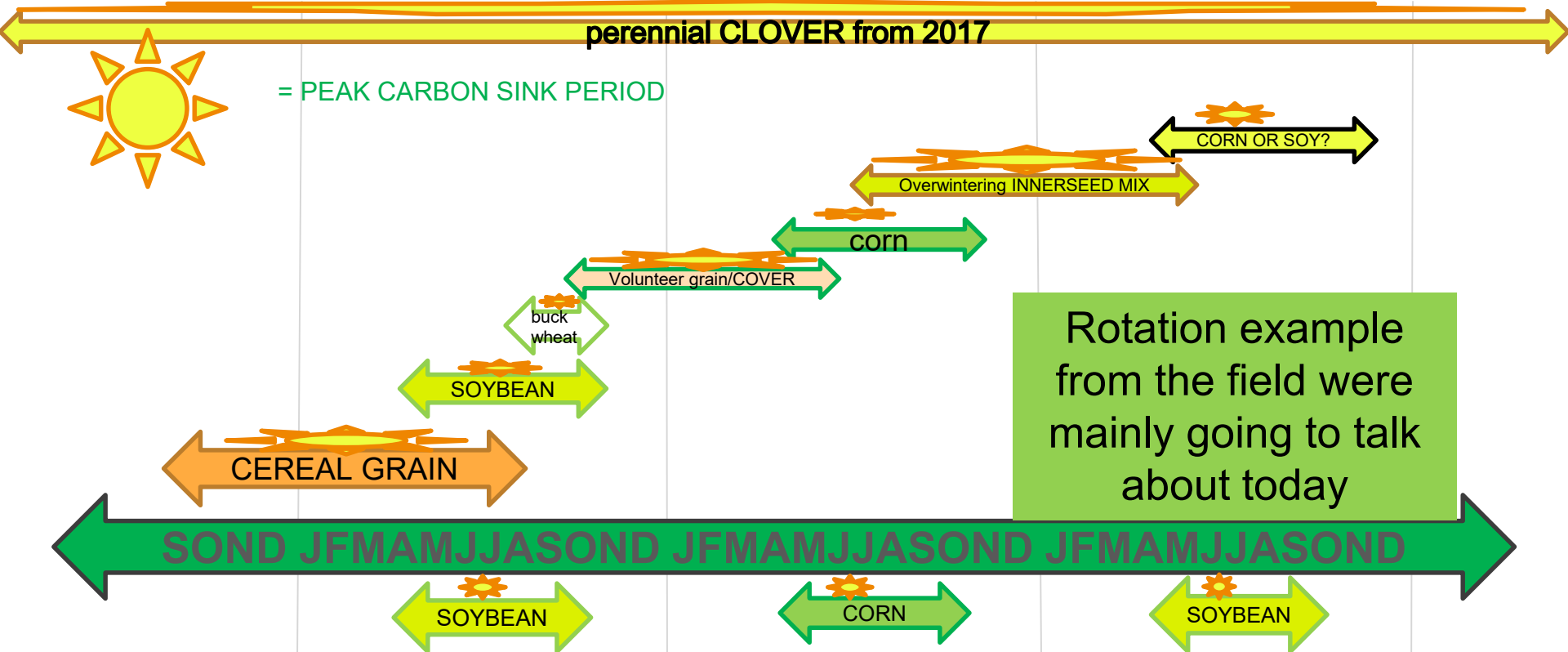


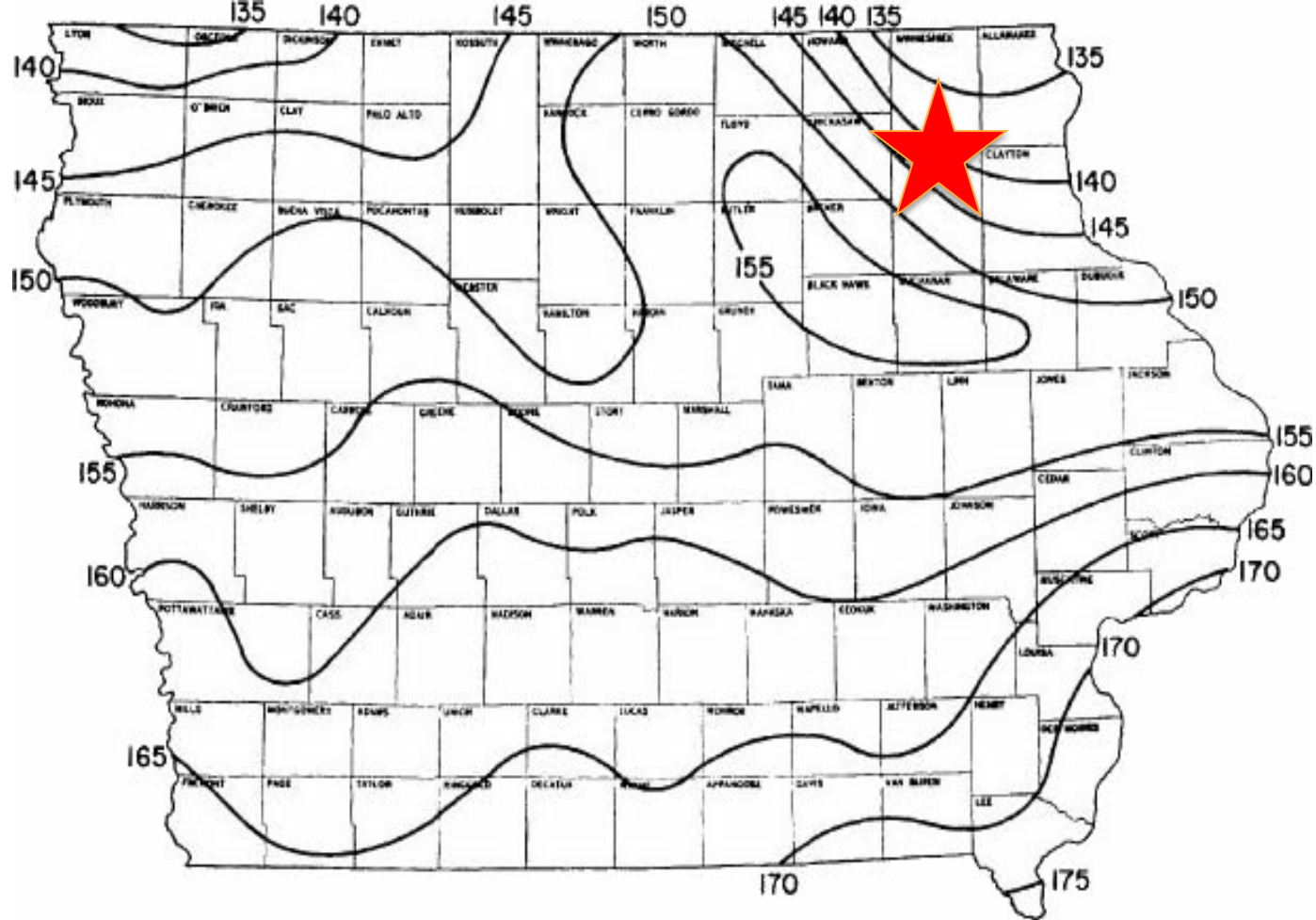
A photograph of a garden path. The path is made of dark soil and is lined with green plants that have large, rounded leaves. Several pinecones are scattered along the path. The background shows a clear sky.

@FLOLOfarms

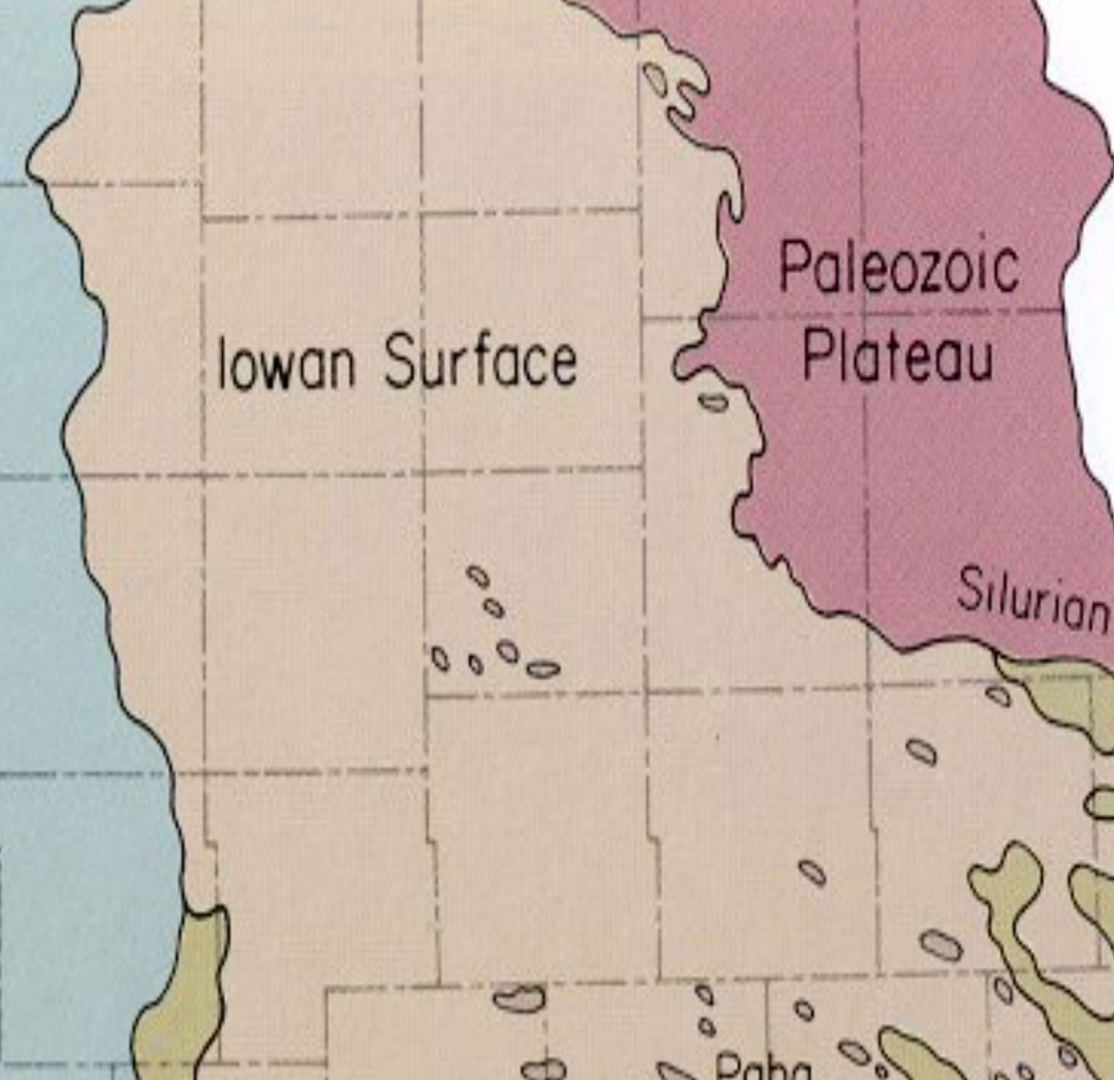
Farming with 2020 vision in mind

CARBON SINK TIMELINE





Map 2. Length of the growing season (in days).



