

# ■ how to use this booklet

The agriculture industry prepared this booklet to provide San Joaquin Valley farmers with the most timely, accurate information and practical guidelines for implementation of Conservation Management Practices on their farms to comply with the regulations in the San Joaquin Valley Unified Air Pollution Control District's Rule 4550 and Rule 3190. Farmers with 100 acres or more of contiguous land are required to prepare and implement Conservation Management Plans for each crop they farm. This booklet includes samples and actual forms farmers can use to document their management plans.

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# ■ for more information

## **San Joaquin Valley Region of the California Association of Resource Conservation Districts**

4974 E. Clinton Way, Ste. 114, Fresno, CA 93727; (559) 252-2191 ext. 105; [www.carcd.org](http://www.carcd.org)

Ron Harben, Air Quality Planner & Coordinator

## **San Joaquin Valley Unified Air Pollution Control District**

1990 E. Gettysburg Ave., Fresno, CA 93726; (559) 230-5950; [www.valleyair.org](http://www.valleyair.org)

Ted Strauss, Supervising Air Quality Inspector

## **USDA, Natural Resources Conservation Service**

**Fresno Area Office**, 4974 E. Clinton Way, Ste. 114, Fresno, CA 93727; (559) 252-2191; [www.ca.usda.gov](http://www.ca.usda.gov)

John Beyer, State Air Quality Coordinator

Johnnie Siliznoff, Area Air Quality Specialist

## **USDA Natural Resources Conservation Service county offices:**

Fresno County, 4625 W. Jennifer, Ste. 125, Fresno, CA 93722; (559) 276-7494

Kern County, 1601 New Stine Rd., Ste. 270, Bakersfield, CA 93514; (661) 861-4125

Kings County, 680 Campus Dr., Ste. E, Hanford, CA 93230; (559) 584-9209

Madera County, 425 N. Gateway, Ste. K, Madera, CA 93637-3163; (559) 674-4628

Merced County, 2135 W. Wardrobe Ave., Ste. C, Merced, CA 95340; (209) 723-4119

San Joaquin County, 1222 Monaco Ct., Ste. 23, Stockton, CA 95207; (209) 946-6241

Stanislaus County, 3800 Cornucopia Way, Ste. E, Modesto, CA 95358-9494; (209) 491-9320

Tulare County, 3530 W. Orchard Ct., Visalia, CA 93277-7055; (559) 734-8732

# Agricultural Air Quality Conservation Management Practices for San Joaquin Valley Farms

The very nature of producing food and fiber crops generates dust and small particulate matter, commonly referred to as PM10. Farmers have worked to reduce the amount of dust generated from ongoing cultural practices, as a means to help control certain dust-loving pest populations, reduce vehicle dust during harvest, as well as for other benefits.

Now, attention has been focused on reducing dust and PM10 emissions from on-farm activities as part of efforts to help improve the San Joaquin Valley's air quality.

The Valley has been identified by the U.S. Environmental Protection Agency to be in "serious" non-attainment for PM10 emissions under the federal Clean Air Act. The San Joaquin Valley Unified Air Pollution Control District (Air District) must show a five percent per year reduction in PM10 emissions until attainment is reached. As a result, the Air District has recently adopted rules governing on-farm emissions.

The rules, Rule 4550 (Conservation Management Practices) and Rule 3190 (Conservation Management Practices Plan Fee), require farmers to implement and document a biennial plan to reduce dust and PM10 emissions from on-farm sources, such as from unpaved roads and equipment yards, during land preparation, harvest activities and from other cultural practices. Likewise, the Air District will collect fees from those farms that must comply with the CMP requirement.

## What is required?

Farmers with **100 acres or more of contiguous, or adjacent, farmland** are required to prepare and implement Conservation Management Practices (CMP) Plans for each crop they farm. (Separate CMP plans are being developed for livestock producers.)

## Conservation Management Practices Plan

A Conservation Management Practice is an activity or practice that farmers will implement on their farms to help reduce dust or particulate matter from getting into the air.

