Cover crops 201

Chris Teachout

97° 96° 95° 94° 93° 92° 91° 90°

0 30 60 mi
0 40 80 km

MINNESOTA

DICKINSON MITCHELL

Rock Rapids LYON OSCEOLA Sibley Estherville Spirit Lake EMMET KOSSUTH WINNEBAGO Northwood Forest City WORTH Osage Cresco WINNESHIEK Waukon HOWARD Decorah ALLAMAKEE

SIOUX O'BRIEN Orange City Primghar Spencer Emmetsburg CLAY PALO ALTO Algona HANCOCK Garner Mason City CERRO GORDO FLOYD Charles City CHICKASAW New Hampton West Union CLAYTON

Le Mars PLYMOUTH Cherokee BUENA VISTA Pocahontas HUMBOLDT Clarion Dakota City FRANKLIN Allison BREMER FAYETTE Elkader

CHEROKEE Storm Lake POCAHONTAS Fort Dodge WRIGHT Hampton BUTLER Waverly BLACK HAWK DELAWARE DUBUQUE

Sioux City IDA Sac City CALHOUN Webster City GRUNDY HARDIN Waterloo Independence Manchester Dubuque

WOODBURY Ida Grove SAC Rockwell City WEBSTER HAMILTON Eldora Grundy Center BUCHANAN JACKSON

MONONA CRAWFORD Onawa Denison CARROLL Carroll GREENE Jefferson Boone STORY Nevada Marshalltown TAMA Toledo BENTON LINN Vinton JONES Anamosa Maquoketa

Cedar Rapids CLINTON Clinton

BOONE MARSHALL

HARRISON SHELBY Logan Harlan AUDUBON Audubon GUTHRIE Guthrie Center DALLAS Adel Des Moines POLK Newton JASPER Montezuma IOWA Iowa City

Marengo POWESHIEK JOHNSON Tipton CEDAR SCOTT

POTTAWATTAMIE Council Bluffs ADAIR Atlantic CASS Greenfield Winterset Indianola MADISON MARION Knoxville WARREN Oskaloosa MAHASKA Sigourney KEOKUK Washington WASHINGTON Muscatine MUSCATINE Davenport LOUISA Wapello

MILLS Glenwood MONTGOMERY Red Oak ADAMS Corning Creston UNION Osceola CLARKE Chariton LUCAS Albia MONROE Ottumwa WAPELLO Fairfield JEFFERSON HENRY Mt. Pleasant DES MOINES

FREMONT Sidney Clarinda TAYLOR RINGGOLD Mount Ayr Leon WAYNE Corydon Centerville DAVIS Bloomfield Keosauqua LEE Fort Madison Burlington