43* north Latitude

1100feet elevation

36.6"(914.4mm)rain

38.2"(970.28mm) snow

82*/61*f (28*/16*c) July

30.2*-12*f(-1*/-11*)c January

Edge of Glacial till Line....

Over 25 soil types on home farm

IOWA FARM ENVIRONMENTAL LEADER AWARDS







A black corrugated pipe is shown discharging water into a stream. The pipe is positioned diagonally across the frame, with water flowing out of its end into the water below. The surrounding area is covered with green grass and some brown mulch or soil.

We monitored For Nitrates

Well--6.2ppm

Spring in woods --19ppm

Tile outlet 50/50 Conventional/COB covers--25ppm

Tile Outlet isolated COB covers 13ppm



Like



Comment

Test	Method	Results	SOIL TEST RATINGS					Calculated Cation Exchange Capacity
			Very Low	Low	Medium	Optimum	Very High	
Soil pH	1:1	7.3						13.4 meq/100g
Buffer pH								% Saturation
Phosphorus (P)	M3	204 ppm						%sat meq
Potassium (K)	M3	324 ppm						K 6.2 0.8
Calcium (Ca)	M3	2119 ppm						Ca 79.1 10.6
Magnesium (Mg)	M3	218 ppm						Mg 13.6 1.8
Sulfur (S)	M3	14 ppm						H 0.0 0.0
Boron (B)	M3	1.4 ppm						Na 1.1 0.1
Copper (Cu)	M3	4.1 ppm						K/Mg Ratio: 0.46
Iron (Fe)	M3	100 ppm						Ca/Mg Ratio: 5.62
Manganese (Mn)	M3	231 ppm						
Zinc (Zn)	M3	11.4 ppm						
Sodium (Na)	M3	34 ppm						
Soluble Salts								
Organic Matter	LOI	3.6% ENR 116						
Nitrate Nitrogen								

"Snirt"

Test	Method	Results	SOIL TEST RATINGS					Calculated Cation Exchange Capacity
			Very Low	Low	Medium	Optimum	Very High	
Soil pH	1:1	7.2						12.1 meq/100g
Buffer pH								% Saturation
Phosphorus (P)	M3	156 ppm						%sat meq
Potassium (K)	M3	163 ppm						K 3.5 0.4
Calcium (Ca)	M3	2052 ppm						Ca 84.8 10.3
Magnesium (Mg)	M3	165 ppm						Mg 11.4 1.4
Sulfur (S)	M3	17 ppm						H 0.0 0.0
Boron (B)	M3	1.2 ppm						Na 0.8 0.1
Copper (Cu)	M3	3.2 ppm						K/Mg Ratio: 0.30
Iron (Fe)	M3	89 ppm						Ca/Mg Ratio: 7.44
Manganese (Mn)	M3	138 ppm						
Zinc (Zn)	M3	9.3 ppm						
Sodium (Na)	M3	22 ppm						
Soluble Salts								
Organic Matter	LOI	3.5% ENR 114						
Nitrate Nitrogen								

Field

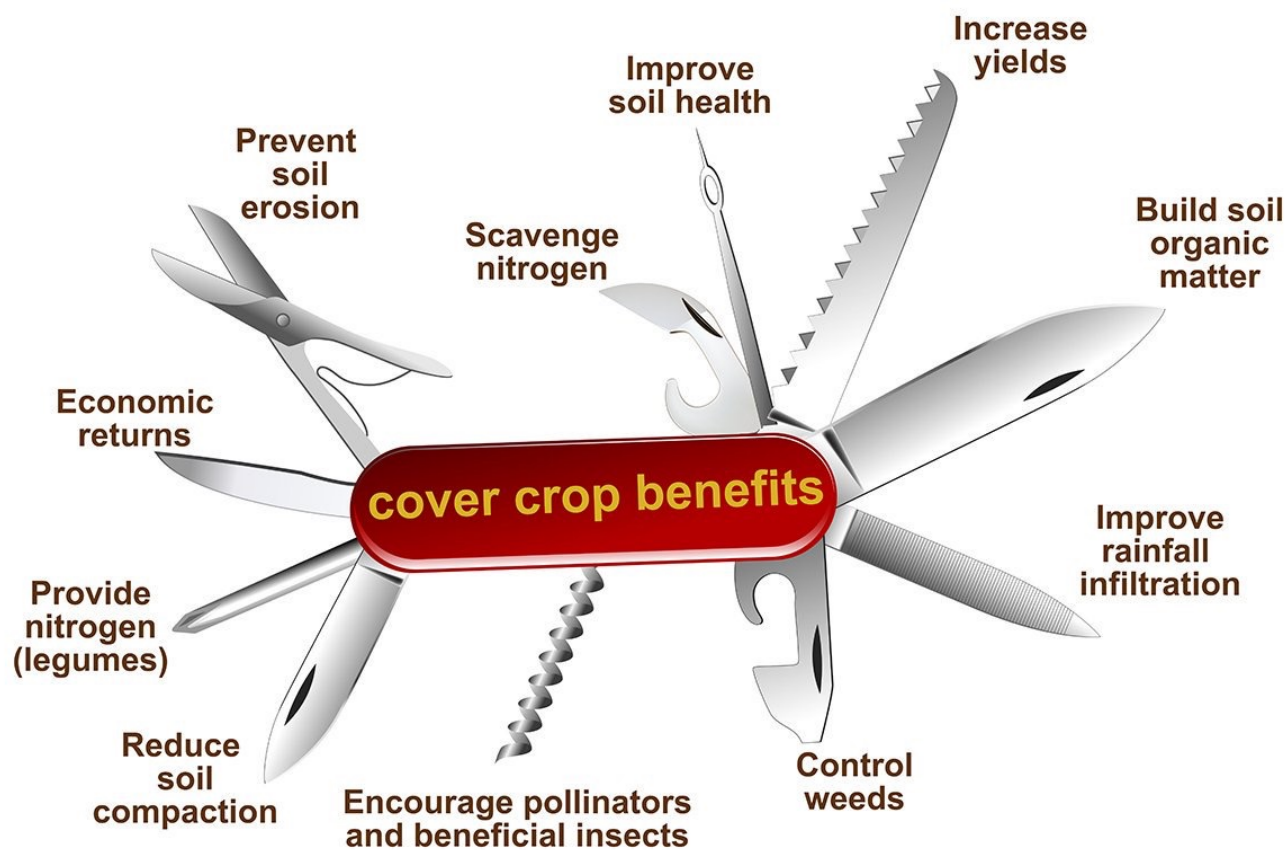


			SOIL TEST RATINGS					Calculated Cation Exchange Capacity	
Test	Method	Results	Very Low	Low	Medium	Optimum	Very High	10.3 meq/100g	
Soil pH	1:1	7.0						%Saturation	
Buffer pH								%sat	meq
Phosphorus (P)	M3	78 ppm						K	4.2 0.4
Potassium (K)	M3	168 ppm						Ca	74.6 7.7
Calcium (Ca)	M3	1537 ppm						Mg	18.6 1.9
Magnesium (Mg)	M3	230 ppm						H	0.0 0.0
Sulfur (S)	M3	18 ppm						Na	2.7 0.3
Boron (B)	M3	1.2 ppm						K/Mg Ratio: 0.22	
Copper (Cu)	M3	2.3 ppm						Ca/Mg Ratio: 4.01	
Iron (Fe)	M3	135 ppm							
Manganese (Mn)	M3	202 ppm							
Zinc (Zn)	M3	4.9 ppm							
Sodium (Na)	M3	63 ppm							
Soluble Salts									
Organic Matter	LOI	3.4 % ENR 112							
Nitrate Nitrogen									

Field from where "Smud" came from

			SOIL TEST RATINGS					Calculated Cation Exchange Capacity	
Test	Method	Results	Very Low	Low	Medium	Optimum	Very High	9.7 meq/100g	
Soil pH	1:1	7.3						%Saturation	
Buffer pH								%sat	meq
Phosphorus (P)	M3	119 ppm						K	6.8 0.7
Potassium (K)	M3	259 ppm						Ca	73.9 7.2
Calcium (Ca)	M3	1433 ppm						Mg	16.8 1.6
Magnesium (Mg)	M3	196 ppm						H	0.0 0.0
Sulfur (S)	M3	16 ppm						Na	2.3 0.2
Boron (B)	M3	1.1 ppm						K/Mg Ratio: 0.41	
Copper (Cu)	M3	3.2 ppm						Ca/Mg Ratio: 4.40	
Iron (Fe)	M3	169 ppm							
Manganese (Mn)	M3	347 ppm							
Zinc (Zn)	M3	8.9 ppm							
Sodium (Na)	M3	51 ppm							
Soluble Salts									
Organic Matter	LOI	3.7 % ENR 118							
Nitrate Nitrogen									

"Smud" Soil/mud collected beyond field border



What about Productivity?

