# TEXAS CLIMATE SMART INITIATIVE

## CARBON-FOCUSED FORESTRY COST ASSISTANCE

CLIMATESMART.TAMU.EDU

# FOREST FERTILIZATION

# REIMBURSEMENT RATE = $105/ACRE

## OVERVIEW

The Texas Climate-Smart Initiative is a 5-year financial incentives program made possible by the USDA's Partnerships for Climate-Smart Commodities grant. The incentives program provides funds to non-industrial, private, small-acreage landowners to conduct science-based, **C**arbon-**F**ocused **F**orest (CFF) management practices to establish new forest stands, improve the health and vigor of existing stands, and/or encourage holistic forest management upon the landscape.

## CLIMATE-SMART

The term climate-smart commodity refers to an agricultural commodity that is produced using farming practices that reduce greenhouse gas emissions or sequester carbon. Sustainable forest management is climate-smart, but there is always room for improvement. CFF focuses specifically on those improvements required to maximize carbon capture while, at the same time, producing quality wood fiber for the timber industry.

This program serves as a financial incentive to landowners to implement the following CFF practices at the stated reimbursement rates.

TEXAS
CLIMATE-SMART **INITIATIVE**
CROPS · FORESTRY · LIVESTOCK

Managing the nutrient levels of forest sites is crucial for ensuring optimal tree growth, health, and carbon sequestration potential. On sites prone to nutrient deficiencies, fertilization is recommended at specific intervals; 1) During stand establishment 2) Soon after complete crown closure 3) Mid-rotation, often coinciding with thinning activities.

**Considerations for Fertilization**
Fertilization should only be considered under the following circumstances:

- unwanted vegetation is controlled and minimized,
- diseased trees are removed or minimal,
- basal area is less than 100 square feet per acre,
- final harvest cutting in even-aged management occurs no sooner than six years after application,
- the estimated growth response over a five to ten year period justifies the cost of the fertilizer application.

**Nutrient Assessment**
Landowners should assess which (if any) nutrients are limited. Fertilization should only be applied if nutrient deficiencies are significantly limiting growth. The main diagnostic tools for determining if fertilization is necessary are foliage sampling and soil sampling.

**Foliage Sampling**
Foliage sampling is preferred if similar species of trees are already present on the site because foliage sampling directly measures deficiencies in the tree. Collect samples from the first flush of foliage of the previous year's growth from a primary lateral branch

during winter (mid-December to mid-February) from the upper 1/3 of the south side of at least 10 dominant trees in the stand. Collect enough needles from at least 10 trees to fill an 8x11 paper envelope. Aim for three sample envelopes per 10-15 acres. Refrigerate samples until analysis. Foliage analysis should include elements (Table 1) expressing critical values for loblolly pine. If any values fall below the minimum, then the stand will likely respond to the addition of nutrients.

Table 1. List of crucial elements and their minimum critical values from a foliage sample.

| Nutrient / Element | Critical Value |
|---|---|
| Nitrogen (N) | 1.2% |
| Phosphorus (P) | 0.12% |
| Potassium (K) | 0.30% |
| Calcium (Ca) | 0.15% |
| Magnesium (Mg) | 0.08% |
| Sulfur (S) | 0.10% |
| Boron (B) | 6 ppm |
| Copper (Cu) | 3 ppm |
| Iron (Fe) | 30 ppm |
| Manganese (Mn) | 30 ppm |
| Zinc (Zn) | 15 ppm |

**Soil Sampling**

Soil sampling can be done year-round. After carefully brushing aside the litter layer, take a small soil sample from the top of the soil to a 6-inch depth at six locations per 10 acres. Mix samples in a clean bucket and fill a one quart plastic bag (soil bags are available at your local AgriLife Extension office). Aggregate samples if there are obvious soil type differences within the stand. Note sample locations on a map. If available P is less than 10 lbs per acre, then the stand will likely respond to a NP application.

**Fertilization Times**

Site preparation fertilization typically involves adding phosphorus (P) before planting. While poorly drained sites usually have the highest P needs, upland sites can also benefit. The recommended P rate is 25 to 50 pounds of elemental P per acre, equivalent to 125–250 pounds of diammonium phosphate (DAP, 18-46-0) or 127–254 pounds of triple superphosphate (TSP, 0-46-0) per acre, applied during site preparation or planting. Application timing isn't critical, and P can be broadcast, side-dressed, or banded around seedlings. A single P treatment can sustain growth for 15 to 20 years. Nitrogen (N) fertilization isn't urgent initially, as soil N can meet demand until crown closure, but weed control should be a priority before fertilization.

For optimal timber stand growth, N, P, and potassium (K) are crucial. Fertilization at crown closure and mid-rotation enhances tree vigor and carbon capture. Common N fertilizers like ammonium nitrate (34-0-0) and urea (46-0-0) are applied in late winter or early spring. Combining P and K with N significantly boosts growth compared to N alone on many sites. Recommended treatments include:

- Applying 200 lbs of nitrogen (N) + 25 lbs of phosphorus (P), when P is a limiting nutrient according to a foliage sample and foliage has a N/P ratio greater than 11;
- Use 150 to 200 lbs of N alone if foliar N is less than <1.0% but P is adequate, and the foliar N/P ratio is less than 10.5; or
- Apply 25 pounds of P alone if foliar P is <0.085% and the foliar N/P ratio is high (>13).

