

# U.C. COOPERATIVE EXTENSION

## ~ CENTRAL COAST CONSERVATION PRACTICES ~

### ESTIMATED COSTS & POTENTIAL BENEFITS FOR GRASSED FARM ROADS 2003

#### PREPARED BY

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#### INTRODUCTION & GENERAL DESCRIPTION

This study is intended as an estimate or guide, which can be helpful in evaluating management decisions related to the installation, operation and maintenance of grassed farm roads. This conservation practice is used to improve penetration and infiltration of water from winter rains, slow the flow of surface water runoff, and reduce erosion. By minimizing surface water runoff and soil erosion, this practice may also help to maintain and protect downstream water quality.

Costs for the installation and annual operation and maintenance for the grassed farm roads in this study are estimated for low, representative and high cost scenarios in Table 1. More detailed information for the representative cost scenario is included in Table 2 (installation, operation and maintenance) and Table 3 (materials). In-kind contributions from federal and other local assistance programs may be available to offset direct expenses borne by the farmers and ranchers adopting this conservation practice. Land ownership and rental rates are specific to each operation and therefore are not included in the analysis. Estimated costs given for labor, materials, and custom or contract services are based on current figures. The costs and practices contained in this study may not be applicable to all situations or used every year. Individual farmers and ranchers should therefore use this study as a template and make adjustments to more accurately reflect their own situations. The use of trade names does not constitute an endorsement or a recommendation by the University of California nor is criticism of similar products implied.

The following is a description of general assumptions pertaining to the conservation practice analyzed in this study. The operations are those currently used by farmers and ranchers within six counties on the Central Coast of California: San Mateo, Santa Cruz, Santa Clara, San Benito, Monterey and San Luis Obispo.

#### PRACTICE COSTS

**Installation (Planting & Establishment).** For this study, 5,800 linear feet of farm roads (15 foot width) per 20 acres of cropland are assumed to be planted to annual grasses such as ryegrass or barley during the

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fall. This represents roughly 10% of planted cropland. Costs for the representative scenario are located on Tables 1, 2 and 3 and include discing and smoothing the roadway to prepare for planting, seeding roads, and irrigating up grasses before winter rains begin. Alternatively, some growers may allow resident vegetation to germinate and grow during the fall and winter. In this case, costs for seeding roadways and irrigating would be avoided.

**Annual Operation & Maintenance.** Because roads are planted to annual grasses each year, installation costs are equivalent to annual operation and maintenance costs. Additional maintenance costs are also incurred as a part of this conservation practice. For the representative scenario, they include mowing to manage vegetative growth and scraping roads to prepare for the upcoming summer cropping season. Costs associated with these operations are included on Tables 1, 2, and 3. As an alternative, growers sometimes mow and apply an herbicide spray to manage vegetative growth. Growers may also disc at the end of the season in addition to scraping roads.

**Additional Fees & Expenses.** When using conservation practices, additional fees and expenses are sometimes incurred for consultants, permits or other charges that are specific to a particular practice. For this study, no specialized fees or costs for grassed farm roads are assumed.

### POTENTIAL BENEFITS & DRAWBACKS OF PRACTICE

Farmers, ranchers and landowners should evaluate each conservation practice for potential benefits and drawbacks with respect to their overall operation. This may include risk and any effects on equipment, labor and capital.

**Benefits.** Planting farm roads to annual grasses may be an effective way to improve water penetration and infiltration and slow surface water runoff from winter rains, thereby reducing or minimizing erosion. This, in turn, can be helpful in minimizing crop and/or property damage, especially when used in combination with other on-farm conservation practices. Ultimately, this practice may also contribute to protecting downstream water quality.

Growers report savings in labor and equipment use during the rainy winter months when farm roads are planted to annual grasses. This is because of a decrease in flood and other erosion control measures. These are considered short-term benefits, which are estimated at \$650 for the representative operation studied here. Potential long-term benefits include a reduction in the loss of productive topsoil. Because of the difficulty in measuring, thus valuing such losses, no cash savings for long-term benefits are included in this study. In addition, preventing or minimizing downstream impacts and/or property damage may reduce conflicts with neighbors and exposure to legal and regulatory actions.

**Drawbacks.** For grassed farm roads, land is not usually taken out of production to accommodate the practice. However, growers may need to limit or prohibit vehicular traffic during the rainy season on grassed access roads. Depending on seasonal conditions, this could

be considered a drawback because it may limit the ability to perform operations (e.g., pest control) in a timely manner. In addition, this practice may not substantially reduce surface water runoff and erosion unless used in combination with other on-farm conservation practices such as row arrangement, underground outlets, water/sediment control basins, and grassed waterways.

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## ADDITIONAL INFORMATION

For additional information about the calculations used in this report, call Laura Tourte, UCCE Santa Cruz County (831) 763-8040. Additional information about the practice itself may be accessed via the internet through UCCE at <http://waterquality.ucanr.org> and NRCS at <http://www.nrcs.usda.gov/technical>.

Copies of this study may be requested through local UCCE, NRCS, and Resource Conservation District (RCD) offices in the six counties listed above. Additional publications with estimated costs and potential benefits for various other conservation practices are also available through Central Coast UCCE, NRCS, and RCD offices. They may also be accessed on the Internet at <http://cesantacruz.ucdavis.edu>.