Credit:Sami Tellatin

Productivity from InterCropping/Companion Cropping

Relay cropping is the growing of two or more crops on the same field with the planting of the second crop after the first one has completed its development. n.

Row intercropping is the cultivation of two or more crops simultaneously on the same field with a row arrangement.

Companion planting in gardening and agriculture is the planting of different crops in proximity for [pest control](#), [pollination](#), [providing habitat for beneficial creatures](#), [maximizing use of space](#), and [to otherwise increase crop productivity](#).^[1] [Companion planting is a form of polyculture](#).

Companion planting is used by farmers and gardeners in both industrialized and developing countries for many reasons. Many of the modern principles of companion planting were present many centuries ago in [cottage gardens in England](#) and [forest gardens in Asia](#), and [thousands of years ago in Mesoamerica](#)





COMPANION PLANTING

IN NATURAL ECOSYSTEMS, PLANTS PERFORM FUNCTIONS THAT CAN EITHER HELP OR PREVENT OTHER PLANTS TO GROW. THE SAME IS TRUE IN OUR GARDENS. THIS CHART WILL HELP YOU UNDERSTAND WHICH PLANTS GROW WELL TOGETHER AND WHICH TO PLANT FAR APART!

PLANT	GOOD COMPANIONS	BAD COMPANIONS
BEANS	MAIZE, SUNFLOWERS, LAVENDER, CABBAGE, CUCUMBER, STRAWBERRIES, ZINZNI	ONION, GARLIC, FENNEL
BEETROOT	BEANS, ONIONS, GARLIC, LETTUCE, CABBAGE	NO BAD COMPANIONS
BEZONZI	CALENDULA, MARIGOLDS, MINT, PEAS	NO BAD COMPANIONS
BROCCOLE, CABBAGE, CAULIFLOWER, KALE	AROMATIC PLANTS, SOIL, SAGE, ROSEMARY, POTATOES, BEETROOT, CELERY, GARLIC, ONIONS, GERANIUM	TOMATOES, POLE & RUNNER BEANS, PEPPERS
CARROTS	LETTUCE, CHIVES, LEEKS, ROSEMARY, SAGE, PEAS, WORMWOOD	STRAWBERRIES, FENNEL, CABBAGE
LETTUCE	CARROTS, RADISH, STRAWBERRIES, CUCUMBER, BEANS	CELERY, PARSLEY
MAIZE	SUNFLOWERS, AMARANTH, BEANS, PEAS & OTHER LEGUMES, PUMPKIN, SQUASH, CUCUMBER, MELONS & OTHER CUCURBITS, PARSLEY	CABBAGE, TOMATO, CELERY
ONION/GARLIC	CARROTS, BEETROOT, STRAWBERRIES, TOMATOES, LETTUCE, CABBAGE	PEAS, BEANS, PARSLEY, LEEKS
PEAS	LAVENDER, CARROT, TURNIP, RADISH, CUCUMBER, MAIZE, BEANS, GROWS WELL WITH MOST VEGETABLES & HERBS	ONION, GARLIC
PEPPERS	TOMATOES, GERANIUM, BASIL, CARROT, ONION	BEANS, KALE, CABBAGE FAMILY
POTATOES	CORIANDE, MARIGOLD, BEANS, MAIZE, CABBAGE FAMILY, BEZONZI	PUMPKIN, CUCUMBER, SQUASH, MELONS, SUNFLOWERS, TOMATOES
SPINACH	STRAWBERRIES, RED BEANS, PEAS	NO BAD COMPANIONS
TOMATOES	BASIL, OREGANO, PARSLEY, CHIVES, NASTURBIUM, ONIONS, CARROTS, CELERY, CALENDULA, GERANIUM, BORAGE	POTATOES, FENNEL, CABBAGE FAMILY
CALENDULA	TOMATOES - REPELS TOMATO WORM	GENERAL PEST DETERRANT, PLANT THROUGHOUT GARDEN
COMFREY	FAST-GROWING NUTRIENT ACCUMULATOR, PLANT ALONG EDGES & USE LEAVES FOR MULCH	COMPOST ACTIVATOR, USE LEAVES TO MAKE COMFREY TEA FERTILIZER!
CHILE PEPPER	CABBAGE, MAIZE	REPELS CABBAGE WORM, PLANT ON BORDERS TO KEEP FLYING PESTS AWAY!
MARIGOLD	PLANT FREELY THROUGHOUT THE GARDEN - REPELS SOIL NEMATODES, APRIDS, BEAN BEETLES & MANY MORE	USE MARIGOLD LEAVES TO MAKE AN ORGANIC GENERAL PESTICIDIC SPRAY
NASTURBIUM	TOMATOES - IMPROVES FLAVOR	REPELS WHITE FLIES & SPIDER MITES
THYME	CABBAGE	DETERS CABBAGE WORM
ROSEMARY	CARROTS, CABBAGE, SAGE, BEANS	DETERS CABBAGE WORM, BEAN BEETLES & CARROT FLY
WORMWOOD/ ARTEMESIA	AROUND GARDEN EDGES	KEEPS ANIMALS OUT! ALSO REPELS WHITE FLY
YARROW	PLANT FREELY THROUGHOUT THE GARDEN, REPELS SOIL NEMATODES, APRIDS, BEAN BEETLES, AND MANY MORE!	PLANT NEAR AROMATIC HERBS TO ENHANCE ESSENTIAL OIL PRODUCTION

A DIVERSE GARDEN IS AN ABUNDANT GARDEN. HAPPY PLANTING!



BEETROOT



BRINJAL



BROCCOLI, CABBAGE, CAULIFLOWER, KALE.



CARROTS



LETTUCE



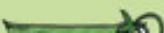
MAIZE



ONION/ GARLIC



PEAS



CUCUMBER, STRAWBERRIES, BRINJAL



BEANS, ONIONS, GARLIC, LETTUCE, CABBAGE



CALENDULA, MARIGOLDS, MINT, PEAS



AROMATIC PLANTS, DILL, SAGE, ROSEMARY, POTATOES, BEETROOT, CELERY, GARLIC, ONIONS, GERANIUM



LETTUCE, CHIVES, LEEKS, ROSEMARY, SAGE, PEAS, WOODWOOD



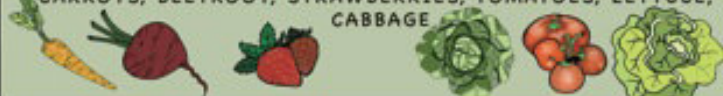
CARROTS, RADISH, STRAWBERRIES, CUCUMBER, BEANS



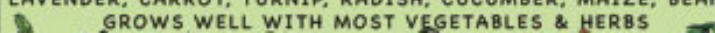
SUNFLOWERS, AMARANTH, BEANS, PEAS, & OTHER LEGUMES, PUMPKIN, SQUASH, CUCUMBER, MELONS, & OTHER CUCURBITS, PARSLEY