PAGE Bedford APPANOOSE DECATUR VAN BUREN Keokuk

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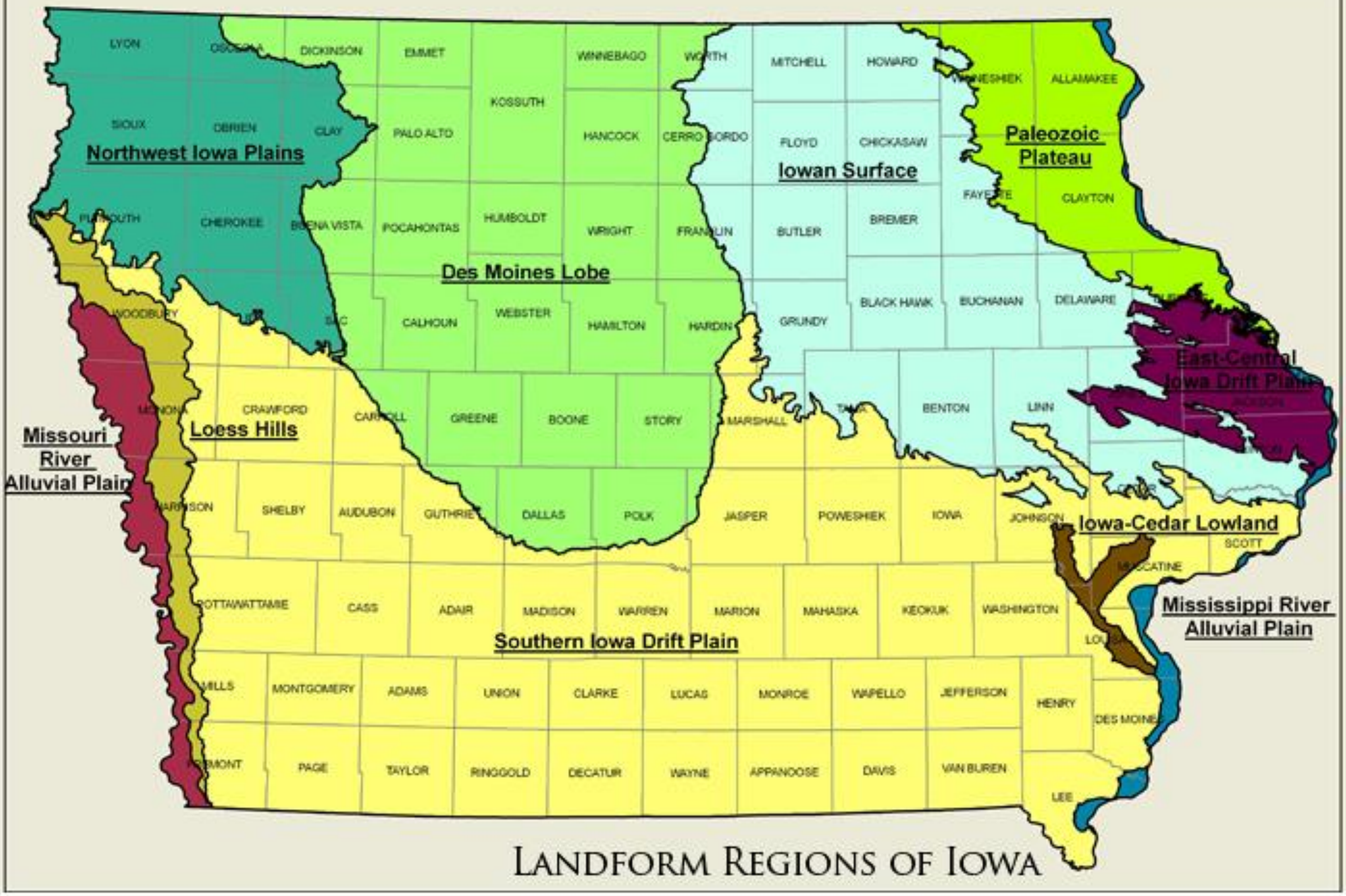
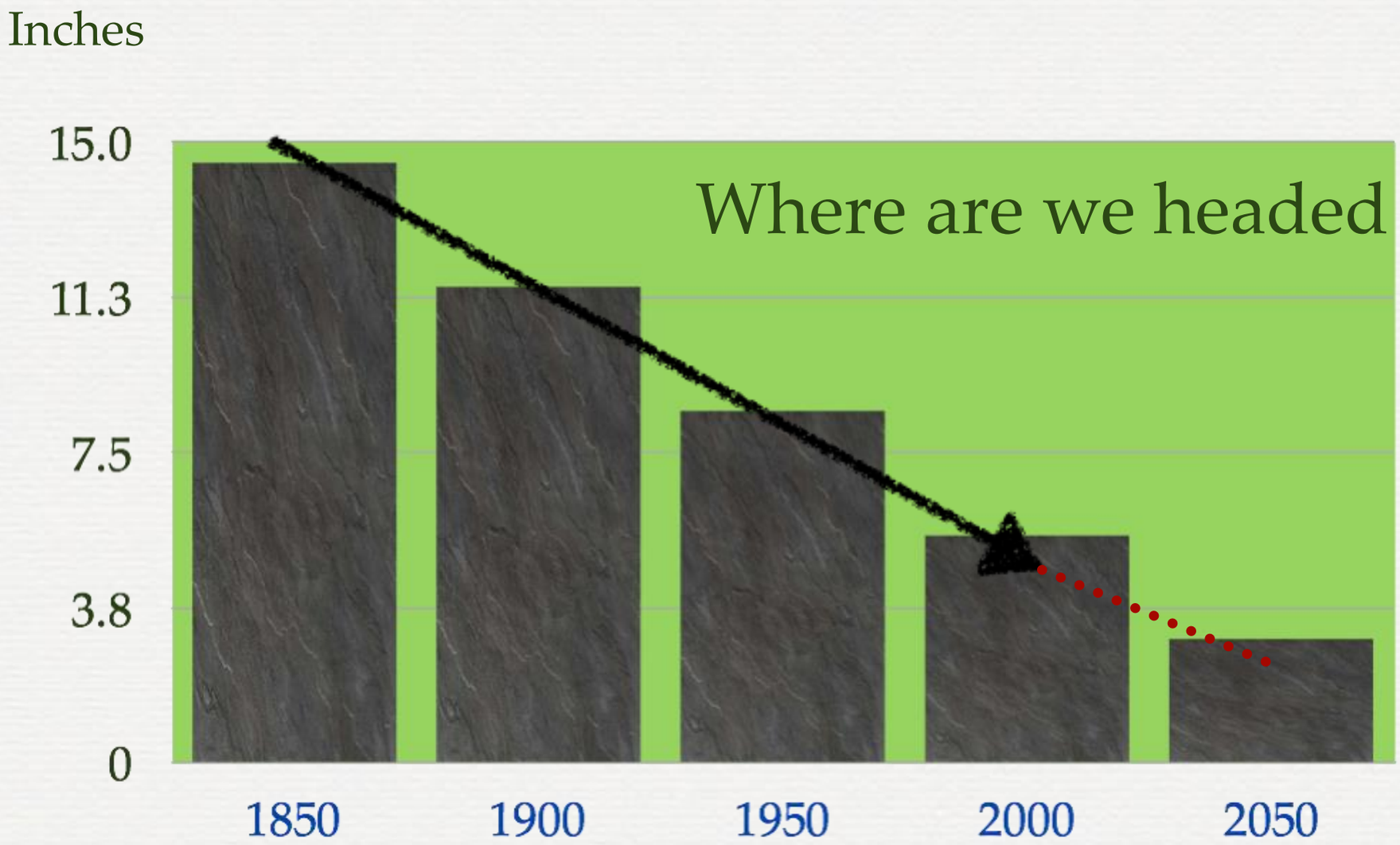


