

Earthworms: The Key To Quality No-Till Soils

Make your Soil Smoke

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WSCS ~ Wetland and Soil Consulting Services



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Dave Gibbs

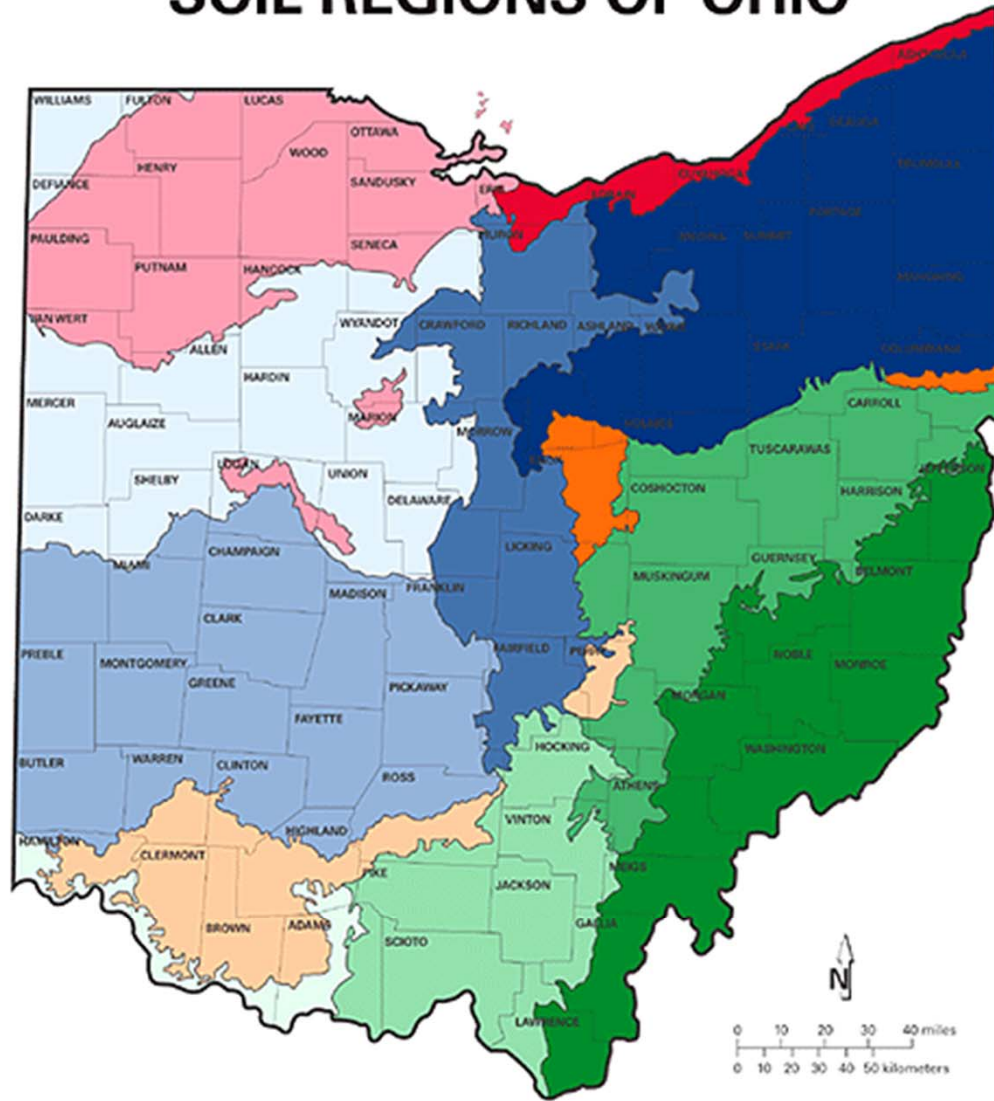


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SOIL REGIONS OF OHIO



- LEGEND***
- | | | |
|--------------------------------------|--|---|
| 1 Hoytville-Nappanee-Paulding-Toledo | 5 Bennington-Cardington-Centerburg | 9 Eden-Bratton-Brushcreek |
| 2 Conotton-Conneaut-Allis | 6 Mahoning-Canfield-Rittman-Chili | 10 Shelocta-Brownsville-Latham-Steinsburg |
| 3 Blount-Pewamo-Glynwood | 7 Clermont-Rossmyrne-Avonburg-Cincinnati | 11 Coshocton-Westmoreland-Berks |
| 4 Miamian-Kokomo-Eldean | 8 Westmoreland-Homewood-Loudonville | 12 Gilpin-Upshur-Lowell-Guernsey |
- *Soil regions are identified by the names of the soil series that are common in that region



