

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**COVER AND GREEN MANURE CROP**

(acre)  
CODE 340

**DEFINITION**

A crop of close growing, legumes, or small grain grown primarily for seasonal protection and soil improvement. It usually is grown for one year or less, except where there is permanent cover as in orchards.

**PURPOSES**

To control erosion during periods when the major crops do not furnish adequate cover; add organic material to the soil; and improve infiltration, aeration, and tilth.

**CONDITIONS WHERE PRACTICE APPLIES**

On cropland; certain recreation and wildlife areas; and orchard, vineyard, and small fruit areas.

**CRITERIA**

This practice includes short term, temporary cover crops as well as long term, perennial or reseeding annual cover crops. Selected species must be compatible with the planned management system.

Legume species provide soil nitrogen. Annual species that provide erosion control should be capable of rapid and vigorous establishment.

Seeding mixtures and rates shall be in conformance with the respective Major Land Resource Area (MLRA) Vegetative Guide in the Field Office Technical Guide.

Based on bag tags, adjust seeding rate to insure the required amounts of pure live seed of each species (germination x purity). Do not include any hard seed in the percent germination. When coated seed is used, adjust seeding rate to compensate for the weight of coating.

When plantings are to be irrigated, maintain adequate moisture in the upper six (6) inches of soil during the first four (4) weeks and then in the upper 12 inches

thereafter until the rainy season during the establishment period.

On sloping land where crop residues are present or will result from the existing or planned crop, minimize seedbed operations to maintain adequate residues on the surface for protecting the new planting. When available, also specify a no-till drill or similar seed drill be used. Do these on the Practice Requirements sheet.

Locally adapted cover crops can be identified with one or more of the following management systems.

**Cover and Green Manure Crop**

Plants provide short-term cover and are generally grown in the interval between main crops. Plants are disked under to add organic material and improve soil fertility and tilth. Generally this is done when plants reach the prebloom to bloom stage. Choose species that will decompose rapidly and/or not interfere with growing the next crop.

**Cover Crop - Mowed**

Plants provide long-term cover and are managed by mowing to maintain at least 60 percent ground cover during the erosive period. Mowing to a 3-4 inch height at the beginning of the frost season can reduce cold temperature damage in orchards and vineyards. Mowing intervals must allow adequate seed production by annual species. Tree and vine rows are generally kept weed free with herbicides or other means to minimize competition and allow soil warming. Selected plants need to complement the Integrated Pest Management (IPM) program being used. Mowed cover crops greatly reduce dust during harvest operations, especially almonds and walnuts, and improve the infiltration rate of water.

**Cover Crop - Disked**

Plants provide long-term cover and are managed by disking after seed production to maintain at least 60 percent ground cover during the erosive period. Mowing at the beginning of the frost season may be

performed to a 3-4 inch height to reduce cold temperature damage in orchards and vineyards. Tree and vine rows may be kept free of plants with herbicides or other means to reduce competition and allow soil warming.

### **Cover Crop - Unmowed and Nondisked**

Plants provide long term cover on lands left idle for several years and are managed as natural stands without mowing or tillage to maintain at least 60 percent ground cover during the erosive period. Firebreaks shall be considered and mowed firebreaks used where feasible. Wildlife needs shall be considered when selecting plants. Control of noxious weeds may require mowing parts of the field for a few seasons.

### **CONSIDERATIONS**

Since most California soils are low in sulfur, preference should be given to fertilizers with this element. Ammonium Phosphate Sulfate 16-20-0 contains 15 percent Sulfur and is the preferred fertilizer when mixtures of grasses and legumes are being seeded. Consider other fertilizers if soils are acid.

The horizontal indentations left by tracked equipment provides a suitable seedbed on steep slopes.

When seeding grasses, apply nitrogen at the rate of 40 pounds per acre, except if soils are coarse sandy, gravelly or granitic, fertilizer rates can be reduced 50 percent.

When seeding legumes, fertilize with the equivalent of 22 pounds per acre of phosphorus.

When planting perennial grasses alone, do not fertilize at planting time. When planting a mixture of perennial and annual grasses or where there is a water quality concern, reduce the fertilizer rate by 50 percent.

When fertilizer rates are reduced, the balance of the fertilizer needs to be applied at the beginning of the next growing season except, when perennials are not fertilized, fertilize after the perennial grasses are established.

Control of noxious weeds by mowing should be evaluated as an alternative to use for herbicides.

### **Endangered Species Considerations**

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that during critical periods, such as spawning, eggs in gravels, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

### **Water Quantity**

The practice may decrease runoff and increase infiltration and available soil moisture because of the increased period of vegetation. Increased organic material may increase water-holding capacity. Transpiration may increase because of increased water use by vegetation. Soil moisture may increase because of an increased ability to trap snow where climatically feasible.

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Effects of vegetation on soil moisture.

### **Water Quality**

Erosion, sediment and adsorbed chemical yields could be decreased in conventional tillage systems because of the increased period of vegetal cover. Plants will take up available nitrogen and prevent its undesired movement. Organic nutrients may be added to the nutrient budget reducing the need to supply more soluble forms. Overall volume of chemical application may decrease because the vegetation will supply nutrients and there may be allelopathic effects of some of the types of cover vegetation on weeds. Temperatures of ground and surface waters could slightly decrease.

1. Filtering effects of vegetation on movement of sediment, pathogens, and dissolved and sediment-attached substances.
2. Effects of growing and decaying vegetation on nutrients in the root zone.
3. Effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances carried by runoff.

### **PLANS AND SPECIFICATIONS**

Plans and specifications will be prepared for each field and include seedbed preparation, date of seeding, seed mixture, fertilization, management, and time and manner of incorporating the crop into the soil.

When seed will be planted more than one inch deep, indicate the depth on the Practice Requirements sheet. When seeding on graded, irrigated fields will not be performed across the slope, indicate this on the Practice Requirements sheet.

Use aerial seeding on steep sites and on other sites where full coverage is needed.

On fields judged to contain a good seed supply of desirable species, do not specify any seeding mixture on the Practice Requirements sheet. Fertilizer must still be specified on the Practice Requirements sheet unless existing fertility of the field is judged adequate.

On Conservation Reserve Program fields in MLRAs and locations not restricted to perennials, specify Cover Crop - unmowed and non-disked. Also list the desirable resident species on the Practice Requirements sheet that will qualify as part of the minimum 60 percent ground cover. Do not list any noxious weeds.

### **OPERATION AND MAINTENANCE**

Maintenance needed for this practice includes mowing at the beginning of the frost season to minimize danger to trees and vines, allowing long term cover crops to set seed, maintaining adequate vegetative cover during the critical erosion period, controlling noxious weeds, and timing operations to minimize impacts on wildlife.

Firebreaks will be installed each season to protect unmowed and nondisked long-term cover on lands left idle and managed as natural stands.