

# Kansas RUSLE2 Training

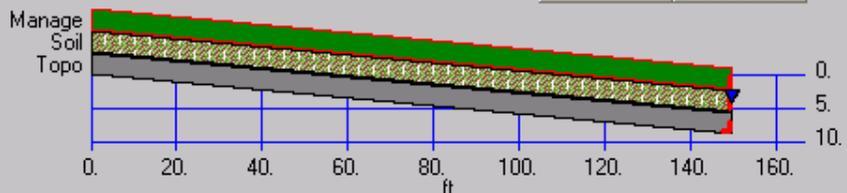
---

Soil Conditioning Index and Soil  
Tillage Intensity Rating

Profile: Ottdemo

Location KS Area3\Ottawa County

Add break Erase break



Contouring a. rows up-and-down hill

Strips/barriers (none)  
 Diversion/terrace, sediment basin (none)  
 Subsurface drainage (none)

Adjust yields Yields  
 General yield level Base yield

Adjust res. burial level Normal res. burial  
 Adjust ext. res. additions Residue inputs

Examine irrigation open

Adjust rock cover Adjust rock cover

Surf. res. cov. values Surf. cover  
 Soil conditioning index Soil conditioning index

Avg. slope steepness, % 6.0  
 Slope length (horiz), ft 150  
 Actual row grade, % 6.0  
 Lnt. slope length, ft

T value, t/ac/yr 5.0  
 Soil loss for cons. plan, t/ac/yr 14  
 Sediment delivery, t/ac/yr 14

Profile: Soil co...

Wind & irrigation-induced 0

SCI OM subfactor -0.68

SCI FD subfactor -0.34

SCI ER subfactor -4.6

STIR value 140

Soil conditioning index (-1.3)

SOIL CONDITIONING INDEX

Soil Topography Management Info MISC\_CALCULATIONS

Slope Soils				
Segment	Soil	Seg length (horiz), ft	Soil loss, t/ac/yr	Sed. del., t/ac/yr
1	KS Area 3\Ottawa\Gf GEARY SILT LOAM, 3 TO 6 PERCENT SLOPES\GEARY silt loam 100%	150	14	14

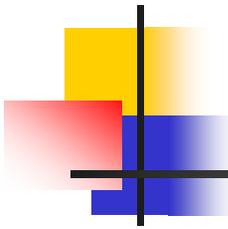


# What is the SCI

---

- A model (index) that predicts the consequences of cropping management systems on soil organic matter
- Predicts whether organic matter will be accumulated or lost over time

*Dictionary: The only place where divorce comes before marriage.*

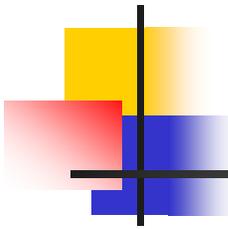


# What the SCI is NOT

---

- It is not a soil quality index.
  - Doesn't consider compaction or microbial activity
  - Does not estimate the amount of organic matter
  - Does not evaluate an acceptable level of soil organic matter

Politician: Someone who can borrow \$20, pay back \$10 and declare you're even because you both lost \$10.



# Three Parts of the SCI

---

- Site information
  - Location and Soils
- Management information
  - Cropping system and tillage operations
- Organic matter
  - Additional residue or manure

Bills travel through the mail at twice the speed of checks.

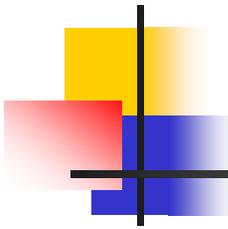


# How to use the SCI

---

- Hardcopy spreadsheet
- EXCEL spreadsheet
- Subroutine in RUSLEII (SCI latest version)
  - Different values from the RUSLE2 version than the EXCEL spreadsheet
  - RUSLE2 accesses some different information than is available from the spread sheet

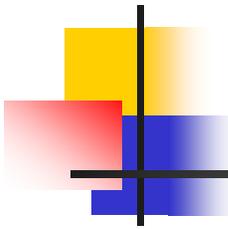
*A fool and his money are soon partying*



# What do the Numbers Mean

---

- A positive number means the management system is generating more organic material than would be degraded (if all other conditions are the same)
  - Does not include climatic or environmental degradation processes.
  - Does not include loss over time.

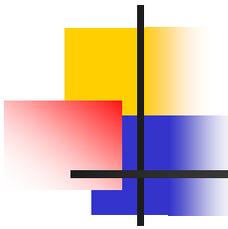


# What do the Numbers Mean

---

- A negative number means the cropping system does not produce or maintain enough organic material to sustain present levels.