Landform Regions of Iowa

Top Soil Lost over Time

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Cereal rye preceding soybeans

Planting green


CASE IH
VALMAR
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Why?

Temperature below heavy rye

Temperature below no rye

Mimic Nature

Feed the Soil

Spring seeded covers work

Cover Crop Chart

AREA 4 SCD

GROWTH CYCLE	RELATIVE WATER USE	PLANT ARCHITECTURE
A = Annual	= Low	= Upright
B = Biennial	= Medium	= Upright-Spreading
P = Perennial	= High	= Prostrate

Cool Season | **Warm Season**

Grass	Broadleaf								Grass
A Barley									A Pearl millet
A Oat	A Phacelia							A Amaranth	A Foxtail millet
A/P Ryegrass	A Flax							A Buckwheat	A Proso millet
		Legumes							
A Wheat	A Spinach	B Turnip	A Field pea	A Berseem clover	A/P Medic	A Chickpea	A Sunflower	A Sudan grass	
A Cereal rye	A Kale	A Radish	A Lentil	B/P Red clover	P Birdsfoot trefoil	A Cowpea	A Safflower	A Teff	
A Triticale	A/B Canola	B Beet	A Lupin	P White clover	P Sainfoin	A Soybean	A Squash	A Grain sorghum	
A Annual fescue	A/P Mustard	A/B Carrot	A/B Vetch	A/B Sweetclover	P Alfalfa	A Mung bean	P Chicory	A Corn	

Variety selection of Covers

Interplanting


107 Years Ago.....Really

Soil Health Testing

- Laboratory Testing
- Haney soil test
- Solvita Respiration test
- S Y U
- T B I