CARROTS, BEETROOT, STRAWBERRIES, TOMATOES, LETTUCE, CABBAGE



LAVENDER, CARROT, TURNIP, RADISH, CUCUMBER, MAIZE, BEANS, GROWS WELL WITH MOST VEGETABLES & HERBS



ONION



GARLIC, FENNEL



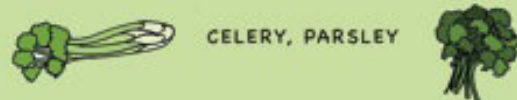
TOMATOES, POLE & RUNNER BEANS, PEPPERS



STRAWBERRIES, FENNEL, CABBAGE



CELERY, PARSLEY



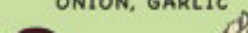
CABBAGE, TOMATO, CELERY



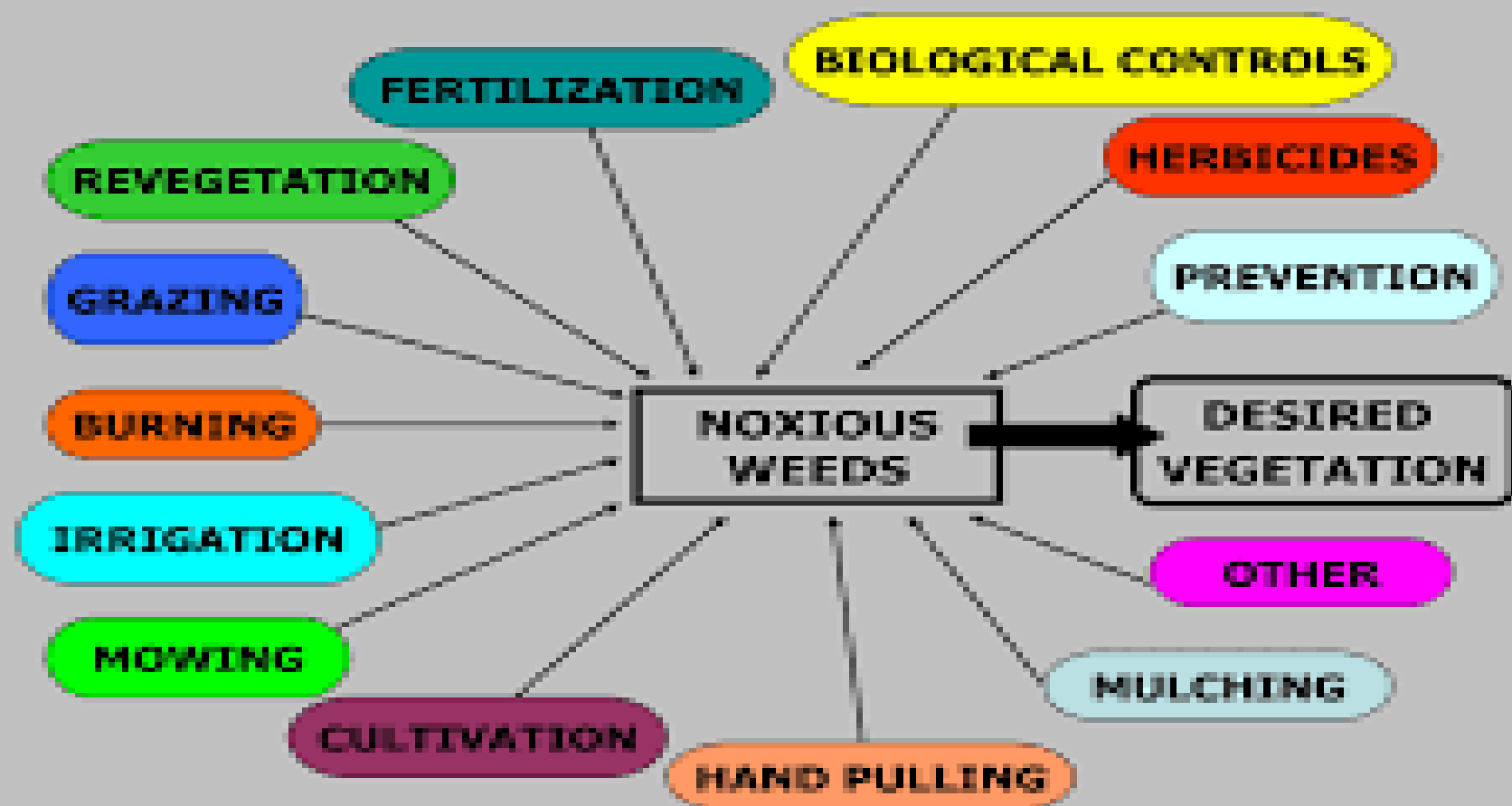
PEAS, BEANS, PARSLEY, LEEKS

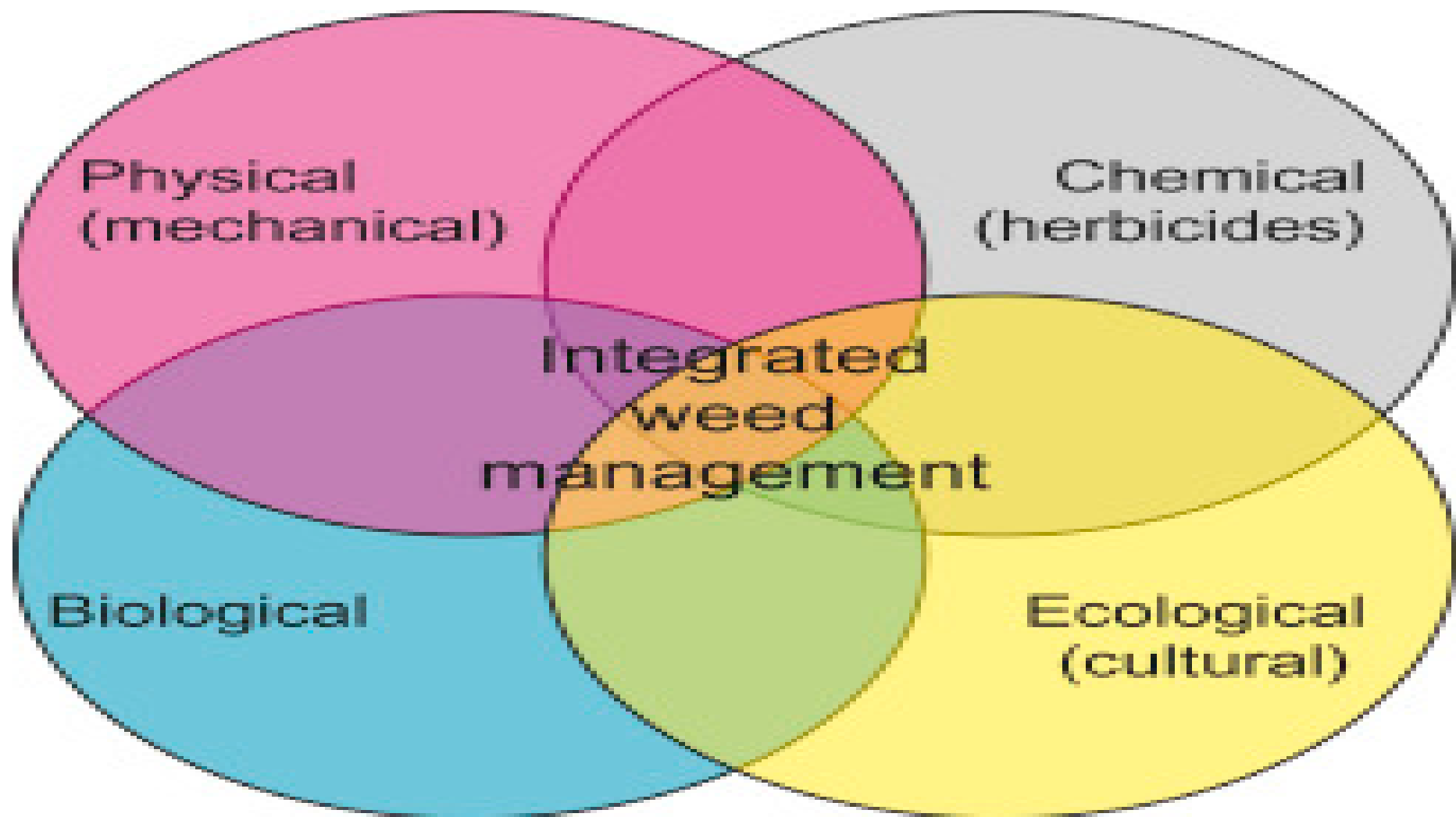


ONION, GARLIC



INTEGRATED WEED MANAGEMENT





PLANTS AS SOIL INDICATORS

Soil Type	Plant Indicators
Slightly Acid	<p> <i>Blueberry</i> (<i>Vaccinium</i> spp.), <i>Blackberry</i> (<i>Rubus</i> spp.), <i>Huckleberry</i> (<i>Gaylussacia</i> spp.), <i>Raspberries</i> (<i>Rubus</i> spp.), <i>Sorrel</i> (<i>Rumex acetosa</i>) </p>
Vary Acid	<p> <i>Cinquefoil</i> (<i>Potentilla</i> spp.), <i>Heather</i> (<i>Calluna</i> spp.), <i>Huckleberry</i> (<i>Gaylussacia</i> spp.), <i>Raspberries</i> (<i>Rubus</i> spp.) </p>
Slate Soil	<p> <i>Shepherd's Purse</i> (<i>Caprifolium</i> spp.), <i>Goldenrod</i> (<i>Solidago</i> spp.) – one of the <i>Chenopodiaceae</i> (<i>Chenopodium</i> spp.), <i>Sunflower</i> (<i>Helianthus</i> spp.), <i>Sunflower</i> (<i>Helianthus</i> spp.) </p>
Hard Pan	<p> <i>Wild Mustard</i> and related <i>Cruciferae</i> </p>
Weak Cultivation	<p> <i>Chickweed</i> (<i>Stellaria</i> spp.), <i>Lamb's Quarters</i> (<i>Chenopodium</i> spp.), <i>Plantain</i> (<i>Plantago</i> spp.), <i>Stinging Nettle</i> (<i>Urtica</i> spp.) </p>
Dry Soil	<p> <i>Agrostis</i> (<i>Agrostis</i> spp.), <i>Bush Clover</i> (<i>Coronilla</i> spp.), <i>Dwarf Geranium</i> (<i>Geranium</i> spp.), <i>Mustard</i>, <i>Common Spotted</i> (<i>Geranium</i> spp.), <i>Rabbit's Foot Clover</i> (<i>Trifolium</i> spp.), <i>Sunflower</i> (<i>Helianthus</i> spp.), <i>Spurge</i> (<i>Euphorbia</i> spp.) </p>
Sandy Soil	<p> <i>Broomrape</i> (<i>Epipactis</i> spp.), <i>Goldenrod</i> (<i>Solidago</i> spp.), <i>Raspberries</i> (<i>Rubus</i> spp.), <i>Wormwood</i> (<i>Artemisia</i> spp.), <i>Yellow Thistle</i> (<i>Leucanthemum</i> spp.) </p>
Alkaline Soil	<p> <i>Wormwood</i> (<i>Artemisia</i> spp.) </p>
Lime Stone Soil	<p> <i>Penny Crocus</i>, <i>Field Marigold</i> (<i>Tagetes</i> spp.), <i>Trout</i> <i>Mustard</i> (<i>Barbarea</i> spp.), <i>Yellow Thistle</i> (<i>Leucanthemum</i> spp.) </p>

Soil Type	Plant Indicators
Alkaline of Lime	<p> <i>Blueberry</i> (<i>Vaccinium</i> spp.), <i>Wild Pennywort</i> (<i>Hydrocotyle</i> spp.), <i>Goldenrod</i> (<i>Solidago</i> spp.), <i>Wormwood</i> (<i>Artemisia</i> spp.), <i>Yellow Thistle</i> (<i>Leucanthemum</i> spp.) </p>
Potassium Rich Soil	<p> <i>Blueberry</i> (<i>Vaccinium</i> spp.), <i>Wormwood</i> (<i>Artemisia</i> spp.), <i>Goldenrod</i> (<i>Solidago</i> spp.), <i>Wormwood</i> (<i>Artemisia</i> spp.) </p>
Gypsum	<p> <i>Common Thistle</i> (<i>Leucanthemum</i> spp.) </p>

Prof. "Woods and What they Tell" – Elizabeth H. Pfeiffer
 George Orwell: 11/5/93

How about them INDACATOR PLANTS?