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Earthworms

Conservation Systems:

- ~Conservation Tillage
- ~Controlled Traffic
- ~Cover Crops
- ~Drainage



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Rainfall Comparison in inches

Month	2011	2010	1972
January	1.62	0.84	1.12
February	4.41	1.67	0.78
March	3.14	2.40	2.55
April	6.22	2.83	5.95
May	7.42	8.14	4.16
June	2.24	6.67	3.37
July	2.35	1.90	4.30
August	6.03	2.80	3.04
September	7.66	1.19	8.26
October	4.26	1.37	1.85
November	5.03	4.28	4.54
December	4.48	0.66	3.07
Total	54.86	34.75	38.99

Past rainfall record year 1950 = 50.39 inches

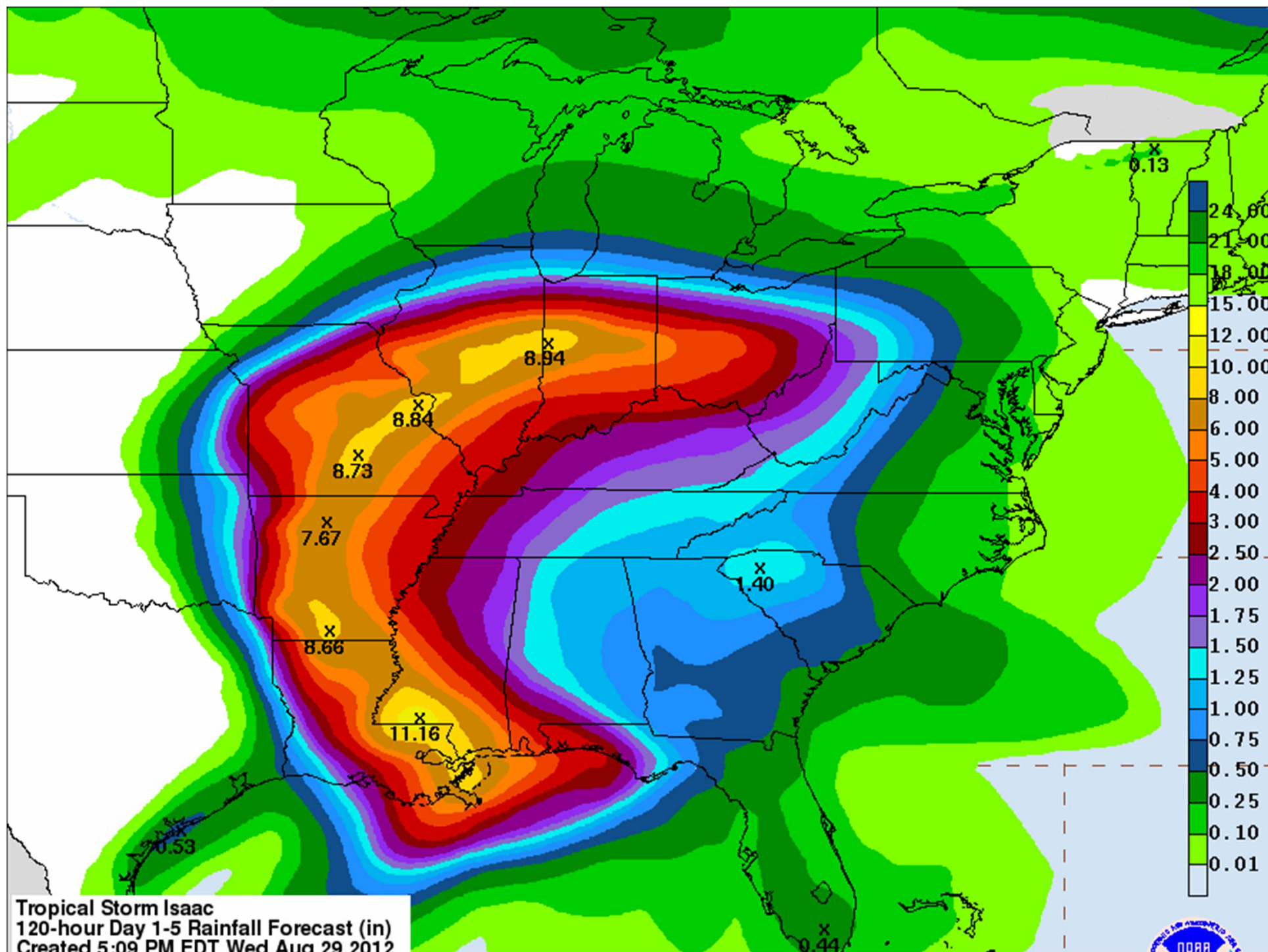
Average Annual Rainfall = 34.50 inches