Examples of these CMP practices include activities that reduce or eliminate the need to move or disturb the soil; activities that protect the soil from wind, such as wind breaks; equipment modifications that physically produce less dust; application of dust suppressants; speed reductions on unpaved roads

and unpaved yards; alternatives to burning brush or prunings; and activities that reduce agricultural chemical applications through use of integrated pest management practices.

The Air District's rule requires farmers to **implement five CMPs for each crop, including one from each of the following categories:**

- Land preparation and cultivation
- Harvest activities
- Unpaved roads
- Unpaved equipment yards
- Other cultural practices

Each farmer with 100 or more contiguous acres must complete a CMP Plan, which includes: 1) the General Information form; 2) a map of the operation that designates where each CMP is being implemented (this map is to be kept at the ag operation only and should not be submitted with the completed CMP Plan); 3) the form for Unpaved Roads and Unpaved Vehicle/ Equipment Areas; and 4) a form for each crop he or she farms. (The forms are included in the back of this booklet and may be photocopied as needed or can be downloaded from the Air District web-site located at [www.valleyair.org/farmpermits](http://www.valleyair.org/farmpermits)).

The crops are categorized as:

- Alfalfa
- Citrus
- Corn, Grain and Silage
- Cotton
- Dry Beans, Cereal Grains, Safflower, Wheat and Barley
- Grapes
- Nut Crops
- Onions and Garlic
- Sugar Beets
- Tree Fruit
- Vegetables, Tomatoes, Melons and Other

This booklet identifies the currently accepted, crop-specific practices to reduce PM10 emissions in each of the five categories mentioned above. The CMPs were developed by the Air District's Agricultural Technical Advisory Committee (AgTech), which includes representatives from the USDA-Natural Resources Conservation Service, Resource Conservation Districts, agricultural organizations and commodity groups, and other state and federal agencies.

The CMPs were designed to be workable and to provide farmers with flexibility in selecting measures. If a CMP in a category can't be implemented, then a grower may select an alternate CMP from another category.

To allow flexibility and innovation, there is an "Other" practice in each category, which may be used if the new practice can show equal or greater emission reductions than the currently approved practice, and is approved by the Air District's Air Pollution Control Officer (APCO).

The Ag Tech Committee strived to make sure, with reasonable certainty, that the CMP practices will reduce emissions. Likewise, the Committee will continue to seek assistance to enhance the quality of research needed to demonstrate the effectiveness of current and future CMPs. Also included in this booklet are new forms that should be used for documenting CMPs for unpaved roads and unpaved equipment yards. These are the current forms that should be used. The forms that were included in the 2002 "Air Quality Conservation Management Practices for San Joaquin Valley Farms" booklet are out-of-date.

A list of approved dust suppressants available for use to help reduce PM10 emissions from unpaved roads and equipment yards is included in the back of this booklet.

### Deadlines

The CMPs must be **implemented by July 1, 2004** and the CMP Plans **must be filed with the Air District by December 31, 2004.**

### Costs and fees

Initial applications for CMP Plan approval are charged a fee based on total acreage farmed. The Air District will invoice for these fees. No fees are due at the time the applications are submitted. The initial application fees are:

<b>\$120.00</b>	<b>500 acres or less</b>
<b>\$350.00</b>	<b>501 to 1,999 acres</b>
<b>\$550.00</b>	<b>2,000 acres or more</b>

The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) or local Resource Conservation Districts (RCD) can assist in selecting CMPs and filing CMP plan applications with the District. In fact, having a plan reviewed by NRCS or RCD prior to

submitting it to the District cuts the filing fee in half – a savings of \$60 to \$275, depending on the size of the operation. Contact information for these agency offices is provided on the front inside cover of this booklet.

Every two years a CMP Plan renewal fee of \$100 must be submitted to the Air District. A CMP Plan may be modified and resubmitted to the Air District at no cost anytime a practice or crop has changed. This allows the Air District to maintain the most accurate and up-to-date emissions inventory as practicable. No CMP plan fees will be required if a District Permit to Operate is required for the operation.

