crops<br>Fallow<br>Sediment trapping crops |
| | Number of strips | 2-100 |
| Tree/Shrub Establishment (CPS 612) | Species category (select most common/extensive type if using more than one) | Coniferous trees<br>Deciduous trees<br>Shrubs |
| | Species density (number of trees planted per acre) | 1-10,000 |
| Vegetative Barrier (CPS 601) | Species category (select most common/extensive type if using more than one) | Grasses<br>Grass forb mix<br>Grass legume mix |
| | Barrier width (feet) | 3-1,000 |

| | | |
|---|---|---|
| Waste Separation Facility (CPS 632) | Separation type | Chemical (e.g., salts, polymers)<br>Mechanical (e.g., screens, presses)<br>Settling basin |
| | Most common use of solids | Bedding<br>Field applied<br>Other (specify) |
| Waste Storage Facility (CPS 313) | Waste storage system prior to installing your waste storage facility | Aerobic lagoon<br>Anaerobic digester (complex mix) with energy generation<br>Anaerobic digester (plug flow) with energy generation<br>Anaerobic lagoon<br>Composting<br>Covered lagoon (no energy generation or flaring)<br>Covered lagoon with energy generation<br>Covered lagoon with flaring<br>Daily spread<br>Deep bedding pack<br>Deep pit<br>Dry lot<br>Dry stacking/solid storage<br>Pasture/range/paddock<br>Poultry with bedding<br>Poultry without bedding (e.g., high rise)<br>Slurry tank/basin |
| Waste Treatment (CPS 629) | Treatment type | Biological<br>Chemical<br>Mechanical |
| Waste Treatment Lagoon (CPS 359) | Waste storage system prior to installing waste treatment lagoon | Aerobic lagoon<br>Anaerobic digester (complex mix) with energy generation<br>Anaerobic digester (plug flow) with energy generation<br>Anaerobic lagoon<br>Composting<br>Covered lagoon (no energy generation or flaring)<br>Covered lagoon with energy generation<br>Covered lagoon with flaring<br>Daily spread<br>Deep bedding pack<br>Deep pit<br>Dry lot<br>Dry stacking/solid storage<br>Pasture/Range/Paddock<br>Poultry with bedding<br>Poultry without bedding (e.g., high rise)<br>Slurry tank/basin |
| | Is there a lagoon cover/crust? | Yes<br>No |
| | Is there lagoon aeration? | Yes<br>No |

| | | |
|---|---|---|
| Windbreak/Shelterbelt Establishment and Renovation (CPS 380) | Species category (select most common/extensive type if using more than one) | Coniferous trees<br>Deciduous trees<br>Shrubs |
| | Species density (number of trees planted per acre) | 1-10,000 |

![USDA] **Partnerships for Climate-Smart Commodities Data Dictionary for Recipients**
**February 2023**

## Appendix A: Climate-smart Agriculture and Forestry Practices
All NRCS Practice Standards (not limited to climate-smart practices)