Deficient Element		Indicator Plants
Nitrogen	–	Cauliflower, Cabbage
Phosphorus	–	Rape
Potassium	–	Potato
Calcium	–	Cauliflower, Cabbage
Magnesium	–	Potato
Iron	–	Cauliflower, Cabbage, Potato, Oat
Sodium	–	Sugar beet
Manganese	–	Sugar beet, Oat
Boron	–	Sunflower

COMPACTED SOIL	OVER GRAZED LAND	WET OR FLOODED SOIL	LOW FERTILITY SOIL	DEFICIENCY
Low Oxygen soils: Platy layers in soil, high bulk density (poor infiltration, increased runoff)	Lack of cover: effects similar to compacted land – High weed population	Low Oxygen soils: Pore spaces become saturated or not present negatively affecting soil structure, decomposition, and chemical and biological processes	Unbalanced Fertility: pH below 5.1 (frequent) or above 7.3 (high pH is uncommon in TN). Often Phosphorous is limiting factor. Potassium is typically limiting on hay land	Severe deficiency of a nutrient or pH is low and infrequently too high in TN Effects Of Soil pH On Nutrient Availability
Prostrate knotweed: <i>Polygonum arenastrum</i> or <i>aviculare</i> 	Horsenettle: <i>Solanum carolinense</i> 	Sedges: <i>Carex</i> spp. Sedges have edges, triangular stem 	Rabbit tobacco: <i>Pseudognaphalium obtusifolium</i> 	
Rushes: <i>Juncus</i> spp. 	Bitter sneezeweed: <i>Helenium amarum</i> 	Rushes: <i>Juncus</i> spp. Segmented hollow stem 	Red sorrel: <i>Rumex acetosella</i> 	Nitrogen
Goosegrass: <i>Eleusine indica</i> 	Spiny amaranth: <i>Amaranthus spinosus</i> 	Spikerush: <i>Eleocharis</i> spp. 	Poor Joe: <i>Diodia virginiana</i> 	Phosphorus
Bitter sneezeweed: <i>Helenium amarum</i> 	Bermudagrass: <i>Cynodon dactylon</i> 	Flatsedge: <i>Cyperus</i> spp. 	Broomsedge: <i>Andropogon virginicus</i> 	Potassium
Dog fennel: <i>Eupatorium capillifolium</i> 	Annual bluegrass: <i>Poa annua</i> 	Bulrush: <i>Scirpus</i> spp. 	Sweet vernalgrass: <i>Anthoxanthum odoratum</i> 	Calcium
Buttercup: <i>Ranunculus</i> 	Kentucky bluegrass: <i>Poa pratensis</i> 	Virginia buttonweed: <i>Diodia Virginiana</i> 	Oxeye Daisy: <i>Leucanthemum vulgare</i> 	Magnesium
Curly dock: <i>Rumex crispus</i> 	Crabgrass: <i>Dactyloctenium aegyptium</i> 	Smartweed: <i>Persicaria</i> spp. 	Panicums: <i>Panicum</i> spp. 	Iron
Chicory: <i>Cichorium</i> spp. 	Ironweed: <i>Vernonia gigantea</i> 	Reed canarygrass: <i>Phalaris arundinacea</i> 	Yarrow: <i>Achillea millefolium</i> 	Zinc

Google indicator
plants
"onpasture.com"



For every ton of
Dry fertlizer we
hauled in
we hauled out 3-
4ton dry
+ all the waste

But....We still apply Removal Rates???

Crop	Unit	Removal, lb/unit ¹				
		N	P ₂ O ₅	K ₂ O	Mg	S
Alfalfa	ton	51	12	49	5.4	5.4
Corn grain	bu	0.90	0.38	0.27	0.09	0.08
Corn stover	bu	0.45	0.16	1.1	0.14	0.07
Corn stover	ton	16	5.8	40	5.0	3
Corn silage	bu	1.6	0.51	1.2	0.33	0.18
Corn silage	ton	9.7	3.1	7.3	2.0	1.1
Soybean grain	bu	3.8	0.84	1.3	0.21	0.18
Soybean stover	bu	1.1	0.24	1.0	0.22	0.17
Soybean stover	ton	40	8.8	37	8.1	6.2
Soybean hay	ton	45	11	25	9	5
Wheat grain	bu	1.5	0.60	0.34	0.15	0.1
Wheat straw	bu	0.7	0.16	1.2	0.1	0.14
Wheat straw	ton	14	3.3	24	2	2.8

¹Moisture for reported units is based on marketing conventions or on a hay or wet silage basis. Values are limited to Northcentral regional publications whenever possible.

PUZZLE PIECES ON MY FARM

THE VALUE OF CHECK STRIPS

RELEVANCE?



RELEVANCE?

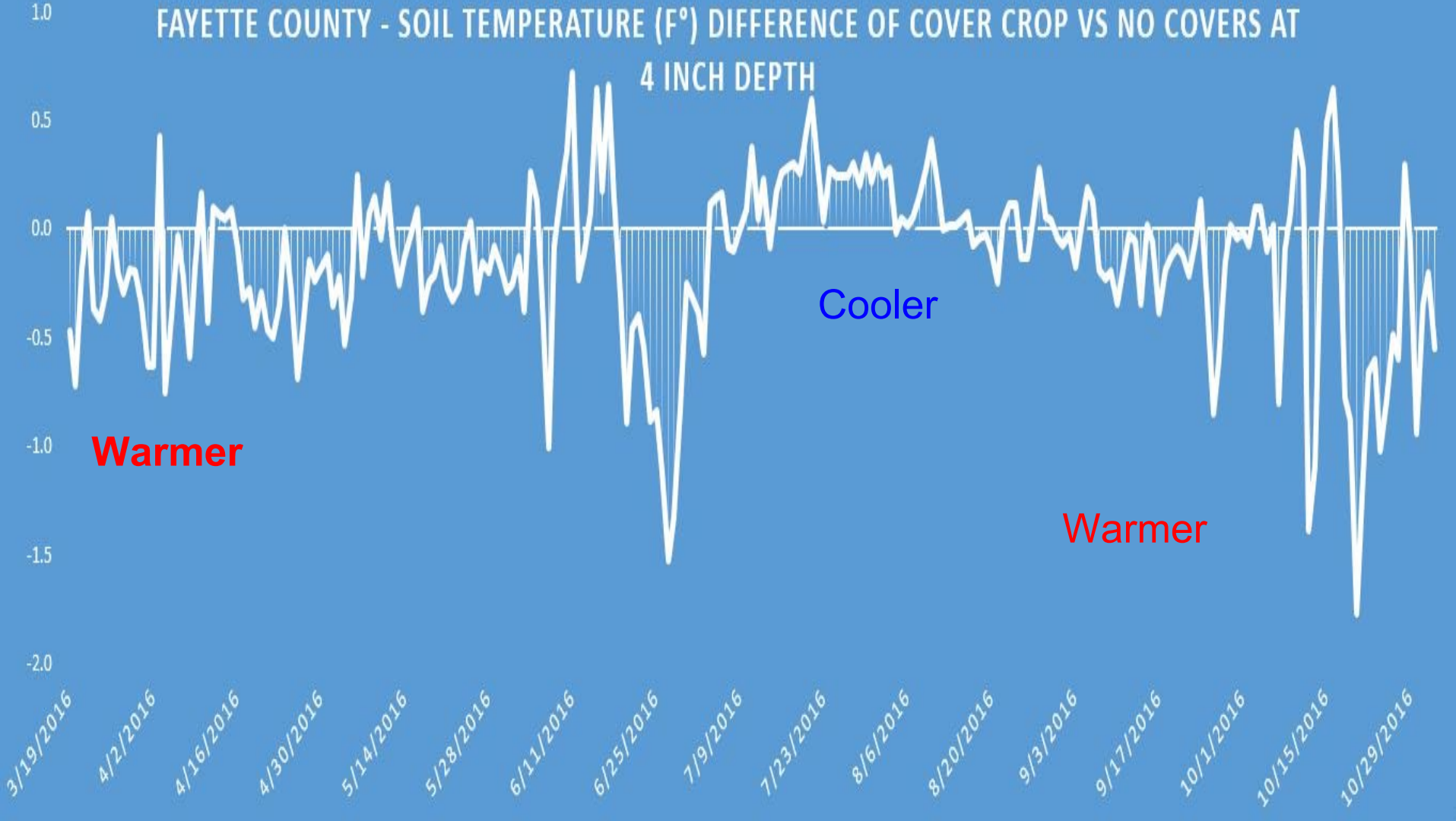


RELEVANCE?





FAYETTE COUNTY - SOIL TEMPERATURE (F°) DIFFERENCE OF COVER CROP VS NO COVERS AT 4 INCH DEPTH



FLIR

54.4°F

FLIR

79.8°F



MANY PIECES TO OUR PUZZLE



CTF SET US UP FOR MANY KEY ELEMENTS



CTF =Controlled Traffic Farming
12 row/30ft 120inch tramlines

CTF is really not hard to accomplish
Just takes a lil planning



Drones will sell CTF like yield maps
sold tile









Soil collapse?

A wide-angle photograph of a lush green field, possibly a meadow or a field of tall grass. In the center of the frame, there is a large, circular pile of dry, brown sticks and twigs, which appears to be a natural structure or a pile of debris. The field extends to the horizon, where a line of trees and a few buildings are visible under a blue sky with scattered white clouds. The overall scene is bright and sunny.

Plus Infiltration Rates



@FLOLOfarms

**FARMING WITH
2020 VISION IN MIND**





Tramline



CornStalk



Soybean



Cereal Cover



**We need to think about
Plant density & Nutrient Placement**

How do we start tackling the problem?
As we saw issues on the horizon





We Mastered INNERSEEDING

Then Started changing the rotation
Corn/Soybean/Wheat/Rye/Barley/Buckwheat/Oats
Sunflower?



But To make it Cash Flow,we need to ge
creative To Make it work on my Farm





As we start seeing success, how far will we go?