### CMP and permitting contact information

The Air District's local Business Assistance offices are manned by experienced staff ready to offer assistance to anyone who calls. Staff can provide information and guidance, as well as assist farmers with completing the necessary forms. The phone numbers for the Air District's Business Assistance offices are:

#### Northern Region

*Serving San Joaquin, Stanislaus, and Merced Counties*  
Office in Modesto: (209) 557-6446

#### Central Region

*Serving Madera, Fresno, and Kings Counties*  
Office in Fresno: (559) 230-5888

#### Southern Region

*Serving Tulare and Kern Counties*  
Office in Bakersfield: (661) 326-6969

### Submittal information

The completed CMP Plan must be submitted to the nearest Air District office. In addition, the farmer must keep a copy of the approved plan and the CMP site map of the operation available for inspection purposes.

#### SJVAPCD Northern Region Office

4230 Kiernan Ave, Suite 130  
Modesto, CA 95356

#### SJVAPCD Central Region Office

1990 E Gettysburg  
Fresno, CA 93726

#### SJVAPCD Southern Region Office

2700 "M" Str., Suite 274  
Bakersfield, CA 93301

# Land Preparation / Cultivation CMPs

**Alternate Till:** Rotate tillage leaving residue on soil.



Tilling alternate rows for weed management and wind blown dust allows for approximately 50% reduction in field activity in addition to stabilizing soil surface and reducing soil compaction.

*Examples:* Tillage of alternate rows of vineyard and orchards, thereby reducing passes across field.

**Bed/Row Size or Spacing:** Increase or decrease the size of the planting bed area (can be done for field and permanent crops).



Spacing adjustments reduce the number of passes and soil disturbance by increasing plant density/canopy through reduction of row width or converting to overhead vineyard production systems to contain PM within the canopy.

*Examples:* Planting multi-rows on a wide bed, e.g.: tomatoes or melons in 2-rows on 60" bed; narrow row planting of cotton can reduce two to three cultivation passes; overhead vineyard system in grapes can reduce cultivation and pesticides by shading unwanted vegetation that reduces the need for cultivation and pesticides; other planting systems may have similar benefits, including but not limited to using 80" wide-bed system as well as a 60" system for either cotton or vegetable planting.

**Chemigation/Fertigation:** Application of chemicals through an irrigation system.



Each application reduces the need to travel in the field for application purposes, thus reducing the number of passes and soil disturbance while increasing the efficiency of the application.

*Examples:* The addition of herbicide or fertilizer through water application during irrigation. This also includes aerial application of herbicides or fertilizer.

**Combined Operations:** To combine equipment, to perform several operations during one pass.



The reduction in the number of passes necessary to cultivate the land will result in fewer disturbances to the soil. Other benefits are reduction of soil compaction and time to prepare fields, both of which can be precursors to additional tillage requirements.

*Examples:* Combining cane cutting, discing and flat-furrowing in a single pass for vineyards; use of one-pass till equipment in ground preparation or crop tillage; cultivation and fertilization of field crop in a single pass.

**Conservation Irrigation:** To conserve the quantity of water use, e.g.: drip, sprinkler, buried/underground line.



Conserving water reduces weed population, which in turn reduces the need for tillage as well as reduces soil compaction.

*Examples:* The use of drip or buried line (including permanent or semipermanent line) in crop production; use of pressure bombs, water flow meters or soil monitoring devices to avoid over-irrigation; using irrigation management consultants; or adopting the use of evapotranspiration factors.

**Conservation Tillage (e.g.: no tillage, minimum tillage):** Types of tillage that reduce loss of soil and water in comparison to conventional tillage.



Reduces the number of passes and amount of soil disturbance. It improves soil because it retains plant residue and increases organic matter.

*Examples:* Converting to no or low till operations; implementing reduced till activities; adding soil/water amendments to improve resource and reduce tillage needs.

# Land Preparation / Cultivation CMPs

**Cover Crops:** Use seeding or natural vegetation/regrowth of plants to cover soil surface.



Reduces soil disturbance due to wind erosion and entrainment.

*Examples:* Plant or allow volunteer vegetation to grow in crop without tilling thereby reducing tillage and increasing stabilization of that portion of soil.

**Floor Management:** Smoothing and flattening the soil surface after nut harvest to remove post-harvest residue; maintain clean, smooth, firm floor throughout season by elimination of discing.



