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**An Economic Analysis of Agricultural Soil Loss in
Crosby County, Texas**

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Any errors or omissions are the sole responsibility of the authors.

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INTRODUCTION

The Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500, established a national goal of eliminating the discharge of pollutants into the nation's waterways by 1985. As a step toward that goal an interim water quality standard of "fishable, swimmable waters nationwide" by July 1, 1983 was set. Under section 208 of this law, each state was required to establish a "continuing planning process" to define controls for agricultural non-point sources of water pollution.

Section 208 calls for the development of state and area-wide water quality management plans. The plans are to include "a process to (i) identify if appropriate, agriculturally and silviculturally related non-point sources of pollution, including runoff from manure disposal areas, and from land used for livestock and crop production, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources."

In an earlier group of technical reports (TR 87, 88, 90, 93, 94) in this series, a model was developed to measure the net social benefits from controlling agricultural sediment given various policy options. This was done by contrasting benefits to be gained from reducing the sediment load in a watershed against costs involved in achieving that reduction using various voluntary or mandatory policies to accomplish the reduction. It was a major conclusion of these studies that no policy which restricted soil loss to less than that which was economically desirable from the farmers own viewpoint would

generate benefits greater than the costs involved. This finding, in the watersheds of major sediment control concern lead to a decision to change the base area for this report to a county instead of a watershed and to only deal with the on-farm consequences of various management practices. These on-farm consequences would include the changes in topsoil loss and the yield losses that result from losing topsoil. Also included are profit levels that could be expected from different management practices and how the present value of a stream of these profits would vary over various planning horizons.

DESCRIPTION OF THE COUNTY

Crosby County (figure 1) is located in west Texas and includes portions of both the High Plains and Rolling Plains Land Resources Areas of the Southern Great Plains. It encompasses an area of 911 square miles. Approximately fifty-five percent of the county's 583,000 acres is cropland. The county is extensively irrigated with irrigated cotton and wheat as the principal cash crops, though grain sorghum, corn, other small grains and some vegetables are also grown. Like much of West Texas, Crosby County suffers from recurring periods of drought. Rainfall is adequate during some years, but satisfactory yields are produced during dry years only on irrigated fields. The county contains both High Plains and Rolling Plains soil associations, the northwestern two-thirds of the county being considered High Plains while the southwestern one-third is made up of Rolling Plains soil associations.

The county is drained by the White River and several tributaries of the Brazos River, including the North Fork, Double Mountain Fork, and Salt Fork. The White River, which runs roughly parallel to the eastern border of the county, and its tributary creeks gather runoff from the Rolling Plains area in the county.

The High Plains portion of the county is characterized by a flat surface with a general southeastern slope. The surface contains many shallow depressions or sinks called playas. Only after heavy rains is runoff adequate for the High Plains to contribute runoff

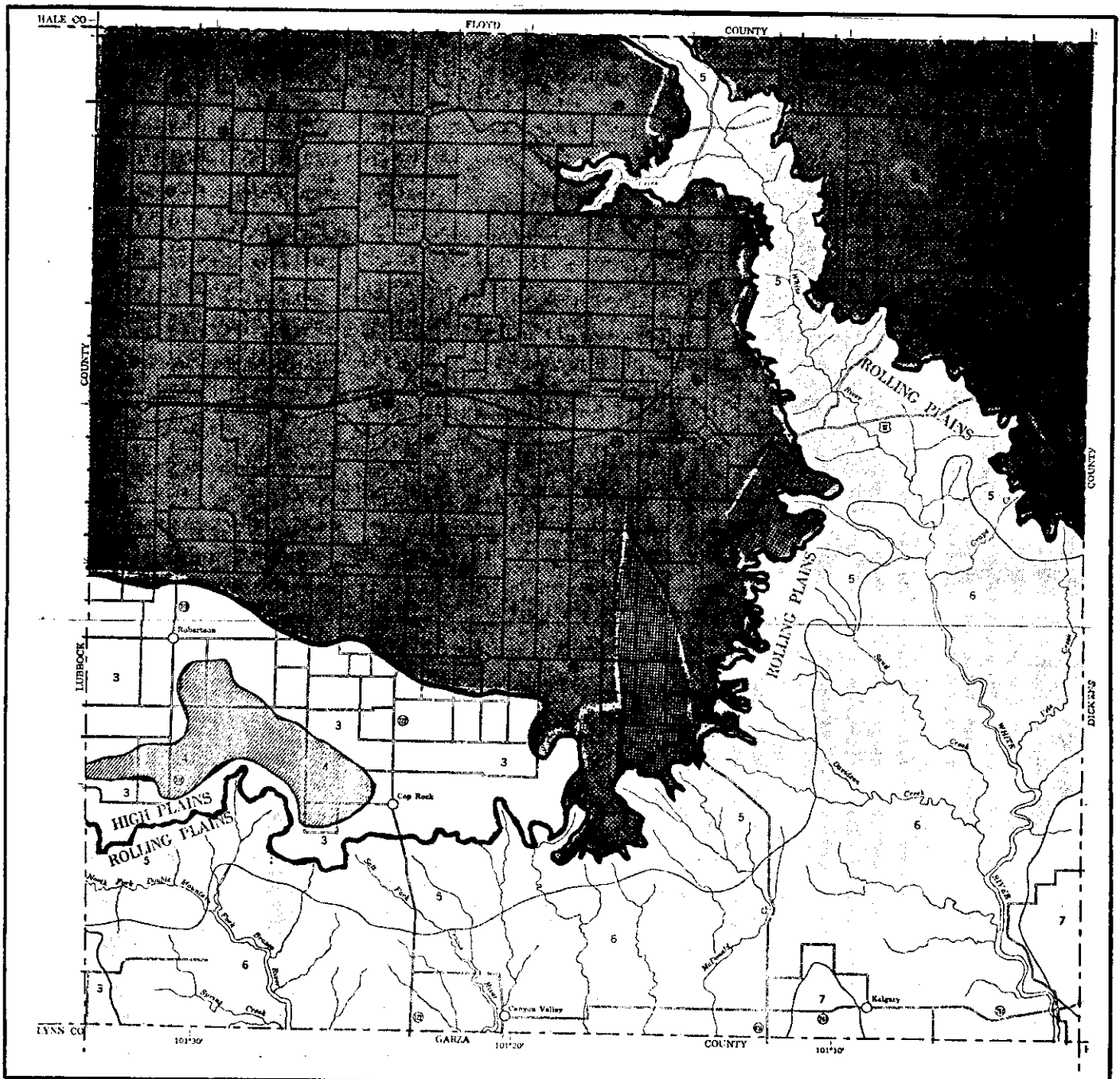


Figure 1. Crosby County, Texas.

water to the various creeks along the edges of the Cap Rock Escarpment. There are few entrenched drainages in the High Plains portion of the county.

Soils of the county are in general shallow to deep, slowly to very slowly permeable clay loams on the High Plains; very shallow to deep, moderately to somewhat rapidly permeable fine sand loams and clay loams in the area along the Cap Rock Escarpment; and very shallow to deep, moderately to very slowly permeable clay loams in the Rolling Plains.

The dominant soil series in the county are Amarillo, Mansker, Miles, Olton, Pullman, Vernon, and Zita. The individual soil mapping units and the extent of each within the county are listed in table 1. Also listed in table 1 is the four character alpha-numeric code which identifies each mapping unit for the remainder of this report.

Crosby County has a subhumid climate. It lies in an area transitional between the semi-arid climate of West Texas and New Mexico and the more humid climate of eastern Texas. The amount of monthly and annual rainfall varies over a wide range since precipitation comes mainly during very heavy showers or thunderstorms. Maximum rainfall is generally during May, June, and July when warm moist air from the Gulf of Mexico is carried inland causing moderate to heavy thunderstorms, sometimes accompanied by hail. In all months except May and July there can be periods of two to three weeks during which no measurable rainfall occurs.

Table 1. Acreages of Cropland and Rangeland in Crosby County by Soil Mapping Unit. ^{a/}

Soil Mapping Units	Identification Code	Total Acreage
Abilene clay loam, 0-1% slopes	AB01	3,328
Abilene clay loam, 1-3% slopes	AB13	6,291
Amarillo fine sandy loam, 0-1% slopes	AF01	28,232
Amarillo fine sandy loam, 1-3% slopes	AF13	4,983
Amarillo fine sandy loam, 0-3% slopes	AM03	7,216
Badland	BDLD	4,178
Berthoud fine sandy loam, 1-3% slopes	BF13	2,673
Berthoud fine sandy loam, 3-5% slopes	BF35	4,201
Berthoud fine sandy loam, 5-8% slopes	BF58	8,393
Berthoud loam, 3-5% slopes	BM35	1,567
Berthoud loam, 5-8% slopes	BM58	3,585
Brownfield fine sand	BDFS	4,245
Brownfield soils, severely eroded	BSSE	9,174
Bippus clay loam, 1-3% slopes	BT13	1,407
Drake clay loam, 1-3% slopes	DC13	2,217
Drake clay loam, 3-5% slopes	DC35	514
Hilly gravelly land	HYGL	659
Likes loamy fine sand	LLFS	911
Loamy alluvial land	LYAL	6,286
Lofton fine sandy loam	LFSL	867
Mansker fine sandy loam, 0-1% slopes	MA01	464
Mansker fine sandy loam, 1-3% slopes	MA13	1,727
Mansker fine sandy loam, 3-5% slopes	MA35	10,091
Mansker loam, 0-1% slopes	MK01	702
Mansker loam, 1-3% slopes	MK13	2,508
Mansker loam, 3-5% slopes	MK35	1,160
Mansker-Potter complex	MPCX	53,570
Miles loamy fine sand, 0-3% slopes	MM03	3,751
Miles loamy fine sand, 3-5% slopes	MM35	916
Miles fine sandy loam, 0-1% slopes	MN01	1,990
Miles fine sandy loam, 1-3% slopes	MN13	15,322
Miles fine sandy loam, 3-5% slopes	MN35	4,768

Table 1. Acreages of Cropland and Rangeland in Crosby County by Soil Mapping Unit ^{a/} (continued).

Soil Mapping Units	Identification Code	Total Acreage
Olton loam, 0-1% slopes	OT01	109,814
Olton loam, 1-3% slopes	OT13	14,960
Portales fine sandy loam, 0-1% slopes	PF01	2,372
Portales fine sandy loam, 1-3% slopes	PF13	357
Portales loam, 0-1% slopes	PM01	6,038
Portales loam, 1-3% slopes	PM13	9,394
Potter soils	PTSS	4,625
Pullman silty clay loam, 0-1% slopes	PU01	137,259
Pullman silty clay loam, 1-3% slopes	PU13	6,338
Randall clay	RLCY	18,068
Randall fine sandy loam	RFSL	398
Rough broken land	RHBL	2,359
Sandy alluvial land	SYAL	1,736
Spur clay loam	SCYL	2,543
Spur fine sandy loam	SFSL	4,674
Stamford clay, 1-3% slopes	SM13	1,969
Stamford soils, 0-1% slopes	ST01	1,970
Tivoli fine sand	TVFS	488
Vernon-Traversilla complex	VTCX	2,200
Vernon clay loam, 1-3% slopes	VC13	24,541
Vernon clay loam, 3-15% slopes	V315	12,111
Zita fine sandy loam, 0-1% slopes	ZF01	3,083
Zita loam, 0-1% slopes	ZM01	5,803
Zita loam, 1-3% slopes	ZM13	2,644
Gravel and caliche pits and storage		970
River channels		<u>2,845</u>
Total		583,040

^{a/} Source: U.S. Department of Agriculture, Soil Conservation Service, Soil Survey Crosby County, Texas. U.S. Government Printing Office, Washington, D.C., January 1966.

Snow falls occasionally during the winter months but is generally light and remains on the ground only a short time. Temperatures, like rainfall and snow vary greatly, especially during the winter months. From November through March, frequent surges of cold air from the north bring rapid and pronounced cooling to the region. Summer days are hot but the low humidity and constant breezes modify the effects of the heat. The average frost-free period is 206 days.

In the period from 1970 to 1976 approximately 145,000 acres have been planted to cotton each year, 75,000 acres to grain sorghum and 35,000 acres to wheat and other small grains. Table 2 gives the complete breakdown of agricultural land use by acreage and percent.

In a 1976 survey of conservation problems in Texas, agricultural non-point source pollutants in the High Plains Area were judged by Soil and Water Conservation District Directors to be a problem of slight to moderate severity, as were floods. They were ranked fifteenth and eighteenth, respectively, among the area's problems. However, water erosion, as a soil management problem, and the economics of conservation were ranked eighth and fifth, respectively, being considered problems of slight to fairly moderate proportions. Thus, the on-farm economics of conservation and water erosion problems is viewed as more critical than the off-farm down stream flooding and pollution problem. The complete survey results for the High Plains Land Resource Area are given in Table 3.

Table 2. Average Agricultural Land Use in Crosby County for the Years 1970-1976. a/

Land Use	Acreage	Percent
Cropland		
Cotton	145,330	24.9%
Grain Sorghum	74,790	12.8%
Wheat, small grains	35,070	6.0%
Corn, soybeans and main crops	5,340	1.0%
Range and Pasture	264,210	45.3%
Miscellaneous <u>b/</u>	58,300	10.0%
Total	583,040	100.0%

a/ Source: Texas Dept. of Agriculture and USDA Statistical Reporting Service. Texas County Statistics, Compiled by Texas Crop and Livestock Reporting Service, Austin, Texas, 1970-1976.

b/ Includes roads, railroads, towns, stream channels, etc.

Table 3. Soil and Water Conservation District Director's Ratings of Conservation Problems in the High Plains Land Resource Area.^{a/}

Conservation Problems	Rank	Present Severity ^{1/}	Change in Condition in Past 10 Years ^{2/}
<u>Water-Related Problems</u>			
Non-Point Source Pollution			
Agricultural Non-Point Source Pollutants	15	1.37	0.15
Silvicultural Non-Point Source Pollutants	24	0.57	0.02
Mining Operations Non-Point Source Pollutants	22	0.82	-0.12
Construction Site Non-Point Source Pollutants	19	1.02	-0.15
Waste Disposal Non-Point Source Pollutants	16	1.30	-0.17
Salt Water Intrusion	18	1.10	-0.02
Hydrologic Modifications	23	0.67	-0.02
Floods	18	1.10	-0.07
Inadequate Drainage	20	1.00	-0.10
Inefficient Irrigation Systems	7	1.95	0.52
Improper Use of Ground Water	10	1.77	0.67
<u>Soil Management Problems</u>			
Water Erosion	8	1.92	0.20
Wind Erosion	3	2.15	0.60
Soil Compaction	13	1.60	0.22
Inefficient Tillage Systems	11	1.72	0.60
Salinity	21	0.90	0.15
Loss of Soil Moisture	6	1.97	0.35
<u>Plant Management Problems</u>			
Undesirable Brush & Weeds	9	1.87	-0.35
Weeds on Cropland	2	2.17	-0.15
Difficulty of Grass Establishment	1	2.20	0.25
Overgrazing	10	1.77	0.17
<u>Other Problems, Issues, & Policies</u>			
Economics of Conservation	5	2.05	-0.50

^{a/} Source: Association of Texas Soil and Water Conservation District. Conservation Problems in Texas, Temple, Texas, Oct. 1976.

^{1/} Scale of Present Severity	^{2/} Scale of Change in Condition
0.0 - 1.5 Slight to None	-1.5 - -2.5 Much Worse
1.5 - 2.5 Moderate	-0.5 - -1.5 Worse
2.5 - 3.5 Severe	-0.5 - 0.0 Slight Decline
3.5 - 4.5 Very Severe	0.0 - 0.5 Slight Improvement
	0.5 - 1.5 Better
	1.5 - 2.5 Much Better

THE APPROPRIATE PLANNING HORIZON

The effect of soil conservation and erosion control on the agricultural economy is felt only over a period of years as the mix of inputs change for a given output. Erosion carries away topsoil reducing soil fertility and reducing crop yields. If erosion is slowed, future crop yields will be higher than they would otherwise have been, given the same level of management.

Farmers make many short-run decisions because they are concerned with the immediate or next year's income. On the surface this suggests that farmers would use a short time horizon for planning conservation practices. However, most farmers and landowners are concerned about the future value of their land in addition to income flow. Inasmuch as the agricultural component of land values is the capitalized value (present value) of a highest and best use profit stream into perpetuity, and given the limited alternative uses for agricultural land in this part of Texas, the value of the land is tied closely to its future agricultural productivity. Thus, it was important that this study consider not only present productivity but also the effect on future productivity, and hence land values, of cropping and conservation practices. Therefore, a long planning horizon is essential when determining appropriate combinations of crop rotations and conservation practices a landowner should employ. In order to emphasize this point and to demonstrate the importance of the length of the planning horizon, calculations were made for time horizons of 10, 100 and 200 years.

Discounting Future Benefits and Costs

As a point of reference from which to calculate the present value of future benefits and costs, 1977 was designated the base year.

All future benefits and costs were discounted to 1977 dollars using standard discounting techniques and a real interest rate of approximately 1.5 percent. The 1.5 percent rate was calculated by assuming that the long-run real interest rate was approximated by the difference of inflation and bank interest rates for the last 10 years. The average inflation rate of the last 10 years, which is 5.8 percent, was thus subtracted from the 7.3 percent average private interest rate charged by banks over the same 10 year period to arrive at the 1.5 percent real interest rate.

Present values of net returns associated with particular crop production activities are given in this study. Present value of net returns was computed as:

$$PV = \sum_{t=0}^T \left[\frac{(B_t - C_t)(1+i)^t}{(1+r)^t} \right]$$

where

Σ = summation of discounted benefits and costs over time

t = time, in years

B_t = gross benefits in year t

C_t = gross costs in year t

i = inflation rate (i.e., 5.8 percent)

r = nominal interest rate (i.e., 7.3 percent)

T = length of planning horizon

ON-FARM ECONOMICS OF SOIL CONSERVATION

In order to study on-farm income consequences of soil conservation, a great deal of data both technical and economic is necessary. Data required for this type of analysis include: (a) expected yields of all relevant crops for each soil in the watershed; (b) expected prices for each crop and associated production costs; (c) additional costs for applicable conservation practices; (d) expected soil loss associated with each cropping practice -- soil type combination; and (e) effects of crop rotations on yield of individual crops. These sets of data were combined to estimate net present value returns for each crop rotation -- conservation practice -- soil mapping unit combination over time periods of 10, 100 and 200 years.

Crop Yields

Table 4 gives the expected yield of four major crops in Crosby County for each soil mapping unit plus the yield of range grasses that could be expected if the land is not cropped.

Yields for irrigated crops are given for those soils that are presently irrigated. All yields are for a high level of management.

Table 4. Crop Yields for Each Soil Mapping Unit in Crosby County.

Soil	Cotton (lbs.)	Grain Sorghum (bu.)	Wheat (bu.)	Hay or Pasture (tons)	Range (AUM)	Irrigation		
						Cotton (lbs.)	Grain Sorghum (bu.)	Wheat (bu.)
AB01	275	32.67	30	2.5	.70			
AB13	275	28.00	30	2.5	.70			
AF01	250	23.33	15	2.9	.70	1000	102.70	50
AF13	200	20.00	12	2.9	.75	850	93.30	45
AM03	225	20.00	12	2.9	.73			
BF13	175	18.33	12	2.9	.82			
BF35	150	15.00	10	2.9	.82			
BF58					.82			
BM35	175	18.33	10	2.5	.73			
BM58					.73			
BDFS				2.9	.82			
BSSE				2.9	.54			
BT13	225	23.33	18	2.5	.88			
DC13		11.20	10	2.5	.51			
DC35				2.5	.51			
HYGL					.51			
LLFS					.73			
LYAL				2.9	.80			
LNCL	190	18.67	15	2.5	.66	850	130.70	55
LFSL	190	18.67	15	2.9	.66	850	130.70	55
MA01	150	18.33	12	2.1	.73	400	51.30	25
MA13	150	18.33	10	2.1	.70	400	51.30	25
MA35				2.1	.70		42.00	20
MK01	150	16.67	12	2.1	.73	350	46.70	25
MK13	125	16.67	12	2.1	.73		37.30	20
MK35	115	13.00	10	2.1	.73			
MPCX					.47			

Table 4. Crop Yields for Each Soil Mapping Unit in Crosby County (continued).

Soil	Cotton (lbs.)	Grain Sorghum (bu.)	Wheat (bu.)	Hay or Pasture (tons)	Range (AUM)	Irrigation		
						Cotton (lbs.)	Grain Sorghum (bu.)	Wheat (bu.)
MM03	250	23.33	15	2.9	.73			
MM35				2.9	.73			
MN01	300	28.00	20	2.9	.73			
MN13	250	23.33	20	2.9	.73			
MN35	200	18.67	15	2.9	.73			
OT01	200	18.67	16	2.5	.58	850	107.30	60
OT13	175	14.00	14	2.5	.58	780	93.30	50
PF01	180	20.00	14	2.9	.51	850	74.70	40
PF13	160	17.50	14	2.9	.51	700	65.30	35
PM01	190	15.83	14	2.5	.56	750	93.30	45
PM13	180	14.58	12	2.5	.56	500	84.00	40
PTSS					.25			
PU01	200	18.67	15	2.5	.51	850	116.70	60
PUI3	150	14.00	12	2.5	.51	750	93.30	50
RICY	300	28.33	20	3.4	.70			
RFSL	300	25.00	20	3.4	.70			
RHBL					.37			
SYAL	225	23.33	20	2.1	.88			
SCYL	225	23.33	20	2.5	.88			
SFSL	225	23.33	20	2.5	.88			
SML3	200	23.33	15	2.5	.88			
ST01	200	23.33	15	2.5	.88			
TVFS					.51			
VTCX					.51			
VC13				1.7	.51			
V315					.51			
ZF01	250	23.33	18	3.4	.73	1000	102.70	50
ZM01	225	23.33	20	2.5	.66	900	102.70	55
ZM13	200	18.67	16	2.5	.66	750	93.30	50

A high level of management and input quality was assumed for this study to make the comparison between the conventional straight row cultivation practice and the limited till or terracing practices as realistic as possible. A higher level of management is necessary to successfully use limited tillage or terracing and thus it would not be a fair comparison if they were compared to a conventional system with a lower level, more typical management.

The higher level of management would include a greater use of fertilizer, insecticides and pesticides, and better seed varieties for row crops. On pasture or range land cross fencing and rotational grazing would be utilized along with improved grass species, brush control on rangeland and careful adjustment of livestock numbers as necessary to make the best use of the available grass. The yield data were furnished by USDA Soil Conservation Service and Texas Agricultural Extension Service personnel familiar with the area.

Crop Prices and Production Costs

Expected prices were defined as the average price received by Texas farmers for the specified crop between 1958-1976 adjusted to 1977 dollars by the index of prices paid for production items. A twenty year price series was used in order to arrive at as stable a set of long run price relationships as possible while at the same time tying prices to production costs.

Table 5 lists the production cost data. This production cost information was developed from a set of 1977 crop budgets for the

Table 5. Crop Production Cost and Input Data. ^{a/}

Crop	Pre-harvest Costs (\$/acre)	Harvest Costs (\$/acre)	Equipment Depreciation Costs (\$/acre)	Price Per Unit (\$)	Pre-harvest Machinery and Labor Costs ^{b/}
Dryland					
Cotton	57.61	24.75	18.59	00.52/lb. lint 00.05/lb. seed	38.37
Grain					
Sorghum	25.95	8.50	8.80	3.65/cwt.	18.28
Wheat, Small Grains	29.84	9.20	8.21	3.36/bu. 14.73/AUM	22.68
Hay or Pasture	26.31	66.73	9.48	45.00/ton	15.83
Range	2.28		4.27	14.73/AUM	.31
Irrigated					
Cotton	143.46	60.50	32.77	00.52/lb. lint 00.05/lb. seed	96.46
Grain					
Sorghum	87.41	20.80	37.65	3.65/cwt.	66.55
Wheat, Small Grains	89.93	13.00	22.72	3.36/bu. 14.73/AUM	57.71

^{a/} Adapted from: Parker, Cecil A. and Ray W. Sammons. Texas Crop Budgets, Texas Agricultural Extension Service, College Station, Texas 1977, Texas High Plains Region.

^{b/} These costs are included in the pre-harvest variable costs given in column 1.

High Plains Land Resource Area prepared by the Texas Agricultural Extension Service. Basic cost data was modified to fit each soil mapping unit as part of the computer simulation. These modifications included: (a) changing harvest costs proportional to yield for that crop for each rotation; and (b) adding appropriate costs of specified conservation practices. As yield is reduced due to effects of soil erosion, harvest cost per acre is proportionally reduced but preharvest costs and equipment costs remain constant.

Four cultural practices were considered in this study. The first is conventional straight row cultivation (denoted "SR" in the tables). This practice was used as the standard method on which production cost and yield data was based.