All of Which gave us



Living SOIL Armor

Resilience to temperature

Extremes

Resilience to moisture

Extremes

Provides shelter to livestock

Above ground as

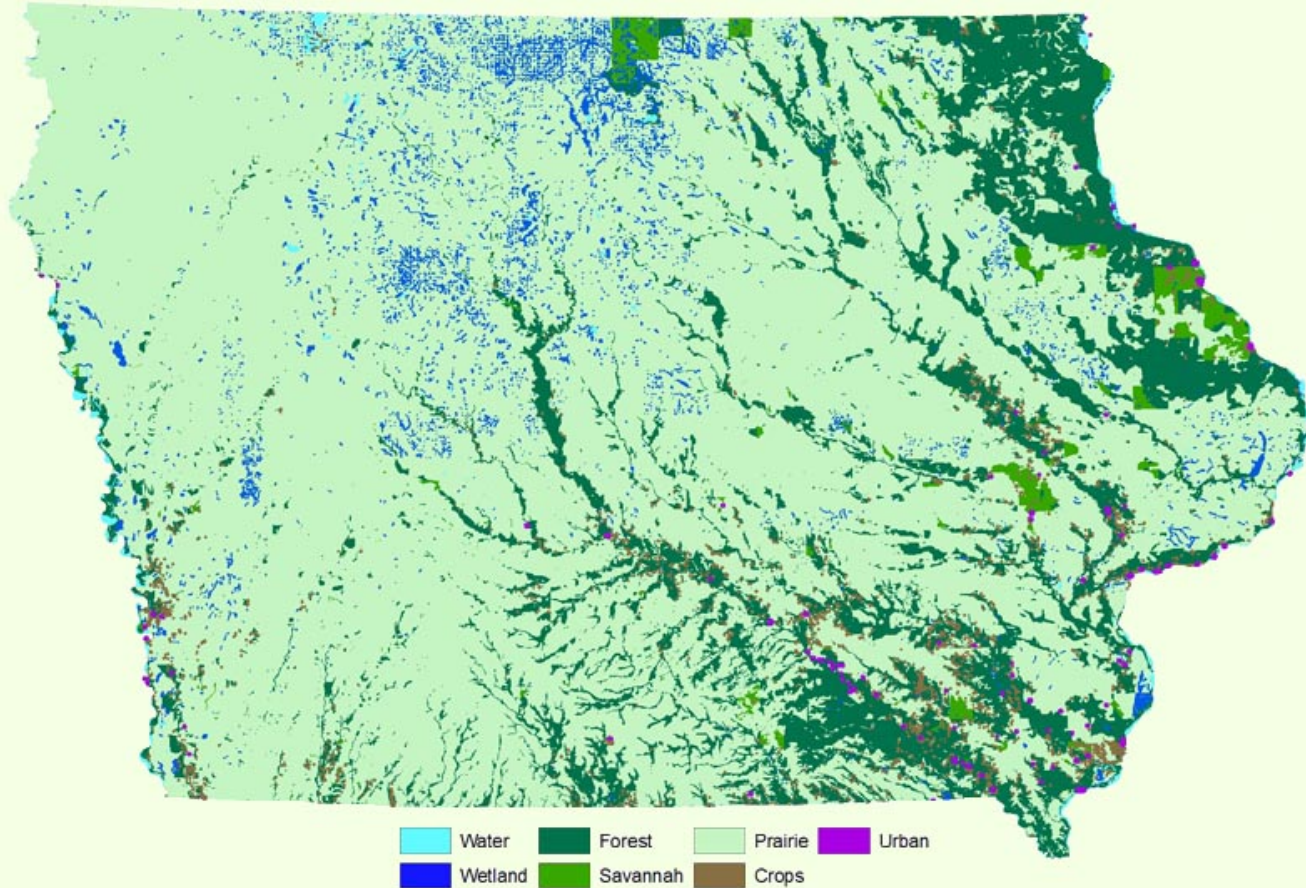
Below the surface

Ohhhand Realize Iowa

Was once a big SWAMP

W
A
T
E
R

Government Land Office Land Cover of Iowa 1832-1859

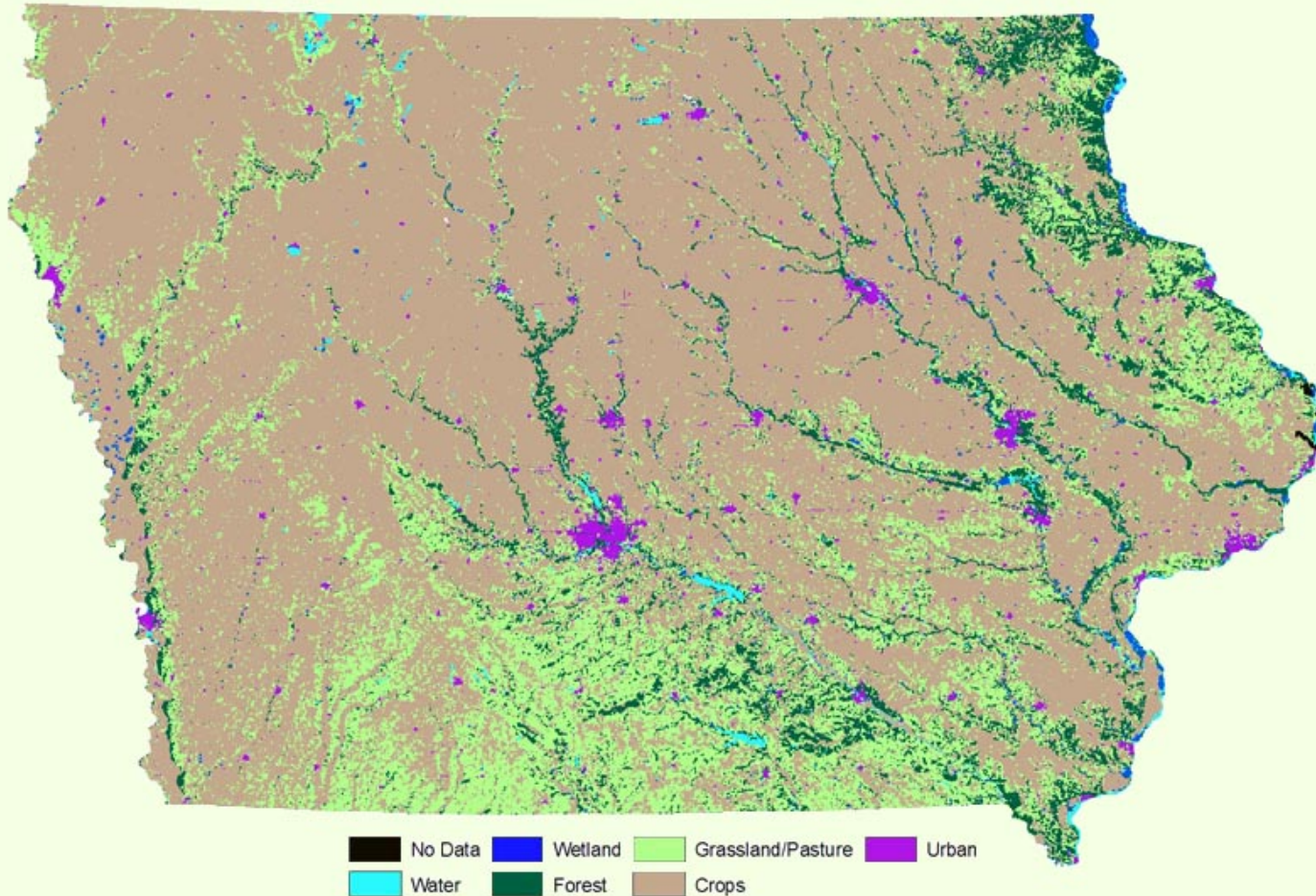


Data source: Adapted from Paul F. Anderson (1996) "Government Land Office Vegetation from the Years 1832-1859 of the State of Iowa" available online at <http://www.igsb.uiowa.edu/hrqslibx/>

P
R
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2002 Satellite Data of Iowa Land Cover