## FOREST FERTILIZATION CRITERIA

All forest stand are eligible for the Forest Fertilization incentive under the following requirements:

- Landowners must work with a degreed/certified consultant forester
- Follow Texas Best Management Practices
- Considerations for Fertilization are met (as outlined in this document)
- Conduct foliar and or soil sampling to determine nutrient deficiencies

# GENERAL ELIGIBILITY

**Participants must**

- Be a private, non-industrial, small-parcel landowner with a total treatment area between 15 and 125 acres in one of the counties identified on the following map. Priority will be given to small-acreage landowners with a total ownership of 50 acres or less,
- Have a Farm Service Number, meet environmental compliance, and provide required documentation,
- Allow for scheduled soil sampling before, during and after practice implementation,
- Maintain treatment area for a period of 5 years,
- Enroll in one and only one practice per application,
- Not begin work until "Approval to Perform Letter" is provided to the participant, and
- Not apply for Texas Climate Smart Initiative funds and other state/federal funds for the same practice on the same acre.

# ENROLLMENT STEPS

- Submit an application at https://climatesmart.tamu.edu
- Work with a degreed/certified forester to create a Forest Practice Plan of Work and a treatment area map.
- Obtain a Farm Number with the Farm Service Agency (FSA) and acquire copies of a FSA Tract Map and a FSA Subsidiary Print.
- Submit the following four documents to txclimatesmart@tfs.tamu.edu.

    1. Forest Practice Plan of Work.
    2. FSA Tract Map.
    3. Treatment area map.
    4. FSA Subsidiary Print

- Schedule a site visit with the Texas A&M Forest Service.

All applications must be scanned and submitted as a single PDF. Paper, faxed, mailed applications, and JPEG images will not be accepted. Please ensure all required documentation is included. The treatment area map must be current and feature base satellite imagery.

# IF APPLICANT IS SELECTED

- An Environmental Evaluation will be conducted which does not usually require a site visit,
- The applicant will receive a contract to be reviewed, signed and returned,
- The applicant will receive an "Approval to Perform" letter which requires the treatment be completed within 12 months,
- The applicant will work with a forester and submit a Forest Stewardship Plan during the open contract, and
- The completed work will be inspected and verified before an incentive payment will be processed.

The content provided above lists only general information about the Texas Climate-Smart Initiative financial assistance program. The official contract agreement supersedes any information provided in this document.

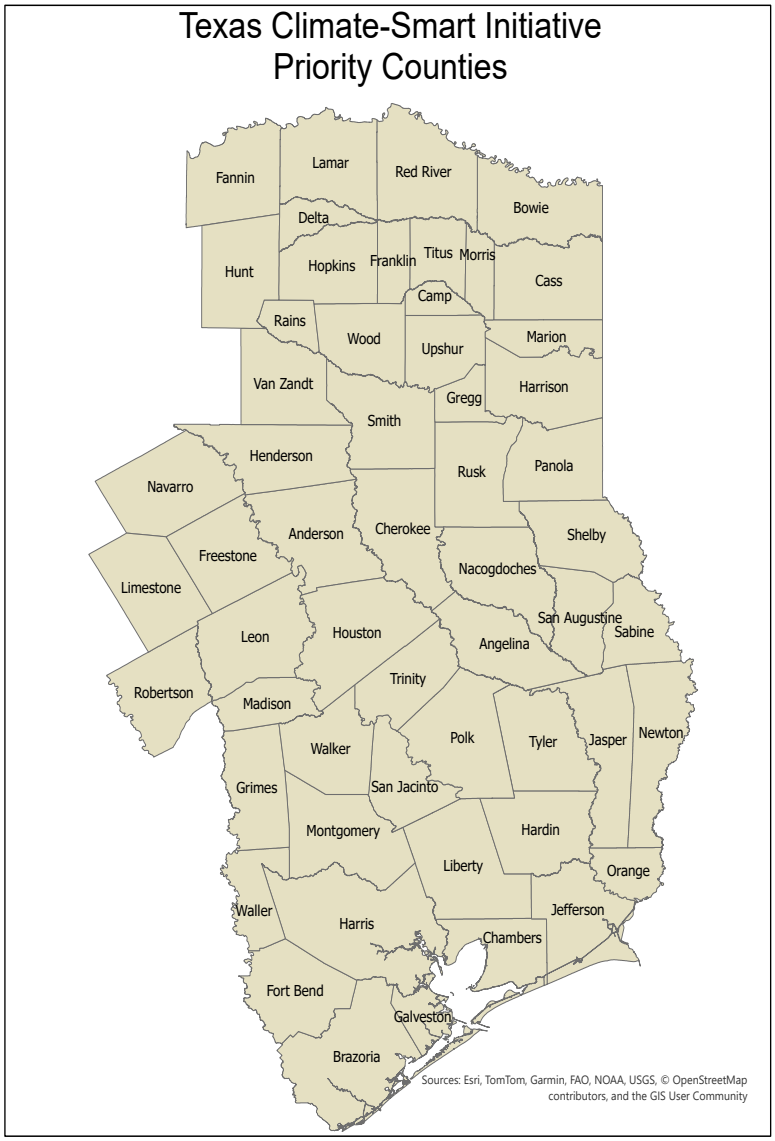
# ESTABLISHING FARM RECORDS WITH THE FARM SERVICE AGENCY