| | |
|---|---|
| 309, Agrichemical Handling Facility | 390, Riparian Herbaceous Cover |
| 311, Alley Cropping | 391, Riparian Forest Buffer |
| 313, Waste Storage Facility | 393, Filter Strip |
| 314, Brush Management | 394, Firebreak |
| 315, Herbaceous Weed Treatment | 395, Stream Habitat Improvement and Management |
| 316, Animal Mortality Facility | 396, Aquatic Organism Passage |
| 317, Composting Facility | 397, Aquaculture Pond |
| 318, Short Term Storage of Animal Waste and By-Products | 398, Fish Raceway or Tank |
| 319, On-Farm Secondary Containment Facility | 399, Fishpond Management |
| 320, Irrigation Canal or Lateral | 400, Bivalve Aquaculture Gear and Biofouling Control |
| 324, Deep Tillage | 402, Dam |
| 325, High Tunnel System | 410, Grade Stabilization Structure |
| 326, Clearing and Snagging | 412, Grassed Waterway |
| 327, Conservation Cover | 420, Wildlife Habitat Planting |
| 328, Conservation Crop Rotation | 422, Hedgerow Planting |
| 329, Residue and Tillage Management, No Till | 423, Hillside Ditch |
| 330, Contour Farming | 428, Irrigation Ditch Lining |
| 331, Contour Orchard and Other Perennial Crops | 428A, Irrigation Water Conveyance, Ditch and Canal Lining, Plain Concrete |
| 332, Contour Buffer Strips | |
| 333, Amending Soil Properties with Gypsum Products | 428B, Irrigation Water Conveyance, Ditch and Canal Lining, Flexible Membrane |
| 334, Controlled Traffic Farming | |
| 336, Soil Carbon Amendment | 428C, Irrigation Water Conveyance, Ditch and Canal Lining, Galvanized Steel |
| 338, Prescribed Burning | |
| 340, Cover Crop | 430, Irrigation Pipeline |
| 342, Critical Area Planting | 432, Dry Hydrant |
| 345, Residue and Tillage Management, Reduced Till | 436, Irrigation Reservoir |
| 348, Dam, Diversion | 441, Irrigation System, Microirrigation |
| 350, Sediment Basin | 442, Sprinkler System |
| 351, Well Decommissioning | 443, Irrigation System, Surface and Subsurface |
| 353, Monitoring Well | 447, Irrigation and Drainage Tailwater Recovery |
| 355, Groundwater Testing | 449, Irrigation Water Management |
| 356, Dike and Levee | 450, Anionic Polyacrylamide (PAM) Application |
| 359, Waste Treatment Lagoon | 453, Land Reclamation, Landslide Treatment |
| 360, Waste Facility Closure | 455, Land Reclamation, Toxic Discharge Control |
| 362, Diversion | 457, Mine Shaft and Adit Closing |
| 366, Anaerobic Digester | 460, Land Clearing |
| 367, Roofs and Covers | 462, Precision Land Forming and Smoothing |
| 368, Emergency Animal Mortality Management | 464, Irrigation Land Leveling |
| 371, Air Filtration and Scrubbing | 466, Land Smoothing |
| 372, Combustion System Improvement | 468, Lined Waterway or Outlet |
| 373, Dust Control on Unpaved Roads and Surfaces | 472, Access Control |
| 374, Energy Efficient Agricultural Operation | 484, Mulching |
| 375, Dust Management for Pen Surfaces | 490, Tree/Shrub Site Preparation |
| 376, Field Operations Emissions Reduction | 500, Obstruction Removal |
| 378, Pond | 511, Forage Harvest Management |
| 379, Forest Farming | 512, Pasture and Hay Planting |
| 380, Windbreak/Shelterbelt Establishment and Renovation | 516, Livestock Pipeline |
| 381, Silvopasture | 520, Pond Sealing or Lining, Compacted Soil Treatment |
| 382, Fence | 521, Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner |
| 383, Fuel Break | |
| 384, Woody Residue Treatment | 521A, Pond Sealing or Lining, Flexible Membrane |
| 386, Field Border | 521B, Pond Sealing or Lining, Soil Dispersant |
| 388, Irrigation Field Ditch | 521C, Pond Sealing or Lining, Bentonite Sealant |