Provided by Guy Verhoff, Pandora Weather Observer



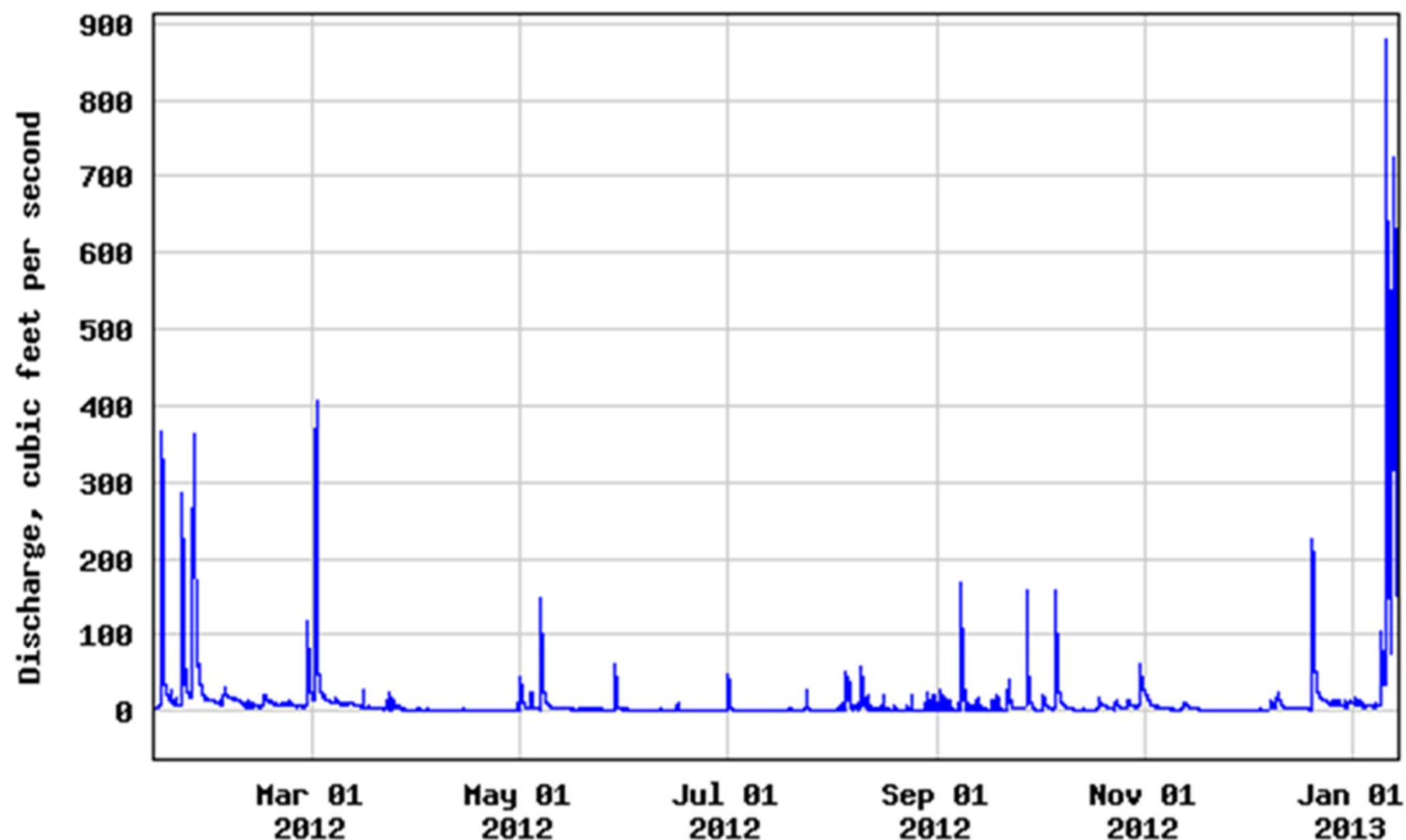








USGS 402913084285400 Chickasaw Creek at St. Marys OH



----- Provisional Data Subject to Revision -----



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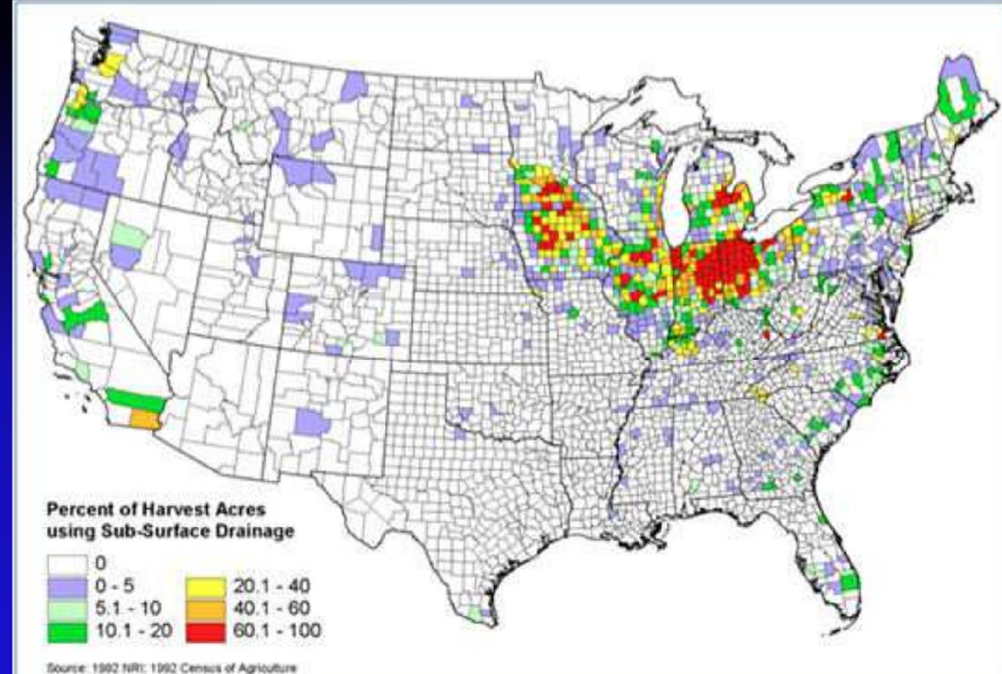
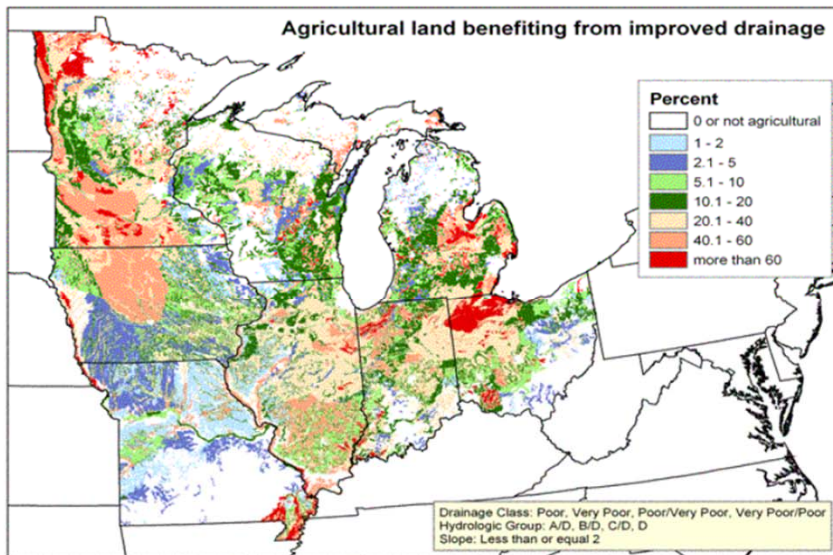