A second cultural practice, which is gaining popularity in this area, called limited or conservation tillage (denoted "C" in the tables), was selected to demonstrate possible savings over time due to reduced machinery and labor usage. For purposes of this study, soil loss due to this cultural practice were assumed to be equal to the soil loss under straight row cultivation. Differences were restricted to production cost savings pertaining principally to use of labor and machinery in field preparation and cultivation. Based on some preliminary studies done at the Texas Agricultural Experiment Station, Bushland, Texas by Allen, Musick and Wiese and by the Perry Foundation in the Rio Grande Valley a ten percent reduction in preharvest machinery and labor costs were assumed for this cultural practice.

Two cultural practices that include contouring and terraces were also considered. Standard terraces (denoted in the tables as "ST"), were defined as terraces that are built from both the front and the back sides and follow the contour of the land without involving substantial cutting and filling. It was assumed that standard terraces could be built for seven cents per linear foot and would have a life expectancy of 10 years. After 10 years, the terrace would have to be rebuilt at a cost of five cents per linear foot.

Parallel terraces (denoted "PT" in the tables) are defined as terraces built from the back side with at least one-third of the terrace interval smoothed and floated in. This not only reduces the slope length but also, partially reduces the steepness of the slope by leveling the interval to some extent. Thus parallel terracing results in a lower Universal Soil Loss Equation "LS" value than standard terraces. Cutting and filling is involved so the contour of the land is not necessarily adhered to exactly. Parallel terraces were assumed to cost twenty-five cents per linear foot to build. Their life expectancy was set at 15 years after which they would have to be rebuilt at a cost of ten cents per linear foot.

The steepness of the slope as well as the type of crop grown affects the number of linear feet of terrace needed per acre. The steeper the slope the narrower the terrace interval must be to be effective. Also the terrace spacing must be closer for row crops than for close grown crops. These cost considerations were combined to arrive at the terrace construction costs listed by soil mapping

units in table 6.

To calculate the production cost of crop rotations grown on terraced soils for each year, the base cost for that year was increased by the discounted sum of the initial construction cost plus the cost of rebuilding the terrace as necessary plus an increase in preharvest machinery and labor costs of 15 percent for standard terraces or 10 percent for parallel terraces. Machinery and labor costs were increased to cover the cost of added field time necessary to farm with the contour of the terraces and to deal with point rows and corners created with standard terraces.

Since terrace construction reduces the speed of runoff, more rainfall has time to soak into the soil. Therefore, the average yield for the various crops was increased 3 percent on land with standard terraces. The expected yield on parallel terraced fields was increased 5 percent as parallel terracing not only traps more runoff but tends to distribute it better over the terraced interval. These yield increases are considered conservative.

Crop Rotations

Crop rotations rather than continuous single crops were considered in this study for two reasons. One reason is that the previous crop influences the amount of erosion from the current crop, and the average erosion rate for a rotation is not a simple average of the erosion rates of the same crops grown continuously. The second reason that rotations were considered is that the yield of some crops will be higher (or lower) when grown in rotation with

Table 6. Terracing Costs, Average Topsoil Thickness and Yield Loss Equation by Soil Mapping Unit.

Soil	Average Topsoil Thickness (in)	Yield Loss Equation (fig. 2)	TERRACING CONSTRUCTION COSTS			
			Standard Terraces		Parallel Terraces	
			Close Grown Crops (\$/acre)	Row Crops (\$/acre)	Close Grown Crops (\$/acre)	Row Crops (\$/acre)
AB01	8	B	10.16	12.19	34.85	41.81
AB13	6	B	17.42	20.33	59.74	69.70
AF01	11	B	10.16	12.19	34.85	41.81
AF13	9	B	17.42	20.33	59.74	69.70
AM03	15	B	10.16	12.19	34.85	41.81
BDDL	2	C	33.14	36.74	113.64	125.95
BF13	10	C	17.42	20.33	59.74	69.70
BF35	7	C	26.98	30.49	92.52	104.54
BF58	5	C	33.14	36.74	113.64	125.95
BM35	7	C	26.98	30.49	92.52	104.54
BM58	5	C	33.14	36.74	113.64	125.95
BDFS	22	B	17.42	20.33	59.74	69.70
BSSE	2	A	17.42	20.33	59.74	69.70
BT13	8	C	17.42	20.33	59.74	69.70
DC13	10	C	17.42	20.33	59.74	69.70
DC35	8	C	26.98	30.49	92.52	104.54
HYGL	2	A	33.14	36.74	113.64	125.95
LLFS	10	C	30.49	33.88	104.54	116.16
LYAL	15	C	10.16	12.19	34.85	41.81
LNCL	7	B	10.16	12.19	34.85	41.81
LFSL	7	B	10.16	12.19	34.85	41.81
MA01	8	B	10.16	12.19	34.85	41.81
MA13	7	B	17.42	20.33	59.74	69.70
MA35	6	B	26.98	30.49	92.52	104.54
MK01	8	B	10.16	12.19	34.85	41.81
MK13	6	B	17.42	20.33	59.74	69.70
MK35	5	B	26.98	30.49	92.52	104.54
MPCX	6	A	22.92	26.06	78.60	89.35
MM03	12	B	17.42	20.33	59.74	69.70
MM35	8	B	26.98	30.49	92.52	104.54
MN01	8	B	10.16	12.19	34.85	41.81
MN13	7	B	17.42	20.33	59.74	69.70
MN35	5	B	26.98	30.49	92.52	104.54
OT01	8	B	10.16	12.19	34.85	41.81
OT13	6	B	17.42	20.33	59.74	69.70
PF01	14	B	10.16	12.19	34.85	41.81
PF13	10	B	17.42	20.33	59.74	69.70
PM01	12	B	10.16	12.19	34.85	41.81
PM13	10	B	17.42	20.33	59.74	69.70
PTSS	8	A	30.49	33.88	104.54	116.16
PU01	7	B	10.16	12.19	34.85	41.81
PU13	5	B	17.42	20.33	59.74	69.70
RLCY	25	C	10.16	12.19	34.85	41.81
RFSL	25	B	10.16	12.19	34.85	41.81
RHBL	4	A	33.14	36.74	113.64	125.95
SYAL	12	C	10.16	12.19	34.85	41.81
SCYL	15	C	10.16	12.19	34.85	41.81
SFSL	17	C	10.16	12.19	34.85	41.81
SM13	7	C	17.42	20.33	59.74	69.70
ST01	6	C	10.16	12.19	34.85	41.81
TVFS	10	C	33.14	36.74	113.64	125.95
VTCX	4	A	33.14	36.74	113.64	125.95
VC13	6	A	17.42	20.33	59.74	69.70
V315	4	A	22.92	26.06	78.60	89.35
ZF01	14	B	10.16	12.19	34.85	41.81
ZM01	12	B	10.16	12.19	34.85	41.81
ZM13	10	B	17.42	20.33	59.74	69.70

another crop, or crops.

Table 7 lists the crop rotations that were considered and the yield changes assumed for the cropping combinations. The yield reduction of crops grown in continuous cultivation rather than as part of a crop rotation was based on research conducted at the Texas Research Foundation, Renner, Texas in the 1950's and early 1960's and on the opinion of experienced agronomists familiar with the area. The yield of cotton grown continuously was reduced twenty-three percent as the crop budget and yield information on cotton was given for cotton in rotation with grain sorghum and small grains. Continuous cotton would not benefit from the plant nutrient carryover or organic residue left by the small grain crop in a rotation or from the cotton pest control and disease reduction provided with sorghum in the rotation. Thus over time expected cotton yields would be less. Cotton grown in rotation with sorghum was penalized five percent due to the fact that while sorghum would provide some opportunity for pest management and some fertility carryover, it would not be as great as the carryover with small grains in the rotation. The yield of cotton in a three-year rotation was not decreased. Sorghum yields were decreased two percent in two year rotations and twelve percent in continuous cultivation. This yield decrease is attributable to the lack of Johnsongrass control and fertility carryover in continuous cultivation.

Soil Loss Factors

The Universal Soil Loss Equation was used to calculate average soil loss per acre for each soil series -- crop rotation -- conservation

Table 7. Crop Rotations Considered in the Analysis, Associated USLE "C" Factors and Percent Reduction in Yield Under Continuous Cultivation Rather than in Rotation.

Cropping System and Yield Change ^{a/}	Table Abbreviation	"C" Factor
Cotton (-23)	C	.65
Grain Sorghum (-12)	S	.50
Wheat (-9)	W	.15
Hay or Pasture	P/H	.02
Range	R	.03
Cotton (-5)/Sorghum (-2)	C/S	.55
Cotton (-5)/Wheat	C/W	.40
Sorghum (-2)/Wheat	S/W	.25
Cotton/Sorghum/Wheat	C/S/W	.35

^{a/}Yield change is equal to the percent change in yield for each crop in the cropping system compared to the yield listed for that crop in table 4.

practice combination in the watershed. This equation is:

$$A = RK(LS)CP$$

where A is gross erosion in tons per acre, R is a rainfall erosivity index, K is a soil-erodibility factor, LS is a topographic factor that represents the combined effects of slope length and steepness, C is a cover and management factor, and P is a conservation practice factor. Values for all of these factors were furnished by the Soil Conservation Service and are reported in tables 7 and 8. It should be noted that the LS value does not represent an average value for the soil mapping unit. Rather it is a value assigned to a specific slope length and slope percent. These specific slope characteristics can commonly be found for that soil mapping unit. Also shown in table 8 are the erosion tolerance limits, or "T" values, that have been established for each soil. Theoretically, if erosion is less than this T value, little or no yield reduction results from the soil loss.

Table 9 shows estimated per acre erosion rates for each soil series -- conservation practice -- crop rotation combination considered in the study.

An overview of data in table 9 leads to several general conclusions about the soil loss problems in Crosby County. It is quickly apparent that most soils have only a low to moderate potential for soil loss, with the major crop of concern being cotton. A few soil mapping units, for example Rough Broken Land or Hilly Gravelly

Table 8. USLE Factors by Soil Mapping Unit for Crosby County.

Soil	USLE Factors					
	K	LS Without Terraces	LS With Standard Terraces	LS With Parallel Terraces	P Contour- Terracing	T (Ton/ Ac/Yr)
AB01	.32	.16	.16	.16	.6	5
AB13	.32	.24	.15	.12	.6	5
AF01	.32	.16	.15	.15	.6	5
AF13	.32	.16	.15	.15	.6	5
AM03	.32	.27	.16	.12	.6	5
BDDL	.32	.62	.62	.62	1.0	2
BF13	.24	.23	.22	.22	.6	5
BF35	.24	.48	.40	.37	.5	5
BF58	.24	1.00	1.00	1.00	1.0	5
BM35	.37	.52	.52	.52	1.0	5
BM58	.37	1.00	1.00	1.00	1.0	5
BDFS	.24	.22	.22	.22	1.0	5
BSSE	.24	.22	.22	.22	1.0	5
BT13	.28	.18	.16	.15	.6	5
DC13	.28	.23	.22	.22	.6	5
DC35	.28	.81	.81	.81	1.0	5
HYGL	.10	4.10	4.10	4.10	1.0	4
LLFS	.15	.45	.45	.45	1.0	5
LYAL	.28	.05	.05	.05	1.0	5
LNCL	.32	.09	.09	.09	1.0	5
LFSL	.32	.07	.07	.07	1.0	5
MA01	.28	.09	.09	.09	.6	3
MA13	.28	.24	.22	.21	.6	3
MA35	.28	.47	.47	.47	1.0	3
MK01	.28	.14	.14	.14	.6	3
MK13	.28	.24	.24	.24	.6	3
MK35	.28	.52	.40	.36	.5	3
MPCX	.28	.46	.46	.46	1.0	3
MM03	.20	.24	.24	.24	.6	5
MM35	.20	.35	.35	.35	1.0	5
MN01	.32	.13	.13	.13	.6	5
MN13	.32	.24	.24	.24	.6	5
MN35	.32	.52	.52	.52	1.0	5
OT01	.32	.13	.13	.13	.6	5
OT13	.32	.20	.20	.20	.6	5
PF01	.37	.12	.12	.12	.6	5
PF13	.37	.24	.24	.24	.6	5
PM01	.32	.13	.13	.13	.6	5
PM13	.32	.21	.21	.21	.6	5
PTSS	.28	.62	.62	.62	1.0	1
PU01	.37	.12	.12	.12	.6	5
PUL3	.37	.20	.20	.20	.6	5
RLCY	.32	.13	.13	.13	1.0	5
RFSL	.32	.14	.14	.14	.6	5
RHBL	.28	4.10	4.10	4.10	1.0	3
SYAL	.17	.14	.14	.14	1.0	5
SCYL	.28	.16	.14	.13	.6	5
SFSL	.24	.13	.13	.13	.6	5
SM13	.32	.20	.18	.17	.6	4
ST01	.32	.12	.12	.12	.6	4
TVFS	.17	2.30	2.30	2.30	1.0	5
VTCX	.32	.93	.93	.93	1.0	2
VC13	.32	.27	.27	.27	1.0	2
V315	.32	1.40	1.40	1.40	1.0	2
ZF01	.32	.14	.14	.14	.6	4
ZM01	.32	.14	.14	.14	.6	4
ZM13	.32	.17	.15	.14	.6	4

TABLE 9. EXPECTED SOIL LOSS (TCNS/ACRE/YEAR) FOR EACH CROP ROTATION.
SOIL MAPPING UNIT, AND CULTURAL PRACTICE.

SOIL	CP	COTTON	SORGHUM	WHEAT	P/H	RANGE	C/S	C/W	S/W	C/S/W
AB01	SR	4.33	3.33	1.00	0.13	0.20	3.66	2.66	1.66	2.33
AB13	SR	6.49	4.99	1.50	0.20	0.30	5.49	3.99	2.50	3.49
	ST	2.43	1.87	0.56	0.07	0.11	2.06	1.50	0.94	1.31
	PT	1.95	1.50	0.45	0.06	0.09	1.65	1.20	0.75	1.05
AF01	SR	4.33	3.33	1.00	0.13	0.20	3.66	2.66	1.66	2.33
	ST	2.43	1.87	0.56	0.07	0.11	2.06	1.50	0.94	1.31
	PT	2.38	1.83	0.55	0.07	0.11	2.01	1.46	0.92	1.28
AF13	SR	4.33	3.33	1.00	0.13	0.20	3.66	2.66	1.66	2.33
	ST	2.43	1.87	0.56	0.07	0.11	2.06	1.50	0.94	1.31
	PT	2.38	1.83	0.55	0.07	0.11	2.01	1.46	0.92	1.28
AM03	SR	7.30	5.62	1.68	0.22	0.34	6.18	4.49	2.81	3.93
	ST	2.60	2.00	0.60	0.08	0.12	2.20	1.60	1.00	1.40
	PT	2.00	1.54	0.46	0.06	0.09	1.69	1.23	0.77	1.08
BDLD	SR	16.76	12.50	3.87	0.52	0.77	14.19	10.32	6.45	9.03
BF13	SR	4.66	3.59	1.08	0.14	0.22	3.95	2.87	1.79	2.51
	ST	2.68	2.06	0.62	0.08	0.12	2.27	1.65	1.03	1.44
	PT	2.64	2.03	0.61	0.08	0.12	2.23	1.62	1.01	1.42
BF35	SR	9.73	7.49	2.25	0.30	0.45	8.24	5.99	3.74	5.24
	ST	4.06	3.12	0.94	0.12	0.19	3.43	2.50	1.56	2.18
	PT	3.79	2.91	0.87	0.12	0.17	3.20	2.33	1.46	2.04
BF58	SR	20.28	15.60	4.68	0.62	0.94	17.16	12.48	7.80	10.92
BM35	SR	16.26	12.51	3.75	0.50	0.75	13.76	10.00	6.25	8.75
BM58	SR	31.26	24.05	7.21	0.96	1.44	26.45	19.24	12.02	16.83
BDFS	SR	4.46	3.43	1.03	0.14	0.21	3.78	2.75	1.72	2.40

TABLE 9. (CONTINUED). EXPECTED SOIL LOSS (TONS/ACRE/YEAR) FOR EACH CROP ROTATION, SOIL MAPPING UNIT, AND CULTURAL PRACTICE.

SOIL	CP	COTTON	SORGHUM	WHEAT	P/H	RANGE	C/S	C/W	S/W	C/S/W
BSSE	SR	4.46	3.43	1.03	0.14	0.21	3.78	2.75	1.72	2.40
BT13	SR	4.26	3.28	0.98	0.13	0.20	3.60	2.62	1.64	2.29
	ST	2.27	1.75	0.52	0.07	0.10	1.92	1.40	0.87	1.22
	PT	2.18	1.67	0.50	0.07	0.10	1.84	1.34	0.84	1.17
DC13	SR	5.44	4.19	1.26	0.17	0.25	4.60	3.35	2.09	2.93
	ST	3.12	2.40	0.72	0.10	0.14	2.64	1.92	1.20	1.68
	PT	3.08	2.37	0.71	0.09	0.14	2.60	1.89	1.18	1.66
DC35	SR	19.16	14.74	4.42	0.59	0.88	16.22	11.79	7.37	10.32
HYGL	SR	34.64	26.65	7.99	1.07	1.60	29.31	21.32	13.33	18.65
LLFS	SR	5.70	4.39	1.32	0.18	0.26	4.83	3.51	2.19	3.07
LYAL	SR	1.18	0.91	0.27	0.04	0.05	1.00	0.73	0.45	0.64
LNCL	SR	2.43	1.87	0.56	0.07	0.11	2.06	1.50	0.94	1.31
LFSL	SR	1.89	1.46	0.44	0.06	0.09	1.60	1.16	0.73	1.02
MA01	SR	2.13	1.64	0.49	0.07	0.10	1.80	1.31	0.82	1.15
MA13	SR	5.68	4.37	1.31	0.17	0.26	4.80	3.49	2.18	3.06
	ST	3.12	2.40	0.72	0.10	0.14	2.64	1.92	1.20	1.68
	PT	3.03	2.33	0.70	0.09	0.14	2.56	1.86	1.16	1.63
MA35	SR	11.12	8.55	2.57	0.34	0.51	9.41	6.84	4.28	5.99
MK01	SR	3.31	2.55	0.76	0.10	0.15	2.80	2.04	1.27	1.78
MK13	SR	5.68	4.37	1.31	0.17	0.26	4.80	3.49	2.18	3.06

TABLE 9. (CONTINUED). EXPECTED SOIL LCSS (TONS/ACRE/YEAR) FOR EACH CROP ROTATION, SOIL MAPPING UNIT, AND CULTURAL PRACTICE.

SOIL	CP	COTTON	SORGHUM	WHEAT	P/H	RANGE	C/S	C/W	S/W	C/S/W
MK35	SR	12.30	9.46	2.84	0.38	0.57	10.41	7.57	4.73	6.62
	ST	4.73	3.64	1.09	0.15	0.22	4.00	2.91	1.82	2.55
	PT	4.26	3.28	0.98	0.13	0.20	3.60	2.62	1.64	2.29
MPCX	SR	10.88	8.37	2.51	0.33	0.50	9.21	6.70	4.19	5.86
MM03	SR	4.06	3.12	0.94	0.12	0.19	3.43	2.50	1.56	2.18
MM35	SR	5.91	4.55	1.36	0.18	0.27	5.00	3.64	2.27	3.18
MN01	SR	3.52	2.70	0.81	0.11	0.16	2.97	2.16	1.35	1.89
MN13	SR	6.49	4.99	1.50	0.20	0.30	5.49	3.99	2.50	3.49
MN35	SR	14.06	10.82	3.24	0.43	0.65	11.90	8.65	5.41	7.57
OT01	SR	3.52	2.70	0.81	0.11	0.16	2.97	2.16	1.35	1.89
OT13	SR	5.41	4.16	1.25	0.17	0.25	4.58	3.33	2.08	2.91
PF01	SR	3.75	2.85	0.87	0.12	0.17	3.17	2.31	1.44	2.02
PF13	SR	7.50	5.77	1.73	0.23	0.35	6.35	4.62	2.89	4.04
PM01	SR	3.52	2.70	0.81	0.11	0.16	2.97	2.16	1.35	1.89
PM13	SR	5.68	4.37	1.31	0.17	0.26	4.80	3.49	2.18	3.06
PTSS	SR	14.67	11.28	3.39	0.45	0.68	12.41	9.03	5.64	7.90
PU01	SR	3.75	2.85	0.87	0.12	0.17	3.17	2.31	1.44	2.02
PU13	SR	6.25	4.81	1.44	0.19	0.29	5.29	3.85	2.40	3.37
RLCY	SR	3.52	2.70	0.81	0.11	0.16	2.97	2.16	1.35	1.89

TABLE 9. (CONTINUED). EXPECTED SOIL LOSS (TONS/ACRE/YEAR) FOR EACH CROP ROTATION, SOIL MAPPING UNIT, AND CULTURAL PRACTICE.

SOIL	CP	COTTON	SORGHUM	WHEAT	P/H	RANGE	C/S	C/W	S/W	C/S/W
RFSL	SR	3.79	2.91	0.87	0.12	0.17	3.20	2.33	1.46	2.04
RHBL	SR	97.01	74.62	22.39	2.98	4.48	82.08	59.70	37.31	52.23
SYAL	SR	2.01	1.55	0.46	0.06	0.09	1.70	1.24	0.77	1.08
SCYL	SR	3.79	2.91	0.87	0.12	0.17	3.20	2.33	1.46	2.04
	ST	1.99	1.53	0.46	0.06	0.09	1.68	1.22	0.76	1.07
	PT	1.89	1.46	0.44	0.06	0.09	1.60	1.16	0.73	1.02
SFSL	SR	2.64	2.03	0.61	0.08	0.12	2.23	1.62	1.01	1.42
SM13	SR	5.41	4.16	1.25	0.17	0.25	4.58	3.33	2.08	2.91
	ST	2.92	2.25	0.67	0.09	0.13	2.47	1.80	1.12	1.57
	PT	2.81	2.16	0.65	0.09	0.13	2.38	1.73	1.08	1.51
ST01	SR	3.24	2.50	0.75	0.10	0.15	2.75	2.00	1.25	1.75
TVFS	SR	33.04	25.41	7.62	1.02	1.52	27.96	20.33	12.71	17.79
VTCX	SR	25.15	19.34	5.80	0.77	1.16	21.28	15.48	9.67	13.54
VC13	SR	7.30	5.62	1.68	0.22	0.34	6.18	4.49	2.81	3.93
V315	SR	37.86	29.12	8.74	1.16	1.75	32.03	23.30	14.56	20.38
ZF01	SR	3.79	2.91	0.87	0.12	0.17	3.20	2.33	1.46	2.04
ZM01	SR	3.79	2.91	0.87	0.12	0.17	3.20	2.33	1.46	2.04
ZM13	SR	4.60	3.54	1.06	0.14	0.21	3.89	2.83	1.77	2.48
	ST	2.43	1.87	0.56	0.07	0.11	2.06	1.50	0.94	1.31
	PT	2.33	1.79	0.54	0.07	0.11	1.97	1.43	0.89	1.25

Land seem to have a fairly high potential for soil erosion especially if planted to row crops but these mapping units are almost never used for crop land and hence these potential soil losses are seldom realized. Another general conclusion one can derive from table 9 is that soil loss for any particular soil mapping unit can be reduced by either changing to a close-grown crop or by terracing and contouring. The better way, if soil losses must be reduced, depends on the relative net returns to the two methods. Soil lost any one year does not directly affect that year's net returns to a particular crop rotation at the low levels of soil loss normally to be expected in Crosby County. However, over time loss of topsoil does become important because yield of crops grown thereafter is reduced.

Yield Loss Attributal to Erosion

In a long-run analysis of soil conservation, the relationship between erosion and future crop yield is critical. This is because the on-farm benefits from conservation practices arise mainly from the relatively higher future crop yield resulting from that conservation practice. Unfortunately, very little experimental or field data on this important relationship are available. Consequently, for purposes of this study, it was necessary to develop estimates of this relationship for each soil mapping unit.

Yield loss attributal to topsoil loss depends to a certain extent on the suitability of the subsoil for crop production. Soils in the county were classified into one of three groups. Group A consists

of soils that have subsoil that is unsuitable for field crop production. For this group, crop yield was assumed to be zero after all topsoil was eroded. Group B consists of soils with subsoils that are slightly suitable for field crop production. It was assumed that crop yield on Group B soils would be 25 percent of the currently attainable yield after all the topsoil was eroded away. Group C consists of those soils with subsoils that are somewhat more suitable for crop production. After the loss of all topsoil, yield in this group was assumed to be 50 percent of present yield. The group to which each soil belongs and initial average topsoil depth for each soil is shown in table 6.

Due to paucity of experimental or field data on the relationship between topsoil thickness and yield, it was necessary to subjectively specify this relationship for each soil group. After considerable discussion with Soil Conservation Service and Texas A&M University scientists, the three relationships shown in figure 2 were specified. The functions in figure 2 have two important characteristics. One is that each function is expressed in terms of percent of topsoil lost and percent of initial yield attainable after erosion. This reflects the fact that the loss of one inch on an initially shallow soil will decrease yield more than the loss of one inch of an initially deep soil. For example, the loss of one inch of a soil in Group A with an initial depth of 20 inches will reduce yield by about 2 percent, while the loss of one inch on a soil with an initial depth of 5 inches will decrease yield by about 8 percent.