521D, Pond Sealing or Lining, Compacted Clay Treatment

522, Pond Sealing or Lining - Concrete

527, Sinkhole Treatment

528, Prescribed Grazing

533, Pumping Plant

543, Land Reclamation, Abandoned Mined Land

544, Land Reclamation, Currently Mined Land

548, Grazing Land Mechanical Treatment

550, Range Planting

554, Drainage Water Management

555, Rock Wall Terrace

557, Row Arrangement

558, Roof Runoff Structure

560, Access Road

561, Heavy Use Area Protection

562, Recreation Area Improvement

566, Recreation Land Improvement and Protection

570, Stormwater Runoff Control

572, Spoil Disposal

574, Spring Development

575, Trails and Walkways

576, Livestock Shelter Structure

578, Stream Crossing

580, Streambank and Shoreline Protection

582, Open Channel

584, Channel Bed Stabilization

585, Stripcropping

587, Structure for Water Control

588, Crosswind Ridges

589, Cross Wind Trap Strips

590, Nutrient Management

591, Amendments for Treatment of Agricultural Waste

592, Feed Management

595, Pest Management Conservation System

600, Terrace

601, Vegetative Barrier

602, Equitable Relief

603, Herbaceous Wind Barriers

604, Saturated Buffer

605, Denitrifying Bioreactor

606, Subsurface Drain

607, Surface Drain, Field Ditch

608, Surface Drain, Main or Lateral

609, Surface Roughening

610, Salinity and Sodic Soil Management

612, Tree/Shrub Establishment

614, Watering Facility

620, Underground Outlet

629, Waste Treatment

630, Vertical Drain

632, Waste Separation Facility

633, Waste Recycling

634, Waste Transfer

635, Vegetated Treatment Area

636, Water Harvesting Catchment

638, Water and Sediment Control Basin

640, Waterspreading

642, Water Well

643, Restoration of Rare or Declining Natural Communities

644, Wetland Wildlife Habitat Management

645, Upland Wildlife Habitat Management

646, Shallow Water Development and Management

647, Early Successional Habitat Development-Mgt

649, Structures for Wildlife

650, Windbreak/Shelterbelt Renovation

654, Road/Trail/Landing Closure and Treatment

655, Forest Trails and Landings

656, Constructed Wetland

657, Wetland Restoration

658, Wetland Creation

659, Wetland Enhancement

660, Tree-Shrub Pruning

666, Forest Stand Improvement

670, Energy Efficient Lighting System

672, Energy Efficient Building Envelope

736, Crop By-Product Transfer, interim

724, Water Treatment Facility, interim

735, Waste Gasification Facility, interim

737, Reduced Water and Energy Coffee Conveyance System, interim

740, Pond Sealing and Lining, Soil Cement, interim

751, Individual Terrace, interim

753, Infiltration Ditch, interim

755, Well Plugging, interim

770, Livestock Confinement Facility, interim

775, Drainage Ditch Covering, interim

782, Phosphorus Removal System, interim

800, Controlling Existing Flowing Wells, interim

803, Water Well Disinfection, interim

805, Amending Soil Properties with Lime, interim

808, Soil Carbon Amendment, interim

809, Conservation Harvest Management, interim

810, Annual Forages for Grazing Systems, interim

812, Raised Beds, interim

815, Groundwater Recharge Basin or Trench, interim

817, On-Farm Recharge, interim

818, Water Conservation System, interim

821, Low Tunnel Systems, interim

823, Organic Management, interim

USDA Partnerships for Climate-Smart Commodities Data Dictionary for Recipients
February 2023

<u>Other CSAF Practices</u>
Traditional or cultural practices
Microbial products
Solar power generation
Grain bin construction
Pre-season drainage