LAB CO_2-BURST

FIELD TEST

Woods End® Laboratories INCORPORATED

Innovative Soil Biology and Nutrient Testing since 1975

290 Belgrade Road
P.O. Box 297
Mount Vernon, ME 04352
207 293 2457
for more information:
lab@woodsend.org

Lab Test Version: 3.1

Soil Nutrient & Health Premium Test

For:

Chris Teachout
Teachout Harvest
1653 400 Ave
Shenandoah, IA 51601

Lab ID: 9325.0 **Acct No:** 2890
Sample: **Soil: Home West**
Sample Received: 4/8/2015
Report Date: 4/29/2015
Crop Intended: Corn-200
QAQC: LeB

Measured Factors	Symbol	UNITS	Level Found	Rating
All Soluble N (Org-N + NO3-N + NH4-N)		ppm	41	MH
Nitrate Only	NO_3-N	ppm	39	MH
Soluble Exudate Carbon	C_{org}	C-ppm	471	M
SLAN *Humus Amino-N*	NH_2-N	N-ppm	198	M
Phosphorus (P)	P	ppm	34	M
Potassium (K)	K	ppm	194	MH
Calcium	Ca	ppm	600	L
Extr. Aluminum	Al	ppm	590	H

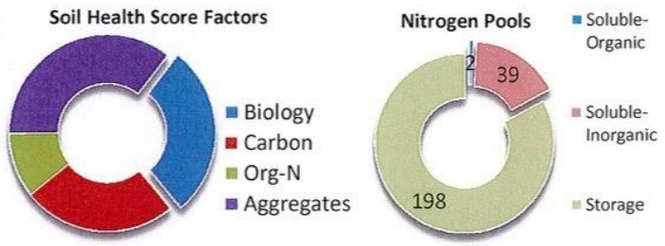
Soil Health Score (updated 10-15-2014)	17.9	MH
Soluble C:N Ratio	11.5	ML
Solvita CO_2-Burst	52.3	M
Microbially Active Carbon- "MAC"	11%	L
Soil Wettability & CO_2 Moisture g g^{-1}	Fast 0.48	H
Aggregate Stability	66%	H

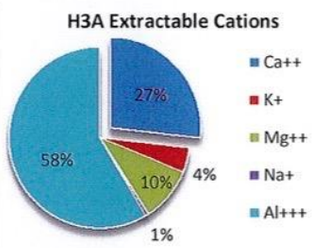
Calculated Availability

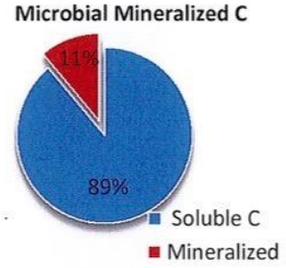
Nitrogen (N-min+Avail)	lb/a	143	H
likelihood of N-response?	*probability:*	Moderately	unlikely
Phosphorus P_2O_5	lb/a	155	M
Potassium K_2O	lb/a	466	MH

Indicators

Potential acidity (Fe+Al)	ppm	969	H
P-Acid-Saturation Index	P/(Al + Fe)	3.5	OK
Calcium Saturation	Ca/(Fe+Al)	62%	L







Nutrient Calculations, Value as $/acre available

$N + P_2O_5 + K_2O$ / acre $ 334

Nutrient Requirements		Nitrogen	Phosphate	Potash
Corn-200	lbs/acre	57	None	none
(assumed total nutrient requirement)		200	100	150
Limestone Requirement	lbs/acre	4327	Check Magnesium	

Cover Crop Recommendations

>Based on Soil Health Score of: **17.9**

Mix Recommended: 10% Legume 90% Grass/Non-Legume

Optional Tests (included with Premiun Soil Test)

Soil Organic Matter	LOI %	5.6	MH
Basal CO_2-C	ppm	18	MH
Effective CEC**	cmol/kg	11.2	-

pH in Water	5.48	L
Magnesium (lb/a)	264	OK
Sodium lb/a	28	OK

USDA Climate Zone Used for this report: 5b

Ratings: VL=Very Low, L=Low, M=Moderate, MH=Medium High, H=High, VH=Very High

* **H3A ARS-Haney Extract** ***Effective CEC = H3A extracted. Al+Ca+Mg+K+Na; optional SOM by LOI @360° C**

Methods: Soil Health Tool, USDA-ARS Temple TX; *Soil Test Procedures for the NE USA Bulletin #493; VT Aluminum Index*

Soil Your Undies

Can drinking tea help us understand climate change?