The second important characteristic of the functions in figure 2 is that the loss of the last remaining topsoil will reduce yield by

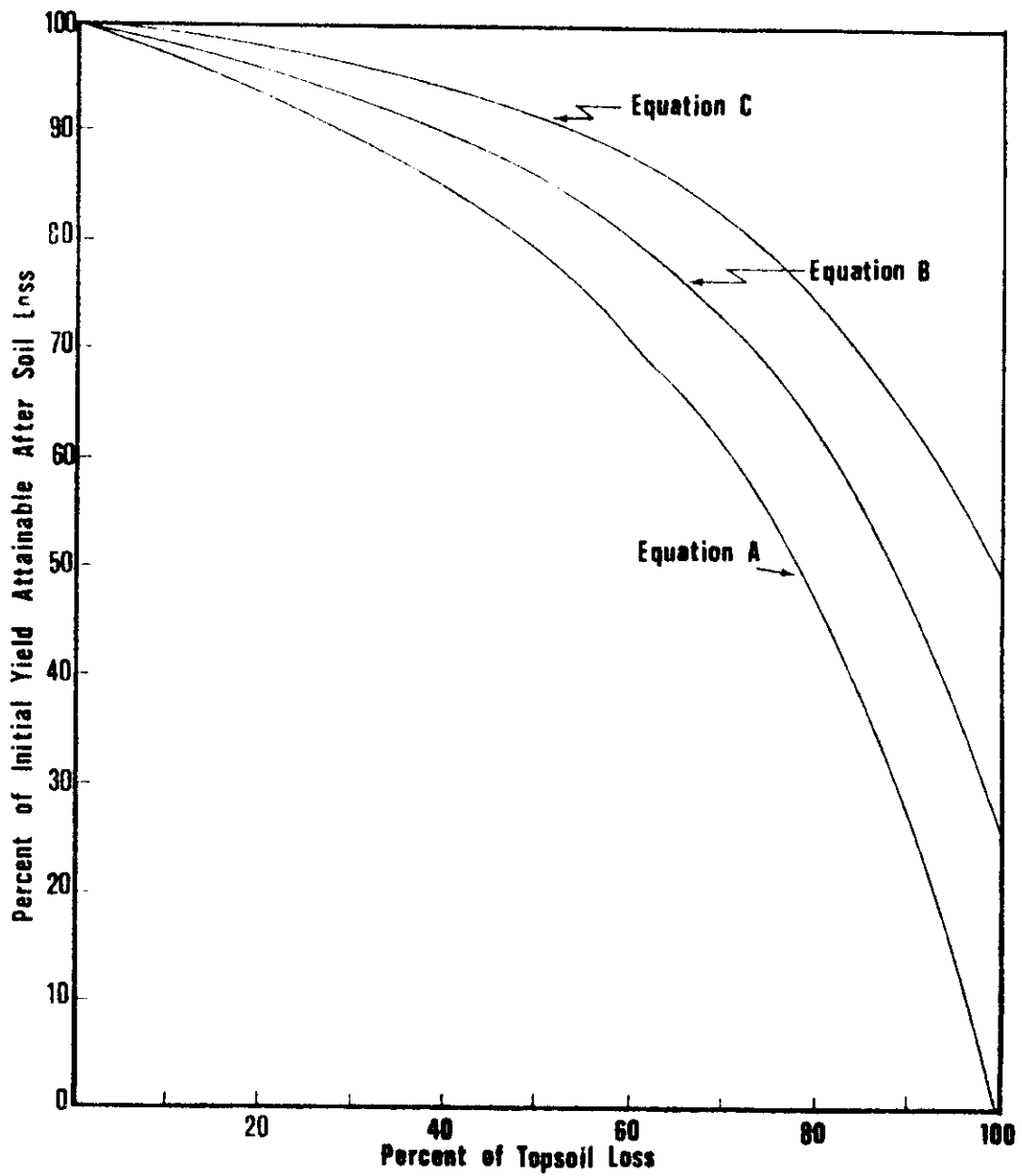


Figure 2. Relationships between yield and topsoil eroded.

more than the loss of the upper portions of initial topsoil. For instance, the loss of the first 20 percent of topsoil in Group A will reduce yield by about 8 percent, while the loss of the last 20 percent of topsoil will reduce yield by about 46 percent. Because of the critical nature of the relationships shown in figure 2, additional experimental and field research appears warranted.

In determining effects of erosion on yield, the bulk density of soil is important. Since erosion typically occurs when the soil is saturated with water, the bulk density of wet soil was used. Based on unpublished field data, a bulk density of 200 tons per acre inch was used for all soils in Crosby County except the clay soils. A bulk density of 180 tons per acre inch was used for the clay soils; Randall clay and Stamford clay.

Profitability of Conservation Practices

Profitability information for the various crop rotation -- conservation practice combinations for each soil in Crosby County is given in Appendix A, tables 12 through 68. All figures are based on assumptions previously stated. All on-farm costs associated with terracing are included when their profitability is calculated, but there is no Federal cost-sharing for terrace construction added in nor is there any cost charged for sediment leaving fields.

As an illustration of information given in these tables, consider table 13 which gives data for Abilene clay loam on 1-3 percent slopes.

The first column of this table gives the crop rotations considered for this soil, while the second column lists the conservation practice. Column 3 gives the estimated percent of topsoil lost annually for each respective crop rotation -- conservation practice combination. In column 4 expected per acre return to land and management in year 1 is given. The next block of columns gives annual yield as a percent of initial yield, and expected profit for years 10, 100, and 200. The final block of columns gives the present value of a profit stream to year 10, 100 and 200.

As a specific example consider continuous cotton on Abilene clay loam with 1-3 percent slope (table 13). Given the assumed initial topsoil thickness of 6 inches (table 6), with straight row or limited till cultivation, .542 percent of the topsoil would be lost annually. If terraces are constructed the yearly percentage loss in topsoil thickness is reduced to .203 percent with standard terraces or .163 percent if parallel terraces are constructed.

The profit from continuous cotton would be \$24.25 the first year with straight row tillage. This profit would get progressively less as the topsoil was lost and yield decreased so that by the 200th year, profit with straight row tillage would have dropped to -\$50.96. Yield losses due to topsoil erosion remains the same with limited tillage methods but the reduced use of machinery and labor results in higher profits for any one year. The use of terraces cut yearly topsoil losses by more than one-half resulting in higher yields for future years. In the long run, one-hundred years or more, these higher yields result in higher returns to land and management. On

the other hand, higher costs associated with terrace construction and maintenance causes short-run returns to be less than without terraces despite the yield differences. Thus, growing continuous cotton on Abilene clay loam (table 13) causes sufficient topsoil erosion to reduce yields in the 100th year to 81.2 percent of initial yield if straight row or conservative tillage cultivation is employed. A yield reduction of this magnitude causes the yearly return to land and management to be \$5.80 for straight row cultivation and \$9.63 for conservation tillage, but the present value of the profit stream to year 100 for these methods of cultivation would be \$959 and \$1163, respectively. If standard terraces were constructed, the yield would only be reduced to 93.8 percent in the 100th year and a return of \$13.86 per acre would be expected. However, the present value of the profit stream to year 100 with standard terraces would be only \$927 -- less than that under either straight row or conservation till cultivation. The present value of the topsoil saving terracing systems does not become larger than that of the non-terracing methods until well past 100 years.

Many of the soils in Crosby County are too flat for contouring and terracing to have any effect on the rate of soil loss. For these soils only the straight row and conservation till cultivation practices are listed. Also, only appropriate crops for a given soil are listed. Thus, a few soil mapping units such as Berthoud fine sandy loam, 5-8 percent slopes (table 20) have no field crop options and are listed only for completeness.

Twenty soil mapping units have potential for irrigation. Expected yields for crops under irrigation are listed as part of table 4. On these soils profit and yield information is also given for irrigated rotations as it is for example in table 14.

Information in tables 12 through 68 can be used to compare profitability of the four cultural practices for a particular crop or profitability of various crop rotation -- cultural practices for each soil mapping unit, given a planning horizon of 10, 100, or 200 years. Table 10 lists the cultural practice with the highest present value of profit for a 200 year planning horizon for every crop rotation on each soil mapping unit in the county. Only the 200 year planning horizon is shown because there was very little difference over the various time horizons and the information is available within tables 12 through 68. Contents of table 10 indicate that very little terracing is profitable in Crosby County unless government cost-sharing programs are involved. Typical fields from which soil mapping unit data in this study was taken were simply too flat to pay for expensive terrace construction if only profit lost due to yield reduction is considered.

Naturally this does not mean that there are no fields in the county that can be profitably terraced. There may be many areas that are steeper or have longer slopes than the typical just as there may be many farmers who have different costs of production and expected yields.

Table 11 lists the most profitable crop rotation -- cultural prac-

Table 10. Most Profitable Conservation Practice by Soil Mapping Unit and Crop Rotation with 200 Year Planning Horizon. a/

Soil	Crop Rotation							
	C	S	W	P/H	C/S	C/W	S/W	C/S/W
AB01	C	C	C	SR	C	C	C	C
AB13	PT	C	C	SR	PT	PT	C	PT
AF01	C	C	C	SR	C	C	C	C
IRR	PT	C	C		PT			PT
AF13	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
AM03	C	C	C	PT	C	C	C	C
BDL	-	-	-	-	-	-	-	-
BF13	C	C	C	SR	C	C	C	C
BF35	C	C	C	SR	C	C	C	C
BF58	-	-	-	-	-	-	-	-
BM35	C	C	C	SR	C	C	C	C
BM58	-	-	-	-	-	-	-	-
BDFS	-	-	-	SR	-	-	-	-
BSSE	-	-	-	SR	-	-	-	-
BT13	C	C	C	SR	C	C	C	C
DC13	-	C	C	SR	C	C	C	C
DC35	-	-	-	SR	-	-	-	-
HYGL	-	-	-	-	-	-	-	-
LLFS	-	-	-	-	-	-	-	-
LYAL	-	-	-	SR	-	-	-	-
LNCL	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
LFSL	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
MA01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
MA13	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
MA35	-	-	-	SR	-	-	-	-
IRR	-	C	C		C			C
MK01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
MK13	C	C	C	SR	C	C	C	C
IRR	-	C	C		C			C
MK35	PT	C	C	SR	PT	C	C	C
MPCX	-	-	-	-	-	-	-	-
MM03	C	C	C	SR	C	C	C	C
MM35	-	-	-	SR	-	-	-	-
MN01	C	C	C	SR	C	C	C	C

Table 10. Most Profitable Conservation Practices by Soil Mapping Unit and Crop Rotation with 200 Year Planning Horizon ^{a/}(continued).

Soil	Crop Rotation							
	C	S	W	P/H	C/S	C/W	S/W	C/S/W
MN13	C	C	C	SR	C	C	C	C
MN35	C	C	C	SR	C	C	C	C
OT01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
OT13	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
PF01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
PF13	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
PM01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
PML3	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
PTSS	-	-	-	-	-	-	-	-
PU01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
PU13	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
RLCY	C	C	C	SR	C	C	C	C
RFSL	C	C	C	SR	C	C	C	C
RHBL	-	-	-	-	-	-	-	-
SYAL	C	C	C	SR	C	C	C	C
SCYL	C	C	C	SR	C	C	C	C
SFSL	C	C	C	SR	C	C	C	C
SM13	C	C	C	SR	C	C	C	C
ST01	C	C	C	SR	C	C	C	C
TVFS	-	-	-	-	-	-	-	-
VTCX	-	-	-	-	-	-	-	-
VC13	-	-	-	SR	-	-	-	-
V315	-	-	-	-	-	-	-	-
ZF01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
ZM01	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C
ZM13	C	C	C	SR	C	C	C	C
IRR	C	C	C		C			C

^{a/} SR denotes conventional straight row cultivation practices, C denotes conservation tillage, PT denotes parallel terracing.

Table 11. Crop Rotation - Cultural Practice Combinations with Highest Present Value for Planning Horizons of 10, 100, and 200 years for Each Soil Mapping Unit.

Soil	Planning Horizon					
	10 Years		100 Years		200 Years	
	Rotation	Cultural Practice	Rotation	Cultural Practice	Rotation	Cultural Practice
AB01	C/W	C	W	C	W	C
AB13	C/W	C	W	C	W	C
AF01	C/W	C	C/W	C	C/W	C
IRR	C	C	C	PT	C	PT
AF13	P/H	SR	P/H	SR	P/H	SR
IRR	C	C	C	C	C	C
AM03	P/H	SR	P/H	SR	P/H	PT
BDDL	-	-	-	-	-	-
BF13	P/H	SR	P/H	SR	P/H	SR
BF35	P/H	SR	P/H	SR	P/H	SR
BF58	R	SR	R	SR	R	SR
BM35	P/H	SR	P/H	SR	P/H	SR
BM58	R	SR	R	SR	R	SR
BDFS	P/H	SR	P/H	SR	P/H	SR
BSSE	P/H	SR	P/H	SR	P/H	SR
BT13	C/W	C	C/W	C	C/W	C
DC13	P/H	SR	P/H	SR	P/H	SR
DC35	P/H	SR	P/H	SR	P/H	SR
HYGL	R	SR	R	SR	R	SR
LLFS	R	SR	R	SR	R	SR
LYAL	P/H	SR	P/H	SR	P/H	SR
LNCL	C/W	C	P/H	SR	P/H	SR
IRR	C/S	C	C/S	C	C/S	C
LFSL	P/H	SR	P/H	SR	P/H	SR
IRR	C/S	C	C/S	C	C/S	C
MA01	P/H	SR	P/H	SR	P/H	SR
MA13	P/H	SR	P/H	SR	P/H	SR
MA35	P/H	SR	P/H	SR	P/H	SR
MK01	P/H	SR	P/H	SR	P/H	SR
MK13	P/H	SR	P/H	SR	P/H	SR
MPCX	R	SR	R	SR	R	SR
MM03	C/W	C	C/W	C	C/W	C
MM35	P/H	SR	P/H	SR	P/H	SR
MN01	C/W	C	C/W	C	C/W	C
MN13	C/W	C	C/W	C	C/W	C
MN35	P/H	SR	P/H	SR	P/H	SR
OT01	C/W	C	C/W	C	C/W	C
IRR	C/S	C	C/S	C	C/S	C
OT13	P/H	SR	P/H	SR	P/H	SR
IRR	C/S	C	C/S	C	C/S	C

Table 11. Crop Rotation - Cultural Practice Combinations with Highest Present Value for Planning Horizons of 10, 100, and 200 Years for Each Soil Mapping Unit (continued).

Soil	Planning Horizon					
	10 Years		100 Years		200 Years	
	Rotation	Cultural Practice	Rotation	Cultural Practice	Rotation	Cultural Practice
PF01	P/H	SR	P/H	SR	P/H	SR
IRR	C	C	C	C	C	C
PF13	P/H	SR	P/H	SR	P/H	SR
IRR	C	C	C	C	C	C
PM01	P/H	SR	P/H	SR	P/H	SR
IRR	C/S	C	C/S	C	C/S	C
PM13	P/H	SR	P/H	SR	P/H	SR
IRR	C/S/W	C	C/S/W	C	C/S/W	C
PTSS	-	-	-	-	-	-
PU01	C/W	C	C/W	C	C/W	C
IRR	C/S	C	C/S	C	C/S	C
PU13	P/H	SR	P/H	SR	P/H	SR
IRR	C/S	C	C/S	C	C/S/W	C
RLCY	C/W	C	C/W	C	C/W	C
RFSL	C/W	C	C/W	C	C/W	C
RHBL	-	-	-	-	-	-
SYAL	C/W	C	C/W	C	C/W	C
SCYL	C/W	C	C/W	C	C/W	C
SFSL	C/W	C	C/W	C	C/W	C
SM13	C/W	C	C/W	C	C/W	C
ST01	C/W	C	C/W	C	C/W	C
TVFS	R	SR	R	SR	R	SR
VTCX	R	SR	R	SR	R	SR
VC13	R	SR	R	SR	R	SR
V315	R	SR	R	SR	R	SR
ZF01	C/W	C	C/W	C	P/H	SR
IRR	C	C	C	C	C	C
ZM01	C/W	C	C/W	C	C/W	C
IRR	C	C	C	C	C	C
ZM13	C/W	C	C/W	C	C/W	C
IRR	C/S	C	C/S	C	C/S	C

tice combination for each soil mapping unit for each of the three planning horizons considered. A cotton-wheat rotation is the preferred dryland crop rotation on most of the soils that will support crop production. This is apparently due to the high profitability associated with cotton combined with yield conserving properties of wheat. Many of the soil mapping units, particularly those which are highly susceptible to soil erosion are confined to native rangeland or permanent pasture.

All the soil mapping units which can be profitably irrigated show their highest present value with continuous cotton or a rotation which includes cotton. The large yield increases that are possible with irrigated cotton are the major cause for this shift to continuous cotton in spite of the soil loss and other associated problems.

Cost-Sharing for Terrace Construction Cost

Profitability estimates for conservation practices shown in appendix A, tables 12 through 69, were based on the assumption that farmers would pay the full cost of adopting a conservation practice. The Agricultural Stabilization and Conservation Service presently makes a limited number of payments to farmers for 50 percent of the initial cost of constructing terraces. This type of payment would obviously make terracing a more attractive alternative. To determine if this would make terracing more profitable than contouring or straight-row farming, one can determine the amount of such a payment

by taking 50 percent of the appropriate terrace cost figure in table 6 and add it to the present value figures (tables 12 through 68).

There are only a few instances where 50 percent cost-sharing payments would make terracing profitable where it would not otherwise be profitable. However, the payments may induce farmers to terrace where it is already profitable because such payments greatly ease the initial financial burden associated with constructing terraces. Also since this model must of necessity deal in average conditions, it may be that certain fields could be profitably terraced with the construction assistance even though the average soil mapping unit could not. Therefore, cost sharing for conservation practices may have a greater impact than would be indicated by the profitability calculations shown in tables 12 through 68.

SUMMARY AND CONCLUSIONS

When an attempt is made to model an activity as complex as agricultural production the decisions made at two points in the modeling process are of crucial importance. One is the type and level of inputs to assume and the second is the appropriate mathematical analogues for the major forces shaping those inputs.

The inputs assumed in this model were average long-run cost and price relationships, average yield with high levels of management and average environmental and climatic conditions for this area. These averages were based on historical data and hence imply an assumption of relative stability with the future being a continuation of the past. Another assumption of the model is that the decision-maker is a profit maximizer and always attempts to minimize costs or maximize net returns.

Given the inputs assumed and the overall drive of profit maximization, accuracy of the model's predictions are mainly dependent on three relationships built into the model.

The first is the relationship between climatic conditions and the environment specified by the Universal Soil Loss Equation. Though this equation has been criticized, it is the best available estimator at this time. Nonetheless, the poorer its accuracy the greater is the deviation of predicted soil loss from the actual soil loss that would occur under the given conditions.

The second crucial relationship in the model is that between soil loss and yield change. Since there is no cost associated with soil

loss in the model other than the yield reduction it causes, the top-soil loss -- yield reduction functions are the essential link that places a monetary value on soil erosion. The higher the yield reduction assumed for each unit of soil lost, the greater the value of that soil and hence the more soil conservation is warranted.

The third relationship with major impact on the model results is the discount rate assumed for future profits. The present value of activities such as terracing, which have high present costs but whose benefits occur many years later, are greatly affected by the discount rate. As the discount rate is increased the importance of future returns decrease. Therefore, the lower the discount rate chosen the greater the importance of future returns and hence of profit conserving soil loss reductions.

Given the difficulty of input data accuracy and the variation in output possible by manipulating the key relationships it is clear that the specific numbers reported herein should not be taken literally. Rather they should be viewed as the best estimates possible given the limitations of the model. Nonetheless, it is the opinion of the authors that the results are sufficiently accurate to specify the relative merits of the crop rotation -- cultural practice combinations for controlling soil erosion and enhancing long-run profits.

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APPENDIX A

Profit and Yield Information by Soil Mapping Units for
10, 100 and 200 Year Planning Horizons

TABLE 12. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES AB01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		PRESENT VALUE OF A PROFIT STREAM TO YEAR						
				YEAR 10	YEAR 200	10	200					
C	SR C	0.271 0.271	24.35 28.18	98.7 98.7	23.49 27.33	92.0 92.0	16.69 20.53	81.2 81.2	5.79 9.63	222. 257.	1129. 1334.	1300. 1555.
S	SR C	0.208 0.208	18.22 20.05	98.9 98.9	17.87 19.70	93.6 93.6	15.06 16.88	87.3 87.3	11.67 13.50	167. 184.	901. 998.	1081. 1203.
W	SR C	0.063 0.063	57.69 59.96	99.4 99.4	57.50 59.76	97.6 97.6	55.72 57.99	95.8 95.8	54.01 56.28	533. 554.	3032. 3153.	3749. 3899.
P/H	SR	0.008	14.75	99.6	14.74	99.4	14.60	99.1	14.46	137.	783.	973.
R	SR	0.013	3.73	99.6	3.72	99.2	3.68	98.8	3.64	34.	198.	245.
C/S	SR C	0.229 0.229	35.97 38.80	98.9 98.9	35.31 38.14	93.1 93.1	30.02 32.85	85.5 85.5	23.05 25.88	330. 356.	1785. 1936.	2145. 2333.
C/W	SR C	0.167 0.167	57.60 60.65	99.1 99.1	56.99 60.05	94.7 94.7	51.96 55.02	90.2 90.2	46.74 49.80	531. 559.	2945. 3107.	3596. 3799.
S/W	SR C	0.104 0.104	45.88 47.93	99.3 99.3	45.60 47.65	96.4 96.4	43.20 45.24	93.6 93.6	40.93 42.98	424. 443.	2386. 2495.	2937. 3073.
C/S/W	SR C	0.146 0.146	48.58 51.19	99.2 99.2	48.12 50.74	95.3 95.3	44.30 46.92	91.4 91.4	40.53 43.15	448. 472.	2494. 2634.	3053. 3226.

TABLE 13. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES AB13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YR 10	YR 100	YR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200		
C	SR	0.542	24.25	97.9	22.61	81.2	5.80	25.0	-50.96	217.	959.	763.
	C	0.542	28.08	97.9	26.45	81.2	9.63	25.0	-47.12	253.	1163.	1018.
	PT	0.163	15.51	99.1	14.97	94.8	17.53	90.4	13.06	141.	1093.	1310.
S	SR	0.417	10.62	98.3	10.04	87.3	5.03	53.5	-10.38	96.	452.	459.
	C	0.417	12.44	98.3	11.87	87.3	6.86	53.5	-8.55	113.	550.	580.
	PT	0.125	1.04	99.2	0.85	95.8	6.31	92.6	4.93	9.	394.	480.
W	SR	0.125	57.67	99.2	57.29	95.8	54.01	92.6	50.88	532.	2993.	3680.
	C	0.125	59.94	99.2	59.55	95.8	56.28	92.6	53.15	553.	3113.	3831.
	PT	0.038	51.59	99.5	51.47	98.4	56.39	97.2	55.37	477.	3046.	3785.
P/H	SR	0.017	14.75	99.6	14.73	99.1	14.46	98.5	14.17	137.	780.	967.
	C	0.006	10.87	99.6	10.86	99.4	12.31	99.2	12.26	101.	660.	824.
	PT	0.005	7.07	99.7	7.06	99.5	13.06	99.3	13.12	65.	699.	879.
R	SR	0.025	3.73	99.6	3.72	98.8	3.64	98.0	3.55	34.	197.	244.
C/S	SR	0.458	31.68	98.1	30.47	85.5	19.43	40.6	-19.90	288.	1448.	1553.
	C	0.458	34.52	98.1	33.30	85.5	22.26	40.6	-17.07	314.	1599.	1741.
	PT	0.138	23.25	99.2	22.85	95.5	26.53	91.9	23.40	214.	1533.	1874.
C/W	SR	0.333	57.53	98.5	56.35	90.2	46.74	72.1	25.94	527.	2834.	3359.
	C	0.333	60.58	98.5	59.40	90.2	49.80	72.1	29.00	556.	2996.	3562.
	PT	0.100	50.25	99.3	49.86	96.5	53.55	93.9	50.53	464.	2973.	3667.
S/W	SR	0.208	41.63	98.9	41.12	93.6	36.97	87.3	31.98	383.	2115.	2573.
	C	0.208	43.68	98.9	43.16	93.6	39.02	87.3	34.02	402.	2224.	2709.
	PT	0.063	33.46	99.4	33.30	97.6	38.87	95.8	37.58	309.	2125.	2635.
C/S/W	SR	0.292	45.69	98.7	44.82	91.4	37.92	78.6	25.68	419.	2265.	2708.
	C	0.292	48.30	98.7	47.44	91.4	40.54	78.6	28.30	443.	2404.	2881.
	PT	0.109	41.14	99.3	40.80	96.2	39.63	93.4	36.89	380.	2216.	2723.
	PT	0.088	37.82	99.4	37.54	96.9	42.13	94.5	39.95	349.	2333.	2882.