## Appendix B: Commodity List

CROPS

| | | |
|---|---|---|
| ALFALFA | CINNAMON | HYBRID POPLAR TREES |
| ALMONDS | CLOVER | IDLE |
| AMARANTH GRAIN | COCONUTS | INDIGO |
| APPLES | COFFEE | ISRAEL MELONS |
| APRICOTS | CORN | JACK FRUIT |
| ARONIA (CHOKEBERRY) | COTTON ELS | JERUSALEM ARTICHOKES |
| ARTICHOKES | COTTON UPLAND | JICAMA |
| ASPARAGUS | CRANBERRIES | JOJOBA |
| ATEMOYA | CRENSHAW MELON | JUJUBE |
| AVOCADOS | CRUSTACEAN | JUNEBERRIES |
| BAMBOO SHOOTS | CUCUMBERS | KENAF |
| BANANAS | CURRANTS | KHORASAN |
| BARLEY | DASHEEN | KIWIBERRY |
| BEANS | DATES | KIWIFRUIT |
| BEETS | DURIAN | KOCHIA (PROSTRATA) |
| BIRDSFOOT/TREFOIL | EGGPLANT | KOHLRABI |
| BLUEBERRIES | EINKORN | KOREAN GOLDEN MELON |
| BREADFRUIT | ELDERBERRIES | KUMQUATS |
| BROCCOFLOWER | EMMER | LAMBS EAR |
| BROCCOLI | FIGS | LEEKS |
| BROCCOLINI | FINFISH | LEMONS |
| BRUSSEL SPROUTS | FLAX | LENTILS |
| BUCKWHEAT | FLOWERS | LESPEDEZA |
| CABBAGE | FORAGE SOYBEAN/SORGHUM | LETTUCE |
| CACAO | GAILON | LIMES |
| CACTUS | GARLIC | LONGAN |
| CAIMITO | GENIP | LOQUATS |
| CALABAZA MELON | GINGER | LYCHEE |
| CALALOO | GINSENG | MANGOS |
| CAMELINA | GOOSEBERRIES | MANGOSTEEN |
| CANARY MELON | GOURDS | MAPLE SAP |
| CANARY SEED | GRAPEFRUIT | MAYHAW BERRIES |
| CANEBERRIES | GRAPES | MEADOWFOAM |
| CANISTEL | GRASS | MILKWEED |
| CANOLA | GREENS | MILLET |
| CANTALOUPES | GROUND CHERRY | MIXED FORAGE |
| CARAMBOLA (STAR FRUIT) | GUAMABANA/SOURSOP | MOHAIR |
| CARROTS | GUAR | MOLLUSK |
| CASHEW | GUAVA | MORINGA |
| CASSAVA | GUAVABERRY | MULBERRIES |
| CAULIFLOWER | GUAYULE | MUSHROOMS |
| CELERIAC | HAZEL NUTS | MUSTARD |
| CELERY | HEMP | NECTARINES |
| CHERIMOYA | HERBS | NIGER SEED |
| CHERRIES | HESPERALOE | NONI |
| CHESTNUTS | HONEY | OATS |
| CHICORY/RADICCHIO | HONEYBERRIES | OKRA |
| CHINESE BITTER MELON | HONEYDEW | OLIVES |
| CHRISTMAS TREES | HOPS | ONIONS |
| CHUFAS | HORSERADISH | ORANGES |
| | HUCKLEBERRIES | PAPAYA |

PARSNIP

PASSION FRUITS

PAWPAW

PEACHES

PEANUTS

PEARS

PEAS

PECANS

PENNYCRESS

PEPPERS

PERENNIAL PEANUTS

PERIQUE TOBACCO

PERSIMMONS

PINE NUTS

PINEAPPLE

PISTACHIOS

PITAYA/DRAGONFRUIT

PLANTAIN

PLUMCOTS

PLUMS

POMEGRANATES

POTATOES

POTATOES SWEET

PRUNES

PSYLLIUM

PUMMELO

PUMPKINS

QUINCES

QUINOA

RADISHES

RAISINS

RAMBUTAN

RAPESEED

RHUBARB

RICE

RICE SWEET

RICE WILD

RUTABAGA

RYE

SAFFLOWER

SAPODILLA

SAPOTE

SCALLIONS

SESAME

SHALLOTS

SORGHUM

SORGHUM DUAL PURPOSE

SORGHUM FORAGE

SOYBEANS

SPELT

SQUASH

STAR GOOSEBERRY

STRAWBERRIES

SUGAR BEETS

SUGARCANE

SUNFLOWERS

SUNN HEMP

TANGELOS

TANGERINES

TANGORS

TANGOS

TANNIER

TARO

TEA

TEFF

TI

TOBACCO CIGAR WRAPPER

TOBACCO BURLEY

TOBACCO BURLEY 31V

TOBACCO CIGAR BINDER

TOBACCO CIGAR FILLER

TOBACCO CIGAR FILLER BINDER

TOBACCO DARK AIR CURED

TOBACCO FIRE CURED

TOBACCO FLUE CURED

TOBACCO MARYLAND

TOBACCO VIRGINIA FIRE CURED

TOMATILLOS

TOMATOES

TREES TIMBER

TRITICALE

TRUFFLES

TURNIPS

VETCH

WALNUTS

WAMPEE

WASABI

WATERMELON

WAX JAMBOO FRUIT

WHEAT

WILLOW SHRUB

WINTER MELON

WOLFBERRY/GOJI

YAM

LIVESTOCK

ALPACAS

BEEF COWS

BEEFALO

BUFFALO OR BISON

CHICKENS (BROILERS)