Income-tax time: When you test your powers of deduction.



# What do the Numbers Mean

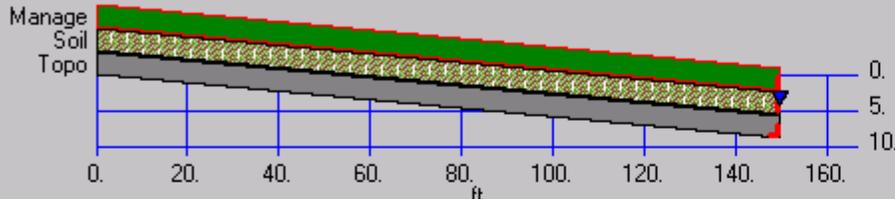
---

- With low erosion rates you may get a positive number but still have a cropping and tillage system that degrades soil organic matter and soil quality.
  - Values will need to be validated for Kansas climate and cropping systems to determine minimum criteria.

Profile: Ottdemo

Location

Add break Erase break



Avg. slope steepness, %   
 Slope length (horiz), ft

Actual row grade, %   
 Crit. slope length, ft

Contouring

Strips/barriers   
 Diversion/terrace, sediment basin   
 Subsurface drainage

Adjust yields  Yields  
 General yield level

Adjust res. burial level   
 Adjust ext. res. additions  Residue inputs

Examine irrigation  open

Adjust rock cover  Adjust rock cover

T value, t/ac/yr

Surf. res. cov. values  Surf. cover Soil loss for cons. plan, t/ac/yr

Soil conditioning index  Soil conditioning index Sediment delivery, t/ac/yr

Profile: Soil co...

Wind & irrigation-induced

SCI OM subfactor   
 SCI FD subfactor   
 SCI ER subfactor

STIR value

Soil conditioning index

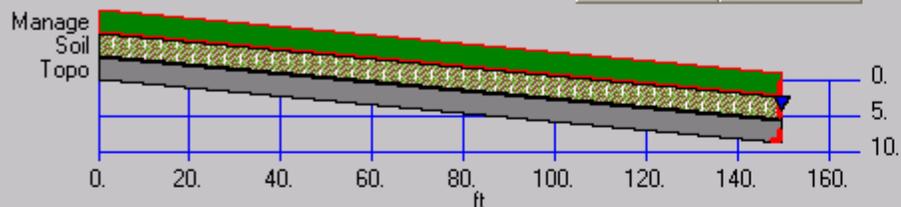
Soil Topography Management Info MISC\_CALCULATIONS

Slope Soils

Segment	Soil	Seg length (horiz), ft	Soil loss, t/ac/yr	Sed. del., t/ac/yr
1	KS Area 3\Ottawa\Gf GEARY SILT LOAM, 3 TO 6 PERCENT SLOPES\GEARY silt loam 100%	150	14	14

Location

Add break Erase break



Contouring

Avg. slope steepness, %   
Slope length (horiz), ft

Actual row grade, %   
Lnt. slope length, ft

Profile: Soil co...

Wind & irrigation-induce

SCI OM subfactor   
SCI FO subfactor   
SCI ER subfactor

STIR value

Soil conditioning index (

Strips/barriers   
Diversion/terrace, sediment basin   
Subsurface drainage

Adjust yields   
General yield level

Adjust res. burial level   
Adjust ext. res. additions

Examine irrigation

Adjust rock cover

T value, t/ac/yr   
Soil loss for cons. plan, t/ac/yr   
Sediment delivery, t/ac/yr   
Surf. res. cov. values   
Soil conditioning index

Soil | Topography | Management | Info | MISC\_CALCULATIONS

Slope Management

Segment	Management	Seg length (horiz), ft	Is this a rotation?	Length, yr	Yrs offset from start year, yr	Soil loss, t/ac/yr	Sed. delivery, t/ac/yr
1	...s\Wheat\Winter Wheat\Continuous\Wheat grain, cont; FM,disk,anhy, fcult z24	150	Yes	1	0	3.5	3.5

Pre-dist management

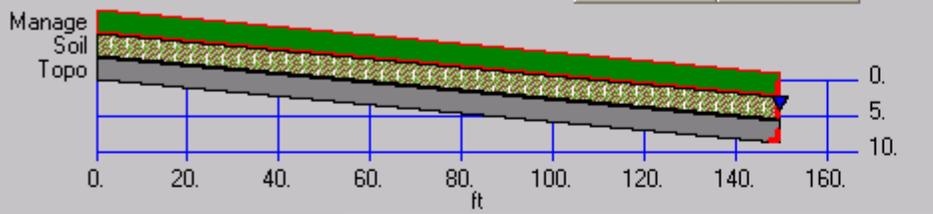
Post-dist management

Examine irrigation

Profile: Ottdemo\*

Location

Add break Erase break



Avg. slope steepness, %   
Slope length (horiz), ft

Actual row grade, %   
Lnt. slope length, ft

Contouring

Strips/barriers   
Diversion/terrace, sediment basin   
Subsurface drainage

Adjust yields   
General yield level   
Adjust res. burial level   
Adjust ext. res. additions   
Examine irrigation