TABLE 14. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES AF01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND MANAGEMENT FOR YEAR 100	PERCENT OF ACRE RETURN TO LAND AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200					
C	SR	0.197	15.23	99.0	14.66	93.9	10.03	88.1	4.71	138.	697.	802.
	C	0.197	19.07	99.0	18.50	93.9	13.87	88.1	8.54	174.	901.	1057.
	ST	0.111	10.13	99.3	9.79	96.2	7.98	93.3	5.28	92.	527.	620.
	PT	0.108	9.96	99.3	9.62	96.3	10.97	93.4	8.34	91.	687.	823.
S	SR	0.152	3.09	99.1	2.90	95.1	1.37	91.1	-0.15	28.	127.	137.
	C	0.152	4.91	99.1	4.73	95.1	3.20	91.1	1.68	45.	224.	258.
	ST	0.085	-0.63	99.4	-0.74	96.9	-0.60	94.6	-1.46	-6.	2.	-8.
	PT	0.083	-2.88	99.4	-2.98	97.0	0.31	94.7	-0.48	-27.	50.	57.
W	SR	0.045	9.82	99.5	9.75	98.1	9.09	96.8	8.43	91.	508.	623.
	C	0.045	12.09	99.5	12.02	98.1	11.36	96.8	10.70	112.	629.	773.
	ST	0.026	6.10	99.6	6.06	98.8	6.57	98.0	6.19	56.	364.	450.
	PT	0.025	4.92	99.6	4.88	98.8	8.03	98.0	7.71	45.	442.	551.
P/H	SR	0.006	22.84	99.6	22.83	99.5	22.72	99.2	22.59	212.	1214.	1510.
	ST	0.003	20.46	99.7	20.46	99.5	21.30	99.4	21.26	189.	1137.	1417.
	PT	0.003	19.16	99.7	19.15	99.6	22.63	99.4	22.65	177.	1208.	1509.
R	SR	0.009	3.73	99.6	3.72	99.3	3.69	99.0	3.66	35.	198.	246.
C/S	SR	0.167	21.93	99.1	21.52	94.7	18.12	90.2	14.60	201.	1084.	1303.
	C	0.167	24.76	99.1	24.35	94.7	20.96	90.2	17.43	227.	1235.	1491.
	PT	0.094	17.90	99.3	17.66	96.7	16.62	94.2	14.67	155.	961.	1170.
C/W	SR	0.092	16.95	99.3	16.71	96.7	18.84	94.3	16.94	156.	1079.	1321.
	C	0.121	25.60	99.2	25.28	95.9	22.52	92.8	19.90	236.	1297.	1577.
	PT	0.068	21.40	99.4	21.22	97.4	20.60	95.5	19.00	197.	1158.	1421.
S/W	SR	0.076	11.06	99.4	10.95	97.2	9.90	95.1	8.90	102.	564.	688.
	C	0.076	13.11	99.4	12.99	97.2	11.95	95.1	10.95	121.	674.	824.
	PT	0.042	5.36	99.5	5.29	98.2	7.69	96.9	7.10	67.	432.	532.
C/S/W	SR	0.106	21.58	99.3	21.34	96.3	19.24	93.5	17.26	199.	1099.	1339.
	C	0.106	24.20	99.3	23.96	96.3	21.86	93.5	19.88	223.	1239.	1513.
	PT	0.060	17.67	99.5	17.53	97.7	17.32	96.0	16.11	163.	969.	1191.
	PT	0.058	16.48	99.5	16.34	97.7	19.30	96.0	18.15	152.	1074.	1326.

TABLE 14. (CONTINUED).
IRRIGATED CROP ROTATIONS

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	PERCENT THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR	YEAR 100	INITIAL YIELD)	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR	10	100	200	
C	SR	0.197	191.60	99.0	189.31	93.9	170.68	88.1	149.27	1764.	9746.	11870.
	C	0.197	201.24	99.0	198.95	93.9	180.33	88.1	158.92	1854.	10260.	12510.
	ST	0.111	186.16	99.3	184.82	96.2	174.22	93.3	163.22	1718.	9694.	11911.
	PT	0.108	194.43	99.3	193.09	96.3	185.65	93.4	174.74	1795.	10303.	12673.
S	SR	0.152	50.58	99.1	49.73	95.1	42.64	91.1	35.55	465.	2520.	3041.
	C	0.152	57.23	99.1	56.39	95.1	49.29	91.1	42.20	526.	2875.	3482.
	ST	0.085	43.79	99.4	43.29	96.9	39.95	94.6	35.80	403.	2285.	2787.
	PT	0.083	46.71	99.4	45.22	97.0	46.04	94.7	41.96	430.	2610.	3195.
W	SR	0.045	52.84	99.5	52.60	98.1	50.31	96.8	48.04	488.	2762.	3406.
	C	0.045	58.61	99.5	58.37	98.1	56.09	96.8	53.81	542.	3070.	3789.
	ST	0.026	47.40	99.6	47.26	98.8	46.80	98.0	45.42	438.	2542.	3148.
	PT	0.025	50.33	99.6	50.19	98.8	52.37	98.0	51.04	466.	2839.	3520.
C/S	SR	0.167	173.79	99.1	172.07	94.7	157.85	90.2	143.08	1602.	8908.	10893.
	C	0.167	181.94	99.1	180.22	94.7	166.00	90.2	151.23	1677.	9342.	11434.
	ST	0.094	169.26	99.3	168.26	96.7	160.44	94.2	152.09	1563.	8862.	10913.
	PT	0.092	175.91	99.3	174.91	96.7	170.26	94.3	161.97	1625.	9385.	11568.
C/S/W	SR	0.106	146.96	99.3	146.00	96.3	137.58	93.5	129.64	1357.	7627.	9379.
	C	0.106	154.25	99.3	153.28	96.3	144.86	93.5	136.92	1424.	8015.	9862.
	ST	0.060	142.47	99.5	141.91	97.7	137.81	96.0	132.82	1317.	7527.	9300.
	PT	0.058	147.87	99.5	147.31	97.7	146.38	96.0	141.45	1367.	7983.	9872.

TABLE 15. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES AF13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 1	YEAR 10	YEAR 20	YEAR 30	YEAR 40	YEAR 50	YEAR 60	YEAR 70	YEAR 80	YEAR 90	YEAR 100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200
C	SR	0.241	-3.07	98.8	-3.62	92.8	-8.05	84.4	-14.19	-31.	-273.	-406.				
	C	0.241	0.77	98.8	0.22	92.8	-4.21	84.4	-10.36	5.	-69.	-151.				
	ST	0.135	-10.13	99.2	-10.46	95.5	-11.41	92.0	-14.01	-95.	-511.	-668.				
	PT	0.132	-13.28	99.2	-13.61	95.6	-9.28	92.2	-11.77	-124.	-397.	-520.				
S	SR	0.185	-2.32	99.0	-2.51	94.2	-4.07	89.0	-5.78	-22.	-162.	-223.				
	C	0.185	-0.49	99.0	-0.68	94.2	-2.24	89.0	-3.95	-5.	-65.	-102.				
	ST	0.104	-7.61	99.3	-7.72	96.4	-6.88	93.6	-7.73	-71.	-332.	-422.				
	PT	0.102	-12.58	99.3	-12.69	96.5	-6.58	93.8	-7.32	-117.	-316.	-395.				
W	SR	0.056	0.25	99.5	0.18	97.8	-0.46	96.2	-1.08	2.	-2.	-11.				
	C	0.056	2.52	99.5	2.45	97.8	1.81	96.2	1.19	23.	119.	139.				
	ST	0.031	-5.03	99.6	-5.07	98.6	-3.90	97.6	-4.22	-47.	-194.	-242.				
	PT	0.031	-8.73	99.6	-8.77	98.6	-3.07	97.6	-3.31	-81.	-150.	-182.				
P/H	SR	0.007	22.84	99.6	22.83	99.4	22.69	99.1	22.53	212.	1214.	1509.				
	ST	0.004	19.20	99.7	19.19	99.5	20.67	99.4	20.64	178.	1104.	1377.				
	PT	0.004	15.56	99.7	15.56	99.5	21.55	99.4	21.62	144.	1151.	1442.				
	SR	0.011	4.46	99.6	4.46	99.3	4.42	98.9	4.38	41.	237.	294.				
C/S	SR	0.204	7.64	99.0	7.24	93.8	3.95	87.6	0.06	69.	326.	359.				
	C	0.204	10.48	99.0	10.07	93.8	6.78	87.6	2.89	95.	476.	547.				
	ST	0.115	1.78	99.3	1.54	96.1	1.29	93.1	-0.59	15.	141.	153.				
	PT	0.112	-2.08	99.3	-2.31	96.2	2.71	93.2	0.94	-20.	217.	254.				
C/W	SR	0.148	9.05	99.1	8.74	95.2	6.12	91.3	3.52	82.	418.	484.				
	C	0.148	12.10	99.1	11.79	95.2	9.17	91.3	6.57	111.	580.	687.				
	ST	0.083	2.94	99.4	2.76	97.0	2.94	94.7	1.46	26.	214.	250.				
	PT	0.081	-0.74	99.4	-0.92	97.0	4.53	94.8	3.16	-8.	299.	362.				
S/W	SR	0.093	2.77	99.3	2.66	96.7	1.62	94.2	0.65	25.	123.	139.				
	C	0.093	4.82	99.3	4.70	96.7	3.67	94.2	2.70	44.	232.	275.				
	ST	0.052	-2.65	99.5	-2.72	97.9	-1.53	96.4	-2.08	-25.	-59.	-77.				
	PT	0.051	-7.37	99.5	-7.44	98.0	-0.98	96.5	-1.43	-69.	-30.	-34.				
C/S/W	SR	0.130	8.24	99.2	8.00	95.7	5.97	92.3	4.02	75.	389.	457.				
	C	0.130	10.86	99.2	10.62	95.7	8.59	92.3	6.64	99.	529.	631.				
	ST	0.073	2.52	99.4	2.38	97.3	2.93	95.3	1.80	23.	201.	238.				
	PT	0.071	-1.55	99.4	-1.70	97.3	4.13	95.3	3.11	-15.	265.	324.				

TABLE 15. (CONTINUED).
IRRIGATED CROP ROTATIONS

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND YEAR 100	INITIAL YIELD) YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO	YEAR 200					
C	SR	0.241	136.37	98.8	134.01	92.8	115.09	84.4	88.82	1252.	6796.	8180.
	C	0.241	146.02	98.8	143.66	92.8	124.73	84.4	98.46	1342.	7310.	8819.
	ST	0.135	127.88	99.2	126.48	95.5	116.48	92.0	105.11	1178.	6621.	8086.
	PT	0.132	132.42	99.2	131.03	95.6	126.31	92.2	115.10	1220.	7144.	8745.
S	SR	0.185	34.48	99.0	33.55	94.2	25.89	89.0	17.46	315.	1647.	1945.
	C	0.185	41.14	99.0	40.20	94.2	32.54	89.0	24.11	377.	2002.	2386.
	ST	0.104	25.81	99.3	25.26	96.4	22.26	93.6	17.91	237.	1356.	1627.
	PT	0.102	25.79	99.3	25.24	96.5	27.53	93.8	23.19	236.	1636.	1983.
W	SR	0.056	36.29	99.5	36.02	97.8	33.54	96.2	31.12	335.	1875.	2300.
	C	0.056	42.06	99.5	41.79	97.8	39.32	96.2	36.99	388.	2183.	2683.
	ST	0.031	29.09	99.6	28.93	98.6	29.00	97.6	27.54	269.	1598.	1973.
	PT	0.031	29.35	99.6	29.20	98.6	33.79	97.6	32.42	271.	1853.	2296.
C/S	SR	0.204	130.80	99.0	128.99	93.8	114.31	87.6	96.99	1203.	6604.	8014.
	C	0.204	138.95	99.0	137.14	93.8	122.47	87.6	105.14	1279.	7039.	8554.
	ST	0.115	123.58	99.3	122.52	96.1	115.12	93.1	106.48	1140.	6458.	7918.
	PT	0.112	126.76	99.3	125.70	96.2	123.58	93.2	115.06	1169.	6908.	8486.
C/S/W	SR	0.130	111.27	99.2	110.24	95.7	101.48	92.3	93.07	1026.	5715.	6995.
	C	0.130	118.55	99.2	117.53	95.7	108.77	92.3	100.36	1093.	6103.	7478.
	ST	0.073	104.30	99.4	103.70	97.3	100.07	95.3	94.95	963.	5525.	6807.
	PT	0.071	106.37	99.4	105.77	97.3	107.43	95.3	102.41	983.	5916.	7301.

TABLE 16. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES AM03.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR	YEAR 100	INITIAL YIELD)	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR	200			
C	SR	0.244	6.07	98.8	5.44	92.7	0.40	84.1	-6.69	53.	199.	172.
	C	0.244	9.91	98.8	9.28	92.7	4.24	84.1	-2.85	89.	403.	427.
	ST	0.087	0.72	99.4	0.48	96.9	-0.54	94.5	-2.49	6.	46.	31.
	PT	0.067	0.37	99.4	0.18	97.5	2.73	95.6	1.20	3.	206.	240.
S	SR	0.188	-2.32	99.0	-2.51	94.2	-4.09	88.8	-5.83	-22.	-163.	-224.
	C	0.188	-0.49	99.0	-0.68	94.2	-2.26	88.8	-4.00	-5.	-65.	-103.
	ST	0.067	-6.19	99.4	-6.26	97.5	-5.83	95.6	-6.42	-58.	-287.	-364.
	PT	0.051	-8.55	99.5	-8.60	97.9	-4.88	96.4	-5.29	-79.	-241.	-300.
W	SR	0.056	0.25	99.5	0.18	97.8	-0.47	96.2	-1.10	2.	-2.	-11.
	C	0.056	2.51	99.5	2.45	97.8	1.80	96.2	1.17	23.	119.	139.
	ST	0.020	-3.77	99.6	-3.79	99.0	-3.13	98.3	-3.36	-35.	-158.	-198.
	PT	0.015	-5.13	99.6	-5.15	99.1	-1.80	98.6	-1.92	-48.	-89.	-108.
P/H	SR	0.008	22.84	99.6	22.83	99.4	22.69	99.1	22.53	212.	1214.	1509.
	ST	0.003	20.46	99.7	20.46	99.6	21.31	99.5	21.29	190.	1137.	1417.
	PT	0.002	19.16	99.7	19.15	99.6	22.66	99.5	22.70	177.	1209.	1510.
R	SR	0.011	4.17	99.6	4.16	99.3	4.12	98.9	4.08	39.	221.	275.
C/S	SR	0.206	13.28	98.9	12.83	93.7	9.20	87.4	4.88	121.	617.	717.
	C	0.206	16.11	98.9	15.66	93.7	12.04	87.4	7.71	147.	768.	905.
	ST	0.073	9.01	99.4	8.84	97.3	8.41	95.2	7.01	83.	502.	607.
	PT	0.057	7.88	99.5	7.75	97.8	10.78	96.1	9.70	72.	618.	759.
C/W	SR	0.150	14.68	99.1	14.34	95.2	11.46	91.2	8.60	134.	712.	847.
	C	0.150	17.74	99.1	17.39	95.2	14.52	91.2	11.65	163.	874.	1049.
	ST	0.053	10.17	99.5	10.04	97.9	9.94	96.3	8.83	94.	572.	698.
	PT	0.041	9.21	99.5	9.11	98.3	12.42	97.0	11.57	85.	695.	860.
S/W	SR	0.094	2.77	99.3	2.66	96.7	1.61	94.2	0.63	25.	123.	139.
	C	0.094	4.82	99.3	4.70	96.7	3.66	94.2	2.68	44.	232.	274.
	ST	0.033	-1.23	99.6	-1.28	98.5	-0.60	97.5	-0.98	-12.	-17.	-24.
	PT	0.026	-3.34	99.6	-3.38	98.8	0.54	97.9	0.31	-31.	41.	53.
C/S/W	SR	0.131	12.15	99.2	11.90	95.6	9.70	92.2	7.60	111.	594.	710.
	C	0.131	14.77	99.2	14.51	95.6	12.32	92.2	10.21	136.	733.	883.
	ST	0.047	7.97	99.5	7.87	98.1	8.07	96.7	7.22	73.	462.	565.
	PT	0.036	6.59	99.5	6.51	98.4	10.05	97.3	9.43	61.	561.	695.

TABLE 17. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BOLD.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND YR 1	YEAR 10	YEAR 100	INITIAL YIELD) MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	100	200			
R	SR	0.194	-6.54	99.1	-6.54	96.2	-6.54	93.3	-6.54	-61.	-348.	-433.

TABLE 18. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BF13.

ROT.	CP	PERCENT TOPSOIL LOST/YR		THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10		THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200		PRESENT VALUE OF A PROFIT STREAM TO YEAR 10		PRESENT VALUE OF A PROFIT STREAM TO YEAR 200		
		YR 1	YR 10	YR 10	YEAR 100	YR 10	YEAR 200	10	100	10	200	
C	SR	0.234	-12.30	99.0	-12.60	95.7	-14.71	91.5	-17.39	-115.	-712.	-915.
	C	0.234	-8.46	99.0	-8.77	95.7	-10.87	91.5	-13.55	-80.	-507.	-660.
	ST	0.134	-19.65	99.2	-19.83	97.0	-19.45	95.2	-20.56	-183.	-987.	-1242.
	PT	0.132	-22.99	99.2	-23.17	97.1	-17.53	95.3	-18.53	-214.	-884.	-1107.
S	SR	0.180	-5.07	99.1	-5.18	96.4	-5.98	93.9	-6.74	-47.	-291.	-373.
	C	0.180	-3.24	99.1	-3.35	96.4	-4.16	93.9	-4.91	-31.	-194.	-252.
	ST	0.103	-10.45	99.3	-10.51	97.5	-9.24	96.0	-9.61	-97.	-473.	-591.
	PT	0.102	-15.47	99.3	-15.54	97.5	-8.99	96.1	-9.26	-144.	-460.	-568.
W	SR	0.054	0.18	99.4	0.14	98.4	-0.25	97.4	-0.61	2.	0.	-5.
	C	0.054	2.45	99.4	2.41	98.4	2.02	97.4	1.66	23.	121.	146.
	ST	0.031	-5.09	99.4	-5.12	98.8	-3.81	98.2	-3.98	-47.	-194.	-241.
	PT	0.030	-8.80	99.4	-8.82	98.8	-2.99	98.2	-3.08	-82.	-151.	-181.
P/H	SR	0.007	22.74	99.5	22.73	99.3	22.64	99.2	22.55	211.	1210.	1504.
	ST	0.004	19.10	99.5	19.09	99.4	20.59	99.3	20.60	177.	1099.	1372.
	PT	0.004	15.46	99.5	15.45	99.4	21.48	99.3	21.57	143.	1146.	1436.
R	SR	0.011	5.47	99.5	5.47	99.3	5.44	99.0	5.41	51.	291.	361.
	SR	0.198	0.42	99.1	0.20	96.2	-1.43	93.2	-3.10	3.	-21.	-47.
C/S	C	0.198	3.25	99.1	3.03	96.2	1.40	93.2	-0.26	29.	130.	141.
	ST	0.113	-5.67	99.2	-5.80	97.3	-5.09	95.8	-5.92	-53.	-233.	-299.
	PT	0.112	-9.67	99.2	-9.80	97.4	-3.82	95.8	-4.55	-90.	-165.	-208.
C/W	SR	0.144	3.32	99.2	3.14	96.9	1.76	95.0	0.60	30.	141.	158.
	C	0.144	6.38	99.2	6.20	96.9	4.81	95.0	3.65	58.	304.	361.
	ST	0.083	-2.96	99.3	-3.07	97.8	-2.18	96.6	-2.88	-28.	-84.	-111.
S/W	PT	0.081	-6.76	99.3	-6.87	97.9	-0.70	96.6	-1.31	-63.	-5.	-7.
	SR	0.090	1.21	99.3	1.13	97.7	0.54	96.4	0.04	11.	50.	54.
	C	0.090	3.25	99.3	3.18	97.7	2.59	96.4	2.09	30.	159.	190.
C/S/W	ST	0.052	-4.26	99.4	-4.31	98.4	-2.88	97.5	-3.15	-40.	-140.	-174.
	PT	0.051	-9.02	99.4	-9.07	98.4	-2.36	97.5	-2.53	-84.	-112.	-133.
	SR	0.126	3.23	99.2	3.09	97.1	2.01	95.5	1.12	29.	144.	166.
C/S/W	C	0.126	5.85	99.2	5.71	97.1	4.62	95.5	3.73	54.	284.	339.
	ST	0.072	-2.65	99.3	-2.73	98.0	-1.63	96.9	-2.17	-25.	-62.	-81.
	PT	0.071	-6.83	99.3	-6.91	98.0	-0.54	96.9	-0.98	-64.	-3.	-2.

TABLE 19. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BF35.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND YR 1	YEAR 10	YEAR 20	INITIAL YIELD) AND MANAGEMENT FOR YEAR 200	PROFIT STREAM TO YEAR 10	PROFIT STREAM TO YEAR 100	PRESENT VALUE OF A YEAR 200			
C	SR	0.696	-21.49	98.1	-22.19	81.5	-31.29	50.0	-48.66	-202.	-1287.	-1838.
	C	0.696	-17.65	98.1	-18.35	81.5	-27.46	50.0	-44.82	-167.	-1083.	-1583.
	ST	0.290	-30.84	98.9	-31.17	94.9	-30.67	87.7	-34.68	-287.	-1558.	-1966.
	PT	0.271	-37.63	98.9	-37.94	95.2	-29.44	89.2	-32.65	-350.	-1495.	-1875.
S	SR	0.536	-10.48	98.4	-10.73	89.4	-12.92	50.0	-22.54	98.	-603.	-815.
	C	0.536	-8.65	98.4	-9.90	89.4	-11.09	50.0	-20.71	-81.	-506.	-694.
	ST	0.223	-17.77	99.0	-17.89	95.8	-15.96	92.1	-16.80	-165.	-823.	-1028.
	PT	0.208	-26.17	99.0	-26.28	96.0	-16.42	92.8	-16.99	-243.	-848.	-1048.
W	SR	0.161	-6.20	99.1	-6.30	96.7	-7.10	94.5	-7.79	-58.	-351.	-447.
	C	0.161	-3.93	99.1	-4.03	96.7	-4.83	94.5	-5.52	-37.	-230.	-296.
	ST	0.067	-13.32	99.3	-13.37	98.1	-11.37	97.0	-11.62	-124.	-591.	-735.
	PT	0.063	-20.22	99.4	-20.27	98.2	-11.25	97.2	-11.35	-188.	-585.	-718.
P/H	SR	0.021	22.74	99.4	22.71	99.0	22.46	98.6	22.20	211.	1206.	1497.
	ST	0.009	17.44	99.5	17.43	99.3	19.72	99.1	19.70	161.	1055.	1318.
	PT	0.008	10.73	99.5	10.72	99.3	20.02	99.1	20.14	99.	1070.	1347.
R	SR	0.032	5.47	99.4	5.46	98.8	5.38	98.2	5.31	51.	289.	359.
C/S	SR	0.589	-8.25	98.3	-8.77	87.3	-13.99	50.0	-31.71	-79.	-537.	-822.
	C	0.589	-5.42	98.3	-5.94	87.3	-11.16	50.0	-28.88	-53.	-386.	-635.
	PT	0.246	-16.33	98.9	-16.58	95.5	-15.52	90.9	-17.71	-152.	-770.	-975.
C/W	SR	0.429	-23.77	99.0	-24.00	95.8	-14.98	91.8	-16.70	-221.	-743.	-929.
	C	0.429	-5.85	98.6	-6.28	92.5	-9.41	68.1	-21.99	-56.	-387.	-555.
	ST	0.179	-14.15	99.1	-14.34	96.4	-13.05	93.9	-14.27	-28.	-224.	-353.
	PT	0.167	-21.40	99.1	-21.58	96.6	-12.33	94.3	-13.29	-132.	-646.	-815.
S/W	SR	0.268	-5.32	98.9	-5.49	95.2	-6.63	89.4	-8.46	-50.	-314.	-408.
	C	0.268	-3.28	98.9	-3.44	95.2	-4.59	89.4	-6.41	-31.	-205.	-272.
	PT	0.112	-12.75	99.2	-12.82	97.4	-10.70	95.8	-11.09	-118.	-549.	-684.
C/S/W	SR	0.104	-20.90	99.3	-20.97	97.5	-10.92	96.0	-11.13	-194.	-561.	-689.
	C	0.375	-5.05	98.7	-5.37	93.6	-7.63	77.8	-14.65	-48.	-326.	-452.
	ST	0.156	-12.92	99.1	-13.07	96.7	-11.46	94.6	-12.30	-24.	-187.	-278.
	PT	0.146	-20.53	99.2	-20.67	96.9	-11.11	94.9	-11.74	-120.	-572.	-719.

TABLE 20. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES EF58.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	5.44	97.6	5.24	96.3	5.08	51.	286.	354.
R	SR	0.094	5.47	99.3	5.44	97.6	5.24	96.3	5.08	51.	286.	354.