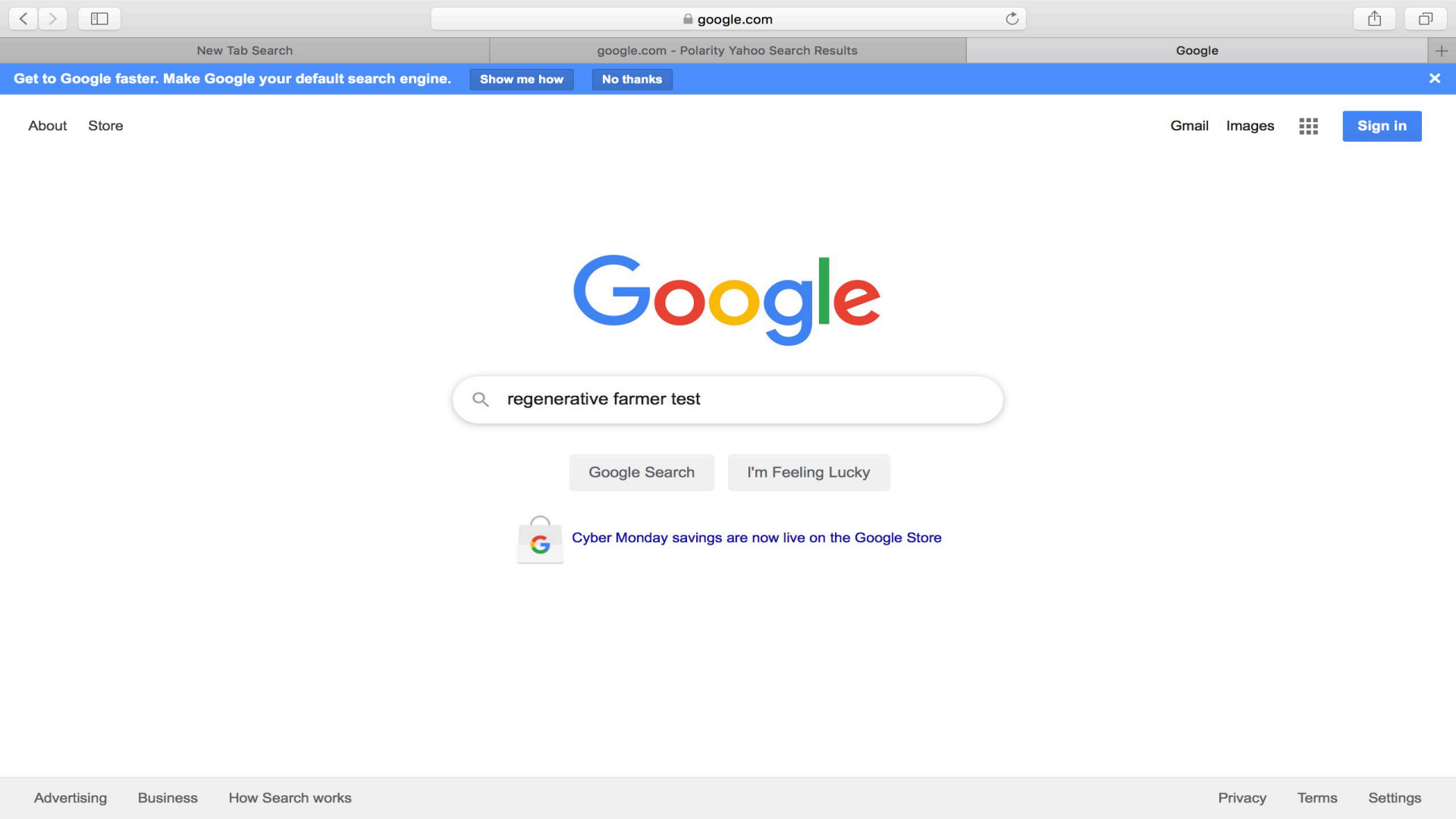
C
R
O
P
S

Data source: Adapted from DNR Iowa Geological Survey's "Land Cover of the State of Iowa in the Year 2002"
available online at <http://www.igsb.uiowa.edu/hrgs/lib/>



We have noticed we hold 1/3 of the moisture





[Google Search](#) [I'm Feeling Lucky](#)



Cyber Monday savings are now live on the Google Store

You might be a Regenerative Farmer



If your soils show the progress



REGEN. IN
PROGRESS
PRND21



Saturation test
100g of soil weighed out and saturated, then weighed

Held -- Practice

68g or 40% --Corn with 32 way Innerseed mix

59.5g or 37% --monocrop Barley w/ Covers

55g or 35% --Relay19 Corn w/delay terminate Clover

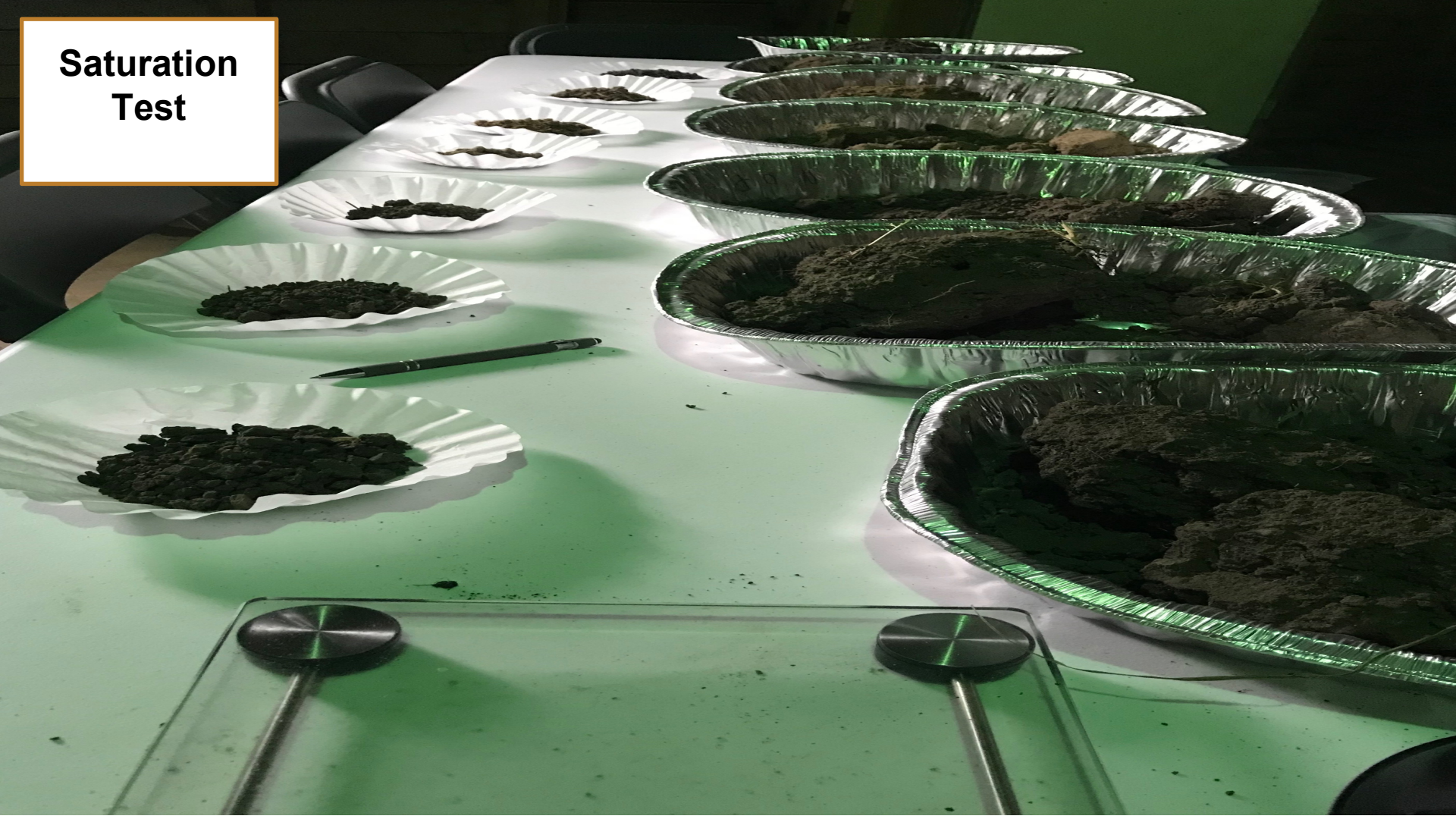
38g or 27% --notill corn into soy w/NH3

72.5g or 42% --current Relay Rye/Soybean

64g or 39% --delay terminated rye Soybean

66g or 39.75% --delay terminated Corn

Saturation Test



Are you a Regenerative Farmer?

 REGEN. IN
PROGRESS

PRND 2 1



OR LITE ON THE DASH AND BLOWING HOT AIR?



Lasting Repercussions The power of Observation


via the Oregon Trail



We need
To think
Back to
When the
LAND
Was
Developed
&
How?

Does all this Matter? Or could define
Field to Field Variability?



A wide, flat, brown landscape under a cloudy sky. The ground is uneven and appears to be a mix of dirt and sparse, dry vegetation. In the far distance, a line of trees is visible on the horizon. The overall tone is somber and desolate.

How do we deal...
with the “new normal”?
As land was developed?

Some of these permanent changes
May effect our plan To farm
"in Natures image"

Native Plants no longer grow here
Needed to look back further in
Succession Plans

Soil biological succession causes plant succession



Bacteria ...A few Fungi.....BalancedMore Fungi..... Fungi

Bacteria:	10 μg	100 μg	500	600 μg	500 μg	700 μg
Fungi:	0 μg	10 μg	250	600 μg	800 μg	7000 μg