Adjust rock cover   
T value, t/ac/yr   
Surf. res. cov. values   
Soil loss for cons. plan, t/ac/yr   
Soil conditioning index   
Sediment delivery, t/ac/yr

Profile: Soil co...

Wind & irrigation-induce   
SCI OM subfactor   
SCI FD subfactor   
SCI ER subfactor   
STIR value   
Soil conditioning index (

Soil Topography Management Info MISC\_CALCULATIONS

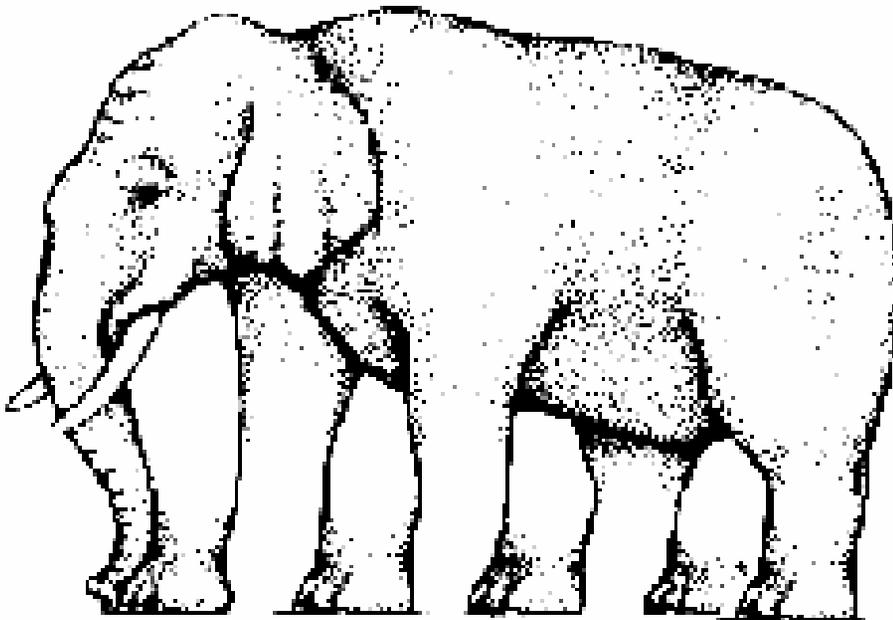
Slope Management

Segment	Management	Seg length (horiz), ft	Is this a rotation?	Length, yr	Yrs offset from start year, yr	Soil loss, t/ac/yr	Sed. delivery, t/ac/yr
1	...eat\Winter Wheat\Continuous\Wheat grain, cont.; Fconv, chisel, disk, fcult, z24	150	Yes	1	0	3.7	3.7

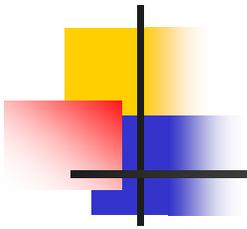
Pre-dist management  Post-dist management  Examine irrigation

# (STIR)

- Soil Tillage Intensity Rating



How many legs  
does this elephant  
have?

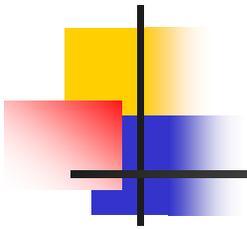


# Soil Tillage Intensity Rating (STIR)

---

- Evaluates the kind severity and number of ground disturbing implements on the soil
- High STIR numbers indicate more disturbance

Success always occurs in private, and failure in full view

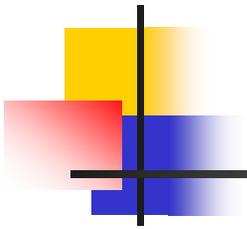


# Soil Tillage Intensity Rating (STIR)

---

- Components of the index
  - Operating speed
  - Tillage type
  - Tillage depth
  - Percent surface area disturbed
    - The components are weighted to calculate the index rating.

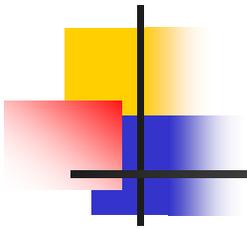
If at first you don't succeed, destroy all evidence that you tried.