Extent of Tile Drainage

43 million ha of soil in US classified as wet; 31 million drained (Pavlis, 1987)

37% of cropland acres in the Midwest (Zucker and Brown, 1998)

- number of acres drained essentially remaining constant
- random drains converted to systematic drains and aging drainage infrastructures are being updated
- intensity (split spacing) increasing to accommodate larger farming enterprises and shorter windows for agricultural practices





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Crop Production

Soil Quality

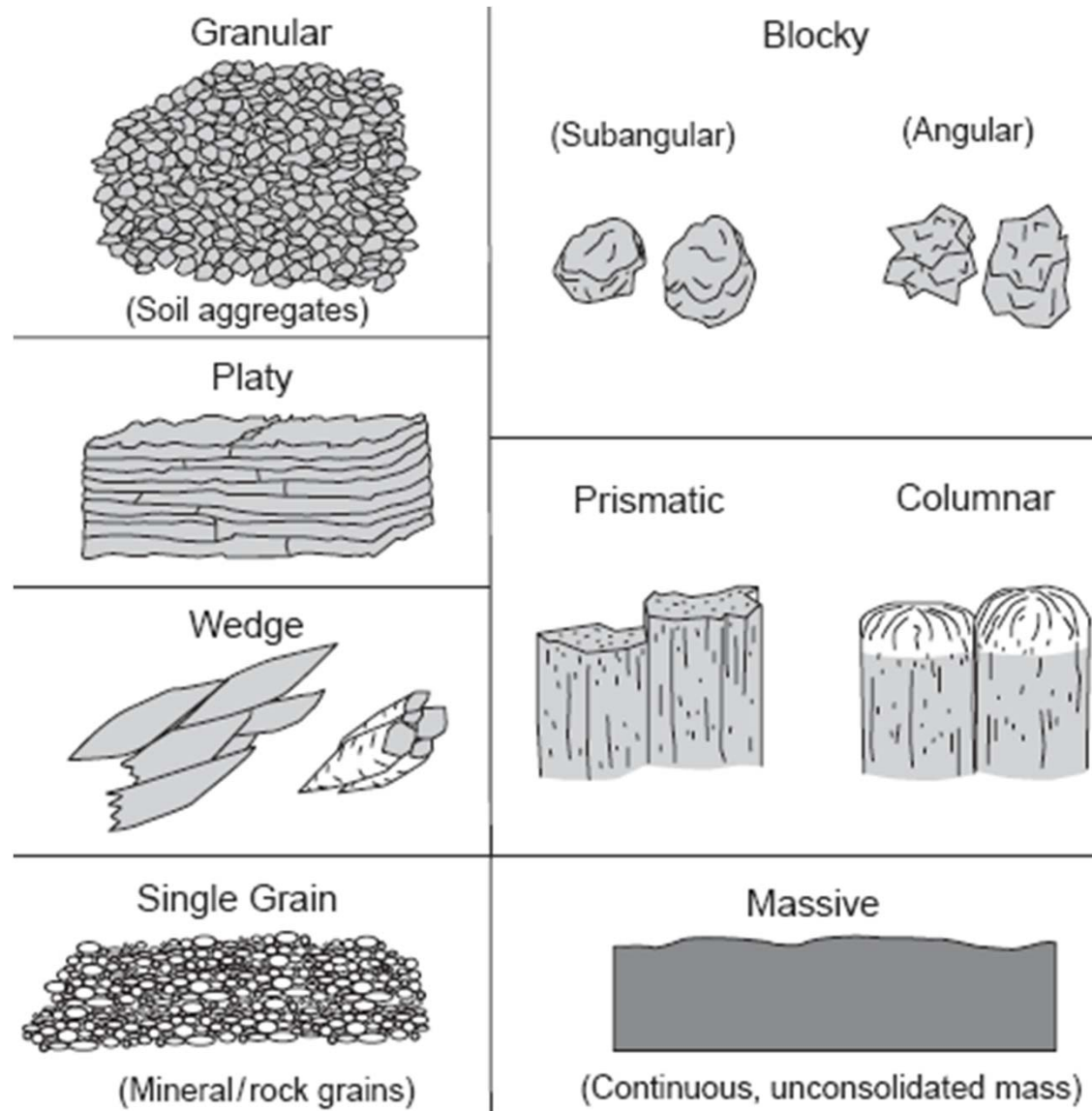


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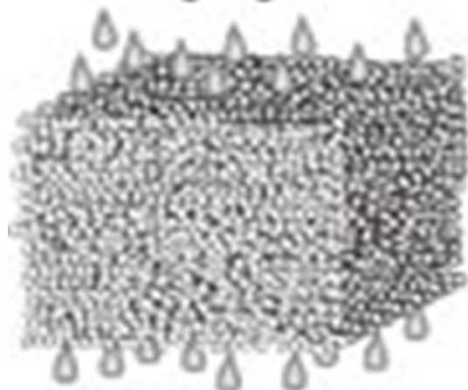
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Structure Types

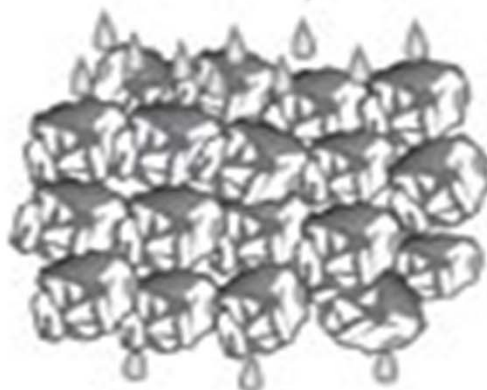