TABLE 21. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BM35.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	50.0	-44.07	50.0	-44.07	50.0	-44.07	-121.	-1108.	-1682.	
C	SR	1.163	-12.44	97.3	-13.68	50.0	-44.07	50.0	-44.07	50.0	-44.07	-121.	-1108.	-1682.
	C	1.163	-8.60	97.3	-9.85	50.0	-40.23	50.0	-40.23	50.0	-40.23	-86.	-903.	-1428.
S	SR	0.895	-5.12	97.7	-5.59	64.0	-15.66	50.0	-19.83	50.0	-19.83	-50.	-394.	-647.
	C	0.895	-3.29	97.7	-3.76	64.0	-13.84	50.0	-18.00	50.0	-18.00	-33.	-296.	-526.
W	SR	0.268	-5.20	98.9	-6.38	95.2	-7.55	89.4	-9.43	89.4	-9.43	-58.	-362.	-468.
	C	0.268	-3.94	98.9	-4.11	95.2	-5.28	89.4	-7.16	89.4	-7.16	-37.	-241.	-318.
P/H	SR	0.036	14.67	99.4	14.63	98.7	14.27	98.0	13.92	98.0	13.92	136.	773.	957.
R	SR	0.054	4.15	99.4	4.14	98.4	4.03	97.4	3.93	97.4	3.93	38.	218.	270.
C/S	SR	0.984	0.32	97.6	-0.63	52.3	-26.07	50.0	-27.37	50.0	-27.37	-2.	-263.	-620.
	C	0.984	3.15	97.6	2.20	52.3	-23.24	50.0	-24.54	50.0	-24.54	25.	-112.	-432.
C/W	SR	0.716	-0.26	98.0	-1.01	80.2	-11.19	50.0	-28.50	50.0	-28.50	-6.	-169.	-464.
	C	0.716	2.79	98.0	2.04	80.2	-8.14	50.0	-25.45	50.0	-25.45	22.	-6.	-261.
S/W	SR	0.447	-2.34	98.5	-2.63	92.0	-4.86	64.0	-14.48	64.0	-14.48	-23.	-177.	-275.
	C	0.447	-0.29	98.5	-0.58	92.0	-2.81	64.0	-12.43	64.0	-12.43	-4.	-67.	-139.
C/S/W	SR	0.626	0.85	98.2	0.27	85.5	-6.10	50.0	-24.00	50.0	-24.00	5.	-67.	-266.
	C	0.626	3.47	98.2	2.88	85.5	-3.48	50.0	-21.38	50.0	-21.38	29.	73.	-92.

TABLE 22. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BM58.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 1	YEAR 10	96.9	3.87	95.0	3.66	38.	215.	264.	
R	SR	0.145	4.15	99.2	4.11	96.9	3.87	95.0	3.66	38.	215.	264.

TABLE 23. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BDFS.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 1	YEAR 10	99.6	22.78	99.4	22.71	212.	1216.	1512.	
P/H	SR	0.003	22.84	99.7	22.84	99.6	22.78	99.4	22.71	212.	1216.	1512.
R	SR	0.005	5.49	99.7	5.49	99.5	5.47	99.3	5.45	51.	292.	363.

TABLE 24. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BSSE.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 1	YEAR 10	97.5	21.55	95.7	20.49	210.	1186.	1462.	
P/H	SR	0.034	22.73	99.3	22.62	97.5	21.55	95.7	20.49	210.	1186.	1462.
R	SR	0.052	1.36	99.2	1.34	96.5	1.13	94.1	0.93	13.	68.	81.

TABLE 25. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES BT13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	PERCENT YIELD REMAINING (AS A % OF THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100)	YR 10	YR 100	INITIAL YIELD)	PERCENT YIELD REMAINING (AS A % OF THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200)	YR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200
C	SR	0.267	5.95	98.9	5.51	95.3	2.50	89.5	-2.26	53.	236.
	C	0.267	9.79	98.9	9.35	95.3	6.34	89.5	1.57	89.	441.
	ST	0.142	-0.84	99.2	-1.09	96.9	-1.20	95.0	-2.74	-9.	2.
	PT	0.136	-3.81	99.2	-4.06	97.0	1.13	95.2	-0.26	-36.	126.
S	SR	0.205	3.02	99.0	2.86	96.1	1.74	92.9	0.53	27.	131.
	C	0.205	4.85	99.0	4.69	96.1	3.56	92.9	2.36	44.	228.
	ST	0.109	-2.11	99.2	-2.20	97.4	-1.11	95.9	-1.62	-20.	-34.
	PT	0.105	-6.97	99.3	-7.06	97.5	-0.68	96.0	-1.08	-65.	-11.
W	SR	0.062	19.30	99.4	19.23	98.2	18.57	97.2	17.98	178.	1012.
	C	0.062	21.57	99.4	21.49	98.2	20.83	97.2	20.25	199.	1133.
	ST	0.033	14.60	99.4	14.56	98.8	15.72	98.1	15.41	135.	852.
	PT	0.031	11.28	99.4	11.24	98.8	16.94	98.2	16.72	104.	916.
P/H	SR	0.008	14.67	99.5	14.66	99.3	14.57	99.1	14.48	136.	780.
	ST	0.004	10.78	99.5	10.78	99.4	12.28	99.3	12.30	100.	656.
	PT	0.004	6.98	99.5	6.98	99.4	13.01	99.3	13.11	65.	695.
R	SR	0.012	6.35	99.5	6.34	99.2	6.31	98.9	6.28	59.	337.
C/S	SR	0.226	16.17	99.0	15.84	95.8	13.55	91.9	10.77	148.	800.
	C	0.226	19.01	99.0	18.68	95.8	16.38	91.9	13.60	175.	951.
	ST	0.120	10.56	99.2	10.38	97.2	10.71	95.6	9.58	97.	622.
	PT	0.115	6.88	99.2	6.70	97.3	12.33	95.7	11.32	63.	708.
C/W	SR	0.164	25.11	99.1	24.83	96.6	22.75	94.4	20.90	231.	1283.
	C	0.164	28.16	99.1	27.88	96.6	25.80	94.4	23.96	260.	1446.
	ST	0.088	19.48	99.3	19.33	97.8	19.83	96.5	18.80	180.	1102.
	PT	0.084	16.12	99.3	15.97	97.8	21.76	96.6	20.85	149.	1205.
S/W	SR	0.103	16.25	99.3	16.14	97.5	15.21	96.1	14.45	150.	843.
	C	0.103	18.30	99.3	18.19	97.5	17.26	96.1	16.49	169.	952.
	ST	0.055	11.23	99.4	11.17	98.3	12.42	97.4	11.98	104.	682.
	PT	0.052	6.78	99.4	6.72	98.4	13.25	97.5	12.93	63.	726.
C/S/W	SR	0.144	21.03	99.2	20.82	96.9	19.21	95.0	17.87	194.	1079.
	C	0.144	23.65	99.2	23.44	96.9	21.83	95.0	20.48	218.	1219.
	ST	0.077	15.69	99.3	15.58	97.9	16.39	96.8	15.60	145.	908.
	PT	0.073	11.87	99.3	11.76	98.0	17.86	96.8	17.19	109.	986.

TABLE 26. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES DC13.

ROT.	CP	PERCENT THE YIELD REMAINING (AS A % OF THE INITIAL YIELD)		PERCENT VALUE OF A								
		TOPSOIL LOST/YR	AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	PROFIT STREAM TO YEAR 10	PROFIT STREAM TO YEAR 200							
S	SR	0.210	-16.62	99.0	-16.69	96.0	-17.24	92.7	-17.85	-154.	-900.	-1128.
	C	0.210	-14.79	99.0	-14.87	96.0	-15.42	92.7	-16.02	-137.	-803.	-1006.
	ST	0.120	-22.34	99.2	-22.39	97.2	-20.95	95.6	-21.18	-207.	-1103.	-1373.
	PT	0.119	-27.60	99.2	-27.65	97.3	-20.93	95.7	-21.06	-256.	-1102.	-1365.
W	SR	0.063	-6.19	99.4	-6.23	98.2	-6.60	97.1	-6.94	-58.	-339.	-427.
	C	0.063	-3.92	99.4	-3.96	98.2	-4.34	97.1	-4.67	-37.	-218.	-276.
	ST	0.036	-11.66	99.4	-11.68	98.7	-10.36	98.0	-10.53	-108.	-544.	-676.
	PT	0.036	-15.49	99.4	-15.51	98.7	-9.67	98.0	-9.75	-144.	-507.	-624.
P/H	SR	0.008	14.67	99.5	14.66	99.3	14.57	99.1	14.47	136.	779.	969.
	ST	0.005	10.78	99.5	10.78	99.4	12.28	99.3	12.29	100.	656.	820.
	PT	0.005	6.98	99.5	6.98	99.4	13.00	99.3	13.10	65.	695.	874.
R	SR	0.013	0.92	99.5	0.92	99.2	0.90	98.9	0.88	9.	49.	60.
S/W	SR	0.105	-8.74	99.3	-8.80	97.5	-9.30	96.0	-9.70	-81.	-478.	-601.
	C	0.105	-6.69	99.3	-6.75	97.5	-7.25	96.0	-7.65	-62.	-369.	-465.
	ST	0.060	-14.51	99.4	-14.54	98.2	-13.05	97.2	-13.26	-135.	-684.	-851.
PT	0.059	-19.46	99.4	-19.50	98.3	-12.73	97.3	-12.84	-180.	-667.	-823.	

TABLE 27. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES DC35.

ROT.	CP	PERCENT THE YIELD REMAINING (AS A % OF THE INITIAL YIELD)		PERCENT VALUE OF A								
		TOPSOIL LOST/YR	AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	PROFIT STREAM TO YEAR 10	PROFIT STREAM TO YEAR 200							
P/H	SR	0.037	14.66	99.4	14.63	98.7	14.26	98.0	13.90	136.	773.	957.
R	SR	0.055	0.92	99.4	0.91	98.3	0.84	97.4	0.77	9.	47.	58.

TABLE 28. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES HYGL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	44.6	82.7	0.75	97.2	0.91	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200
R	SR	0.400	0.91	97.2	0.75	82.7	-0.33	44.6	-3.20	8.	20.	5.			

TABLE 29. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES LLFS.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	98.9	99.2	4.12	99.5	4.15	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200
R	SR	0.013	4.15	99.5	4.15	99.2	4.12	98.9	4.09	38.	220.	274.			

TABLE 30. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES LYAL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	99.4	99.5	22.73	99.5	22.74	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200
P/H	SR	0.001	22.74	99.5	22.74	99.5	22.73	99.4	22.71	211.	1211.	1508.			
R	SR	0.002	5.18	99.5	5.17	99.5	5.17	99.4	5.16	48.	276.	343.			

TABLE 31. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES LNCL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND YR 1	YEAR 10	YEAR 100	INITIAL YIELD) AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200			
C	SR C	0.174 0.174	-6.71 -2.87	99.1 99.1	-7.09 -3.25	94.5 94.5	-10.25 -6.42	89.7 89.7	-13.61 -9.77	-64. -28.	-436. -231.	-586. -331.
S	SR C	0.134 0.134	-4.47 -2.64	99.2 99.2	-4.60 -2.77	95.6 95.6	-5.70 -3.87	92.1 92.1	-6.76 -4.94	-42. -25.	-265. -168.	-345. -224.
W	SR C	0.040 0.040	9.82 12.09	99.5 99.5	9.76 12.03	98.3 98.3	9.17 11.44	97.1 97.1	8.58 10.85	91. 112.	510. 631.	626. 777.
P/H	SR	0.005	14.75	99.7	14.75	99.5	14.66	99.3	14.56	137.	784.	975.
R	SR	0.008	3.14	99.6	3.14	99.4	3.11	99.1	3.08	29.	167.	207.
C/S	SR C	0.147 0.147	4.20 7.03	99.1 99.1	3.92 6.75	95.2 95.2	1.57 4.40	91.3 91.3	-0.76 2.07	38. 64.	166. 317.	175. 363.
C/W	SR C	0.107 0.107	12.08 15.14	99.3 99.3	11.85 14.90	96.3 96.3	9.77 12.82	93.5 93.5	7.82 10.87	111. 139.	594. 755.	711. 913.
S/W	SR C	0.067 0.067	6.85 8.90	99.4 99.4	6.76 8.81	97.5 97.5	5.91 7.95	95.6 95.6	5.09 7.13	63. 82.	345. 454.	418. 553.
C/S/W	SR C	0.094 0.094	9.35 11.97	99.3 99.3	9.18 11.80	96.7 96.7	7.62 10.24	94.2 94.2	6.15 8.77	86. 110.	461. 600.	552. 726.
IRRIGATED CROP ROTATIONS												
C	SR C	0.174 0.174	136.45 146.10	99.1 99.1	134.72 144.37	94.5 94.5	120.49 130.14	89.7 89.7	105.39 115.03	1256. 1345.	6918. 7432.	8415. 9055.
S	SR C	0.134 0.134	98.48 105.13	99.2 99.2	97.52 104.18	95.6 95.6	89.40 96.05	92.1 92.1	81.55 88.20	908. 969.	5048. 5403.	6174. 6615.
W	SR C	0.040 0.040	69.40 75.17	99.5 99.5	69.16 74.93	98.3 98.3	66.92 72.69	97.1 97.1	64.67 70.44	642. 695.	3645. 3953.	4506. 4889.
C/S	SR C	0.147 0.147	166.47 174.62	99.1 99.1	164.99 173.14	95.2 95.2	152.48 160.63	91.3 91.3	140.10 148.25	1535. 1611.	8562. 8997.	10488. 11029.
C/S/W	SR C	0.094 0.094	147.33 154.62	99.3 99.3	146.48 153.76	96.7 96.7	138.91 146.19	94.2 94.2	131.78 139.06	1361. 1428.	7668. 8056.	9442. 9925.

TABLE 32. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES LFSL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200				
C	SR	0.135	-6.70	99.2	-7.00	95.5	-9.55	92.0	-12.02	-63.	-419.	-556.
	C	0.135	-2.85	99.2	-3.16	95.5	-5.71	92.0	-8.18	-28.	-215.	-302.
S	SR	0.104	-4.47	99.3	-4.57	96.4	-5.45	93.6	-6.29	-42.	-259.	-335.
	C	0.104	-2.64	99.3	-2.74	96.4	-3.63	93.6	-4.46	-25.	-162.	-214.
W	SR	0.031	9.83	99.6	9.78	98.6	9.31	97.6	8.84	91.	513.	632.
	C	0.031	12.09	99.6	12.05	98.6	11.58	97.6	11.10	112.	634.	782.
P/H	SR	0.004	22.84	99.7	22.83	99.5	22.75	99.4	22.67	212.	1215.	1511.
R	SR	0.006	3.14	99.6	3.14	99.4	3.12	99.2	3.10	29.	167.	207.
C/S	SR	0.115	4.21	99.3	3.99	96.1	2.09	93.1	0.30	38.	178.	196.
	C	0.115	7.04	99.3	6.82	96.1	4.93	93.1	3.13	64.	329.	384.
C/W	SR	0.083	12.09	99.4	11.90	97.0	10.24	94.7	8.67	111.	604.	730.
	C	0.083	15.14	99.4	14.96	97.0	13.29	94.7	11.72	139.	767.	932.
S/W	SR	0.052	6.86	99.5	6.78	97.9	6.10	96.4	5.44	63.	349.	425.
	C	0.052	8.90	99.5	8.83	97.9	8.15	96.4	7.49	82.	458.	561.
C/S/W	SR	0.073	9.36	99.4	9.22	97.3	7.97	95.3	6.78	86.	469.	567.
	C	0.073	11.98	99.4	11.84	97.3	10.59	95.3	9.40	110.	608.	740.
IRRIGATED CROP ROTATIONS												
C	SR	0.135	136.49	99.2	135.14	95.5	123.67	92.0	112.56	1258.	6992.	8547.
	C	0.135	146.14	99.2	144.79	95.5	133.31	92.0	122.20	1347.	7506.	9187.
S	SR	0.104	98.50	99.3	97.76	96.4	91.22	93.6	85.06	909.	5090.	6248.
	C	0.104	105.16	99.3	104.41	96.4	97.87	93.6	91.72	971.	5445.	6689.
W	SR	0.031	69.40	99.6	69.22	98.6	67.45	97.6	65.64	642.	3657.	4527.
	C	0.031	75.17	99.6	74.99	98.6	73.22	97.6	71.41	695.	3964.	4910.
C/S	SR	0.115	166.51	99.3	165.35	96.1	155.27	93.1	145.74	1537.	8627.	10602.
	C	0.115	174.66	99.3	173.50	96.1	163.42	93.1	153.89	1613.	9061.	11143.
C/S/W	SR	0.073	147.35	99.4	146.69	97.3	140.64	95.3	134.86	1362.	7707.	9510.
	C	0.073	154.64	99.4	153.97	97.3	147.92	95.3	142.14	1429.	8095.	9993.

TABLE 33. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MA01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200			
C	SR C	0.133 0.133	-21.33 -17.49	99.2 99.2	-21.56 -17.73	95.6 95.6	-23.55 -19.71	92.1 92.1	-25.47 -21.63	-199. -163.	-1185. -980.	-1502. -1247.
S	SR C	0.103 0.103	-5.02 -3.19	99.3 99.3	5.12 -3.29	96.4 96.4	-5.97 -4.15	93.7 93.7	-6.78 -4.95	-47. -30.	-288. -191.	-370. -249.
W	SR C	0.031 0.031	0.25 2.52	99.6 99.6	0.21 2.48	98.6 98.6	-0.15 2.11	97.6 97.6	-0.53 1.74	2. 23.	5. 126.	1. 151.
P/H	SR	0.004	6.67	99.7	6.66	99.5	6.61	99.4	6.54	62.	354.	440.
R	SR	0.006	4.17	99.6	4.17	99.4	4.14	99.2	4.12	39.	222.	275.
C/S	SR C	0.113 0.113	-5.11 -2.28	99.3 99.3	-5.30 -2.46	96.1 96.1	-6.87 -4.04	93.2 93.2	-8.36 -5.53	-48. -22.	-311. -160.	-408. -220.
C/W	SR C	0.082 0.082	-2.29 0.85	99.4 99.4	-2.35 0.70	97.0 97.0	-3.65 -0.60	94.8 94.8	-4.88 -1.83	-21. 7.	-148. 14.	-202. -0.
S/W	SR C	0.051 0.051	1.27 3.32	99.5 99.5	1.21 3.26	97.9 97.9	0.63 2.67	96.4 96.4	0.05 2.10	11. 30.	54. 163.	59. 195.
C/S/W	SR C	0.072 0.072	-0.60 2.02	99.4 99.4	-0.71 1.91	97.3 97.3	-1.73 0.89	95.3 95.3	-2.70 -0.09	-6. 18.	-56. 84.	-84. 90.
IRRIGATED CROP ROTATIONS												
C	SR C	0.133 0.133	-29.06 -19.42	99.2 99.2	-29.69 -20.05	95.6 95.6	-35.02 -25.37	92.1 92.1	-40.16 -30.51	-272. -183.	-1679. -1165.	-2161. -1522.
S	SR C	0.103 0.103	-37.31 -30.66	99.3 99.3	-37.60 -30.94	96.4 96.4	-40.13 -33.47	93.7 93.7	-42.51 -35.86	-347. -285.	-2049. -1694.	-2584. -2143.
W	SR C	0.031 0.031	-29.90 -24.13	99.6 99.6	-29.98 -24.21	98.6 98.6	-30.77 -25.00	97.6 97.6	-31.58 -25.81	-277. -224.	-1611. -1304.	-2017. -1634.
C/S	SR C	0.113 0.113	-11.11 -2.96	99.3 99.3	-11.62 -3.47	96.1 96.1	-15.99 -7.84	93.2 93.2	-20.12 -11.97	-105. -30.	-698. -264.	-928. -387.
C/S/W	SR C	0.072 0.072	-10.58 -3.30	99.4 99.4	-10.88 -3.59	97.3 97.3	-13.52 -6.24	95.3 95.3	-16.05 -8.77	-99. -32.	-627. -239.	-816. -333.

TABLE 34. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MA13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10)	AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	INITIAL YIELD FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200					
C	SR	0.406	-21.38	98.3	-22.07	87.7	-27.91	56.3	-45.20	201.	-1273.	-1703.
	C	0.406	-17.55	98.3	-18.23	87.7	-24.07	56.3	-41.36	-166.	-1068.	-1449.
	ST	0.223	-28.99	98.9	-29.38	93.3	-30.77	86.0	-34.80	-270.	-1527.	-1942.
	PT	0.217	-32.50	98.9	-32.90	93.4	-28.98	86.6	-32.75	-303.	-1433.	-1817.
S	SR	0.313	-5.04	98.6	-5.33	90.8	-7.65	75.6	-12.20	48.	-325.	-443.
	C	0.313	-3.21	98.6	-3.50	90.8	-5.82	75.6	-10.38	31.	-228.	-322.
	ST	0.172	-10.41	99.1	-10.57	94.6	-10.14	89.9	-11.52	-97.	-492.	-626.
	PT	0.167	-15.43	99.1	-15.60	94.7	-9.87	90.2	-11.12	-144.	-478.	-602.
W	SR	0.094	-6.14	99.3	-6.24	96.7	-7.09	94.2	-7.89	57.	-348.	-444.
	C	0.094	-3.87	99.3	-3.97	96.7	-4.82	94.2	-5.62	36.	-227.	-294.
	ST	0.052	-11.61	99.5	-11.66	97.9	-10.62	96.4	-11.05	-108.	-547.	-684.
	PT	0.050	-15.43	99.5	-15.49	98.0	-9.92	96.5	-10.26	-143.	-510.	-632.
P/H	SR	0.013	6.67	99.6	6.65	99.2	6.48	98.8	6.30	62.	351.	435.
	ST	0.007	2.54	99.6	2.53	99.4	3.99	99.2	3.95	23.	216.	272.
	PT	0.007	-1.42	99.6	-1.43	99.4	4.55	99.2	4.60	-13.	246.	315.
R	SR	0.019	3.73	99.6	3.72	99.0	3.66	98.4	3.59	34.	197.	244.
	SR	0.344	-5.16	98.5	-5.69	89.9	-10.05	70.2	-19.97	50.	-379.	-550.
C/S	C	0.344	-2.32	98.5	-2.86	89.9	-7.22	70.2	-17.14	24.	-228.	-362.
	ST	0.189	-11.40	99.0	-11.71	94.1	-12.43	88.7	-15.18	-107.	-573.	-744.
	PT	0.183	-15.51	99.0	-15.81	94.3	-11.24	89.1	-13.81	-145.	-511.	-658.
C/W	SR	0.250	-5.75	98.8	-6.16	92.6	-9.38	83.5	-14.05	55.	-386.	-529.
	C	0.250	-2.70	98.8	-3.10	92.6	-6.32	83.5	-10.99	27.	-224.	-327.
	ST	0.138	-12.30	99.2	-12.53	95.5	-12.69	91.9	-14.52	-115.	-607.	-777.
S/W	PT	0.133	-16.28	99.2	-16.51	95.6	-11.37	92.1	-13.08	-152.	-537.	-683.
	SR	0.156	-2.26	99.1	-2.43	95.0	-3.85	90.8	-5.28	22.	-155.	-213.
	C	0.156	-0.21	99.1	-0.38	95.0	-1.80	90.8	-3.23	3.	-46.	-77.
C/S/W	ST	0.086	-7.83	99.4	-7.93	96.9	-6.98	94.6	-7.73	-73.	-341.	-432.
	PT	0.083	-12.66	99.4	-12.75	97.0	-6.52	94.7	-7.16	-118.	-317.	-395.
	SR	0.219	-2.94	98.9	-3.26	93.4	-5.83	86.4	-9.05	29.	-221.	-311.
C/S/W	C	0.219	-0.32	98.6	-0.64	93.4	-3.21	86.4	-6.44	4.	-81.	-138.
	ST	0.120	-9.00	99.2	-9.18	95.9	-8.94	92.8	-10.37	-84.	-421.	-540.
	PT	0.117	-13.30	99.3	-13.48	96.0	-7.95	93.0	-9.26	-124.	-369.	-468.

TABLE 34. (CONTINUED).

