Soil Quality Evaluation Site Description

Site Description		DATE:
Map Location	State:	County:
Geographic Location	Longitude:	Latitude:
Field or site location		
Landowner		
Soil Information		
Soil Series		
Slope %		
Erosion		
Mean Annual Temp.		
Mean Annual Precip.		
Present Management		
Cropping System (Rotations, cover crops, etc)		
Fertilizers/Pesticides (N inputs, pesticide use, etc)		
Tillage/Residue Cover (Type, depth, frequency, timing, % cover, etc)		
Irrigation (Pivot, gravity, amount and timing, etc)		
Other		
Past Management History		
Cropping System (Rotation/fallow history, etc)		
Fertilizers/Pesticides (N inputs, pesticide use, etc)		
Tillage/Residue Cover (Past tillage, frequency and type)		
Irrigation (past irrigation, how long?)		
Unusual Events (Floods, fires, land-leveling)		

Aerial view of field showing sampling sites and location of environmentally sensitive areas, such as ponds, creeks, wetlands, and other fragile sites adjacent to the field.

Scale 1 inch = _____ ft. (NA indicates sketch not to scale).

Additional Specifications and Notes:

Soil Respiration (at Initial Field Water Content)

DATE:

Sample site	(H) Ring height (cm)	Start time	End time	(A) Soil temp. (Celsius)	(B) Draeger tube %CO₂ (n=1)	* Soil Respiration lbs CO₂-C/acre/day	(B) Draeger tube %CO₂ (n=5)	* Soil Respiration lbs CO₂-C/acre/day
1								
2								
3								
4								

Soil Respiration (at least 6 hours after irrigation or soil wetting)

1								
2								
3								
4								

* Soil respiration = PF x $((A + 273)/273)$ x (B - 0.035) x 22.91 x H = lbs CO_2-C/acre/day   H = 5.08 cm (if not measured)

PF = Pressure Factor = 'raw' barometric pressure in inches Hg/29.9 inches.
Note: This adjustment is necessary at elevations > 3,000 ft.; otherwise PF = 1

Conversion: Degrees Celsius = 5/9 x (Degrees Fahrenheit - 32)

NOTES:

Infiltration (for 1 inch of water)

DATE:

Sample site	1st inch of water		(W) 1st Infiltration time (minutes)	* 1st Infiltration (in/hr)	2nd inch of water		(W) 2nd Infiltration time (minutes)	* 2nd Infiltration (in/hr)
	Start time	End time			Start time	End time		
1								
2								
3								
4								

* Conversion of infiltration time to inches per hour (in/hr); in/hr = (1/**W**) x 60

NOTES:

Bulk Density and Soil Water Status (core method)

DATE:

Sample site	(h) Height of ring above soil (cm)	(E) Weight of field moist soil + bag (grams)	(F) Weight of bag (grams)	Subsample for determining soil water content				** (M) Soil H_2O content (g/g)	*** Soil bulk density (g/cm^3)
				(G) Weight of paper cup (grams)	(I) Weight of paper cup + soil (g)	(K) Dry weight of soil + cup	* (L) Dry weight of soil (grams)		
1									
2									
3									
4									

*Dry wt. of soil subsample = (K - G)   **Soil H_2O content = (I - K)/L

***Soil bulk density = [(E - F)/(1 + M)]/[(12.7 - h) x 42.52]   h = 5.08 cm (2 inches) if not measured;   volume of soil = 324 cm^3

Bulk Density and Soil Water Status for Gravelly Soils (excavation method)

Sample site	(n) Volume of water (cm^3)	(E) Weight of field moist soil + bag (grams)	(F) Weight of bag (grams)	Subsample for determining soil water content				** (M) Soil H_2O content (g/g)	*** Soil bulk density (g/cm^3)
				(G) Weight of paper cup (grams)	(I) Weight of paper cup + soil (g)	(K) Dry weight of soil + cup	* (L) Dry weight of soil (grams)		
1									
2									
3									
4									

*Dry wt. of soil subsample = (K - G)   **Soil H_2O content = (I - K)/L

***Soil bulk density = [(E - F)/(1 + M)]/(n)   n = volume of soil in cm^3

	Sample site	(X) Weight of field moist soil (grams)	Readings for 1:1 soil:water mix.			* Estimated Soil NO_3-N (1b NO_3-N/acre)	** Exact Soil NO_3-N (1b NO_3-N/acre)
			EC (dS/m)	pH	(Y) Soil NO_3-N ppm (est.)		
1							
2							
3							
4							

Soil Electrical Conductivity, pH, and Nitrate (NO_3^-)   DATE:

*Estimated: lb NO_3-N/acre = **Y** x [depth of soil in cm /10] x soil bulk density x 0.89
Depth of soil = depth of soil sampled in centimeters; for kit it is 0 to 3 inches = 7.6 cm

Exact: lb NO_3-N/acre = **Y x C.F. x [depth of soil in cm /10] x soil bulk density x 0.89
C.F. = [30 mL + ((X/(1 + M)) x M)]/[X/(1 + M)]   M = decimal soil water content (g/g)
Depth of soil = depth of soil sampled in centimeters; for kit it is 0 to 3 inches = 7.6 cm

Water Quality Measurements   DATE:

	Sample site	Salinity (dS/m)	Water Nitrite (ppm)	Water Nitrate (ppm)
1				
2				
3				
4				

NOTES:

Aggregate Stability						DATE:
	Sample site	**(A)** Weight of sieve (grams)	**(B)** Weight of sieve + aggregates (grams)	**(C)** Weight of sieve + dry aggregates (grams)	**(D)** Weight of sieve + dry sand (grams)	* Percent water stable aggregates (% of soil > 0.25mm)
1						
2						
3						
4						

* % Water stable aggregates = (C - D)/(B - D) x 100

Slake Test			DATE:
	Sample site	Individual Soil Slake Ratings	* Average Soil Slake Rating
1			
2			
3			
4			

* Soil Slake Rating = (add all of the individual ratings and divide by the total number)

Earthworms				DATE:	NOTES:
	Sample site	Surface dwelling earthworms	Deep dwelling earthworms	Total Earthworms (no. per square foot)	
1					
2					
3					
4					

Classes for Structure Index

	Structure		Class[a]
Type	Size	Grade	
Granular	Fine, Medium, Coarse	Weak	2
Granular	Fine, Medium, Coarse	Moderate	4
Granular	Fine, Medium, Coarse	Strong	5
Blocky	Very fine, Fine, Med.	Weak	1
Blocky	Very fine, Fine	Moderate	4
Blocky	Very fine, Fine, Med.	Strong	5
Blocky	Medium	Moderate	3
Platy	Thin, Medium, Thick	Very friable[b]	3
Platy	Thin, Medium, Thick	Friable[b]	2
Platy	Thin, Medium, Thick	Firm or Stronger[b]	1
Massive			1
Single Grain			1

Note: [a] Class 5 is the best. [b] Substitute horizontal moist rupture resistance.

Soil Observations and Estimations

DATE:

	Description
Top soil depth (inches)	
Plant roots	
Compaction layer	
Soil texture	
Other	

Soil Structure

DATE: NOTES:

Depth (inches)	Type	Size	Grade	(A) Class	(B)	(A) x (B)	Structure index*
0 - 4					3		
4 - 8					2		
8 - 12					1		
					Total =		

*Structure index = ((Total - 6)/24) x 100