# Soil Tillage Intensity Rating (STIR)

---

- Components of the index
  - Operating speed
  - Tillage type
  - Tillage depth
  - Percent surface area disturbed
    - The components are weighted to calculate the index rating.



# Soil Tillage Intensity Rating (STIR)

---

- Not currently listed as an assessment for soil quality criteria
- Currently the Conservation Security Program requires a STIR rating of “30” or less as minimum eligibility requirement

Possibly: No in three syllables

# Soil Tillage Intensity Rating (STIR)

RUSLE2 Version 1.15.4.0 (Feb 11 2004)

File Database Edit View Options Window Help

Profile: Ottdemo\*

Location: KS Area3\Ottawa County

Manage Soil Topo

0. 20. 40. 60. 80. 100. 120. 140. 160. ft

Contouring: a. rows up-and-down hill

Strips/barriers: (none)

Diversion/terrace, sediment basin: (none)

Subsurface drainage: (none)

Adjust yields: Yields, General yield level: Base yield

Adjust res. burial level: Normal res. burial

Adjust ext. res. additions: Residue inputs

Adjust rock cover: Adjust rock cover

Surf. res. cov. values: Surf. cover

Soil conditioning index: Soil conditioning index

Avg. slope steepness, %: 6.0

Slope length (horiz), ft: 150

Actual row grade, %: 6.0

Crit. slope length, ft: [ ]

T value, t/ac/yr: 5.0

Soil loss for cons. plan, t/ac/yr: 0.34

Sediment delivery, t/ac/yr: 0.34

Profile: Soil co... (popup window)

Wind & irrigation-induce: 0

SCI OM subfactor: 1.3

SCI FO subfactor: 0.97

SCI ER subfactor: 0.87

STIR value: 2.6

Soil conditioning index: 2.6

Stir in the SCI

Soil | Topography | Management | Info | MISC\_CALCULATIONS

Slope Management

Segment	Management	Seg length (horiz), ft	Is this a rotation?	Length, yr	Yrs offset from start year, yr	Soil loss, t/ac/yr	Sed. delivery, t/ac/yr
1	... Crop Templates\Wheat\Winter Wheat\Continuous\Wheat grain, cont; NT, Z24	150	Yes	1	0	0.34	0.34

No-till with disk openers

Pre-dist management: default

Post-dist management: default

Examine irrigation: open

Finished calculating

R2\_NRCS\_Fld\_Office | NRCS advanced SCI 122003 | Cmoses

start | Inbox - Microsoft Out... | C:\Documents and Se... | Microsoft PowerPoint ... | RUSLE2 Version 1.15... | 1:30 PM

# Soil Tillage Intensity Rating (STIR)

**RUSLE2 Version 1.15.4.0 (Feb 11 2004)**

Profile: Ottdemo\*  
Location: KS Area3\Ottawa County

Manage Soil Topo

Contouring: a. rows up-and-down hill

Strips/barriers: (none)  
Diversion/terrace, sediment basin: (none)  
Subsurface drainage: (none)

Adjust yields: Yields (Base yield)  
Adjust res. burial level: Normal res. burial  
Adjust ext. res. additions: Residue inputs

Adjust rock cover: Adjust rock cover

Surf. res. cov. values: Surf. cover  
Soil conditioning index: Soil conditioning index

Actual row grade, %: 6.0  
Slope length (horiz), ft: 150  
Avg. slope steepness, %: 6.0  
Slope length (horiz), ft: 150

Actual row grade, %: 6.0  
Lrt. slope length, ft: 150

Examine irrigation: open

T value, t/ac/yr: 5.0  
Soil loss for cons. plan, t/ac/yr: 1.9  
Sediment delivery, t/ac/yr: 1.9

Soil conditioning index: 24

Segment		Slope Management						
+	-	Management	Seg length (horiz), ft	Is this a rotation?	Length, yr	Yrs offset from start year, yr	Soil loss, t/ac/yr	Sed. delivery, t/ac/yr
1		... Crop Templates\Wheat\Winter Wheat\Continuous\Wheat grain, cont: NT, Z24*	150	Yes	1	0	1.9	1.9

Pre-dist management: default  
Post-dist management: default  
Examine irrigation: open

Finished calculating

R2\_NRCS\_Fld\_Office | INRCS advanced SCI 122003 | Cmoses

start | Inbox - Microsoft Out... | C:\Documents and Se... | Microsoft PowerPoint ... | RUSLE2 Version 1.15... | 1:37 PM