IRRIGATED CROP ROTATIONS		PERCENT THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR				PRESENT VALUE OF A						
ROD.	CP	TOPSOIL LOST/YR	YR 1	YR 10	YEAR 100	YEAR 200	PROFIT 10	PROFIT 100	PROFIT 200			
C	SR	0.406	-29.21	98.3	-31.04	87.7	-46.71	56.3	-93.08	-279.	-1914.	-2702.
	C	0.406	-19.56	98.3	-21.39	87.7	-37.07	56.3	-83.44	-190.	-1400.	-2062.
	ST	0.223	-42.70	98.9	-43.76	93.3	-50.53	86.0	-61.45	-400.	-2391.	-3095.
	PT	0.217	-41.46	98.9	-42.52	93.4	-43.93	86.6	-54.35	-389.	-2043.	-2652.
S	SR	0.313	-37.38	98.6	-38.23	90.8	-45.08	75.6	-58.52	-350.	-2158.	-2801.
	C	0.313	-30.72	98.6	-31.57	90.8	-38.42	75.6	-51.87	-288.	-1803.	-2359.
	ST	0.172	-48.21	99.1	-48.71	94.6	-50.96	89.9	-55.17	-449.	-2572.	-3253.
	PT	0.167	-49.66	99.1	-50.15	94.7	-47.10	90.2	-51.11	-462.	-2368.	-2991.
W	SR	0.094	-29.92	99.3	-30.17	96.7	-32.37	94.2	-34.45	-278.	-1647.	-2080.
	C	0.094	-24.15	99.3	-24.40	96.7	-26.60	94.2	-28.68	-225.	-1339.	-1697.
	ST	0.052	-39.10	99.5	-39.25	97.9	-39.02	96.4	-40.25	-363.	-2031.	-2543.
	PT	0.050	-40.16	99.5	-40.30	98.0	-35.54	96.5	-36.68	-373.	-1847.	-2307.
C/S	SR	0.344	-11.23	98.5	-12.71	89.9	-24.80	70.2	-52.27	-111.	-888.	-1321.
	C	0.344	-3.08	98.5	-4.56	89.9	-16.65	70.2	-44.12	-35.	-453.	-780.
	ST	0.189	-22.72	99.0	-23.58	94.1	-28.79	88.7	-36.55	-214.	-1288.	-1696.
	PT	0.183	-22.39	99.0	-23.24	94.3	-23.12	89.1	-30.56	-211.	-988.	-1314.
C/S/W	SR	0.219	-10.65	98.9	-11.52	93.4	-18.51	86.4	-27.30	-103.	-741.	-1023.
	C	0.219	-3.37	98.9	-4.24	93.4	-11.23	86.4	-20.02	-35.	-353.	-540.
	ST	0.120	-21.28	99.2	-21.78	95.9	-24.27	92.8	-28.28	-199.	-1142.	-1474.
	PT	0.117	-21.65	99.3	-22.15	96.0	-19.33	93.0	-23.19	-203.	-879.	-1140.

TABLE 35. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MA35.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND YEAR 10	THE INITIAL YIELD) AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200					
P/H	SR	0.029	6.66	99.6	6.62	98.7	6.25	97.8	5.86	62.	346.	426.
R	SR	0.043	3.73	99.5	3.71	98.2	3.58	96.9	3.44	34.	195.	241.
IRRIGATED CROP ROTATIONS												
S	SR	0.714	-53.38	97.3	-54.88	67.7	-76.26	25.0	-107.03	-501.	-3186.	-4445.
	C	0.714	-46.72	97.3	-48.22	67.7	-69.61	25.0	-100.38	-440.	-2831.	-4004.
W	SR	0.214	-46.49	98.9	-46.94	93.5	-50.55	86.8	-54.99	-433.	-2566.	-3246.
	C	0.214	-40.72	98.9	-41.17	93.5	-44.77	86.8	-49.22	-379.	-2259.	-2863.

TABLE 36. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MK01.

ROT.	CP	PERCENT THE YIELD REMAINING (AS A % OF THE INITIAL YIELD)		AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100		AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200		PRESENT VALUE OF A PROFIT STREAM TO YEAR				
		TOPSOIL LOST/YR	YR 1	YR 10	YR 100	YR 10	YR 200	10	100	200		
C	SR	0.207	-21.34	98.9	-21.70	93.7	-24.61	87.3	-28.09	-199.	-1209.	-1546.
	C	0.207	-17.51	98.9	-17.87	93.7	-20.77	87.3	-24.25	-164.	-1005.	-1292.
S	SR	0.160	-7.72	99.1	-7.85	94.9	-8.99	90.6	-10.16	-72.	-439.	-562.
	C	0.160	-5.89	99.1	-6.03	94.9	-7.17	90.6	-8.33	-55.	-342.	-441.
W	SR	0.048	0.25	99.5	0.19	98.1	-0.37	96.6	-0.92	2.	0.	-7.
	C	0.048	2.52	99.5	2.46	98.1	1.90	96.6	1.35	23.	121.	143.
P/H	SR	0.006	6.67	99.6	6.66	99.4	6.57	99.2	6.48	62.	353.	438.
R	SR	0.010	4.17	99.6	4.16	99.3	4.13	99.0	4.10	39.	221.	275.
C/S	SR	0.175	-6.62	99.1	-6.90	94.5	-9.13	89.6	-11.52	-63.	-408.	-539.
	C	0.175	-3.79	99.1	-4.06	94.5	-6.30	89.6	-8.69	-36.	-257.	-351.
C/W	SR	0.128	-2.21	99.2	-2.44	95.7	-4.35	92.4	-6.19	-22.	-165.	-231.
	C	0.128	0.84	99.2	0.62	95.7	-1.30	92.4	-3.13	7.	-2.	-28.
S/W	SR	0.080	-0.23	99.4	-0.33	97.1	-1.16	94.9	-1.95	-3.	-32.	-52.
	C	0.080	1.82	99.4	1.72	97.1	0.89	94.9	0.10	16.	77.	84.
C/S/W	SR	0.112	-1.61	99.3	-1.78	96.2	-3.26	93.3	-4.65	-16.	-122.	-171.
	C	0.112	1.01	99.3	0.84	96.2	-0.64	93.3	-2.04	9.	18.	2.
IRRIGATED CROP ROTATIONS												
C	SR	0.207	-47.50	98.9	-48.34	93.7	-55.16	87.3	-63.32	-444.	-2700.	-3457.
	C	0.207	-37.85	98.9	-39.69	93.7	-45.51	87.3	-53.68	-354.	-2186.	-2817.
S	SR	0.160	-45.20	99.1	-45.60	94.9	-48.97	90.6	-52.41	-420.	-2491.	-3146.
	C	0.160	-38.54	99.1	-38.95	94.9	-42.32	90.6	-45.75	-359.	-2136.	-2705.
W	SR	0.048	-29.90	99.5	-30.03	98.1	-31.23	96.6	-32.42	-278.	-1621.	-2035.
	C	0.048	-24.13	99.5	-24.26	98.1	-25.46	96.6	-26.65	-224.	-1314.	-1652.
C/S	SR	0.175	-26.86	99.1	-27.55	94.5	-33.22	89.6	-39.26	-252.	-1571.	-2034.
	C	0.175	-18.71	99.1	-19.40	94.5	-25.07	89.6	-31.11	-176.	-1137.	-1493.
C/S/W	SR	0.112	-21.43	99.3	-21.84	96.2	-25.42	93.3	-28.79	-200.	-1228.	-1577.
	C	0.112	-14.14	99.3	-14.56	96.2	-18.13	93.3	-21.51	-133.	-840.	-1094.

TABLE 37. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MK13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	PRESENT VALUE OF A PROFIT STREAM TO YEAR					
				YEAR 10	YEAR 200		10	200				
C	SR C	0.474 0.474	-30.53 -26.69	98.1 98.1	-31.19 -27.35	84.8 84.8	-37.28 -33.44	35.1 35.1	-60.09 -56.26	-286. -250.	-1757. -1552.	-2329. -2074.
S	SR C	0.365 0.365	-7.74 -5.91	98.4 98.4	-8.04 -6.21	89.2 89.2	-10.55 -8.72	66.1 66.1	-16.81 -14.98	-73. -56.	-471. -374.	-634. -512.
W	SR C	0.109 0.109	0.24 2.51	99.3 99.3	0.11 2.37	96.2 96.2	-1.06 1.21	93.4 93.4	-2.16 0.10	2. 23.	-15. 105.	-35. 115.
P/H	SR	0.015	6.67	99.6	6.65	99.2	6.45	98.7	6.24	62.	351.	434.
R	SR	0.022	4.17	99.6	4.16	98.9	4.09	98.2	4.01	39.	220.	273.
C/S	SR C	0.401 0.401	-12.29 -9.46	98.3 98.3	-12.82 -9.99	87.9 87.9	-17.35 -14.52	57.6 57.6	-30.47 -27.63	-116. -90.	-759. -608.	-1035. -848.
C/W	SR C	0.292 0.292	-7.88 -4.82	98.7 98.7	-8.32 -5.27	91.4 91.4	-11.91 -8.85	78.6 78.6	-18.26 -15.21	-75. -47.	-508. -345.	-689. -487.
S/W	SR C	0.182 0.182	-0.25 1.80	99.0 99.0	-0.45 1.59	94.3 94.3	-2.17 -0.12	89.2 89.2	-4.03 -1.99	-3. 16.	-55. 54.	-93. 43.
C/S/W	SR C	0.255 0.255	-5.55 -2.93	98.8 98.8	-5.90 -3.28	92.4 92.4	-8.69 -6.07	83.0 83.0	-12.83 -10.21	-53. -29.	-365. -225.	-496. -322.
IRRIGATED CROP ROTATIONS												
S	SR C	0.365 0.365	-61.32 -54.66	98.4 98.4	-62.03 -55.38	89.2 89.2	-67.96 -61.30	66.1 66.1	-82.72 -76.07	-571. -510.	-3407. -3052.	-4351. -3909.
W	SR C	0.109 0.109	-46.47 -40.70	99.3 99.3	-46.70 -40.93	96.2 96.2	-48.72 -42.95	93.4 93.4	-50.62 -44.85	-431. -378.	-2524. -2217.	-3169. -2787.

TABLE 38. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MK35.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR				PRESENT VALUE OF A PROFIT STREAM TO YEAR				
				YEAR 10	YEAR 100	YEAR 200	YEAR 200	10	100	200		
C	SR	1.232	-34.30	95.9	-35.72	25.0	-65.64	25.0	-65.64	324.	-2344.	-3199.
	C	1.232	-30.46	55.9	-31.88	25.0	-61.81	25.0	-61.81	289.	-2139.	-2945.
	ST	0.474	-43.97	98.1	-44.60	84.8	-47.65	35.1	-69.15	410.	-2321.	-3016.
	PT	0.427	-51.01	98.2	-51.58	86.9	-45.98	50.6	-61.77	475.	-2264.	-2906.
S	SR	0.948	-13.73	96.7	-14.29	35.1	-27.32	25.0	-29.46	130.	-895.	-1278.
	C	0.948	-11.90	96.7	-12.47	35.1	-25.49	25.0	-27.63	113.	-798.	-1157.
	ST	0.365	-21.09	98.4	-21.33	89.2	-20.63	66.1	-25.54	196.	-1026.	-1307.
	PT	0.328	-29.55	98.5	-29.78	90.3	-20.96	73.0	-24.54	275.	-1052.	-1323.
W	SR	0.284	-6.16	98.7	-6.45	91.6	-8.71	79.5	-12.58	58.	-384.	-514.
	C	0.284	-3.89	98.7	-4.18	91.6	-6.44	79.5	-10.31	37.	-263.	-363.
	ST	0.109	-13.27	99.3	-13.39	96.2	-11.98	93.4	-12.83	123.	-603.	-758.
	PT	0.098	-20.17	99.3	-20.28	96.5	-11.80	93.9	-12.44	187.	-596.	-738.
P/H	SR	0.038	6.66	99.5	6.61	98.4	6.12	97.2	5.62	61.	343.	421.
	ST	0.015	0.88	99.6	0.86	99.2	3.06	98.7	2.95	8.	170.	216.
	PT	0.013	-6.15	99.6	-6.17	99.2	3.05	98.8	3.09	-57.	169.	224.
R	SR	0.057	4.17	99.5	4.15	97.8	3.96	96.1	3.79	38.	218.	268.
	SR	1.043	-17.94	96.4	-19.04	25.0	-46.03	25.0	-46.03	171.	-1309.	-1909.
C/S	C	1.043	-15.11	96.4	-16.21	25.0	-43.19	25.0	-43.19	145.	-1158.	-1721.
	ST	0.401	-26.27	98.3	-26.75	87.9	-28.09	57.6	-39.74	245.	-1348.	-1752.
	PT	0.361	-33.90	98.4	-34.33	89.3	-27.33	66.9	-35.96	316.	-1325.	-1699.
C/W	SR	0.758	-13.72	97.2	-14.68	62.9	-29.64	25.0	-46.21	132.	-958.	-1502.
	C	0.758	-10.66	97.2	-11.62	62.9	-26.59	25.0	-43.15	103.	-796.	-1299.
	ST	0.292	-22.21	98.7	-22.62	91.4	-23.16	78.6	-28.83	208.	-1118.	-1437.
S/W	PT	0.263	-29.61	98.8	-29.99	92.2	-22.35	82.2	-26.69	276.	-1085.	-1379.
	SR	0.474	-7.11	98.1	-7.53	84.8	-11.44	35.1	-26.07	68.	-462.	-666.
	C	0.474	-5.06	98.1	-5.48	84.8	-9.39	35.1	-24.02	49.	-353.	-531.
C/S/W	ST	0.182	-14.56	99.0	-14.74	94.3	-13.45	89.2	-14.89	136.	-666.	-842.
	PT	0.164	-22.75	99.1	-22.91	94.8	-13.61	90.3	-14.71	211.	-678.	-845.
	SR	0.664	-11.72	97.5	-12.46	72.4	-21.90	25.0	-39.75	112.	-785.	-1206.
C/S/W	C	0.664	-9.10	97.5	-9.84	72.4	-19.29	25.0	-37.14	88.	-646.	-1033.
	ST	0.255	-19.76	98.8	-20.07	92.4	-19.82	83.0	-23.38	184.	-969.	-1236.
	PT	0.230	-27.50	98.9	-27.78	93.1	-19.43	85.5	-22.18	256.	-955.	-1204.

TABLE 39. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MPCX.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		PERCENT VALUE OF A PROFIT STREAM TO YEAR							
			YR 1	YEAR 100		10	200					
R	SR	0.042	0.34	99.2	0.32	97.1	0.17	94.9	0.02	3.	14.	16.

TABLE 40. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MM03.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		PERCENT VALUE OF A PROFIT STREAM TO YEAR							
			YR 1	YEAR 100		10	200					
C	SR C	0.169 0.169	15.24 19.08	99.1 99.1	14.75 18.58	94.6 94.6	10.68 14.52	90.0 90.0	6.44 10.27	139. 174.	712. 916.	830. 1084.
S	SR C	0.130 0.130	3.09 4.92	99.2 99.2	2.93 4.76	95.7 95.7	1.59 3.42	92.3 92.3	0.30 2.13	28. 45.	132. 229.	146. 267.
W	SR C	0.039 0.039	9.82 12.09	99.5 99.5	9.76 12.03	98.3 98.3	9.19 11.46	97.1 97.1	8.61 10.88	91. 112.	510. 631.	627. 777.
P/H	SR	0.005	22.84	99.7	22.83	99.5	22.73	99.3	22.63	212.	1215.	1511.
R	SR	0.008	4.17	99.6	4.16	99.4	4.14	99.1	4.11	39.	221.	275.
C/S	SR C	0.143 0.143	21.93 24.76	99.2 99.2	21.58 24.41	95.3 95.3	18.60 21.43	91.6 91.6	15.67 18.51	202. 228.	1095. 1246.	1323. 1511.
C/W	SR C	0.104 0.104	25.61 28.66	99.3 99.3	25.33 28.38	96.4 96.4	22.91 25.96	93.6 93.6	20.63 23.69	236. 264.	1306. 1469.	1593. 1795.
S/W	SR C	0.065 0.065	11.06 13.11	99.4 99.4	10.96 13.01	97.5 97.5	10.05 12.10	95.7 95.7	9.17 11.22	102. 121.	568. 677.	694. 830.
C/S/W	SR C	0.091 0.091	21.58 24.20	99.3 99.3	21.38 24.00	96.8 96.8	19.54 22.16	94.3 94.3	17.80 20.42	199. 223.	1106. 1245.	1351. 1525.

TABLE 41. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MM35.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	PERCENT YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	PERCENT YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200			
P/H	SR	0.011	22.84	99.6	22.82	99.3	22.60	98.9	22.37	211.	1212.	1506.
R	SR	0.017	4.17	99.6	4.16	99.1	4.10	98.5	4.04	39.	221.	274.

TABLE 42. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MN01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	PERCENT YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	PERCENT YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200			
C	SR	0.220	33.51	98.9	32.75	93.3	26.62	86.3	18.88	307.	1633.	1945.
	C	0.220	37.34	98.9	36.58	93.3	30.46	86.3	22.72	342.	1837.	2199.
S	SR	0.169	10.66	99.1	10.41	94.6	8.39	90.0	6.28	98.	518.	617.
	C	0.169	12.48	99.1	12.24	94.6	10.22	90.0	8.11	115.	615.	739.
W	SR	0.051	25.78	99.5	25.67	98.0	24.70	96.5	23.74	238.	1351.	1667.
	C	0.051	28.05	99.5	27.94	98.0	26.97	96.5	26.00	259.	1471.	1818.
P/H	SR	0.007	22.84	99.6	22.83	99.4	22.70	99.2	22.56	212.	1214.	1509.
R	SR	0.010	4.17	99.6	4.16	99.3	4.13	99.0	4.09	39.	221.	275.
C/S	SR	0.186	37.40	99.0	36.85	94.2	32.38	88.9	27.43	344.	1882.	2280.
	C	0.186	40.23	99.0	39.69	94.2	35.21	88.9	30.26	370.	2033.	2468.
C/W	SR	0.135	45.66	99.2	45.22	95.5	41.44	92.0	37.79	421.	2340.	2862.
	C	0.135	48.71	99.2	48.27	95.5	44.50	92.0	40.85	449.	2503.	3065.
S/W	SR	0.085	24.07	99.4	23.91	96.9	22.44	94.6	21.04	222.	1247.	1533.
	C	0.085	26.12	99.4	25.96	96.9	24.48	94.6	23.09	241.	1357.	1668.
C/S/W	SR	0.119	38.05	99.2	37.72	96.0	34.87	92.9	32.16	351.	1958.	2399.
	C	0.119	40.67	99.2	40.34	96.0	37.49	92.9	34.78	375.	2097.	2572.

TABLE 43. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MN13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR					
			YEAR 10	YEAR 200			10	100	200			
C	SR C	0.464 0.464	15.14 18.98	98.1 98.1	13.85 17.69	85.2 85.2	2.05 5.89	38.6 38.6	-40.81 -36.97	134. 170.	552. 756.	417. 671.
S	SR C	0.357 0.357	3.06 4.89	98.4 98.4	2.64 4.47	89.4 89.4	-0.79 1.04	67.6 67.6	-9.06 -7.23	26. 43.	82. 179.	39. 160.
W	SR C	0.107 0.107	25.77 28.03	99.3 99.3	25.55 27.82	96.3 96.3	23.64 25.90	93.5 93.5	21.83 24.10	238. 259.	1327. 1447.	1625. 1776.
P/H	SR	0.014	22.84	99.6	22.81	99.2	22.55	98.7	22.26	211.	1211.	1503.
R	SR	0.021	4.17	99.6	4.16	98.9	4.09	98.2	4.01	39.	220.	273.
C/S	SR C	0.393 0.393	21.86 24.69	98.3 98.3	20.93 23.76	88.2 88.2	13.04 15.87	59.7 59.7	-9.09 -6.26	198. 224.	982. 1133.	1067. 1254.
C/W	SR C	0.286 0.286	34.34 37.39	98.7 98.7	33.53 36.58	91.6 91.6	27.01 30.06	79.4 79.4	15.77 18.83	314. 343.	1669. 1832.	1974. 2177.
S/W	SR C	0.179 0.179	19.84 21.89	99.0 99.0	19.52 21.57	94.4 94.4	16.90 18.95	89.4 89.4	14.09 16.13	182. 201.	992. 1101.	1199. 1335.
C/S/W	SR C	0.250 0.250	27.35 29.96	98.8 98.8	26.75 29.36	92.6 92.6	21.95 24.57	83.5 83.5	14.99 17.61	251. 275.	1338. 1477.	1593. 1767.

TABLE 44. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES MN35.

ROT.	CP	PERCENT THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	YEAR 200	PRESENT VALUE OF A						
		TOPSOIL LOST/YR	YR 1			PROFIT STREAM TO YEAR 10	200					
C	SR	1.408	-3.37	95.4	-6.15	25.0	-57.84	25.0	-57.84	-44.	-1243.	-1997.
	C	1.408	0.47	95.4	-2.31	25.0	-54.00	25.0	-54.00	-9.	-1039.	-1743.
S	SR	1.083	-4.57	96.3	-5.49	25.0	-27.15	25.0	-27.15	-47.	-547.	-901.
	C	1.083	-2.74	96.3	-3.66	25.0	-25.32	25.0	-25.32	-30.	-450.	-780.
W	SR	0.325	9.77	98.5	9.29	90.4	5.40	73.5	-2.72	88.	427.	464.
	C	0.325	12.04	98.5	11.56	90.4	7.66	73.5	-0.45	109.	547.	614.
P/H	SR	0.043	22.83	99.5	22.75	98.2	21.98	96.9	21.20	211.	1198.	1481.
R	SR	0.065	4.16	99.4	4.14	97.5	3.94	95.7	3.74	38.	217.	267.
C/S	SR	1.192	6.23	96.0	4.19	25.0	-39.93	25.0	-39.93	48.	-393.	-913.
	C	1.192	9.06	96.0	7.02	25.0	-37.10	25.0	-37.10	74.	-242.	-725.
C/W	SR	0.867	14.14	96.9	12.37	48.6	-22.24	25.0	-39.19	123.	285.	-197.
	C	0.867	17.20	96.9	15.42	48.6	-19.19	25.0	-36.14	151.	448.	6.
S/W	SR	0.542	6.78	97.9	6.08	81.2	-1.15	25.0	-25.55	60.	218.	87.
	C	0.542	8.83	97.9	8.12	81.2	0.90	25.0	-23.50	79.	327.	222.
C/S/W	SR	0.758	10.78	97.2	9.45	62.9	-11.22	25.0	-34.09	94.	260.	-103.
	C	0.758	13.39	97.2	12.07	62.9	-8.60	25.0	-31.47	118.	400.	71.

TABLE 45. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES OT01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND YR 1	YEAR 10	YEAR 100	INITIAL YIELD) AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10 100	200			
C	SR C	0.220 0.220	-3.06 0.77	98.9 98.9	93.3 93.3	-7.65 -3.82	86.3 86.3	-12.81 -8.98	-31. 5.	-265. -60.	-388. -133.
S	SR C	0.169 0.169	-4.47 -2.65	99.1 99.1	94.6 94.6	-5.98 -4.15	90.0 90.0	-7.39 -5.56	-42. -25.	-272. -174.	-356. -235.
W	SR C	0.051 0.051	13.01 15.28	99.5 99.5	98.0 98.0	12.15 14.42	96.5 96.5	11.38 13.65	120. 141.	675. 796.	829. 980.
P/H	SR	0.007	14.75	99.6	99.4	14.63	99.2	14.51	137.	784.	974.
R	SR	0.010	1.96	99.6	99.3	1.93	99.0	1.90	18.	104.	129.
C/S	SR C	0.186 0.186	6.45 9.28	99.0 99.0	94.2 94.2	3.10 5.93	88.9 88.9	-0.20 2.63	58. 84.	269. 420.	294. 482.
C/W	SR C	0.135 0.135	16.09 19.14	99.2 99.2	95.5 95.5	13.09 16.14	92.0 92.0	10.48 13.54	148. 176.	791. 954.	949. 1151.
S/W	SR C	0.085 0.085	8.61 10.66	99.4 99.4	96.9 96.9	7.39 9.44	94.6 94.6	6.36 8.40	79. 98.	433. 542.	523. 659.
C/S/W	SR C	0.119 0.119	12.08 14.69	99.2 99.2	96.0 96.0	9.84 12.46	92.9 92.9	7.94 10.56	111. 135.	595. 734.	713. 887.
IRRIGATED CROP ROTATIONS											
C	SR C	0.220 0.220	136.40 146.04	98.9 98.9	93.3 93.3	116.78 126.42	86.3 86.3	94.72 104.37	1254. 1343.	6833. 7347.	8255. 8895.
S	SR C	0.169 0.169	58.43 65.09	99.1 99.1	94.6 94.6	49.30 55.95	90.0 90.0	40.77 47.42	537. 598.	2912. 3266.	3513. 3954.
W	SR C	0.051 0.051	85.94 91.71	99.5 99.5	98.0 98.0	82.57 88.34	96.5 96.5	79.58 85.35	795. 848.	4507. 4815.	5568. 5951.
C/S	SR C	0.186 0.186	144.15 152.30	99.0 99.0	94.2 94.2	128.20 136.35	88.9 88.9	112.49 120.64	1327. 1403.	7328. 7762.	8924. 9464.
C/S/W	SR C	0.119 0.119	138.32 145.60	99.2 99.2	96.0 96.0	128.28 135.57	92.9 92.9	119.75 127.04	1276. 1344.	7151. 7539.	8779. 9263.

TABLE 46. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES OT13.