The Texas Climate Smart Initiative requires landowners to have or establish farm records with the United States Department of Agriculture (USDA) Farm Service Agency. A farm record creates a unique farm and tract number for your agricultural operation and ensures environmental compliance is met.

The following information is a guideline to establishing farm records. For complete information visit https://www.farmers.gov/working-with-us/USDA-service-centers

Steps to Creating a Farm Service Number:

- Find Your Local Service Center. Visit https://www.farmers.gov/working-with-us/USDA-service-centers
- Call or email your Service Center to make an appointment.
- Ask what documents to bring to your appointment.
- During your appointment make sure to register for a farm number and file form AD- 1026 (Wetland Conservation and Highly Erodible Land Conservation).
- Obtain a copy of a Farm Tract Map and a copy of a Subsidiary Print. These copies are required for the Texas Climate Smart Initiative.




**For detailed information visit:** https://tfsweb.tamu.edu/climatesmart.aspx

**Questions:** txclimatesmart@tfs.tamu.edu

TO BE COMPLETED BY A DEGREED/CERTIFIED FORESTER

TEXAS A&M FOREST SERVICE

# FOREST PRACTICE PLAN OF WORK

## FOREST FERTILIZATION

| For TAMFS use only | |
|---|---|
| Project name: | |
| Received Date: | |
| TAMFS Forester: | |
| Pretreat Date Inspected: | |
| Post-Treat Inspection Date: | |

## CONTACT INFORMATION

| LANDOWNER'S LEGAL NAME | MANAGER'S NAME | CONTRACTOR'S NAME |
|---|---|---|
| COMPANY NAME | COMPANY NAME | COMPANY NAME |
| MAILING ADDRESS | MAILING ADDRESS | MAILING ADDRESS |
| CITY/STATE/ZIP | CITY/STATE/ZIP | CITY/STATE/ZIP |
| PHONE | PHONE | PHONE |
| EMAIL | EMAIL | EMAIL |

## PROPERTY DESCRIPTION

| TRACT NAME | ADDRESS | COUNTY | TOTAL ACREAGE |
|---|---|---|---|
| PERCENT PINE COMPONENT | BASAL AREA | PRIMARY SOIL TYPE | STAND AGE / SITE INDEX |
| | | TREATMENT ACRES | TOTAL REQUESTED |
| PROPERTY LOCATION: (Include the nearest cross roads, how to access, and lat/long coordinates to tract center) | | | |
| SITE DESCRIPTION AND CURRENT CONDITIONS: (Understory composition/structure, last thinning operation) | | | |

TO BE COMPLETED BY A DEGREED/CERTIFIED FORESTER

# MANAGEMENT ACTIVITIES AND PLAN OF WORK

In the space provided, list the management activities addressing the Fertilization Criteria. Prioritize carbon-focused strategies where applicable. Explain deviations from above listed criteria if necessary.

| |
|---|
| DESCRIBE THE PRIMARY AND SECONDARY OBJECTIVES OF THIS ACTIVITY: (Improve forest health and vigor, increased carbon sequestration) |
| HAS THE UNDERSTORY COMPETITION BEEN CONTROLLED AND MINIMIZED: ○ YES ○ NO |
| PLEASE DESCRIBE THE CURRENT CONDITION OF THE UNDERSTORY VEGETATION: |
| WILL THE FINAL HARVEST OCCUR WITHIN SIX YEARS AFTER APPLICATION: ○ YES ○ NO |
| HAS SOIL OR FOLIAR SAMPLES BEEN TAKEN: ○ YES ○ NO |
| IF TEST RESULTS ARE BACK, WHAT WAS THE LIMITING NUTRIENT: |
| DESCRIBE THE PLANNED FERTILIZATION PRESCRIPTION: |
| DESCRIBE THE EXPECTED TIMING OF APPLICATION: |
| DESCRIBE ANY OTHER MANAGEMENT ACTIVITIES OR PERTINENT INFORMATION ABOUT THIS ACTIVITY: (follow up activities after herbicide application) |

By signing this document in the space provided below, I'm acknowledging that I agree with the following:

- ✓ I worked with a degreed/certified forester to complete this forest practice plan of work, and
- ✓ To the best of my knowledge, this plan of work accurately represents the work that I intend to conduct on the property.

Landowner Signature: _____

**Please submit the following to txclimatesmart@tfs.tamu.edu**

- Forest Management Plan of Work
- Treatment Area Map
- Farm Service Agency Tract Map
- Farm Service Agency Subsidiary Print