Reduces passes through elimination of discing.

*Examples:* Maintain level floor; chemical treatment, use one-pass tillage practices, irrigation or otherwise firming of soil to prevent PM.

**Equipment Changes/Technological Improvements:**

To modify the equipment such as tilling; increase equipment size; modify land planing and land leveling; matching the equipment to row spacing; grafting to new varieties or other technological improvements.



Reduces the number of passes during an operation, thereby reducing soil disturbance.

*Examples:* Convert from conventional raisin operation to dried on the vine (D.O.V.) or overhead; grafting to new varieties; increase tillage equipment size to reduce passes and flame cultivation.

**Integrated Pest Management:** A decision process that uses a combination of techniques including organic, conventional and biological farming practices to suppress pest problems.



Creates beneficial insect habitat that reduces the use of herbicides/pesticides thereby reducing number of passes for spraying. It also reduces soil compaction and the need for additional tillage.

*Examples:* Monitoring crop for pests to accurately and effectively apply control measures; use county farm advisor thresholds for spray timing; incorporate biological practices into farming operation to reduce need for spraying.

**Fallowing Land:** Temporary or permanent removal from production (e.g.: vineyard pullout, Raisin Industry Diversion program, wildlife/wetlands conservation program).



Eliminates entire operation/passes or reduces activities.

*Examples:* Leaving a portion of the field untilled; remove an area of farm from planting to reduce need for tillage and pesticide application; install a NRCS approved practice.

**Mulching:** Applying or leaving plant residue or other material to soil surface.



Reduces entrainment of PM due to winds as well as reduces weed competition thereby reducing tillage passes and compaction.

*Examples:* May include organic material, gypsum, lime, humus, pre-plant ground covers or plastic mulches for vegetables.

# Land Preparation / Cultivation CMPs

**Night Farming:** Operate at night, if practical, when moisture levels are higher and winds are lighter.



Decreases the concentration of PM emissions during daytime and the increased ambient humidity reduces PM emissions during the night.

*Examples:* Increased humidity increases soil surface moisture thereby helping contain PM emissions from tillage. Also can be used in the

Other category for night time spraying.

**Precision Farming (GPS):** Using satellite navigation to calculate position in the field, therefore manage/treat selective area.



Reduces overlap and allows operations to occur during inclement weather conditions and at night thereby generating less PM.

*Examples:* Install overlap reduction technology; pass markers; variable rate application technology or use petiole and soil sampling to reduce unnecessary applications.

**Non Tillage / Chemical Tillage:** Use flail mower, low volume sprayers or heat delivery systems (as harvest pre-conditioner).



Reduces soil compaction and stabilizes soil through elimination or reduction of soil tillage passes.

*Examples:* Leaving residue on surface after mowing, using pre-emergent or contact herbicides, scorching of weeds or foliage, mulch to smother weed competition. Semi-permanent crops e.g. alfalfa that will require no tillage.

alfalfa that will require no tillage.

**Time of Planting:** Timing of planting either earlier or later.



Assists in distributing PM10 emissions to a period when there is less PM concentration.

*Examples:* When possible plant early season varieties (i.e.: tomatoes, sugar beets, vegetables, some tree varieties) includes seasonality and time of day.

**Transgenic Crops:** Use of GMO or Transgenic crops such as "herbicide-ready."



Reduces need for tillage or cultivation operations, as well as reduces soil disturbance. Can also reduce the number of chemical applications.

*Examples:* May include genetically altered seed, nematode resistant rootstock and grafting.

**Organic Practices:** Use biological control methods or non-chemical control methods.



Reduces chemical use, thereby reducing passes.

*Examples:* Organic certification, biological controls, mulches, humus.

**Transplanting:** Planting plants already in a growth state.

Reduces soil disturbance and the number of passes compared to using seeding.

*Examples:* Instead of direct seeding, use transplants to avoid tillage; viable in vegetable crops.

# Harvest CMPs

**Baling/Large Bales:** Using balers to harvest crop.



Reduce PM emissions from crops traditionally harvested by chopping, truck passes and residue burning.