Single-grain



Rapid

Blocky



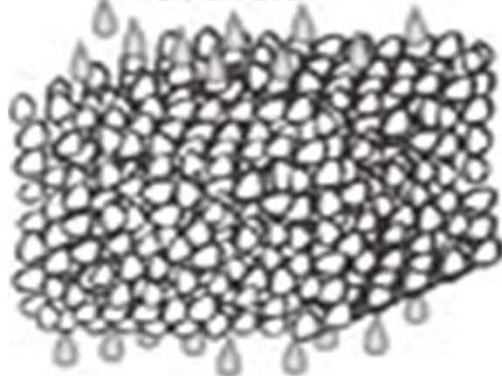
Moderate

Platy



Slow

Granular



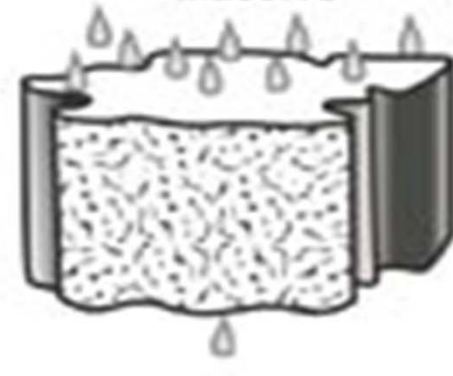
Rapid

Prismatic



Moderate

Massive



Slow



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Two Situations:

1) Isolated (Load Out Zones/Wet Spots)

~GPS in to deal with later...

~Do what's necessary to level out...

~Follow on your yield maps...

Drain, Subsoil follow with legumes/radishes



**Avoid Messing the whole field up
By doing wet deep tillage**



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2) Almost Every Pass Across the Field

~GPS What's practical...

Light Shallow Tillage when it dry's on top

No Tillage if it's another wet spring...

Follow on Yield Maps...

