Compost Application to Croplands (CPS 808)

Part of Fibershed's Carbon Farming Education program, learn more online at: fibershed.org/carbon-farming





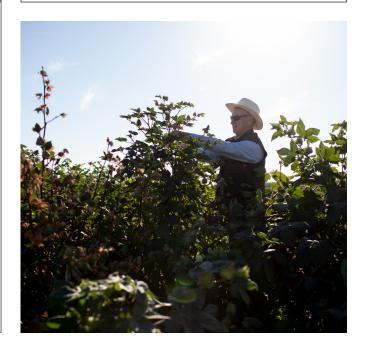
Benefits of Compost Application on Croplands

- ▶ Increases soil organic carbon
- ► Improves water infiltration and water holding capacity
- ► Improves drainage; reduces flooding and erosion; conserves water by decreasing irrigation demand
- ► Reduces bioavailability of heavy metals and soil pollutants
- ► Improves soil fertility, nutrient availability and production
- ► Reduces the need for synthetic fertilizer / nitrogen inputs to soil
- ▶ Increases microbial activity and beneficial microorganisms, supporting soil ecosystem processes and suppressing root diseases



Why consider compost on croplands?

- ► Compost is a source of energy for the soil ecosystem.
- ► Compost is the end product of managed aerobic, high temperature decomposition process of organic matter, suitable for beneficial application to soil.
- ► Compost is not a fertilizer; it is a soil amendment with soil fertility and soil quality enhancing characteristics.
- ► Compost is a source of both macro and micro nutrients.
- ▶ Compost does not need to be incorporated into the soil to be effective. Tilling compost in will tend to oxidize both compost carbon and soil carbon, resulting in a loss of approximately one half of the applied compost carbon annually. If tillage is required, consider doubling compost rates.





Compost Application Quantities and Conversions

- ► Compost is typically measured by the cubic yard or by the ton.
- ▶ One cubic yard of compost weighs approximately 1,000 lbs (½ ton), with variation based on moisture content.
- ▶ You may need to convert a measurement of dry weight of compost to wet compost (as purchased from supplier). If so, multiply the dry weight by the quantity (1+moisture content). For example, if the moisture content is 40%, multiply the desired dry weight by (1.4) to calculate the wet weight of compost you will need.



How much compost to apply and when

- ► Application timing and quantity varies depending on climate, geographic location, soil and crops.
 - In many cases, compost is applied prior to each cropping cycle.
- ▶ Factors to consider to determine timing and rate:
 - Crop nutrient demand; compost nutrient content and availability; baseline organic matter levels on cropland; soil and compost salinity
 - NRCS suggests 5% SOM as an indicator of soil health; ongoing compost applications can reach for this goal.
 - Because organic forms of nutrients, including nitrogen, are less available than synthetic forms, over-application of compost is unlikely.
 - For cropland, there is no ideal application rate for compost. Rate should be based on soil conditions, crop and compost characteristics. Higher rates are common in soil restoration projects.
 - Compost carbon to nitrogen (C/N) ratios vary widely, affecting nutrient availability and organic matter development.



Complementary Practices

- ▶ Nutrient Management (CPS 590)
- ▶ Tillage management (CFP 329/345)
- ► Cover Cropping (CPS 340)
- ► Conservation Crop Rotation (CPS 328)



Technical Support

- ► Resource Conservation District (see CARCD's website directory to find which one serves your area)
- ► Natural Resources Conservation Service (see NRCS's service center locator to find which office serves your area)
- ► Climate Smart Agriculture Community Agriculture Specialists working across the state with UC Cooperative Extension
- ► Community Alliance with Family Farmers (CAFF): caff.org
- ► Some regional land trusts may offer technical support services.



Sourcing Compost

- ► On-farm produced compost is a great option for producers who have available materials and capacity.
- ► Contact Fibershed (<u>hello@fibershed.org</u>) for a list of compost providers in your area.
- ➤ Typical cost per yard: \$20 \$80 (approx. 1/2 ton). Ask your local RCD or Fibershed for local references.
- ► Total cost includes compost material, hauling and spreading.