*Examples:* Baling forage, grain stubble or crop residue to harvest crop at a different stage of maturity and reduce passes.

**Equipment Changes/Technological Improvements:** To modify the equipment such as combines or cotton pickers, and harvesting equipment, increase equipment size, or other technological improvements.



Reduces the number of passes during an operation, thereby reducing soil disturbance. Also reduces soil compaction, and consequently reduces the frequency for the need to rip or chisel the soil.

*Examples:* Convert from conventional raisin operation to dried on the vine (D.O.V.) or overhead, low emission almond harvesters, increase harvester head size to reduce passes.

**Combined Operations:** To combine equipment, to perform several operations during one pass.



The reduction in the number of passes necessary to harvest the crop, or complete the post harvest cultivation, will result in fewer disturbances to the soil. Other benefits are reduction of soil compaction and time to prepare fields, both of which can be precursors to additional tillage requirements.

*Examples:* Includes one-pass equipment that combines stalk shredding, stalk incorporation and bedding in a single pass.

**Floor Management:** Smoothing and flattening the soil surface after nut harvest to remove post-harvest residue; maintain clean, smooth, firm floor throughout season by elimination of discing.

Reduces passes through elimination of discing allows for proper calibration of harvest equipment to reduce soil surface disturbance.

*Examples:* Maintain level floor.

**Continuous Tray/D.O.V., New Drying Techniques for Dried Fruit:** Any technology to reduce labor and tillage.



Reduces the number of equipment passes, field entry, and soil erosion, i.e. terracing and throwing back in raisin operation.

*Examples:* Technology changes to dry fruit on vine or the use of continuous trays to dry raisins.

**Green Chop:** The harvesting of a forage crop without allowing it to dry in the field.



Reduces multiple equipment passes in-field as well as reduces soil disturbance and soil compaction.

*Examples:* Alfalfa, winter forage and silage corn.

# Harvest CMPs

**Hand Harvesting:** Harvesting crop by hand.



Reduces soil disturbance due to machinery passes.

*Examples:* Use where practical, may be the only option for fresh fruit and vegetables.

**Pre-Harvest Soil Preparation:** Applying a light amount of water or stabilizing material to soil prior to harvest (when possible).



Reduces PM emissions at harvest.

*Examples:* A light application of water to soil prior to harvest to help control dust.

**Fallowing Land:** Temporary or permanent removal from production (e.g.: vineyard pullout, Raisin Industry Diversion program, wildlife/wetlands conservation program).



Eliminates entire operation/passes or reduces activities.

*Examples:* Leaving a portion of the field untilled; remove an area of farm from planting to reduce need for tillage and pesticide application; install a NRCS approved practice.

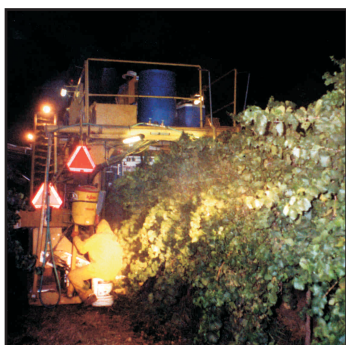
**Shed Packing:** Packing commodities in a covered or closed area.



Reduces field traffic, thereby reducing PM emissions.

*Examples:* Moving crops out of field, by way of bulk transport systems, to a designated packing area.

**Night Harvesting:** Implementing cultural practices at night, or at times of high humidity.



Reduces PM by operating when ambient air is moist, thereby reducing PM emissions.

*Examples:* Increased humidity may increase soil surface moisture thereby helping contain PM emissions from tillage.

**Shuttle System/Larger Carrier:** Multiple bin/trailer.



Haul multiple or larger trailers/bins per trip thereby reducing emissions through reduced passes.

*Examples:* Boll buggies, cotton modules versus trailers, bankout wagons, gondolas, bulk movement of commodity from field.

**No Burning:** Switching to a crop/system that would not require waste burning.

Reduces emissions associated with burning.

*Examples:* Non-burning may include eliminating burning of paper tray drying materials.



# Other CMPs

**Alternate Till:** Rotate tillage leaving residue on soil.



Tilling alternate rows for weed management allows for approximately 50% reduction in field activity, in addition to stabilizing soil surface, and reducing soil compaction. Reduces wind erosion.

