

Soil Capability Class IV - 15 to 25 percent slopes

BEFORE CONDITION - CONTINUOUS SILAGE CORN PLANTED IN MAY, NO COVER, UP AND DOWN THE SLOPE DIRECTION, CHARLTON/PAXTON/WOODBRIDGE SOILS, MAXIMUM SLOPE OF 25 PERCENT AND SLOPE LENGTH OF 200 FEET.

BEFORE SOIL LOSS - A = RKLSCP

A = 150 X .24 X 8.3 X .46 X 1 = 137 tons per acre.

To produce occasional row crops on slopes of 15 to 20 percent, landusers need to have an acceptable conservation system to reduce soil loss to not more than 12 tons per acre. This is to be achieved with the following constraint: LSC-max = 0.33, and NO ROW CROPS ARE ALLOWED ON ANY SLOPES GREATER THAN 20 PERCENT. Slopes greater than 20 percent need to be planted to hay, pasture or other protective land uses.

If slope is at maximum of 20 percent for LCC #4 before conditions, then slope length maximum must be reduced to no more than 100 feet for the following ACS conditions:

ACS #10 - Rotation of silage corn for one year, conventional plant in May, up and down slope tillage, fall cover established by October 1, annually, and hay planted for two years.

AFTER SOIL LOSS (ACS #10)

A = RKLSCP = 150 X .24 X 4.1 X .08 X 1 = 12 tons per acre.

ACS #11 - Rotation of silage corn for two years, conventional plant in May, up and down slope tillage, fall cover established by October 1, annually, and hay planted for five years.

AFTER SOIL LOSS (ACS #11)

A = RKLSCP = 150 X .24 X 4.1 X .08 X 1 = 12 tons per acre.

ACS #12 - Rotation of silage corn for three years, conventional plant in May, up and down slope tillage, fall cover established by October 1, annually, and hay planted for eight years.

AFTER SOIL LOSS (ACS #12)

A = RKLSCP = 150 X .24 X 4.1 X .08 X 1 = 12 tons per acre.

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NOTES

If actual, onsite slope lengths are greater than those given in the listed ACS's, either adjust the crop C-max factor downward through less intensive cropping sequences, or reduce the slope length mechanically through installation of conservation practices to stay within the maximum LSC constraints for each land capability class.

If actual, onsite slope lengths are less than those given in the listed ACS's, it is permissible to adjust the crop C-max factor upward through more intensive cropping sequences, yet not exceed the maximum LSC constraints for each land capability class.

If 15 to 20 tons of as-produced manure (i.e. free stall with little bedding) is added in the fall and spring tilled, reduce the overall C-factor by 0.02.

If 15 to 20 tons of manure with bedding (i.e. young stock or stanchion barns with hay or straw) is added in the fall and spring tilled, reduce the overall C-factor by 10 percent.

Substitute ACS's may be used so long as they do not exceed the land capability class constraints or raise the soil loss above that of the ACS being substituted.

A conservation system on a long slope length may be acceptable for treating sheet and rill erosion yet may have ephemeral gullies. If so, plan to treat this erosion separately.

ALTERNATIVE CONSERVATION SYSTEMS

CONSERVATION PRACTICE	Alternative Conservation System											
	1	2	3	4	5	6	7	8	9	10	11	12
CCS-1	X	X	X	X			X					
CCS-2					X							
CCS-3						X						
CCS-4								X				
CCS-5									X			
CCS-6										X		
CCS-7											X	
CCS-8												X
CROSS-SLOPE	X		X		X	X	X	X	X			
COVER CROP-1		X		X			X		X			
COVER CROP-2	X		X		X	X		X		X	X	X
CONTILLAGE							X					
REDUCED TILL			X	X								

- CCS-1 Continuous corn for silage
- CCS-2 Silage corn-3 years; hay-1 year
- CCS-3 Silage corn-3 years; ACR-3 years
- CCS-4 Silage corn-3 years; hay-3 years
- CCS-5 Silage corn-1 year; ACR-3 years
- CCS-6 Silage corn-1 year; hay-2 year
- CCS-7 Silage corn-2 years; hay-5 years
- CCS-8 Silage corn-3 years; hay-8 years
- COVER CROP-1 Plant by September 15
- COVER CROP-2 Plant by October 1
- CONTIL Conservation Tillage with 30% residues
- REDUCED TILL At least 20% residues at corn planting time

ALTERNATIVE CONSERVATION SYSTEM

CONSERVATION PRACTICE	ALTERNATIVE CONSERVATION SYSTEM														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CCS-1: Continuous corn for silage	X	X	X	X			X								
CCS-2: Silage corn-3 years; hay-1 year					X										
CCS-3: Silage corn-3 years; Rye cover-UN-harvested						X									
CCS-4: Silage corn-3 years; hay-1 year								X							
CCS-5: Silage corn-1 year; Rye cover-UN-harvested									X						
CCS-6: Silage corn-1 years; hay-2 year										X					
CCS-7: Silage corn-2 years; hay-3 year											X				
CCS-8: Silage corn-3 years; hay-8 year												X			
CCS-9: Silage corn-3 years; hay-5 year or max. C= 0.20													X		
CCS-10: Silage corn-5 years; hay-5 year or max. C= 0.11														X	
CROSS-SLOPE	X		X		X	X	X	X	X						X
COVER CROP-1: Plant by September 15		X		X			X		X						X
COVER CROP-2: Plant by October 1	X		X		X	X		X		X	X	X	X	X	
CONTILLAGE: Conservation Tillage with 30% residues							X						X		
REDUCED TILL: At least 20% residues at corn planting time			X	X											
DIVERSION/TERRACE													X		
CCS-11: Continuous Vegetables or flowers															X

ALTERNATIVE CONSERVATION SYSTEMS (ACS'S)

SOIL CAPABILITY CLASS II - 3 TO 8 PERCENT SLOPES

BEFORE CONDITION - Continuous silage corn planted in may, no cover, up and down the slope direction, maximum slope of 8 percent and slope length of 200 feet.