ROT.	CP	PERCENT TOPSOIL LOST/YR		THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10		THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND MANAGEMENT FOR YEAR 200		PRESENT VALUE OF A PROFIT STREAM TO YEAR 10		PRESENT VALUE OF A PROFIT STREAM TO YEAR 200		
		YR 1	YR 10	YR 10	YEAR 100	YEAR 200	YEAR 200	10	100	10	200	
C	SR	0.451	-12.26	98.1	-13.14	85.8	-21.05	42.9	-48.61	-118.	-826.	-1205.
	C	0.451	-8.42	98.1	-9.30	85.8	-17.21	42.9	-44.77	-82.	-622.	-951.
S	SR	0.347	-12.06	98.5	-12.31	89.7	-14.30	69.6	-18.89	-113.	-690.	-895.
	C	0.347	-10.23	98.5	-10.48	89.7	-12.47	69.6	-17.06	-96.	-593.	-774.
W	SR	0.104	6.62	99.3	6.47	96.4	5.17	93.6	3.94	61.	321.	382.
	C	0.104	8.89	99.3	8.74	96.4	7.43	93.6	6.20	82.	442.	533.
P/H	SR	0.014	14.75	99.6	14.73	99.2	14.51	98.7	14.27	137.	781.	969.
	SR	0.021	1.96	99.6	1.96	98.9	1.90	98.3	1.84	18.	103.	128.
C/S	SR	0.382	-3.44	98.4	-4.05	88.6	-9.17	62.3	-22.91	-35.	-303.	-476.
	C	0.382	-0.61	98.4	-1.22	88.6	-6.34	62.3	-20.08	-8.	-152.	-298.
C/W	SR	0.278	6.90	98.7	6.35	91.8	1.91	80.4	-5.45	61.	258.	252.
	C	0.278	9.96	98.7	9.40	91.8	4.96	80.4	-2.40	90.	421.	454.
S/W	SR	0.174	0.86	99.1	0.66	94.5	-1.04	89.7	-2.83	7.	4.	-18.
	C	0.174	2.91	99.1	2.70	94.5	1.01	89.7	-0.78	26.	113.	118.
C/S/W	SR	0.243	2.98	98.8	2.58	92.7	-0.61	84.2	-5.08	26.	79.	52.
	C	0.243	5.59	98.8	5.20	92.7	2.01	84.2	-2.46	50.	219.	225.
IRRIGATED CROP ROTATIONS												
C	SR	0.451	110.41	98.1	106.48	85.8	71.00	42.9	-52.54	1005.	5106.	5564.
	C	0.451	120.06	98.1	116.12	85.8	80.65	42.9	-42.89	1094.	5620.	6203.
S	SR	0.347	34.39	98.5	32.68	89.7	18.69	69.6	-13.60	311.	1498.	1613.
	C	0.347	41.04	98.5	39.33	89.7	25.34	69.6	-6.94	372.	1853.	2054.
W	SR	0.104	52.81	99.3	52.26	96.4	47.42	93.6	42.86	487.	2697.	3291.
	C	0.104	58.58	99.3	58.03	96.4	53.19	93.6	48.63	540.	3004.	3674.
C/S	SR	0.382	114.77	98.4	111.65	88.6	85.54	62.3	15.45	1049.	5506.	6348.
	C	0.382	122.92	98.4	119.80	88.6	93.69	62.3	23.61	1124.	5940.	6888.
C/S/W	SR	0.243	106.17	98.8	104.31	92.7	89.49	84.2	68.68	975.	5288.	6363.
	C	0.243	113.45	98.8	111.60	92.7	96.77	84.2	75.97	1042.	5676.	6846.

TABLE 47. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES PF01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR					
			YEAR 10	YEAR 200			10	100	200			
C	SR C	0.134 0.134	-10.36 -6.52	99.2 99.2	-10.64 -6.80	95.6 95.6	-13.04 -9.20	92.1 92.1	-15.35 -11.52	-97. -62.	-610. -406.	-792. -538.
S	SR C	0.103 0.103	-2.31 -0.48	99.3 99.3	-2.42 -0.59	96.4 96.4	-3.36 -1.53	93.7 93.7	-4.24 -2.42	-22. -5.	-146. -48.	-194. -73.
W	SR C	0.031 0.031	6.63 8.90	99.6 99.6	6.59 8.86	98.6 98.6	6.16 8.43	97.6 97.6	5.72 7.99	61. 82.	344. 464.	422. 572.
P/H	SR	0.004	22.84	99.7	22.83	99.5	22.76	99.4	22.67	212.	1215.	1511.
R	SR	0.006	0.94	99.6	0.94	99.4	0.92	99.2	0.90	9.	50.	62.
C/S	SR C	0.114 0.114	3.16 5.99	99.3 99.3	2.94 5.78	96.1 96.1	1.09 3.93	93.2 93.2	-0.65 2.18	28. 55.	123. 274.	129. 316.
C/W	SR C	0.083 0.083	8.08 11.13	99.4 99.4	7.90 10.96	97.0 97.0	6.35 9.40	94.8 94.8	4.88 7.93	74. 102.	393. 556.	468. 671.
S/W	SR C	0.052 0.052	6.30 8.35	99.5 99.5	6.23 8.27	97.9 97.9	5.56 7.61	96.4 96.4	4.91 6.96	58. 77.	320. 429.	389. 525.
C/S/W	SR C	0.072 0.072	7.44 10.06	99.4 99.4	7.31 9.93	97.3 97.3	6.11 8.73	95.3 95.3	4.97 7.59	68. 93.	368. 508.	442. 615.
IRRIGATED CROP ROTATIONS												
C	SR C	0.134 0.134	136.49 146.14	99.2 99.2	135.15 144.80	95.6 95.6	123.77 133.42	92.1 92.1	112.76 122.41	1258. 1348.	6994. 7508.	8552. 9191.
S	SR C	0.103 0.103	2.71 9.37	99.3 99.3	2.29 8.95	96.4 96.4	-1.41 5.24	93.7 93.7	-4.91 1.75	23. 85.	55. 410.	19. 460.
W	SR C	0.031 0.031	19.75 25.52	99.6 99.6	19.62 25.39	98.6 98.6	18.35 24.12	97.6 97.6	17.04 22.81	182. 236.	1023. 1330.	1255. 1638.
C/S	SR C	0.114 0.114	113.18 121.33	99.3 99.3	112.22 120.37	96.1 96.1	103.90 112.05	93.2 93.2	96.04 104.19	1044. 1119.	5829. 6263.	7142. 7683.
C/S/W	SR C	0.072 0.072	93.37 100.65	99.4 99.4	92.83 100.12	97.3 97.3	87.97 95.26	95.3 95.3	83.33 90.61	862. 930.	4859. 5247.	5982. 6465.

TABLE 48. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES PF13.

ROT.	CP	PERCENT TOPSOIL LOST/YR		THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10		THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND MANAGEMENT FOR YEAR 200		PRESENT VALUE OF A PROFIT STREAM TO YEAR				
		YR 1	YR 10	YR 10	YEAR 100	YEAR 200	10	100	200			
C	SR	0.376	-17.72	98.4	-18.40	88.8	-24.04	63.7	-38.78	167.	-1076.	-1447.
	C	0.376	-13.89	98.4	-14.56	88.8	-20.20	63.7	-34.94	-132.	-872.	-1193.
S	SR	0.289	-6.38	98.7	-6.64	91.5	-8.68	78.9	-12.27	60.	-390.	-519.
	C	0.289	-4.55	98.7	-4.81	91.5	-6.86	78.9	-10.44	-43.	-293.	-397.
W	SR	0.087	6.62	99.4	6.50	96.9	5.39	94.5	4.34	61.	326.	391.
	C	0.087	8.89	99.4	8.77	96.9	7.66	94.5	6.61	82.	447.	542.
P/H	SR	0.012	22.84	99.6	22.82	99.3	22.60	98.9	22.37	211.	1212.	1505.
R	SR	0.017	0.94	99.6	0.93	99.1	0.89	98.5	0.85	9.	49.	60.
C/S	SR	0.318	-3.65	98.6	-4.16	90.7	-8.28	74.7	-16.59	-36.	-294.	-436.
	C	0.318	-0.82	98.6	-1.33	90.7	-5.45	74.7	-13.76	-10.	-144.	-248.
C/W	SR	0.231	3.54	98.9	3.09	93.1	-0.45	85.3	-5.15	31.	100.	73.
	C	0.231	6.59	98.9	6.15	93.1	2.61	85.3	-2.10	59.	263.	276.
S/W	SR	0.145	4.03	99.2	3.84	95.3	2.27	91.5	0.73	36.	176.	198.
	C	0.145	6.07	99.2	5.89	95.3	4.32	91.5	2.78	55.	285.	334.
C/S/W	SR	0.202	2.76	99.0	2.43	93.8	-0.26	87.7	-3.42	24.	80.	62.
	C	0.202	5.38	99.0	5.05	93.8	2.36	87.7	-0.80	48.	220.	236.
IRRIGATED CROP ROTATIONS												
C	SR	0.376	81.09	98.4	78.11	88.8	53.30	63.7	-11.58	737.	3739.	4180.
	C	0.376	90.73	98.4	87.75	88.8	62.95	63.7	-1.93	827.	4253.	4820.
S	SR	0.289	-13.44	98.7	-14.44	91.5	-22.49	78.9	-36.59	-129.	-914.	-1266.
	C	0.289	-6.78	98.7	-7.79	91.5	-15.84	78.9	-29.94	-67.	-559.	-825.
W	SR	0.087	3.18	99.4	2.86	96.9	-0.03	94.5	-2.75	28.	101.	86.
	C	0.087	8.95	99.4	8.63	96.9	5.74	94.5	3.02	81.	408.	469.
C/S	SR	0.318	70.06	98.6	67.88	90.7	50.32	74.7	14.94	639.	3306.	3818.
	C	0.318	78.21	98.6	75.03	90.7	58.47	74.7	23.09	714.	3741.	4359.
C/S/W	SR	0.202	57.60	99.0	55.36	93.8	46.29	87.7	34.47	528.	2819.	3367.
	C	0.202	64.89	99.0	63.64	93.8	53.57	87.7	41.76	595.	3207.	3850.

TABLE 49. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES PM01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR				
			YR 1	YR 10			YR 100	10	100	200	
C	SR C	0.147 0.147	-6.70 -2.86	99.2 99.2	-7.03 -3.19	-9.76 -5.92	91.4 91.4	-12.46 -8.62	-64. -28.	-424. -220.	-565. -310.
S	SR C	0.113 0.113	-9.07 -7.25	99.3 99.3	-9.17 -7.34	-9.97 -8.14	93.2 93.2	-10.73 -8.90	-84. -68.	-503. -406.	-637. -516.
W	SR C	0.034 0.034	6.63 8.90	99.5 99.5	6.58 8.85	6.12 8.38	97.4 97.4	5.64 7.91	61. 82.	343. 463.	420. 570.
P/H	SR	0.005	14.75	99.7	14.75	14.67	99.3	14.59	137.	784.	975.
R	SR	0.007	1.67	99.6	1.67	1.65	99.2	1.63	15.	89.	110.
C/S	SR C	0.124 0.124	1.64 4.47	99.2 99.2	1.41 4.25	-0.53 2.30	92.6 92.6	-2.38 0.45	14. 40.	40. 191.	24. 212.
C/W	SR C	0.090 0.090	10.33 13.38	99.3 99.3	10.13 13.18	8.39 11.45	94.4 94.4	6.75 9.81	95. 123.	509. 671.	609. 812.
S/W	SR C	0.056 0.056	2.53 4.58	99.5 99.5	2.46 4.51	1.80 3.85	96.1 96.1	1.16 3.21	23. 42.	119. 228.	140. 275.
C/S/W	SR C	0.079 0.079	6.47 9.09	99.4 99.4	6.33 9.94	5.05 7.67	94.9 94.9	3.84 6.46	59. 84.	314. 454.	374. 547.
IRRIGATED CROP ROTATIONS											
C	SR C	0.147 0.147	99.69 109.34	99.2 99.2	98.40 108.05	87.56 97.20	91.4 91.4	76.84 86.49	918. 1007.	5045. 5559.	6133. 6773.
S	SR C	0.113 0.113	34.52 41.18	99.3 99.3	33.95 40.60	28.95 35.60	93.2 93.2	24.22 30.87	317. 379.	1718. 2073.	2071. 2513.
W	SR C	0.034 0.034	36.30 42.07	99.5 99.5	36.14 41.91	34.58 40.35	97.4 97.4	32.99 38.76	335. 389.	1898. 2205.	2340. 2723.
C/S	SR C	0.124 0.124	108.22 116.37	99.2 99.2	107.19 115.34	98.38 106.53	92.6 92.6	89.97 98.12	998. 1073.	5551. 5985.	6790. 7331.
C/S/W	SR C	0.079 0.079	95.55 102.85	99.4 99.4	94.97 102.26	89.66 96.94	94.9 94.9	84.61 91.90	882. 950.	4965. 5353.	6107. 6590.

TABLE 50. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES PM13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR					
			YEAR 10	YEAR 200			10	200				
C	SR	0.284	-10.39	98.7	-10.98	91.6	-15.64	79.5	-23.64	-99.	-668.	-906.
	C	0.284	-6.55	98.7	-7.14	91.6	-11.81	79.5	-19.80	-63.	-464.	-652.
S	SR	0.219	-11.11	98.9	-11.27	93.4	-12.59	86.4	-14.24	-104.	-625.	-796.
	C	0.219	-9.28	98.9	-9.45	93.4	-10.76	86.4	-12.41	-87.	-527.	-675.
W	SR	0.066	0.25	99.4	0.16	97.5	-0.58	95.6	-1.29	2.	-4.	-16.
	C	0.066	2.51	99.4	2.43	97.5	1.69	95.6	0.98	23.	116.	135.
P/H	SR	0.009	14.75	99.6	14.74	99.4	14.60	99.1	14.44	137.	783.	972.
R	SR	0.013	1.67	99.6	1.67	99.2	1.63	98.8	1.60	15.	88.	109.
C/S	SR	0.241	-1.76	98.8	-2.17	92.8	-5.42	84.4	-9.93	-18.	-175.	-265.
	C	0.241	1.07	98.8	0.66	92.8	-2.59	84.4	-7.10	8.	-24.	-77.
C/W	SR	0.175	4.54	99.1	4.19	94.5	1.38	89.7	-1.62	40.	172.	175.
	C	0.175	7.59	99.1	7.25	94.5	4.43	89.7	1.43	69.	335.	378.
S/W	SR	0.109	-2.12	99.3	-2.24	96.2	-3.29	93.4	-4.28	-20.	-138.	-186.
	C	0.109	-0.08	99.3	-0.20	96.2	-1.24	93.4	-2.23	-1.	-29.	-51.
C/S/W	SR	0.153	1.81	99.1	1.56	95.1	-0.52	91.0	-2.60	16.	45.	28.
	C	0.153	4.42	99.1	4.18	95.1	2.10	91.0	0.01	40.	185.	202.
IRRIGATED CROP ROTATIONS												
C	SR	0.284	7.63	98.7	6.00	91.6	-7.05	79.5	-29.39	63.	86.	-100.
	C	0.284	17.27	98.7	15.64	91.6	2.60	79.5	-19.73	153.	599.	539.
S	SR	0.219	18.56	98.9	17.57	93.4	9.60	86.4	-0.43	167.	791.	870.
	C	0.219	25.22	98.9	24.23	93.4	16.25	86.4	6.23	229.	1145.	1311.
W	SR	0.066	19.74	99.4	19.46	97.5	16.89	95.6	14.42	182.	991.	1198.
	C	0.066	25.51	99.4	25.23	97.5	22.66	95.6	20.19	235.	1298.	1581.
C/S	SR	0.241	42.61	98.8	41.15	92.8	29.45	84.4	13.23	388.	1980.	2292.
	C	0.241	50.76	98.8	49.30	92.8	37.60	84.4	21.38	464.	2414.	2832.
C/S/W	SR	0.153	44.15	99.1	43.27	95.1	35.90	91.0	28.52	405.	2171.	2602.
	C	0.153	51.44	99.1	50.56	95.1	43.19	91.0	35.80	472.	2559.	3085.

TABLE 51. YIELD LOSS AND FEF ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES PTSS.

ROT.	CP	SR	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 1	YEAR 10	YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200			
R			0.042	-2.89	99.2	-2.90	97.0	-2.98	94.9	-3.06	-27.	-156.	-195.

TABLE 52. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES PU01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO 10	100	200		
C	SR C	0.268 0.268	-3.08 0.76	98.7 98.7	92.1 92.1	-8.59 -4.75	81.5 81.5	-16.36 -12.52	-31. 4.	-285. -81.	-430. -176.
S	SR C	0.206 0.206	-4.48 -2.65	98.9 98.9	93.7 93.7	-6.27 -4.44	87.4 87.4	-8.18 -6.35	-42. -25.	-278. -181.	-369. -248.
W	SR C	0.062 0.062	9.82 12.09	99.4 99.4	97.6 97.6	8.84 11.11	95.8 95.8	7.99 10.26	91. 112.	502. 623.	613. 764.
P/H	SR	0.008	14.75	99.6	99.4	14.61	99.1	14.46	137.	783.	973.
R	SR	0.012	0.94	99.6	99.2	0.90	98.8	0.87	9.	49.	61.
C/S	SR C	0.227 0.227	6.44 9.27	98.9 98.9	93.2 93.2	2.44 5.27	85.7 85.7	-2.20 0.64	58. 84.	255. 406.	265. 453.
C/W	SR C	0.165 0.165	14.32 17.37	99.1 99.1	94.8 94.8	10.84 13.89	90.3 90.3	7.63 10.68	131. 159.	686. 849.	812. 1014.
S/W	SR C	0.103 0.103	6.85 8.90	99.3 99.3	96.4 96.4	5.45 7.50	93.7 93.7	4.27 6.32	63. 82.	335. 444.	400. 535.
C/S/W	SR C	0.145 0.145	10.91 13.53	99.2 99.2	95.3 95.3	8.30 10.92	91.5 91.5	6.01 8.62	100. 124.	524. 664.	621. 794.
IRRIGATED CROP ROTATIONS											
C	SR C	0.268 0.268	136.34 145.99	98.7 98.7	92.1 92.1	112.76 122.41	81.5 81.5	79.56 89.21	1251. 1340.	6746. 7260.	8074. 8714.
S	SR C	0.206 0.206	74.48 81.14	98.9 98.9	93.7 93.7	62.65 69.31	87.4 87.4	50.08 56.74	684. 746.	3707. 4061.	4465. 4906.
W	SR C	0.062 0.062	85.93 91.70	99.4 99.4	97.6 97.6	81.88 87.66	95.8 95.8	78.35 84.12	794. 848.	4492. 4800.	5541. 5924.
C/S	SR C	0.227 0.227	153.05 161.21	98.9 98.9	93.2 93.2	133.44 141.59	85.7 85.7	110.70 118.85	1408. 1483.	7721. 8155.	9358. 9898.
C/S/W	SR C	0.145 0.145	144.32 151.60	99.2 99.2	95.3 95.3	132.13 139.41	91.5 91.5	121.40 128.68	1331. 1398.	7422. 7810.	9090. 9573.

TABLE 53. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES PU13.

ROT.	CP	PERCENT THE YIELD REMAINING (AS A % OF THE INITIAL YIELD)		THE YIELD REMAINING (AS A % OF THE INITIAL YIELD)		PERCENT VALUE OF A						
		TOPSOIL LOST/YR	YR 1	AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	AND MANAGEMENT FOR YEAR 200	PROFIT STREAM TO YEAR 10	PROFIT STREAM TO YEAR 200					
C	SR	0.626	-21.43	97.6	-22.45	75.4	-34.64	25.0	-62.43	-203.	-1359.	-1999.
	C	0.626	-17.59	97.6	-18.61	75.4	-30.81	25.0	-58.59	-168.	-1155.	-1744.
S	SR	0.482	-12.07	98.0	-12.40	84.4	-15.51	32.2	-27.42	-113.	-709.	-956.
	C	0.482	-10.24	98.0	-10.58	84.4	-13.68	32.2	-25.59	-96.	-612.	-835.
W	SR	0.145	0.23	99.2	0.06	95.3	-1.43	91.5	-2.89	1.	-24.	-50.
	C	0.145	2.50	99.2	2.33	95.3	0.84	91.5	-0.62	22.	97.	101.
P/H	SR	0.019	14.75	99.6	14.72	99.0	14.41	98.4	14.09	136.	779.	965.
R	SR	0.029	0.94	99.6	0.93	98.7	0.86	97.7	0.79	9.	48.	59.
C/S	SR	0.530	-9.09	97.9	-9.83	81.9	-17.30	25.0	-43.82	-88.	-634.	-979.
	C	0.530	-6.26	97.9	-7.00	81.9	-14.47	25.0	-40.99	-61.	-483.	-791.
C/W	SR	0.385	-2.26	98.4	-2.91	88.4	-8.37	61.5	-23.24	-24.	-248.	-414.
	C	0.385	0.79	98.4	0.14	88.4	-5.32	61.5	-20.19	4.	-85.	-212.
S/W	SR	0.241	-2.66	98.8	-2.92	92.8	-4.96	84.4	-7.80	-26.	-193.	-270.
	C	0.241	-0.62	98.8	-0.87	92.8	-2.91	84.4	-5.75	-7.	-84.	-134.
C/S/W	SR	0.337	-3.27	98.5	-3.75	90.1	-7.65	71.4	-16.24	-33.	-268.	-402.
	C	0.337	-0.66	98.5	-1.13	90.1	-5.03	71.4	-13.62	-8.	-129.	-229.
IRRIGATED CROP ROTATIONS												
C	SR	0.626	99.22	97.6	94.09	75.4	32.75	25.0	-106.98	895.	4193.	3673.
	C	0.626	108.86	97.6	103.74	75.4	42.40	25.0	-97.34	985.	4707.	4313.
S	SR	0.482	34.31	98.0	31.99	84.4	10.16	32.2	-73.51	307.	1365.	1184.
	C	0.482	40.97	98.0	38.64	84.4	16.82	32.2	-66.86	369.	1720.	1625.
W	SR	0.145	52.78	99.2	52.02	95.3	45.60	91.5	39.29	485.	2655.	3218.
	C	0.145	58.56	99.2	57.79	95.3	51.37	91.5	45.06	539.	2962.	3600.
C/S	SR	0.530	107.84	97.9	103.71	81.9	62.11	25.0	-85.69	980.	4911.	5057.
	C	0.530	115.99	97.9	111.87	81.9	70.26	25.0	-77.54	1055.	5345.	5597.
C/S/W	SR	0.337	101.36	98.5	98.88	90.1	78.68	71.4	34.15	928.	4915.	5762.
	C	0.337	108.65	98.5	106.16	90.1	85.97	71.4	41.43	995.	5303.	6245.

TABLE 54. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES RLCY.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR					
			YEAR 10	YEAR 200			10	200				
C	SR C	0.079 0.079	33.39 37.22	99.3 99.3	33.20 37.04	97.9 97.9	31.65 35.49	96.7 96.7	30.32 34.16	308. 344.	1741. 1945.	2146. 2401.
S	SR C	0.060 0.060	11.13 12.96	99.4 99.4	11.08 12.90	98.2 98.2	10.56 12.38	97.2 97.2	10.09 11.92	103. 120.	581. 678.	716. 837.
W	SR C	0.018 0.018	25.68 27.95	99.5 99.5	25.65 27.92	99.1 99.1	25.42 27.69	98.7 98.7	25.17 27.44	238. 259.	1363. 1484.	1693. 1843.
P/H	SR	0.002	32.83	99.5	32.83	99.4	32.80	99.4	32.76	304.	1748.	2176.
R	SR	0.004	3.71	99.5	3.71	99.4	3.70	99.3	3.69	34.	197.	246.
C/S	SR C	0.066 0.066	37.59 40.42	99.3 99.3	37.46 40.29	98.1 98.1	36.31 39.15	97.0 97.0	35.31 38.14	348. 374.	1975. 2126.	2443. 2631.
C/W	SR C	0.048 0.048	45.52 48.58	99.4 99.4	45.42 48.47	98.5 98.5	44.46 47.52	97.6 97.6	43.58 46.63	421. 449.	2403. 2565.	2978. 3180.
S/W	SR C	0.030 0.030	24.28 26.33	99.4 99.4	24.24 26.29	98.8 98.8	23.88 25.92	98.2 98.2	23.51 25.56	225. 244.	1285. 1394.	1594. 1730.
C/S/W	SR C	0.042 0.042	38.13 40.75	99.4 99.4	38.05 40.67	98.6 98.6	37.33 39.95	97.8 97.8	36.65 39.27	353. 377.	2015. 2154.	2498. 2671.

TABLE 55. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES RFSL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	97.2	30.87	95.1	28.57	310.	1731.	2121.
		YR 1	YEAR 10	97.2	34.71	95.1	32.40	345.	1935.	2375.
C	SR	0.076	33.56	99.4	33.29	97.2	30.87	310.	1731.	2121.
	C	0.076	37.40	99.4	37.13	97.2	34.71	345.	1935.	2375.
S	SR	0.058	5.81	99.5	5.73	97.7	5.03	53.	293.	355.
	C	0.058	7.64	99.5	7.56	97.7	6.85	70.	390.	476.
W	SR	0.018	25.79	99.6	25.75	99.1	25.02	239.	1366.	1695.
	C	0.018	28.06	99.6	28.02	99.1	27.29	260.	1487.	1845.
P/H	SR	0.002	32.95	99.7	32.95	99.6	32.84	305.	1754.	2183.
R	SR	0.004	3.73	99.7	3.73	99.5	3.70	35.	198.	247.
C/S	SR	0.064	34.73	99.4	34.55	97.5	31.18	321.	1810.	2230.
	C	0.064	37.57	99.4	37.38	97.5	34.02	347.	1961.	2417.
C/W	SR	0.047	45.69	99.5	45.54	98.1	42.64	423.	2400.	2968.
	C	0.047	48.75	99.5	48.59	98.1	45.69	451.	2563.	3170.
S/W	SR	0.029	21.38	99.6	21.32	98.7	20.26	198.	1127.	1395.
	C	0.029	23.42	99.6	23.37	98.7	22.30	217.	1236.	1531.
C/S/W	SR	0.041	36.25	99.5	36.14	98.3	34.00	335.	1906.	2358.
	C	0.041	38.87	99.5	38.76	98.3	36.62	360.	2046.	2532.