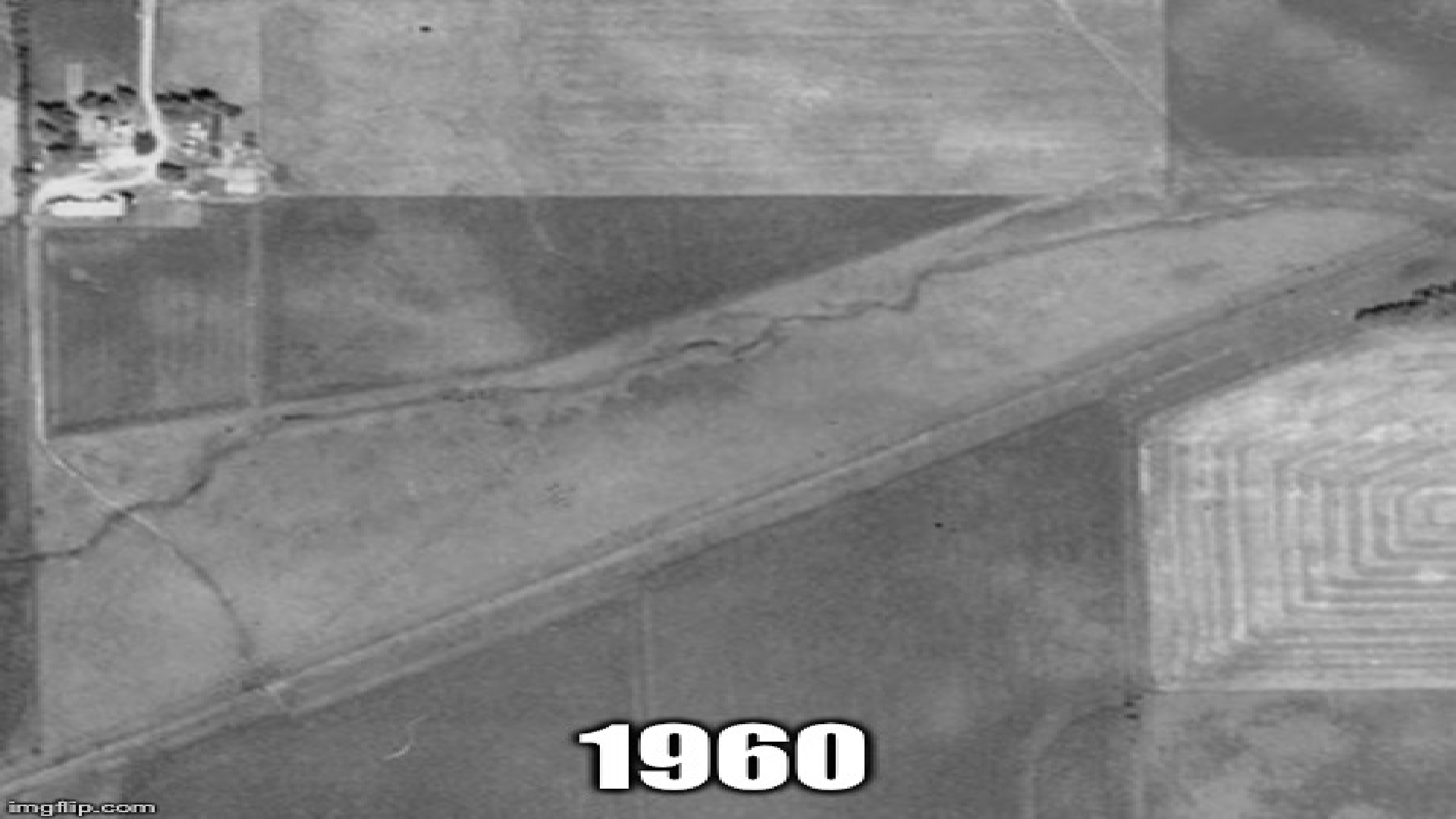
1930



1940



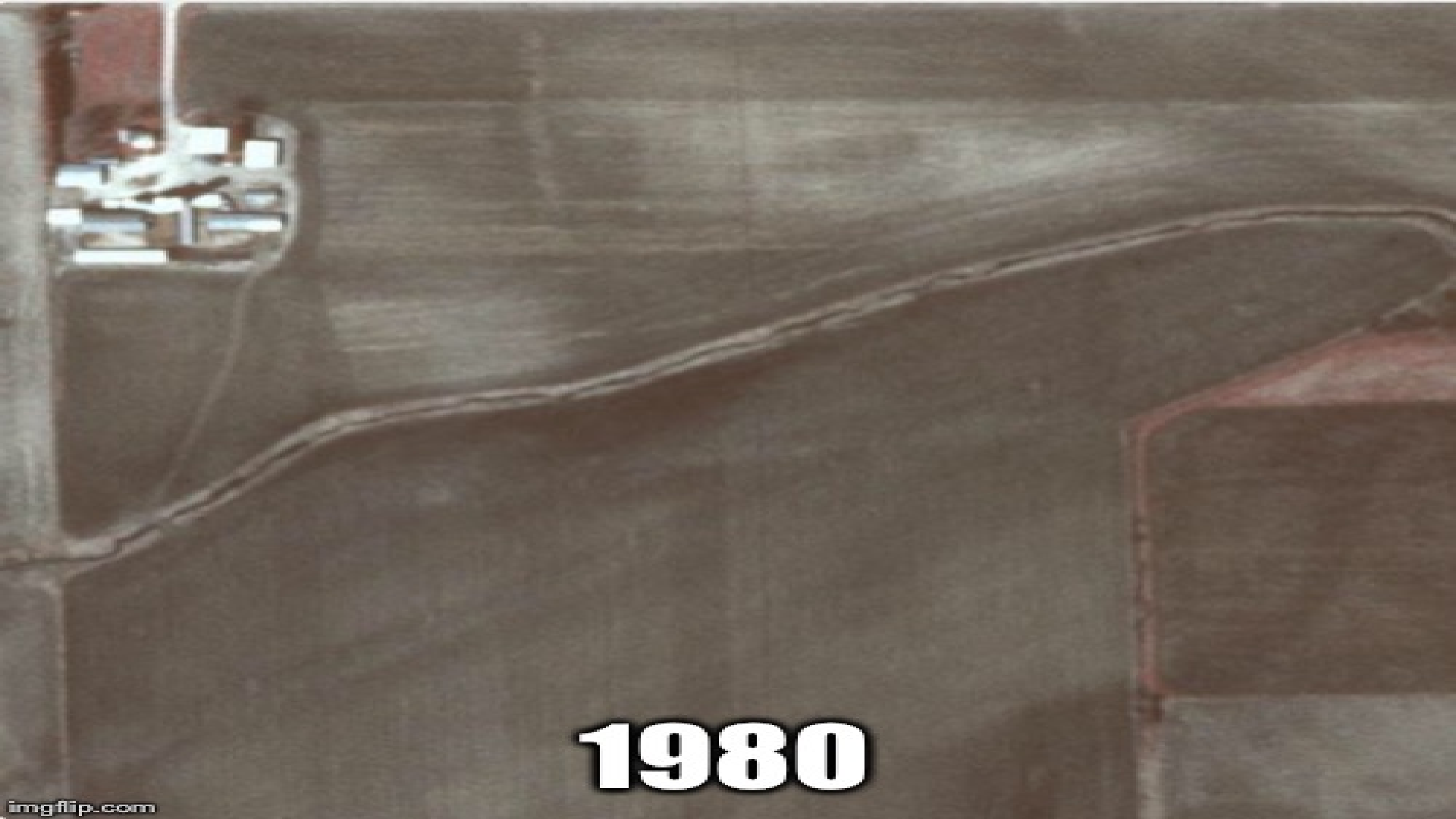
1950



1960



1970



1980



2002



2011



2016

WARNING

**These stunts are being
performed by
trained professionals.**

Please DO try this at home.

THE PIECES MAY NOT ALL FIT TOGETHER



ADAPTION VS ADOPTION WILL HELP SOLVE IT

WHEN IT COMES TO READING YOUR PLAN



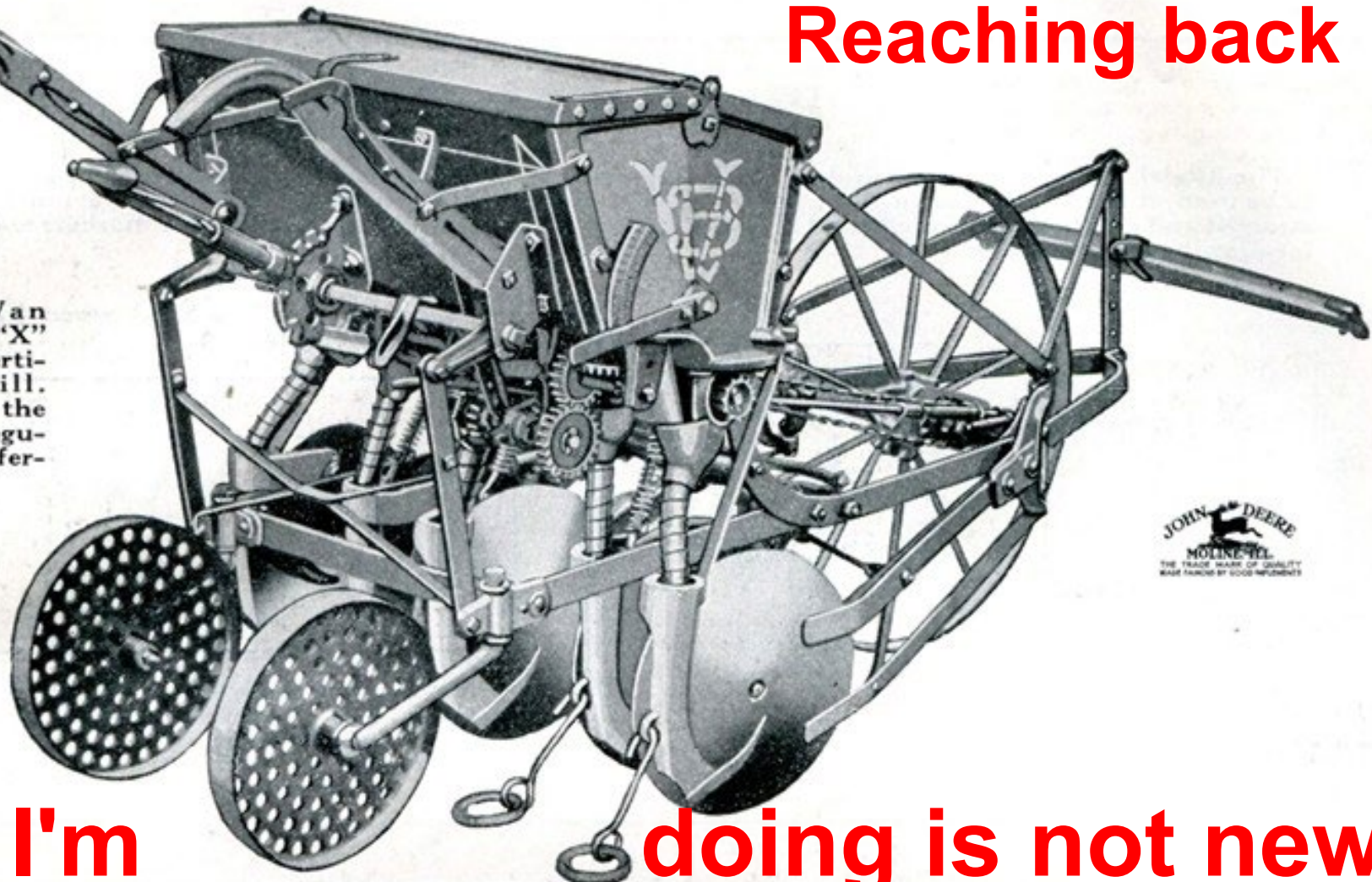
MOTHER NATURE IS ILLITERATE



INNERSEEDING

Reaching back

John Deere-Van
Brunt Model "X"
Combination Fertilizer-Grain Drill.
Hand lever at the
side of the box regulates
the flow of fertilizer.



JOHN DEERE
MOLINE-ILL.
THE TRADE MARK OF QUALITY
MADE IN U.S.A. BY JOHN DEERE & CO.

what I'm doing is not new

Just now we have the
tech, tools & equipment
To make it Happen easier



The start of CoverCrops and Evolution to permaculture



Started figuring out the need for InnerSeed











TwinRows &
InnerSeeding &
Relay/companion

