



United States Department of Agriculture

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

FIELD OPERATIONS EMISSIONS REDUCTION

(Ac.)

CODE 376

DEFINITION

Adjusting field operations and technologies to reduce particulate matter (PM) emissions from field operations

PURPOSE

Improve air quality by reducing emissions of particulate matter.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to crop, forest, pasture and range land use designations.

CRITERIA

General Criteria

There shall be a demonstrated reduction in PM emissions from the benchmark (current system) to the planned system by using one or more of the techniques below:

- Combined Tillage Operations.—Utilize equipment that allows multiple operations in a single pass to reduce the number of field passes per crop rotation.
- Precision Guidance Systems.—To reduce total soil disturbance, use global positioning system (GPS) and steering technologies that minimize overlap of field passes.
- Alternative Equipment Technology.—Use alternative equipment and/or equipment retrofits that reduce PM emissions. This can include dust-reducing technology (such as misters, deflectors, etc.) increasing equipment size to reduce net field passes, and changes to bed/row size or spacing.
- Timing of Field Operations.—Modify the timing of field operations so that PM emissions are reduced. This can include conducting operations when relative humidity and/or soil moisture levels are higher, winds are lighter, or by limiting operations during high-wind events. This could also include a reduction in the amount of time between seedbed preparation and planting, and other such timing modifications that reduce PM emissions.
- Modify Crop Cultural and Harvest Methodologies.—Modify operations to use other means of crop production such as performing soil disturbance and/or harvest operations at slower speeds. For example, harvesting a forage crop without allowing it to dry in the field, hand harvesting, applying water or other soil stabilizing material prior to soil disturbance or harvest, using transplants instead of direct seeding, and applying chemicals and fertilizers via irrigation to reduce field passes.

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service (NRCS) [Colorado State office](#) or visit the NRCS [Colorado electronic Field Office Technical Guide](#).

NRCS, CO
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For applicable mechanical nut harvest operations manage pre-harvest irrigation water to create a more consolidated and firm soil surface to reduce harvest-related PM emissions.

CONSIDERATIONS

Managing higher levels of crop residue can reduce the potential for PM emissions from wind erosion and increase the potential for carbon sequestration.

Maintaining cover between rows or on alternate crop rows will reduce the potential for wind erosion.

Using alternatives to tillage for weed control (e.g. mowers, sprayers, flammers, etc.) can significantly reduce the PM emissions.

Increasing the time interval between uncombined tillage passes (e.g., disking) may help reduce PM emissions by reducing the effects of thermal profile changes that cause additional entrainment of the soil particles.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field or treatment unit according to the Criteria, and Operation and Maintenance sections of this standard.

Specifications shall describe the requirements to apply this practice to achieve the intended purpose. Plans for the implementation of this practice shall include the following specification components documented in an approved Field Operations Emissions Reduction 376, Implementation Requirements Worksheet, as a minimum.

- Field number and acres
- Purpose of the emission reduction
- Listing of the current benchmark field operations system
- Listing of the planned field operations system
- Listing of emission reduction activities and when and how the activities will be applied
- Special considerations

Record specifications practice using the approved implementation requirements document.

OPERATION AND MAINTENANCE

Review the PM emission reduction activities seasonally or annually as appropriate to ensure the activities are working properly and modify if needed.

REFERENCES

Agricultural Air Quality Conservation Management Practices for San Joaquin Valley Farms. 2004. San Joaquin Valley Air Pollution Control District and USDA-NRCS. 14 pp.

USDA, NRCS. 2015. Wind Erosion Prediction System (WEPS) website. Washington, DC.

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/weps/>