CHICKENS (LAYERS)

DAIRY COWS

DEER

DUCKS

ELK

EMUS

EQUINE

GEESE

GOATS

HONEYBEES

LLAMAS

REINDEER

SHEEP

SWINE

TURKEYS

# Partnerships for Climate-Smart Commodities
# Additional Specific Terms and Conditions
# February 2023

## I.  Overarching Statement

The following award terms and conditions are applicable to Partnerships for Climate-Smart Commodities agreements and are in addition to the USDA FPAC General Terms and Conditions. The award recipient must abide by all terms of this grant including, but not limited to, the General Terms and Conditions, the terms in the Funding Opportunity and associated Frequently Asked Questions, and this addendum.  The recipient must also deliver on the planned objectives in the project narrative and budget narrative associated with this grant.

## II.  Eligibility and Highly Erodible Lands and Wetlands Compliance

In order to be eligible for an incentive payment as a part of the Partnerships for Climate-Smart Commodities, a producer must:

- Establish Farm Records with the Farm Service Agency (FSA) (have farm, tract, and field numbers in place);
- Complete an AD-2047 (Customer Data Worksheet to facilitate the collection of customer data for Business Partner Record);
- Certify highly erodible land conservation (HEL) and wetland conservation (WC) compliance via Form AD-1026, Highly Erodible Land Conservation (HELC) and Wetland Conservation (WC) Certification; and
- Certify that they are not a foreign person or entity.

Farm, tract, and field numbers are required for the producer, and ultimately the Partnerships for Climate-Smart Commodities recipient, to report climate-smart practice implementation to USDA, as well as to certify and maintain HELC/WC compliance. This will require that some producers who do not already have these numbers, like perennial crop growers or feedlots, establish these records with USDA's FSA.  Farm, tract, field numbers, producer name, and Core Customer I.D. (CCID) will be provided by the recipient to the National Program Officer as a part of routine grant reporting. Recipients must ensure that producers receiving financial assistance or incentives through this project use the same name as is included in the relevant FSA Business File for that Farm ID in any contracts or similar documentation kept by the recipient.

Producers are not bound by the payment limitations and the adjusted gross income (AGI) limitations that are in place for other USDA programs.

In order to demonstrate HELC/WC compliance for Partnerships for Climate-Smart Commodities incentive payments, producers will need to request a copy of their subsidiary print from their

USDA FSA field office. The Subsidiary Print includes print year specific eligibility related information about a selected producer. The producer will then provide this documentation to the Partnerships for Climate-Smart Commodities recipients as proof of compliance. A current year subsidiary print will be required for each crop year that the producer receives a payment, and HELC/WC eligibility information is provided under the AD-1026 and Conservation Compliance sections of subsidiary (determined by year, which can change at any time during the year or in a subsequent year). As is the case already, field offices will not be expected to provide documentation to anyone besides the producer themselves (and must always comply with Section 1619 limitations if they ever do provide documentation to third parties). Producers must have control of the land for the term of their beneficiary contract.

Recipients are responsible for determining producer eligibility within the funding opportunity requirements. Recipients must inform producers of eligibility requirements and direct them to local USDA offices for requested information as necessary, including but not limited to, farm and tract establishment and Highly Erodible Land and Wetland Compliance determinations. Privacy of producers is a priority throughout this process, and recipients are responsible for maintaining producer privacy in the process.

At minimum, the recipient will collect and review subsidiary reports from participating producers. They will ensure that the producer is listed as "compliant" in all sections of the conservation compliance portion of subsidiary and "certified" for AD-1026 before an incentive payment is made. If payments to a producer span more than one Federal fiscal year, the recipient will review an updated subsidiary print each fiscal year to ensure that the status is still compliant.