Drain, subsoil, follow with legumes/radishes...

"Smeared Goobers"





Systematically Destroyed Soil Structure

Principals of Soil Health

- Limit Soil Disturbance
- Increase Soil Microbial Diversity
- Grow Living Roots Year Round
- Keep the Soil Covered
- Reduce Compaction



Dave Brandt



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Allen Dean





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Joe Nester



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VRT Strip till with Auto Steer



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“Un” Controlled Traffic



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Cereal Rye



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Food Source For Night Crawlers



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Bret Margraf



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Jerry and Les Seiler



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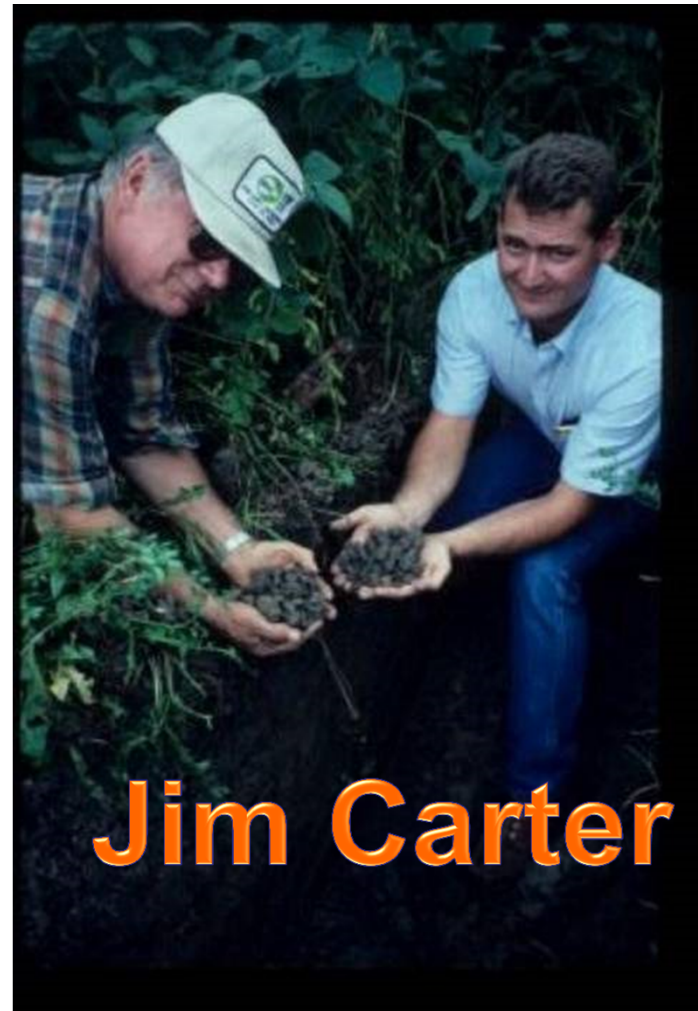
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Jim Carter



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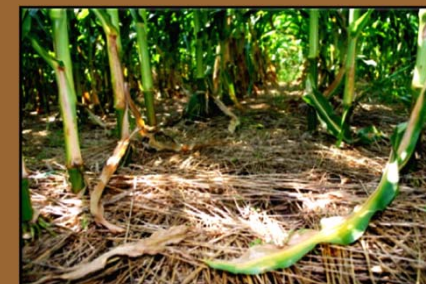






