

Chiseling and Subsoiling

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - practice code 324



DEFINITION

Chiseling and subsoiling is the practice of loosening the soil, without inversion, and shattering restrictive layers below the normal plow depth that inhibit water movement or root development

PRACTICE INFORMATION

The purpose of chiseling and subsoiling is to improve water infiltration, root penetration, and aeration. The soil must be suitable for this practice and plowing depths are specific to soil types or depths of restrictive soil layers.

Chiseling is applicable when the restrictive soil layers are less than 16 inches below the surface. When the restrictive layers are more than 16 inches, the practice is referred to as subsoiling and larger, more powerful equipment is necessary.

Cropland sites may only need to be chiseled a few inches deep using conventional farm equipment. Fields planned for orchards or vineyards may need to be subsoiled several feet deep.

Additional information including design criteria and specifications are in the local NRCS Field Office Technical Guide.

The following pages list the conservation effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, and soil. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

CONSERVATION PRACTICE PHYSICAL EFFECT WORKSHEET

NOTE: recorded in Microsoft word 6.0 - use tabs to change cells/fields

STATE	ANY	FIELD OFFICE	ANY	DATE	5/15/97
PRACTICE: 324 Chiseling and Subsoiling			NOTES:		
RESOURCE: SOIL RESOURCE CONCERN: EROSION			Help Message: Click on form field for choice lists. Tab key to move around. "N/A" is the default.		
RESOURCE INDICATORS			PHYSICAL EFFECTS		
SHEET AND RILL			moderate reduction in sheet and rill erosion		
WIND			moderate reduction in wind erosion		
EPHEMERAL GULLY			moderate reduction in ephemeral gully erosion		
CLASSIC GULLY			situational concerning classic gullies		
STREAMBANK			N/A		
IRRIGATION INDUCED			moderate reduction in irrigation induced erosion		
SOIL MASS MOVEMENT			insignificant		
ROADBANK/CONSTRUCTION			N/A		
OTHER					
RESOURCE CONCERN: SOIL CONDITION					
SOIL TILTH			moderate improvement in tilth		
SOIL COMPACTION			significant reduction in soil compaction		
SOIL CONTAMINATION					
• SALTS			moderate reduction in soil salinity		
• ORGANICS			moderate decrease in organic contaminates		
• FERTILIZERS			moderate reduction in contaminates from fertilizer		
• PESTICIDES			moderate reduction in pesticide contam./soil		
• OTHER					
DEPOSITION/DAMAGE					
• ONSITE			moderate reduction/onsite deposition damage		
• OFFSITE			moderate decrease/offsite deposition damage		
DEPOSITION/SAFETY					
• ONSITE			moderately improve onsite safety/deposition		
• OFFSITE			moderately improve offsite safety hazard/depos.		
OTHER					
RESOURCE: WATER					
RESOURCE CONCERN: WATER QUANTITY					
SEEPS			slight increase in seepage hazard		
RUNOFF/FLOODING			moder. decrease in runoff/flooding		
EXCESS SUBSURFACE WATER			slight increase in excess subsurface water		
INADEQUATE OUTLETS			slight improvement in H2O outlet concern		
WATER MGT. IRRIGATION					
• SURFACE			moderate improvement in irrigation efficiency		
• SPRINKLER			moderate improvement in irrigation efficiency		
WATER MGT. NON-IRRIGATED			significant improvement in moisture use		
RESTRICTED FLOW CAPACITY (H2O convey.)					
• ONSITE			insignificant		
• OFFSITE			insignificant		
RESTRICTED STORAGE			moderate reduction in sedimentation of H2O stroage		

RESOURCE: WATER	
RESOURCE CONCERN: WATER QUALITY	
RESOURCE INDICATORS	PHYSICAL EFFECTS
GROUNDWATER CONTAMINANTS	
• PESTICIDES	slight potential increase/GWater contam./pesticide
• NUTRIENTS AND ORGANICS	slight poten. increase in GWater contam./nutr.,org.
• SALINITY	slight poten. increase/GWater contam./salinity
• HEAVY METALS	slight poten. increase/GWater contam./heavy metal
• PATHOGENS	slight poten. increase/GWater contam./pathegens
• OTHER	
SURFACE WATER CONTAMINANTS	
• PESTICIDES	slight reduction in SWater contam./pesticides
• NUTRIENTS AND ORGANICS	slight reduction in SWater contam./nutr.,organics
• SUSPENDED SEDIMENTS	moderate reduction in SWater contam./susp. sedi.
• LOW DISSOLVED OXYGEN	N/A
• SALINITY	slight reduction in SWater contam./salinity
• HEAVY METALS	slight reduction in SWater contam./heavy metals
• WATER TEMPERATURE	N/A
• PATHOGENS	slight decrease in SWater contam./pathegens
AQUATIC HABITAT SUITABILITY	slight improvement in Aqua. Hab. Suit.
OTHER	
RESOURCE: AIR	
RESOURCE CONCERN: AIR QUALITY	
AIRBORNE SEDIMENT AND SMOKE PARTICLES	
• ONSITE SAFETY	N/A
• OFFSITE SAFETY	N/A
• ONSITE STRUCT. PROBLEMS	N/A
• OFFSITE STRUCT. PROBLEMS	N/A
• ONSITE HEALTH	N/A
• OFFSITE HEALTH	N/A
AIRBORNE SEDIMENT CAUSING CONVEYANCE PROBLEMS	N/A
AIRBORNE CHEMICAL DRIFT	N/A
AIRBORNE ODORS	N/A
FUNGI, MOLDS, AND POLLEN	N/A
OTHER	
RESOURCE CONCERN: AIR CONDITION	
AIR TEMPERATURE	N/A
AIR MOVEMENT (windbreak effect)	N/A
HUMIDITY	N/A
OTHER	

RESOURCE: HUMAN	
RESOURCE CONCERN: SOCIAL CONSIDERATIONS	
RESOURCE INDICATORS	PHYSICAL EFFECTS
PUBLIC HEALTH AND SAFETY	insignificant
PRIVATE/PUBLIC VALUES	sign. improvement in private/public values
CLIENT CHARACTERISTICS	N/A
RISK TOLERANCE	N/A
TENURE	N/A
OTHER	
RESOURCE CONCERN: CULTURAL CONSIDERATIONS	
ABSENCE/PRESENCE OF CULTURAL RESOURCES	situational regarding cultural resources
SIGNIFICANCE OF CULTURAL RESOURCES	situational regarding cultural resources
MITIGATION OF NEGATIVE CULTURAL RES. IMPACTS	situational regarding cultural resources
OTHER	