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Table 1. Grassed Farm Roads (5,800 Linear Feet Per 20 Acres of Cropland) - Partial Budget - Central Coast - 2003

ESTIMATED COSTS				POTENTIAL BENEFITS			
COSTS PER UNIT*	LOW	REP**	HIGH	ADDITIONAL RETURNS PER UNIT	LOW	REP	HIGH
<i>Installation (Year 1):</i>				None			
Disc & Smooth (Ringroller) Roads	\$16	\$33	\$49		\$0	\$0	\$0
Seed Roads - Annual Grasses	\$50	\$66	\$82				
Set Up Sprinklers & Irrigate	\$0	\$48	\$98				
Mow Vegetation	\$0	\$34	\$61				
Herbicide Spray	\$70	\$0	\$70				
Scrape Roads	\$0	\$127	\$140				
<i>Installation - Subtotal</i>	<i>\$136</i>	<i>\$308</i>	<i>\$500</i>				
<i>Annual Operation &amp; Maint. (Years 2-5):</i>							
Equivalent to Installation							
<i>Ann. Oper. &amp; Maint. Costs - Subtotal</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>				
<i>Interest on Operating Capital @ 7.4%</i>	<i>\$1</i>	<i>\$2</i>	<i>\$3</i>				
<b>(1) Costs - Subtotal</b>	<b>\$137</b>	<b>\$310</b>	<b>\$503</b>	<b>(4) Additional Returns - Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
REDUCED RETURNS PER UNIT	LOW	REP	HIGH	REDUCED COSTS PER UNIT	LOW	REP	HIGH
				Labor & Equip. Use for Prevention & Repairs (Associated with Flood Control & Storm Events)	\$0	\$650	\$1,950
<b>(2) Reduced Returns - Subtotal</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>(5) Reduced Costs - Subtotal</b>	<b>\$0</b>	<b>\$650</b>	<b>\$1,950</b>
COSTS & REDUCED RETURNS	LOW	REP	HIGH	ADD. RETURNS & REDUCED COSTS	LOW	REP	HIGH
<b>(3) Total Per Unit Per Year (1+2)</b>	<b>\$137</b>	<b>\$310</b>	<b>\$503</b>	<b>(6) Total Per Unit Per Year (4+5)</b>	<b>\$0</b>	<b>\$650</b>	<b>\$1,950</b>
<b>NET CHANGE IN INCOME PER UNIT (5,800 Linear Feet) PER YEAR (6-3)</b>					<b>-\$137</b>	<b>\$340</b>	<b>\$1,447</b>
<b>NET CHANGE IN INCOME PER LINEAR FOOT</b>					<b>***</b>	<b>***</b>	<b>***</b>

\* Unit = 5,800 linear feet per 20 acres of cropland.

\*\* Rep = Representative cost.

\*\*\* Net change in income is negligible when represented on a linear foot basis.

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Table 2. Detail of Representative Installation, Operation & Maintenance Costs<sup>†</sup>  
Grassed Farm Roads (5,800 Linear Feet Per 20 Acres of Cropland) – Central Coast 2003

Operation	Non-Mach Labor		Machine Labor		Custom Work		Material Cost (\$/5,800 LF) <sup>‡</sup>	Total Cost (\$/5,800 LF) <sup>¶</sup>	Your Cost (\$/5,800 LF)
	Hrs/ 5,800 LF	Cost/ 5,800 LF	Hrs/ 5,800 LF	Cost/ 5,800 LF	Hrs/ 5,800 LF	Cost/ 5,800 LF			
<i>Installation (Year 1):</i>									
Disc & Smooth (Ringroller) Roads			1.0	21			12 <sup>§</sup>	33	
Seeds Roads – Annual Ryegrass			.5	10			56 <sup>§</sup>	66	
Set Up Sprinklers & Irrigate	.60	8					40	48	
Mow Vegetation			1.0	21			13 <sup>§</sup>	34	
Scrape Roads			4.0	84			43 <sup>§</sup>	127	
<i>Subtotal</i>		<i>8</i>		<i>136</i>			<i>164</i>	<i>308</i>	
<i>Annual Operation &amp; Maint. (Years 2-5):</i>									
Equivalent to Installation									
<i>Subtotal</i>									
<i>Interest on Operating Capital @ 7.4%</i>								<i>2</i>	
<i>Total Costs Per Unit Per Year</i>							<i>164</i>	<i>310</i>	
<i>Total Costs Per Linear Foot Per Year</i>							<i>**</i>	<i>**</i>	

<sup>†</sup> Costs for 5,800 linear feet per 20 acres of cropland.

<sup>‡</sup> Detail of material costs located in Table 3. Representative Material Costs.

<sup>¶</sup> May not sum due to rounding.

<sup>§</sup> Includes fuel, lube and repairs.

<sup>\*\*</sup> Cost is negligible when represented on a linear foot basis.

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Table 3. Detail of Representative Material Costs<sup>†</sup>  
Grassed Farm Roads (5,800 Linear Feet Per 20 Acres of Cropland) – Central Coast 2003

Material	Quantity/ 5,800 LF	Unit	Cost/ Unit	Material Cost (\$/5,800 LF)	Your Cost (\$/5,800 LF)
<i>Installation (Year 1):</i>					
Seed – Annual Ryegrass	150	pounds	.32	48	
Water – Irrigation	3	acre inch	13.40	40	
Fuel, Lube & Repairs	1	5,800 LF	88.00	76	
<i>Subtotal</i>				<i>164</i>	
<i>Annual Operation &amp; Maintenance (Years 2-5):</i>					
Equivalent to Installation					
<i>Subtotal</i>					
<i>Total Material Costs Per Unit Per Year</i>				<i>164</i>	
<i>Total Material Costs Per Linear Foot Per Year</i>				<i>**</i>	

<sup>†</sup> Costs for 5,800 linear feet per 20 acres of cropland.

\*\* Cost is negligible when represented on a linear foot basis.