### III. Other Environmental and Cultural Resources Reviews

A Finding of No Significant Impact (FONSI) was signed by USDA NRCS on August 26, 2022. A copy of the Programmatic Environmental Assessment for Partnerships for Climate-Smart Commodities is available at www.usda.gov/climate-smart-commodities . USDA may determine that additional environmental and cultural resources review is needed for any particular action under Partnerships for Climate-Smart Commodities. The recipient must not execute any beneficiary contracts under this grant agreement prior to receipt of a letter from USDA that specifically details:

1) further procedures deemed appropriate by the Agency to ensure a completed National Environmental Policy Act (NEPA) review and all appropriate consultation requirements are met, and
2) additional instructions for any unanticipated discoveries or conditions.

A resolution of support is required for projects on Tribal lands from the governing body of the Tribe with jurisdiction over that land, if the applicant is not the Tribe nor an entity owned or

operated by that Tribe.  USDA may approve alternative documentation for resolutions when USDA deems necessary and legally sufficient.

## IV. Producer Benefits

USDA encourages the recipient to disclose to participating producers the manner and amount for which any market premiums derived from the development of the relevant climate-smart commodity will be shared between participating parties, including producers.  USDA will be monitoring producer benefits, in particular those to small and underserved producers, throughout the grant period.  Recipients agree that their project(s) will implement a plan for engaging small and underserved producers as laid out in this agreement.

## V. Producer Data Protection and Disclosure

Recipients must ensure each producer has convenient access to any data collected from that producer or the producer's land and any associated modeling as part of the project.  The recipient must provide each producer applying for benefits under this grant a description in writing of how their information, including but not limited to data about their farm and commodities, will be utilized, protected and shared as applicable.

## VI. Other Data and Reporting Requirements

In addition to the reporting information provided in the statement of work and General Terms and Conditions, USDA will provide a template for the Detailed Progress Report, also known as the Partnerships for Climate-Smart Commodities (PSCS) Project Reporting Workbook.  Within 30 calendar days of execution of this grant, a copy of this workbook will be posted at www.usda.gov/climate-smart-commodities or an alternative location provided to the recipient by the National Program Officer.  USDA may provide updates to the PCSC Project Reporting Workbook or submission methods to streamline the data collection process and/or reduce the burden on the recipient throughout the grant period. Generally, these updates will be provided at least 3 months in advance of any required changes. The recipient must not transfer any data to foreign governments or foreign entities without prior approval from USDA.

USDA will provide a Technical Contact for this grant. The Technical Contact will have the responsibility of technical oversight for USDA for the project. The recipient is responsible for providing the technical assistance required to successfully implement and complete the project. The recipient must comply with any requests for information from the Technical Contact.  The Technical Contact for this award is the National Program Officer assigned to this grant.

Prior to execution of this grant, the recipient must provide a shapefile depicting the project boundary for enrollment under this grant.  Producer enrollment may not occur outside this boundary without modification of this grant.

Within 30 calendar days of execution of this grant, the recipient must provide to the National Program Officer a website address where enrollment information will be posted for producers for the project associated with this grant. Recipients will be responsible for the following reports:

- Submit quarterly performance reports that include a written progress report, as well as additional reporting on specific data elements contained in the most up-to-date version of the Partnerships for Climate-Smart Commodities Project Reporting Workbook. Additional information about each reported element is described in the Data Dictionary.
- Submit supplemental reports required to validate greenhouse gas (GHG) benefit data, including: (1) an initial project MMRV plan, (2) field-modeled GHG benefit reports, and (3) field-direct GHG measurement results, as applicable. Additional information about these reports is in included in the Data Dictionary.
- Submit copies of project outputs and deliverables (e.g., fact sheets, reports) as attachments in ezFedGrants along with quarterly performance reports.
- Report the version of COMET-Planner used to estimate GHG benefits of the project within each quarterly performance report. As COMET-Planner is updated, recipients must adopt the latest version of the tool as directed by USDA for use in performance reports.

Recipients must designate an individual as a member of the USDA Partnerships for Climate-Smart Commodities Learning Network (Partnerships Network); this representative should be identified in the Project Narrative for this grant. Each project includes a plan for up to two Partnerships Network virtual meetings and two in-person meetings a year during the project duration. Dates and other details on events will be posted at www.usda.gov/climate-smart-commodities or an alternative location provided to the recipient by the National Program Officer.