Yes. Teabags can provide vital information on the global carbon cycle. And consumers worldwide can improve climate modelling without much effort or equipment. That is why we want you, tea consumers, to become tea researchers and help us to plant tea.

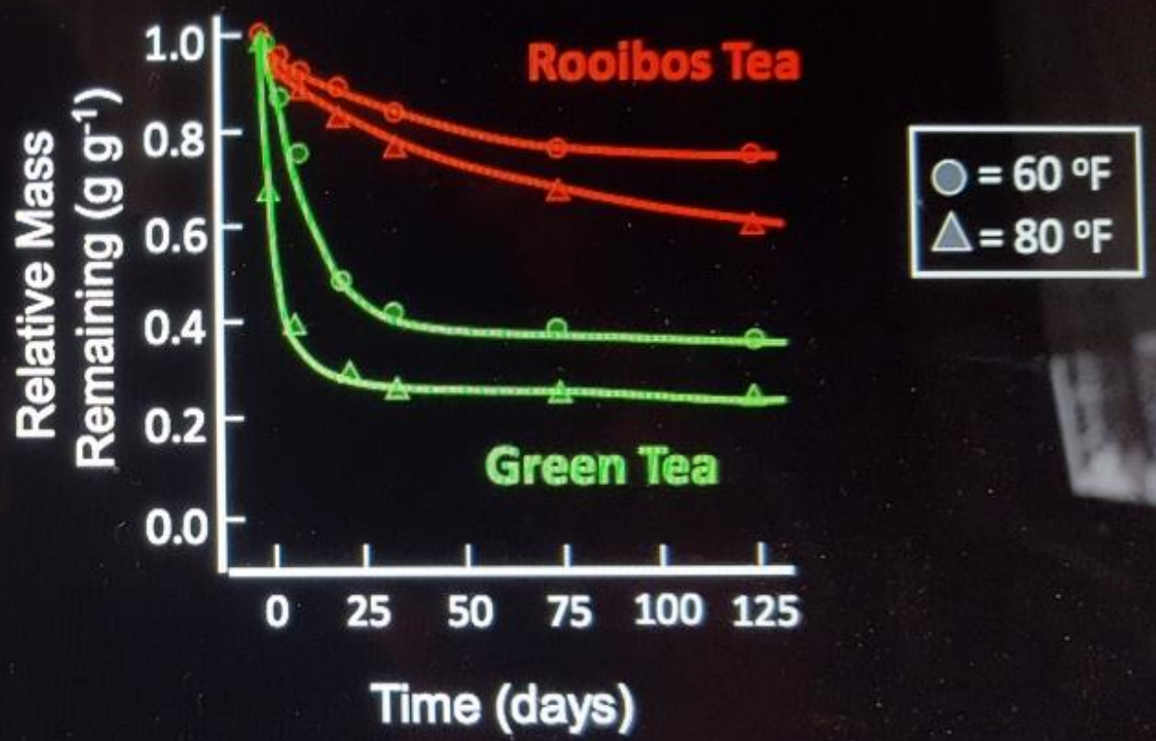
The idea

We developed a simple and cheap method to measure decay rate of plant material by using tea. The method consists of burying tea bags with Green tea and Rooibos and digging them up ca. three months later. In this period, the tea will decay, and will therefore show what will happen with normal plant material in the soil. This method was developed and tested by a team of researchers from the University of Utrecht, Umeå University, The Netherlands Institute of Ecology and the Austrian Agency for Health and Food Safety Ltd.

The scientific value of this new method has already been acknowledged and experiments are currently running in countries all over the world. Many school children and other citizen scientists joined. The idea is to use this new method to collect data on decay rates from all over the world. With this data we will make a global soil map, and consequently improve global climate models that use these maps.