*Examples:* Tillage of alternate rows of vineyard and orchards, thereby reducing passes across field.

**Application Efficiencies:** Use compact, low volume or concentrate quantity with spray equipment; aerial applications; use micro-heads or infrared spot sprayer; electrostatic sprayers in closed area.



Reduces soil compaction, passes, and chemical usage.

*Examples:* Low volume sprayer heads, photosynthetic I.D. heads; hand-spot spraying; variable rate applicators and shielded sprayers to reduce spray emissions and apply spray to desired pest.

**Baling/Large Bales:** Using balers for crop residue.

Reduce PM emissions from crops traditionally harvested by chopping, truck passes and residue burning.

*Examples:* Baling forage, grain stubble or crop residue as an alternative to burning.

**Bulk Materials Control:** Minimize visible dust emissions from bulk materials.



Reduces entrainment of fugitive dust.

*Examples:* To apply water or suitable chemicals/organics, or cover the bulk materials with tarps, plastic or suitable material, or construct wind barriers surrounding the bulk materials.

**Chemigation/Fertigation:** Application of chemicals through an irrigation system.

Each application reduces the need to travel in-field for application purposes. Reduces the number of passes and soil disturbance, while increasing the efficiency of the application.

*Examples:* The addition of a herbicide or fertilizer through water application during irrigation. This also includes aerial application of herbicides or fertilizer.

**Conservation Irrigation:** To conserve the quantity of water use, e.g.: drip, sprinkler, buried/underground line.



Conserves water, reduces weed population, which in turn reduces the need for tillage and reduces soil compaction. By reducing water use, fuel fired irrigation pump usage can also be reduced.

*Examples:* Use drip, or buried line (including permanent or semi-permanent line) in crop production, use of pressure bombs, water flow meters or soil monitoring devices to avoid over-irrigation, using irrigation management consultants, adopting the use of evapotranspiration factors.

**Fallowing Land:** Temporary or permanent removal from production (e.g.: vineyard pullout, Raisin Industry Diversion program, wildlife/wetlands conservation program).



Eliminates entire operation/passes or reduces activities.

*Examples:* Leaving a portion of field untilled, remove an area of farm from planting to reduce the need for harvest requirements, burning, irrigation pump usage, pesticide and herbicide applications, etc.

## Other CMPs

**Grinding/Chipping/ Shredding:** Grinding prunings and orchard removals instead of burning; incorporate to soil.



Reduces PM from burning crop residues.

*Examples:* Using Bio-mass; chippers to grind broken or downed limbs rather than burning; flailing of vegetation instead of tilling; send prunings and/or orchard removal material to power cogeneration plants; compost residue for use as soil amendment or incorporate into soil.

**Mulching:** Applying or leaving plant residue or other material to soil surface or incorporating into soil.



Reduces entrainment of PM due to winds.

*Examples:* May include organic material, gypsum, lime, humus, pre-plant ground covers.

**Integrated Pest Management:** A decision process that uses a combination of techniques including organic, conventional, and biological farming practices to suppress pest problems.



Reduces use of herbicides and pesticides.

*Examples:* Monitoring crop for pests to accurately and effectively apply control measures, use county farm advisor thresholds for spray timing, incorporate biological practices into farming operation to reduce need for spraying.

**Night Farming:** Operate at night if practical when moisture levels are higher and winds are lighter.

Decreases the concentration of PM emissions during daytime, increased ambient humidity reduces PM during high emission periods, reduces PM10 precursors. Night spraying can reduce VOC emissions, by reducing drift and volatilization.

*Examples:* Increased humidity increases soil surface moisture thereby helping contain PM emissions from tillage. Night time spraying.

**No Burning:** Switching to a crop/system that would not require waste burning.

Utilizing practices such as shredding and chipping of prunings, reduces the need for burning.

*Examples:* Non-burning may include eliminating burning of paper tray drying materials, and chipping and shredding of prunings.

**Irrigation Power Units:** Use cleaner burning engines, electric motors (CMP only applicable if engines are cleaner than current rule requirements).



