

BIOCHAR – SOIL CARBON AMENDMENT

Definition/Purpose

- The application of eligible biochar to agricultural land to improve soil health and address identified water quality resource concerns.
- This practice may be used to:
 - Reduce soil erosion.
 - Reduce sediments and nutrients transported to surface and groundwater.
 - Improve or maintain soil organic matter.
 - Increase soil carbon stocks.
 - Improve soil aggregate stability.
 - Improve habitat for soil organisms.

Policies

1. Biochar applications shall be planned and implemented in accordance with the current North Carolina NRCS Conservation Practice Standard (CPS) 336 – Soil Carbon Amendment and applicable ACSP policies, unless otherwise specified in this policy.
2. The need for the practice must be documented through the conservation planning process. Biochar shall only be eligible for cost share through NC ACSP where application addresses an identified resource concern consistent with the purpose of the program.
3. Cost share is limited to agricultural land eligible for participation in the Agriculture Cost Share Program where biochar application is determined to be technically appropriate.
4. A site-specific Soil Carbon Amendment Plan shall be developed prior to application. At a minimum, the plan shall document:
 - Resource concerns and purpose of the practice.
 - Fields and acreage receiving biochar.
 - Required soil testing and site evaluation.
 - Biochar source and product analysis.
 - Planned application rate, method, and timing.
 - Applicable sensitive areas and setbacks.
 - Nutrient management requirements, when applicable.
5. Biochar application rates shall be site-specific and supported by an acceptable method identified in NRCS CPS 336. The planned rate shall be documented in the Soil Carbon Amendment Plan.
6. Biochar may be implemented in combination with other existing or planned conservation practices or activities necessary to achieve identified practice purposes.

Agriculture Cost Share Program

7. Soil tests must be taken prior to biochar application to determine existing soil conditions and one year after application to evaluate impacts.
 - At a minimum, soil tests must contain the following soil properties: soil pH, phosphorus, potassium, calcium, sulfur, magnesium, and cation exchange capacity (CEC).
 - Soil testing conducted by the NCDA&CS Agronomic Division may be used to meet these requirements.
8. Biochar products eligible for cost share must:
 - Be produced through pyrolysis or gasification of biomass at temperatures greater than 350°C under controlled, limited-oxygen conditions.
 - Meet the biochar quality, testing, and contaminant requirements of NRCS CPS 336.
 - Have documentation identifying the feedstock, production method, and required laboratory analyses.
9. Biochar produced from treated wood, biosolids, or municipal solid waste, is not eligible for ACSP cost share. Biochar produced from other feedstocks is also ineligible if testing results exceed the maximum allowable parameter levels specified in NRCS CPS 336.
10. A sample of the biochar to be applied must be submitted to the NCDA&CS Agronomic Division Waste & Compost Analysis Lab for analysis of plant available nutrients and other parameters relevant to crop fertility.
11. A nutrient management plan meeting NRCS CPS 590 criteria is required on any fields where an amendment is applied when any of the following conditions are met:
 - a. The amendment is derived in whole or in part from an animal manure feedstock.
 - b. The planned application for a field supplies nitrogen or phosphorus, based on the NCDA&CS Waste & Compost analysis, in excess of the Realistic Nitrogen Rate (lbs/acre) or Estimated Phosphorus Removal (lbs P₂O₅/acre) identified in the NCSU Realistic Yield Expectations Database.
 - c. The pre-application NCDA&CS soil test for a field indicates a Phosphorus Index at or above 400.
12. The cooperator's routine nutrient application rates should be adjusted to account for all plant-available nutrients supplied through the biochar application, based on the NCDA&CS Waste & Compost analysis.
13. Application rate, method, timing, and when applicable, method of incorporation shall follow NRCS CPS 336 specifications.
14. Biochar shall be applied using equipment capable of reasonably uniform distribution. Application shall occur under conditions and using methods that minimize off-site movement. Application equipment shall be calibrated prior to application.

Agriculture Cost Share Program

15. Cost share may be provided for the purchase, delivery, and application of eligible biochar in accordance with the Commission-approved cost list and applicable ACSP payment policies. Payment shall be based on the actual quantity applied.
16. Repeat applications on the same acreage are eligible only when supported by a current Soil Carbon Amendment Plan and documentation demonstrating additional application is needed to address the identified resource concern. Previous applications and potential additional benefits shall be considered when determining eligibility.
17. The following items must be verified and documented for practice implementation and certification
 - Actual acres treated.
 - Actual application rate, method and timing.
 - Quantity of biochar applied.
 - Application meets specifications and intended purpose established in the Soil Carbon Amendment Plan.
18. The participant shall follow the operation, maintenance, and monitoring requirements provided in the Soil Carbon Amendment Plan and NRCS CPS 336.
19. The Soil Carbon Amendment Plan and supporting documentation shall be maintained in the contract file.

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Maintenance Period	1 year
BMP Units	ACRES
Required Effects	SOIL_SAVED PHOSPHORUS_SAVED ACRES_AFFECTED (treated acres)
JAA	SWCC - Biochar-Soil Carbon Amendment OR NRCS - ECS - 336 - Soil Carbon Amendment OR An NC 336 Soil Carbon Amendment Plan/IR and Practice Certification signed by a NC Licensed Soil Scientist (NC LSS), Certified Professional Soil Scientist (CPSS), Certified Crop Advisor (CCA) or Certified Professional Agronomist (CPAg).
NRCS Standards	NRCS - ECS - 336 - Soil Carbon Amendment
Additional Spot Check Requirement	Soil sampling and tests for all fields one year after application
CS2 Reference Materials	NC-ACSP-11 Signature Page Map with BMP location, fields, and roads Soil Carbon Amendment Plan Soil test results prior to Biochar application Soil Carbon Amendment Analysis Nutrient Management Plan (if applicable)