The Partnerships Network will be co-chaired by representative from the USDA Office of the Chief Economist and the Farm Production and Conservation Mission Area. The Partnerships Network will inform synthesis reports to be assembled by USDA on a range of topics related to the implementation of Partnerships for Climate-Smart Commodities projects, including:

- Lessons-learned as projects are implemented;
- Options for providing technical assistance;
- Procedures for measurement/quantification, monitoring, reporting, and verifying GHG benefits;
- Options for tracing climate-smart commodities through the supply chain;
- Mechanisms for reducing costs of implementation;
- A forum for discussion and learning regarding approaches to climate-smart agriculture and forestry implementation (including but not limited to deployment and

measurement/quantification, monitoring, reporting, tracking, and verification of associated greenhouse gas benefits and marketing of climate-smart commodities).

- Synthesis of outcomes; and
- Opportunities for USDA and others to inform future approaches to generating new and expanded markets for climate-smart commodities.

The Partnerships Network topics to be discussed will cover at minimum the areas described in previous FAQs and will evolve with USDA's ongoing project data analysis efforts and with input from the project recipients on the kinds of sessions that will be most helpful to them in building the diverse climate-smart markets associated with their projects. Participation may include at least one interview a year and include questions related to the following areas:

- Technical assistance approaches, methods, and successes and/or challenges
- Producer outreach approaches, methods, and successes and/or challenges
- Monitoring, measurement, reporting, and verification (MMRV) approaches, methods, and successes and/or challenges
- Marketing approaches, methods, and successes and/or challenges
- Partnership approaches, methods, and successes and/or challenges
- Data collection and storage approaches, methods, and successes and/or challenges
- Supply chain approaches, methods and successes and/or challenges, including approaches to traceability
- Supply chain benefits and demand for climate-smart commodities
- Perspectives on program design, climate-smart commodity definitions, and future approaches or opportunities
- Project successes and stories

USDA may also request producer exit reports at a later date. Additional marketing and branding-related requirements may be provided by USDA, including signage related to Partnerships for Climate-Smart Commodities.

## VII. Competition and Anti-Competitive Practices

In connection with this grant, recipients may not prohibit or otherwise limit a producer from changing the provider of other services or materials not included as part of this grant. Recipients may not condition, limit, steer, or discriminate in their provision or sale of non-project business functions or products to producers based on their participation or non-participation in or use of any services provided as part of this grant. Additionally, funds in this agreement shall not be used for purposes or activities related to mergers or acquisitions.

**VIII.    Suspension and Disbarment**

The provisions governing Suspension and Disbarment in subsection 1.a.8 shall also apply to fraud, embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements, or violations of the Federal civil antitrust or unfair trade practice laws.

**IX. Special provisions for awards to for-profit entities as recipients**

This section contains provisions that apply to awards to for-profit entities. These provisions are in addition to other applicable provisions of these terms and conditions, or they make exceptions from other provisions of the terms and conditions for awards to for-profit entities. For-profit entities that receive awards have two options regarding audits:

1) A financial related audit of a particular award in accordance with Generally Accepted Government Auditing Standards issued by the Comptroller General of the United States, in those cases where the for-profit entity receives awards under only one USDA program; or, if awards are received under multiple USDA programs, a financial related audit of all awards in accordance with Generally Accepted Government Auditing Standards issued by the Comptroller General of the United States; or

2) An audit that meets the requirements contained in 2 CFR 200 subpart F.

For-profit entities that receive annual awards totaling less than the audit requirement threshold in 2 CFR 200 subpart F are exempt from USDA audit requirements for that year, but records must be available for review by appropriate officials of Federal agencies or the Government Accountability Office.

**X.  Non-Disparagement**

Recipients may not engage in any advertising deemed by USDA as disparaging to another agricultural commodity or competing product, or in violation of the prohibition against false and misleading advertising. Disparagement is defined as anything that depicts other commodities in a negative or unpleasant light via overt or subjective video, photography, or statements. Comparative advertising is allowable, provided the presentation of  facts is truthful, objective, not misleading, and supported by a reasonable basis.