Reduces PM and NOx emissions.

*Examples:* New Tier II engines; electric motors; other alternative fuels.

**Non Tillage / Chemical Tillage:** Use flail mower, low volume sprayers or heat delivery systems (as harvest pre-conditioner).

Reduces soil compaction and stabilizes soil through elimination or reduction of soil tillage passes. Reduces wind erosion.

*Examples:* Leaving residue on surface after mowing, using pre-emergent or contact herbicides, scorching of weeds or foliage, mulch to smother weed competition.

## Other CMPs

**Organic Practices:** Use biological control methods, use non-chemical control methods.



Reduces chemical use.

*Examples:* Organic certification, biological controls, mulches, humus.

**Soil Amendments:** Organic or chemical materials applied to the soil for improvement (e.g.: gypsum, lime, polyacrylamide).



Increase moisture retention; reduce soil compaction and stabilize soil.

*Examples:* May include organic material, gypsum, lime, humus and pre-plant ground covers.

**Permanent Crops:** Having an established permanent crop.



Reduces incidence of wind blown dust.

*Examples:* Trees, vines or certain semi-permanent field crops.

**Soil Incorporation:** Disking residues and/or soil incorporation of residue.



Reduces emissions from burning.

*Examples:* May include discing of chips or crop residue at site; movement to other points on farm or other farms for incorporation; use chips or grindings for bio-mass; humus.

**Reduced Pruning:** Reduce frequency of pruning (e.g.: one time per year, or every other year).



Reduces soil disturbance due to machinery passes and reduce fuel use.

*Examples:* Topping, hedging, alternate row pruning, alternate year pruning.

**Sulfur: Reduction or Elimination of Dusting:** Organic chemical used to control disease in crop, ornamental and home and gardens.



Reduced dry particulates.

*Examples:* Control disease through alternative measures such as wettable sulfurs, biological or other controls.

## Other CMPs

**Surface Roughening:** Leaving the soil surface as it stands or clods of soil when fallow, preparing planting surface perpendicular to wind direction.



Reduces entrainment of PM due to winds.

*Examples:* Till perpendicular to predominate wind direction. Can be used in the Valley especially during the high wind period from as March-June to reduce geologic emissions.

**Transgenic Crops:** Use of genetically modified crops to reduce environmental impacts.



Use of pest resistant varieties, reduces chemical applications.

*Examples:* The use of Bt-Cotton and Bt-Corn

**Wind Barrier:** Artificial or vegetative wall/fence that disrupts the erosive flow of wind over unprotected land.



Reduces entrainment of PM due to winds.

*Examples:* Plant various wind breaks around farm with plants such as oleanders, eucalyptus, juniper, native grass or tillage perpendicular to field till, etc.

# Unpaved Roads & Vehicle/Equipment Traffic Areas

**Chips / Mulches, Organic Materials, Polymers, Road Oil & Sand:** Application of any nontoxic chemical or organic dust suppressant that meets any specification required by any federal, state, or local water agency and is not prohibited for use by any applicable regulations. See District's list of products available.



Reduces entrainment of fugitive dust.

*Examples:* Application of suppressant to areas meeting the vehicle trips per day threshold.

**(Air District approved dust suppressants and road oils meet treatment standards for roads and areas with greater than 75 vehicle trips.)**

**with greater than 75 vehicle trips.)**

**Gravel:** Placing a layer of gravel with enough depth to minimize dust generated from vehicle movement and to dislodge any excess debris which can become entrained.



Reduces entrainment of fugitive dust.

*Examples:* To add a layer of washed gravel, rock, or crushed rock.

**(Only washed gravel meets treatment standard for roads and areas with greater than 75 vehicle trips.)**

**Mechanical Pruning:** Using a machine instead of hand labor to prune. (*Applies as an Unpaved Roads CMP only*)



Reduced vehicle trips, thereby reducing PM emissions.

*Examples:* Pruning style can include tree hedging, topping, summer pruning, trimming, vineyard hedging or other mechanical pruning operations.

**Paving:** To pave currently unpaved roads.



Prevents dust from vehicle traffic.

*Examples:* To pave unpaved roads.

