

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**ROW ARRANGEMENT**  
**(Acre)**  
**CODE 557**

**DEFINITION**

A system of crop rows on planned grades and lengths.

**PURPOSE**

Establish crop rows in direction, grade and length to:

- Provide adequate drainage
- Provide erosion control
- Permit optimum use of rainfall and irrigation water.

**CONDITIONS WHERE PRACTICE APPLIES**

Proper row arrangement is applicable:

1. As part of a surface drainage system for a field where the rows are planned to carry runoff to main or lateral drains.
2. To facilitate optimum use of water in graded furrow irrigation systems.
3. In dryland areas where it is necessary to control the grade of rows to more fully utilize available rainfall.
4. On sloping land where control of the length, grade and direction of the rows can help reduce soil erosion, as a stand-alone practice or in conjunction with other conservation practices.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Row arrangement shall accommodate the type and size of farm equipment to be used in the field.

**Additional Criteria for Surface Drainage**

As part of a surface drainage system, row arrangement shall:

1. Conform to the NEH, Part 650, Engineering Field Handbook, Chapter 14, Water Management (Drainage) for the area regarding grade, depth, and permissible velocities.
2. Facilitate flow of excess water from the field into surface ditches or other appropriate measures.

**Additional Criteria for Furrow Irrigation**

As part of a furrow irrigation system, row arrangement shall:

1. Conform to the irrigation guide for the area regarding grade and length.
2. Facilitate irrigation water management in the field.

**Additional Criteria for Erosion Control and Water Conservation**

As part of an erosion control and/or water conservation system for a field, row arrangement shall:

1. Conform to the particular Conservation Practice Standard for the area (such as 449, Irrigation Water Management) for which row arrangement is a facilitating measure.
2. Conform to the grade and length requirements for Conservation Practice Standard 600, Terrace if the arrangement is used without another engineering practice.

**CONSIDERATIONS**

**Cultural Resources Considerations**

NRCS's objective is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice will have any effect on any cultural resources.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

GM 420, Part 401, the California Environmental Handbook and the California Environmental Assessment Worksheet provide guidance on how the NRCS must account for cultural resources. The Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

### **Endangered Species Considerations**

Determine if installation of this practice, along with any others proposed, will have an 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 that 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 U.S. 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.

### **Water Quantity**

1. Effects upon components of the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation and ground water recharge.
2. Effects of snow catch and snowmelt on water budget components.
3. The potential for a change in plant growth and transpiration due to changes in the volume of soil water.
4. Effects on downstream flows and aquifers that would affect other water uses and users.
5. Effects on the volume of downstream flow to prohibit undesirable environmental, social or

economic effects, such as, effects on wetlands or water-related wildlife habitats.

6. The effects on the water table of the field and/or soil moisture to ensure that it will provide a suitable rooting depth for the anticipated land uses.
7. Potential use for water management to conserve water.

### **Water Quality**

1. Effects of nutrients, sediments and pesticides on surface and ground water quality.
2. Effects on the visual quality of downstream water resources.
3. Effects of water levels on solid nutrient processes such as plant nutrient use.
4. Effects of soil and water level control on the salinity of soils, soil water or downstream water.

### **PLANS AND SPECIFICATIONS**

Plans and specifications for row arrangement shall be in keeping with this standard and shall describe the requirements for properly applying the practice to achieve its intended purpose.

### **OPERATION AND MAINTENANCE**

An Operation and Maintenance (O&M) plan specific to the intended purpose of the row arrangement system shall be provided to the landowner.