TABLE 56. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES RHBL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	73.2	-2.56	0.0	0.0	-11.	-89.	-133.
		YR 1	YEAR 10	73.2	-2.56	0.0	0.0	-11.	-89.	-133.
R	SR	0.561	-1.15	96.3	-1.30	73.2	0.0	-11.	-89.	-133.

TABLE 57. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES SYAL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200			
C	SR C	0.084 0.084	5.99 9.82	99.3 99.3	5.84 9.68	97.8 97.8	4.61 8.45	96.6 96.6	3.57 7.41	55. 90.	289. 493.	343. 598.
S	SR C	0.065 0.065	3.04 4.86	99.3 99.3	2.98 4.81	98.2 98.2	2.53 4.36	97.1 97.1	2.13 3.96	28. 45.	151. 248.	182. 303.
W	SR C	0.019 0.019	25.68 27.95	99.5 99.5	25.65 27.92	99.1 99.1	25.40 27.67	98.7 98.7	25.14 27.41	238. 259.	1362. 1483.	1692. 1842.
P/H	SR	0.003	6.60	99.5	6.59	99.4	6.57	99.4	6.54	61.	351.	436.
R	SR	0.004	6.35	99.5	6.35	99.4	6.34	99.3	6.32	59.	338.	420.
C/S	SR C	0.071 0.071	16.20 19.03	99.3 99.3	16.09 18.93	98.0 98.0	15.16 17.99	96.9 96.9	14.35 17.18	150. 176.	840. 991.	1034. 1222.
C/W	SR C	0.052 0.052	28.64 31.70	99.4 99.4	28.55 31.60	98.4 98.4	27.70 30.75	97.5 97.5	26.92 29.98	265. 293.	1506. 1668.	1863. 2065.
S/W	SR C	0.032 0.032	19.77 21.82	99.4 99.4	19.73 21.78	98.8 98.8	19.37 21.42	98.2 98.2	19.02 21.07	183. 202.	1045. 1154.	1296. 1431.
C/S/W	SR C	0.045 0.045	23.37 25.98	99.4 99.4	23.30 25.92	98.5 98.5	22.66 25.28	97.7 97.7	22.07 24.68	216. 240.	1230. 1369.	1522. 1696.

TABLE 58. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES SCYL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	YEAR 200				
C	SR	0.126	5.98	99.2	5.76	97.1	4.05	95.4	2.66	54.	275.	321.
	C	0.126	9.82	99.2	9.60	97.1	7.89	95.4	6.49	90.	480.	575.
	ST	0.066	0.58	99.3	0.47	98.1	0.51	97.0	-0.36	5.	64.	69.
	PT	0.063	0.23	99.4	0.11	98.2	3.35	97.1	2.55	2.	214.	260.
S	SR	0.097	3.03	99.3	2.96	97.6	2.32	96.2	1.79	28.	146.	173.
	C	0.097	4.86	99.3	4.78	97.6	4.14	96.2	3.62	45.	243.	294.
	ST	0.051	-0.69	99.4	-0.73	98.4	-0.02	97.5	-0.33	-7.	12.	13.
	PT	0.049	-2.94	99.4	-2.98	98.5	0.90	97.6	0.67	-27.	61.	78.
W	SR	0.029	25.68	99.4	25.64	98.8	25.27	98.3	24.89	238.	1359.	1687.
	C	0.029	27.95	99.4	27.91	98.8	27.53	98.3	27.16	259.	1480.	1837.
	ST	0.015	22.43	99.5	22.40	99.1	23.10	98.8	22.92	208.	1238.	1541.
	PT	0.015	21.57	99.5	21.55	99.2	24.89	98.8	24.77	200.	1333.	1662.
P/H	SR	0.004	14.67	99.5	14.66	99.4	14.62	99.3	14.58	136.	781.	971.
	ST	0.002	12.04	99.5	12.04	99.5	12.93	99.4	12.94	112.	689.	860.
	PT	0.002	10.58	99.5	10.57	99.5	14.10	99.4	14.16	98.	752.	941.
R	SR	0.006	6.35	99.5	6.35	99.4	6.33	99.2	6.31	59.	338.	420.
C/S	SR	0.107	16.13	99.3	16.03	97.4	14.73	96.0	13.66	149.	830.	1016.
	C	0.107	19.03	99.3	18.87	97.4	17.56	96.0	16.49	176.	981.	1204.
	ST	0.056	11.99	99.4	11.90	98.3	12.20	97.4	11.54	111.	678.	836.
	PT	0.053	10.92	99.4	10.83	98.4	14.32	97.4	13.73	101.	790.	980.
C/W	SR	0.078	28.64	99.3	28.50	97.9	27.29	96.7	26.26	265.	1496.	1846.
	C	0.078	31.69	99.3	31.55	97.9	30.34	96.7	29.31	293.	1659.	2049.
	PT	0.041	24.52	99.4	24.45	98.6	24.83	97.9	24.20	227.	1348.	1671.
S/W	SR	0.039	23.84	99.4	23.77	98.6	27.33	97.9	26.78	221.	1481.	1841.
	C	0.049	19.77	99.4	19.71	98.5	19.19	97.6	18.70	183.	1041.	1288.
	ST	0.026	16.27	99.4	16.24	98.9	17.03	97.6	20.75	202.	1150.	1424.
	PT	0.024	14.50	99.4	14.47	99.0	18.43	98.4	16.77	151.	918.	1141.
C/S/W	SR	0.068	23.36	99.3	23.26	98.1	22.35	97.0	21.55	216.	1223.	1510.
	C	0.068	25.98	99.3	25.88	98.1	24.97	97.0	24.17	240.	1362.	1683.
	ST	0.036	19.50	99.4	19.44	98.7	20.00	98.0	19.54	180.	1084.	1345.
	PT	0.034	18.34	99.4	18.29	98.7	22.02	98.1	21.63	170.	1192.	1483.

TABLE 59. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES SFSL.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	100	200			
C	SR C	0.078 0.078	5.99 9.83	99.3 99.3	5.85 9.69	97.9 97.9	4.70 8.54	96.7 96.7	3.71 7.55	55. 90.	291. 495.	347. 601.
S	SR C	0.060 0.060	3.04 4.86	99.4 99.4	2.99 4.82	98.2 98.2	2.56 4.39	97.2 97.2	2.18 4.01	28. 45.	152. 249.	183. 304.
W	SR C	0.018 0.018	25.68 27.95	99.5 99.5	25.66 27.92	99.1 99.1	25.42 27.69	98.7 98.7	25.18 27.44	238. 259.	1363. 1484.	1693. 1843.
P/H	SR	0.002	14.67	99.5	14.67	99.4	14.64	99.4	14.61	136.	781.	972.
R	SR	0.004	6.35	99.5	6.35	99.4	6.34	99.3	6.33	59.	338.	421.
C/S	SR C	0.066 0.066	16.20 19.03	99.3 99.3	16.10 18.93	98.1 98.1	15.23 18.06	97.1 97.1	14.46 17.29	150. 176.	842. 993.	1036. 1224.
C/W	SR C	0.048 0.048	28.64 31.70	99.4 99.4	28.56 31.61	98.5 98.5	27.77 30.82	97.6 97.6	27.03 30.08	265. 293.	1507. 1670.	1865. 2068.
S/W	SR C	0.030 0.030	19.77 21.82	99.4 99.4	19.74 21.78	98.8 98.8	19.40 21.45	98.2 98.2	19.07 21.12	183. 202.	1046. 1155.	1297. 1433.
C/S/W	SR C	0.042 0.042	23.37 25.99	99.4 99.4	23.30 25.92	98.6 98.6	22.71 25.33	97.8 97.8	22.15 24.77	216. 240.	1231. 1370.	1524. 1698.

TABLE 60. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES SM13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND YEAR 10	INITIAL YIELD) AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200
C	SR	0.432	-3.20	92.4	67.5	-26.65
	C	0.432	0.63	92.4	67.5	-22.81
	ST	0.233	-10.26	95.7	91.6	-14.34
	PT	0.224	-13.42	95.8	92.0	-11.89
S	SR	0.332	3.01	94.3	83.5	-3.03
	C	0.332	4.84	94.3	83.5	-1.20
	ST	0.179	-2.11	96.4	93.9	-2.41
	PT	0.173	-6.98	96.5	94.1	-1.84
W	SR	0.100	9.74	97.6	96.1	8.14
	C	0.100	12.01	97.6	96.1	10.40
	ST	0.054	4.75	98.4	97.4	5.35
	PT	0.052	1.24	98.4	97.5	6.46
P/H	SR	0.013	14.67	99.2	98.9	14.37
	ST	0.007	10.78	99.3	99.2	12.23
	PT	0.007	6.98	99.3	99.2	13.04
	SR	0.020	6.35	99.0	98.6	6.23
C/S	SR	0.365	10.53	93.8	79.2	-2.87
	C	0.365	13.36	93.8	79.2	-0.04
	ST	0.197	4.76	96.2	93.2	2.38
	PT	0.190	0.96	96.3	93.5	4.08
C/W	SR	0.266	14.20	95.3	89.6	7.12
	C	0.266	17.25	95.3	89.6	10.17
	ST	0.143	8.25	96.9	95.0	6.83
	PT	0.138	4.67	97.0	95.1	8.67
S/W	SR	0.166	10.97	96.6	94.3	8.52
	C	0.166	13.02	96.6	94.3	10.57
	ST	0.090	5.80	97.7	96.4	6.18
	PT	0.086	1.24	97.8	96.5	7.02
C/S/W	SR	0.232	13.63	95.7	91.6	8.68
	C	0.232	16.25	95.7	91.6	11.29
	ST	0.125	8.08	97.2	95.5	7.36
	PT	0.121	4.11	97.2	95.6	8.81

TABLE 61. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES ST01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200				
C	SR C	-3.18 0.66	98.9 98.9	95.2 95.2	-6.28 -2.45	89.2 89.2	-10.70 -6.86	-31. 4.	-242. -38.	-342. -87.
S	SR C	3.02 4.85	99.0 99.0	96.0 96.0	1.72 3.55	92.8 92.8	0.48 2.31	27. 44.	131. 228.	147. 269.
W	SR C	9.74 12.01	99.4 99.4	98.2 98.2	9.12 11.39	97.2 97.2	8.63 10.89	90. 111.	506. 626.	622. 772.
P/H	SR	14.67	99.5	99.3	14.57	99.1	14.48	136.	779.	969.
R	SR	6.35	99.5	99.2	6.31	98.9	6.27	59.	337.	419.
C/S	SR C	10.55 13.38	99.0 99.0	95.8 95.8	8.10 10.93	91.8 91.8	5.45 8.28	96. 123.	505. 656.	599. 786.
C/W	SR C	14.21 17.27	99.1 99.1	96.6 96.6	12.14 15.19	94.3 94.3	10.51 13.56	131. 159.	710. 872.	860. 1062.
S/W	SR C	10.98 13.03	99.3 99.3	97.5 97.5	10.03 12.08	96.0 96.0	9.34 11.38	101. 120.	564. 673.	691. 827.
C/S/W	SR C	13.65 16.25	99.2 99.2	96.9 96.9	12.00 14.62	94.9 94.9	10.77 13.39	126. 150.	690. 829.	840. 1013.

TABLE 62. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES TVFS.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND MANAGEMENT FOR YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 10	PRESENT VALUE OF A PROFIT STREAM TO YEAR 200				
R	SR	0.076	99.3	97.9	0.81	96.8	0.72	8.	47.	57.

TABLE 63. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES VTCX.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE YIELD AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10)	YEAR 10	92.3	0.38	87.1	-0.01	8.	37.	40.
R	SR	0.145	0.92	98.6	0.86	92.3	0.38	87.1	-0.01	8.	37.	40.

TABLE 64. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES VC13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE YIELD AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10)	YEAR 10	98.4	-1.52	97.3	-2.24	-14.	-87.	-113.
P/H	SR	0.019	-1.48	99.4	-1.52	98.4	-1.52	97.3	-2.24	-14.	-87.	-113.
R	SR	0.028	0.92	99.3	0.91	97.8	0.80	96.3	0.68	8.	47.	56.

TABLE 65. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES V315.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE YIELD AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10)	YEAR 10	89.6	0.18	81.0	-0.47	8.	32.	31.
R	SR	0.219	0.91	98.2	0.83	89.6	0.18	81.0	-0.47	8.	32.	31.

TABLE 66. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES ZF01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	YR 1	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR		YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR				
				YEAR 10	YEAR 200			10	200			
C	SR C	0.135 0.135	15.25 19.09	99.2 99.2	14.85 18.69	95.5 95.5	11.50 15.34	92.0 92.0	8.25 12.09	139. 175.	730. 935.	864. 1118.
S	SR C	0.104 0.104	3.09 4.92	99.3 99.3	2.97 4.79	96.4 96.4	1.86 3.69	93.6 93.6	0.82 2.64	28. 45.	138. 235.	157. 278.
W	SR C	0.031 0.031	19.40 21.67	99.6 99.6	19.34 21.61	98.6 98.6	18.79 21.05	97.6 97.6	18.21 20.48	179. 200.	1021. 1142.	1263. 1413.
P/H	SR	0.004	32.95	99.7	32.94	99.5	32.85	99.4	32.75	305.	1753.	2181.
R	SR	0.006	4.17	99.6	4.16	99.4	4.14	99.2	4.12	39.	222.	275.
C/S	SR C	0.115 0.115	21.94 24.77	99.3 99.3	21.66 24.49	96.1 96.1	19.20 22.03	93.1 93.1	16.87 19.70	202. 228.	1109. 1260.	1347. 1535.
C/W	SR C	0.083 0.083	30.89 33.94	99.4 99.4	30.65 33.71	97.0 97.0	28.54 31.59	94.7 94.7	26.54 29.59	285. 313.	1595. 1758.	1957. 2159.
S/W	SR C	0.052 0.052	16.34 18.39	99.5 99.5	16.25 18.30	97.9 97.9	15.43 17.48	96.4 96.4	14.62 16.66	151. 170.	851. 960.	1048. 1184.
C/S/W	SR C	0.073 0.073	25.07 27.69	99.4 99.4	24.90 27.52	97.3 97.3	23.32 25.93	95.3 95.3	21.81 24.42	231. 256.	1298. 1438.	1594. 1768.
IRRIGATED CROP ROTATIONS												
C	SR C	0.135 0.135	191.68 201.33	95.2 99.2	190.09 199.74	95.5 95.5	176.59 186.24	92.0 92.0	163.52 173.17	1768. 1858.	9882. 10396.	12118. 12758.
S	SR C	0.104 0.104	50.61 57.26	99.3 99.3	50.02 56.68	96.4 96.4	44.89 51.54	93.6 93.6	40.05 46.70	466. 528.	2572. 2927.	3133. 3574.
W	SR C	0.031 0.031	52.85 58.62	99.6 99.6	52.68 58.46	98.6 98.6	51.08 56.85	97.6 97.6	49.43 55.20	489. 542.	2779. 3086.	3436. 3819.
C/S	SR C	0.115 0.115	173.85 182.00	99.3 99.3	172.66 180.81	96.1 96.1	162.35 170.50	93.1 93.1	152.60 160.75	1605. 1680.	9012. 9447.	11079. 11619.
C/S/W	SR C	0.073 0.073	147.00 154.28	99.4 99.4	146.33 153.61	97.3 97.3	140.29 147.57	95.3 95.3	134.52 141.80	1359. 1426.	7688. 8076.	9487. 9970.

TABLE 67. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES ZM01.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR	INITIAL YIELD) YEAR 100	YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	YEAR 200					
C	SR C	0.158 0.158	6.10 9.93	99.1 99.1	5.68 9.52	94.9 94.9	2.24 6.08	90.7 90.7	-1.26 2.58	55. 90.	240. 444.	252. 506.
S	SR C	0.122 0.122	3.09 4.92	99.2 99.2	2.94 4.77	95.9 95.9	1.68 3.51	92.7 92.7	0.47 2.30	28. 45.	134. 231.	150. 271.
W	SR C	0.036 0.036	25.78 28.05	99.5 99.5	25.71 27.98	98.4 98.4	24.99 27.26	97.3 97.3	24.26 26.53	238. 259.	1357. 1478.	1679. 1829.
P/H	SR	0.005	14.75	99.7	14.75	99.5	14.67	99.3	14.58	137.	784.	975.
R	SR	0.007	3.14	99.6	3.14	99.4	3.11	99.2	3.09	29.	167.	207.
C/S	SR C	0.134 0.134	16.30 19.13	99.2 99.2	15.99 18.83	95.6 95.6	13.39 16.22	92.1 92.1	10.87 13.71	150. 176.	805. 956.	967. 1154.
C/W	SR C	0.097 0.097	28.77 31.82	99.3 99.3	28.50 31.55	96.6 96.6	26.14 29.19	94.0 94.0	23.91 26.96	265. 294.	1476. 1639.	1805. 2007.
S/W	SR C	0.061 0.061	19.86 21.91	99.5 99.5	19.75 21.80	97.7 97.7	18.73 20.78	95.9 95.9	17.75 19.80	183. 202.	1034. 1143.	1273. 1409.
C/S/W	SR C	0.085 0.085	23.48 26.09	99.4 99.4	23.28 25.90	96.9 96.9	21.50 24.12	94.6 94.6	19.82 22.44	217. 241.	1208. 1348.	1480. 1653.
IRRIGATED CROP ROTATIONS												
C	SR C	0.158 0.158	154.86 164.51	99.1 99.1	153.20 162.84	94.9 94.9	139.33 148.98	90.7 90.7	125.27 134.92	1427. 1516.	7909. 8423.	9656. 10296.
S	SR C	0.122 0.122	50.60 57.25	99.2 99.2	49.91 56.57	95.9 95.9	44.04 50.70	92.7 92.7	38.46 45.11	466. 527.	2553. 2908.	3098. 3540.
W	SR C	0.036 0.036	69.40 75.17	99.5 99.5	69.18 74.95	98.4 98.4	67.14 72.91	97.3 97.3	65.07 70.84	642. 695.	3650. 3957.	4515. 4897.
C/S	SR C	0.134 0.134	151.16 159.31	99.2 99.2	149.87 158.02	95.6 95.6	138.92 147.07	92.1 92.1	128.34 136.49	1394. 1470.	7786. 8220.	9543. 10084.
C/S/W	SR C	0.085 0.085	137.25 144.54	99.4 99.4	136.50 143.79	96.9 96.9	129.81 137.09	94.6 94.6	123.48 130.76	1268. 1335.	7153. 7541.	8812. 9295.

TABLE 68. YIELD LOSS AND PER ACRE RETURN TO LAND AND MANAGEMENT FOR SOIL SERIES ZM13.

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE INITIAL YIELD) AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 10	93.1	-7.85	85.4	-13.47	31.	-269.	-397.
		YR 1	YEAR 10	93.1	-4.01	85.4	-9.63	5.	-64.	-142.
			YEAR 100	95.9	-11.13	92.7	-13.46	-95.	-504.	-657.
			YEAR 200	96.0	-8.95	93.0	-11.11	-124.	-390.	-507.
C	SR	0.230	3.60	94.4	-6.04	89.5	-7.54	-42.	-273.	-359.
	C	0.230	0.24	94.4	-4.22	89.5	-5.71	-25.	-176.	-238.
	ST	0.122	-10.42	96.7	-8.94	94.2	-9.65	-91.	-447.	-563.
	PT	0.116	-13.56	96.8	-8.66	94.4	-9.25	-138.	-433.	-538.
S	SR	0.177	4.64	97.9	12.11	96.3	11.31	120.	674.	828.
	C	0.177	-2.82	97.9	14.38	96.3	13.58	141.	795.	978.
	ST	0.094	-9.83	98.7	9.17	97.8	8.76	75.	505.	626.
	PT	0.090	-14.84	98.7	10.26	97.9	9.95	43.	563.	704.
W	SR	0.053	13.01	99.4	14.63	99.2	14.50	137.	783.	973.
	C	0.053	15.19	99.5	12.36	99.4	12.35	101.	661.	826.
	ST	0.028	8.12	99.5	13.08	99.4	13.17	65.	699.	880.
	PT	0.027	4.63	99.3	3.10	98.9	3.07	29.	167.	207.
P/H	SR	0.007	14.75	94.0	2.96	88.3	-0.58	58.	266.	288.
	ST	0.004	10.87	94.0	5.79	88.3	2.25	84.	417.	476.
	PT	0.004	7.07	96.4	0.30	93.7	-1.37	4.	81.	81.
R	SR	0.011	3.14	96.5	1.74	93.9	0.21	-32.	157.	182.
C/S	SR	0.195	6.44	95.4	12.96	91.7	10.23	148.	789.	944.
	C	0.195	9.28	95.4	16.02	91.7	13.28	176.	951.	1146.
	ST	0.103	0.54	97.2	10.18	95.2	8.68	94.	601.	730.
	PT	0.099	-3.33	97.3	11.95	95.3	10.59	61.	694.	853.
C/W	SR	0.142	16.09	96.8	7.34	94.4	6.26	79.	431.	521.
	C	0.142	19.14	96.8	9.39	94.4	8.31	98.	541.	657.
	ST	0.075	10.19	98.1	4.45	96.7	3.87	31.	261.	320.
	PT	0.072	6.65	98.2	5.13	95.8	4.67	-12.	296.	372.
S/W	SR	0.089	8.61	95.8	9.75	92.6	7.76	111.	593.	709.
	C	0.089	10.66	95.8	12.37	92.6	10.38	135.	732.	883.
	ST	0.047	3.36	97.5	6.93	95.6	5.82	59.	412.	501.
	PT	0.045	-1.25	97.6	8.23	95.8	7.26	22.	481.	594.
C/S/W	SR	0.124	12.07	95.8	11.83	92.6	7.76	111.	593.	709.
	C	0.124	14.69	95.8	14.45	92.6	10.38	135.	732.	883.
	ST	0.066	6.47	97.5	6.93	95.6	5.82	59.	412.	501.
	PT	0.063	2.47	97.6	8.23	95.8	7.26	22.	481.	594.

TABLE 68. (CONTINUED).
IRRIGATED CROP ROTATIONS

ROT.	CP	PERCENT TOPSOIL LOST/YR	THE YIELD REMAINING (AS A % OF THE AND THE YEARLY RETURN TO LAND AND MANAGEMENT FOR YEAR 100	INITIAL YIELD) YEAR 200	PRESENT VALUE OF A PROFIT STREAM TO YEAR 100	200				
C	SR	0.230	99.61	93.1	81.58	85.4	60.37	914.	4909.	5877.
	C	0.230	109.25	93.1	91.22	85.4	70.02	1003.	5423.	6516.
	ST	0.122	90.00	95.9	81.18	92.7	72.19	829.	4660.	5677.
	PT	0.116	93.81	96.0	90.48	93.0	81.82	864.	5149.	6295.
S	SR	0.177	34.49	94.4	26.22	89.5	18.33	315.	1655.	1959.
	C	0.177	41.14	94.4	32.88	89.5	24.98	377.	2010.	2400.
	ST	0.094	25.81	96.7	22.75	94.2	18.70	237.	1367.	1647.
	PT	0.090	25.80	96.8	28.12	94.4	24.25	237.	1650.	2007.
W	SR	0.053	52.84	97.9	49.91	96.3	47.32	488.	2753.	3390.
	C	0.053	58.61	97.9	55.68	96.3	53.09	542.	3061.	3773.
	ST	0.028	46.14	98.7	46.04	97.8	44.56	427.	2506.	3103.
	PT	0.027	46.73	98.7	51.20	97.9	49.84	432.	2780.	3450.
C/S	SR	0.195	108.15	94.0	93.58	88.3	78.78	594.	5440.	6590.
	C	0.195	116.30	94.0	101.73	88.3	86.93	1070.	5874.	7130.
	ST	0.103	100.25	96.4	93.45	93.7	86.25	925.	5251.	6437.
	PT	0.099	102.97	96.5	101.63	93.9	94.68	950.	5682.	6981.
C/S/W	SR	0.124	101.55	95.8	92.50	92.6	84.78	936.	5213.	6379.
	C	0.124	108.83	95.8	99.79	92.6	92.07	1004.	5601.	6862.
	ST	0.066	94.29	97.5	90.83	95.6	86.33	871.	5008.	6173.
	PT	0.063	96.15	97.6	98.10	95.8	93.78	888.	5391.	6659.