**meets treatment standard for roads and areas with greater than 75 vehicle trips.)**

**Restricted Access:** To restrict public access to private roads.



Reduces vehicle traffic and thus reduces associated fugitive dust.

*Examples:* To install a device which will limit use of the road on or surrounding an operation.

**Speed Limits:** Enforcement of speeds that reduce visible dust emissions.



Dust emissions from unpaved roads are a function of speed, meaning reducing speed reduces dust.

*Examples:* Posting speed limits on or around the operation.

# Unpaved Roads & Vehicle/Equipment Traffic Areas

**Track-Out Control:** Minimize any and all material that adheres to and agglomerates on all vehicles and equipment from unpaved roads and falls onto a paved public road or the paved shoulder of a paved public road.

Reduces entrainment of fugitive dust.

*Examples:* Accomplished by maintaining sufficient length of paved/ graveled interior roads to allow mud and dirt to drop off vehicles before exiting the site; or use of a grizzly to dislodge debris from tires and undercarriage of vehicles leaving site.

**Water:** Application of water to unpaved roads and traffic areas.



Reduces entrainment of fugitive dust.

*Examples:* Application of water to areas meeting a vehicle trip threshold.

**(Control meets treatment standard for roads and areas with greater than 75 vehicle trips.)**

**Wind Barrier:** Artificial or vegetative wall/fence that disrupts the erosive flow of wind over unprotected land.



Reduces entrainment of PM due to winds.

*Examples:* Plant various wind breaks around farm with plants such as, oleanders, eucalyptus, juniper, native grass or tillage perpendicular to field till, etc.

**(Control meets treatment standard for bulk materials and equipment traffic areas with greater than 75 vehicle trips.)**

# Glossary

**Alternate:**

To do activity in an every-other-month rotation, or every-other row fashion.

**Bed, Bed Row:**

A surface prepared for the planting of seeds or crop.

**Chemigation:**

Applying chemicals through an irrigation system

**Conservation Management Practices:**

An activity or practice that farmers will implement on their farms to help reduce dust or particulate matter from getting into the air.

**Disturb, Disturbance:**

To work the soil in a fashion where it would no longer be in a firm or stable state.

**Disc, Disk, Disking:**

An implement designed and used, when pulled behind a tractor, mixes soil and eliminates weeds.

**Equipment:**

Implement of farm husbandry including but not limited to; tractor, disk, plow, spray machine, cultivator, trailer.

**Fertigation:**

Applying plant nutrients through an irrigation system.

**Floor:**

The area of ground that is between the width of trees or vines. Also called the centers.

**GMO:**

Genetically Modified Organism: A genetic exchange among organisms used to modify plants. In GMO, or genetic engineering, only a single or a few specific genes are used to improve the plant.

**GPS:**

Global Position Satellite System: Using a satellite navigation system on farm equipment to calculate position in the field.

**Fugitive Dust:**

Dust particles that are introduced into the air through certain activities such as soil cultivation, or vehicles operating on open fields or dirt roadways.

**Non-Tillage:**

A system whereby the soil is not moved through mechanical means.

**PM10 (Particulate Matter less than 10 microns):**

A criteria air pollutant consisting of small particles with an aerodynamic diameter less than or equal to a nominal 10 microns (about 1/7 the diameter of a single human hair). Their small size allows them to make their way to the air sacs within the lungs where they may be deposited and may result in adverse health effects.

**San Joaquin Valley Unified Air Pollution Control District (Air District):**

A special district with regulatory responsibilities for managing air quality from stationary air pollution sources within the San Joaquin Valley Air Basin. The District serves the counties of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, and the valley portion of Kern County. This Air District is one of 35 air districts in California.

**Tillage:**

Using an implement to disturb the soil surface or subsurface.

**Vehicle Trips:**

The 24 hour total (midnight-to-midnight) count of pickups, trucks, cars, motorcycles and/or self-propelled farm equipment driven on unpaved roads or through unpaved equipment yards. One vehicle trip is counted each time a vehicle drives over a survey point in any one direction located at the most heavily traveled portion of the road or yard during a 24 hour period. A round trip is counted as two vehicle trips.

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# Notes



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