BEFORE SOIL LOSS - $A = RKLSCP$

$A = 150 \times .24 \text{ assume } \times 1.4 \times .46 \times 1 = 23 \text{ tons per acre.}$

To produce continuous corn on slopes of 3 to 8%, land users need to have an acceptable conservation system to reduce soil loss to not more than 11 tons per acre (reduction of 50% of the worst case, no treatment, condition of 23 tons per acre). This is to be achieved with the following constraint: $LSC\text{-max} = 0.31$. $LS = 0.31/C$ and $C = 0.31/LS$.

If slope is at maximum of 8 percent for before condition, then slope length maximum must be reduced to no more than 120 feet for the following ACS conditions:

ACS #1 - Continuous silage corn, conventional plant in May, cross slope tillage, and fall cover established by October 1, annually.

AFTER SOIL LOSS (ACS #1)

$A = RKLSCP = 150 \times .24 \times 1.1 \times .31 \times .9 = 11 \text{ tons per acre.}$

(If $C = 0.31$, then $LS\text{-max} = 1.1$ when $P = 0.9$)

ACS #2 - Continuous silage corn, conventional plant in May, up and down slope tillage, and fall cover established by September 15 annually.

AFTER SOIL LOSS (ACS #2)

$A = RKLSCP = 150 \times .24 \times 1.1 \times .28 \times 1 = 11 \text{ tons per acre.}$

(If $C = 0.28$, then $LS\text{-max} = 1.1$ when $P = 1.0$)

Note:

For Slope percents of less than the maximum 8 percent for LLC # 2 conditions, the following adjustments can be made for ACS # 1 and ACS # 2:

PERCENT SLOPE	MAXIMUM LENGTH (FEET)
3	None
4	None
5	400
6	250
7	200
8	120

* See Soil Survey of Rhode Island - individual soil map unit descriptions for capability class.

To meet requirements for using ACS #1 and ACS #2 for continuous silage corn, stay within the 400 feet maximum length for a 5 percent slopes down to the maximum limit of 120 feet for 8 percent slopes.

ACS #3 - Continuous silage corn, reduced tillage with 20 percent cover after corn planting in May, cross slope tillage, and fall cover established by October 1, annually.

AFTER SOIL LOSS (ACS #3)

$$A = RKLSCP = 150 \times .24 \times 1.6 \times .18 \times .1 = 10 \text{ Tons per acre.}$$

ACS #4 - Continuous silage corn, reduced tillage with 20 percent cover after corn planting in May, up and down slope, and fall cover established by September 15, annually.

AFTER SOIL LOSS (ACS #4)

$$A = RKLSCP = 150 \times .24 \times 1.6 \times .22 \times .9 = 11 \text{ tons per acre}$$

ACS #5 - Rotation of silage corn for three years, conventional plant in May, cross slope tillage, fall cover established by October 1, annually, and hay planted for one year.

AFTER SOIL LOSS (ACS #5)

$$A = RKLSCP = 150 \times .24 \times 1.6 \times .22 \times .9 = 11 \text{ Tons per acre.}$$

ACS #6 - Rotation of silage corn for three years, conventional plant in May, cross slope tillage, fall cover established by October 1, annually and rye cover planted for ACR and managed for three years.

AFTER SOIL LOSS (ACS #6)

$$A = RKLSCP = 150 \times .24 \times 1.6 \times .22 \times .9 = 11 \text{ Tons per acre.}$$

(If C = .22 then LS-max = 1.6 At 8 percent slope, maximum slope length = 250 feet).

$$\text{Example: } LS = A/RKCP = 10/150 \times .24 \times .18 \times 1 = 1.6$$

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SOIL CAPABILITY CLASS III - 8 TO 15 PERCENT SLOPES

BEFORE CONDITION - CONTINUOUS SILAGE CORN, NO COVER, UP AND DOWN THE SLOPE DIRECTION, CHARLTON/PAXTON/WOODBRIDGE SOILS, MAXIMUM SLOPE OF 15 PERCENT AND SLOPE LENGTH OF 200 FEET.

BEFOR SOIL LOSS - A = RKLSCP

A = $150 \times .24 \times 3.6 \times .46 \times 1 = 60$ tons per acre.

To produce silage corn on slopes of 8 to 15%, land users need to have an acceptable conservation system to reduce soil loss to not more than 12 tons per acre. This is to be achieved with the following constraint: LSC-max = 0.37.

If slope is at maximum of 15 percent for LCC #3 before condition, then slope length maximum must be reduced to no more than 100 feet for the following ACS conditions:

ACS #7 - Continuous silage corn, conservation tillage with 30 percent cover after corn planting in May, cross slope tillage, and fall cover established by September 15, annually.

AFTER SOIL LOSS (ACS #7)

A = RKLSCP = $150 \times .24 \times 2.5 \times .14 \times .9 = 11$ tons per acre.

ACS #8 - Rotation of silage corn for three years, conventional plant in May, cross slope tillage, fall cover established by October 1, annually and hay planted for three years.

AFTER SOIL LOSS (ACS #8)

A = RKLSCP = $150 \times .24 \times 2.5 \times .15 \times .9 = 12$ tons per acre.

ACS #9 - Rotation of silage corn for one year, conventional plant in May, cross slope tillage, fall cover established by September 15, and rye cover managed for ACR for three years.

AFTER SOIL LOSS (ACS #9)

A = RKLSCP = $150 \times .24 \times 2.5 \times .15 \times .9 = 12$ tons per acre.

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