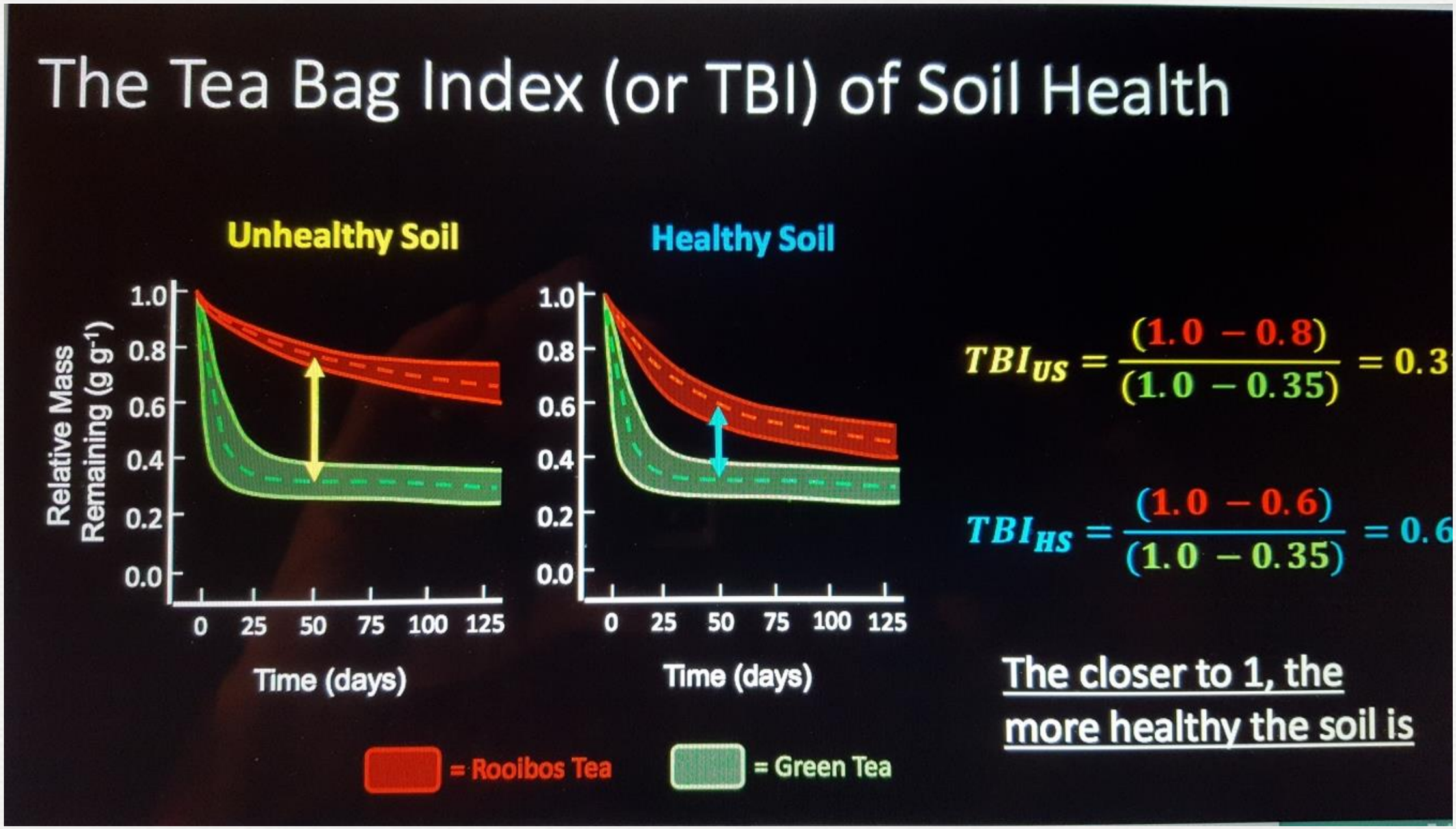
Use two types of tea bags as easy indicators

~$20 for 60 pyramids



adapted from Keuskamp et al. (201

The Tea Bag Index (or TBI) of Soil Health



www.teatime4science.org

Become a Soil Sommelier

Dig

Smell

Feel

Observe

Thank You

Text

Chris Teachout
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