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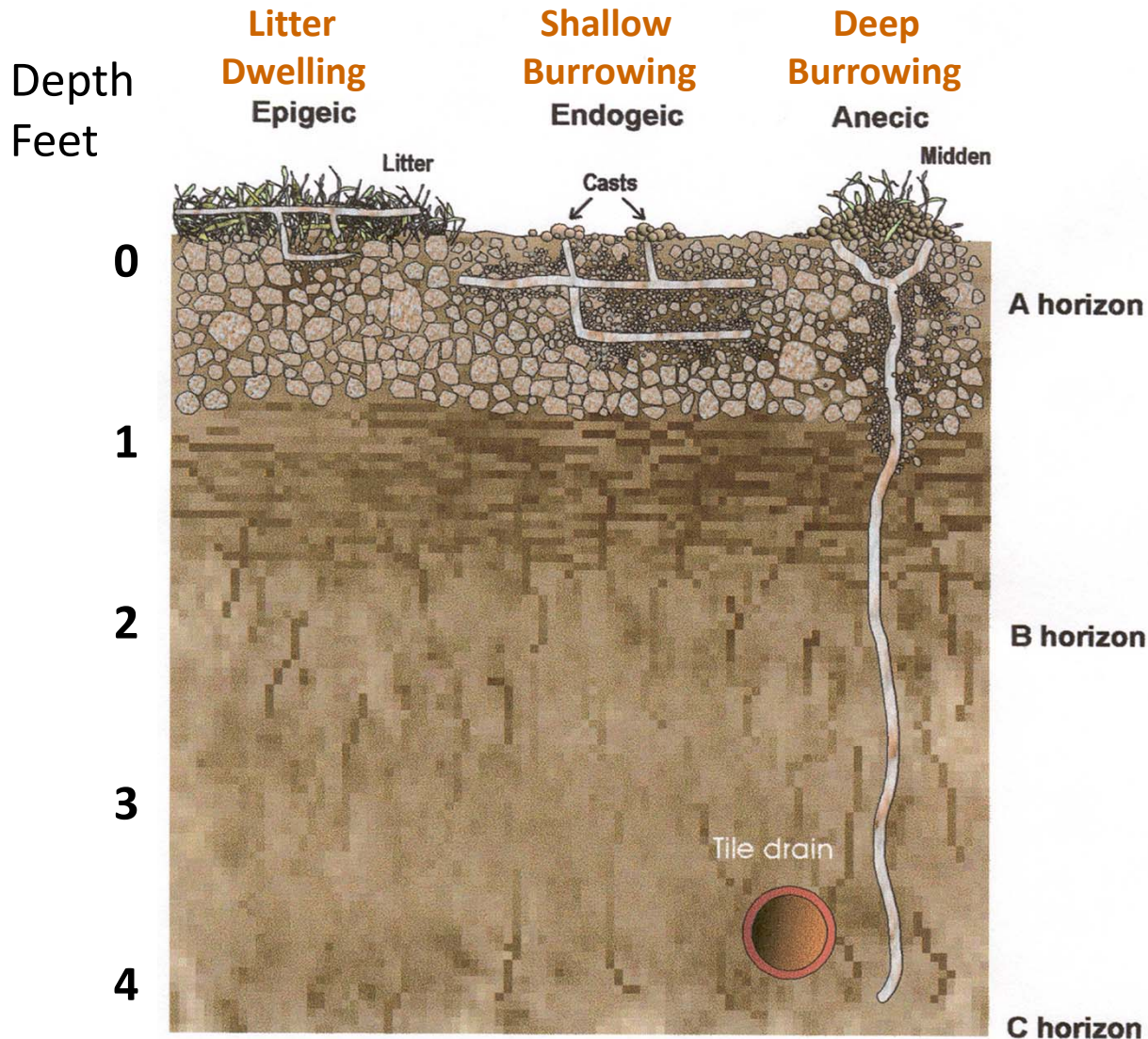




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There are ~ 3000 Species of Earthworms

- Litter Dwelling (*Epigeic*) Species
- Shallow Burrowing (*Endogeic*) Species
- Deep Burrowing (*Anecic*) Species
 - construct burrows that extend ~3-4 feet deep
 - cannot tolerate dry or frozen soil
 - come to the soil surface to feed, breed, and migrate



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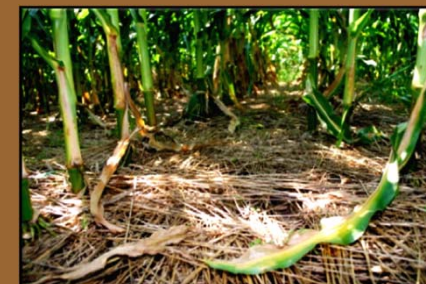
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White 6 Row~Tillage Radishes 7 Row Splitter~Austrian Peas



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Sugar Beet Plate Radishes

Low Pressure



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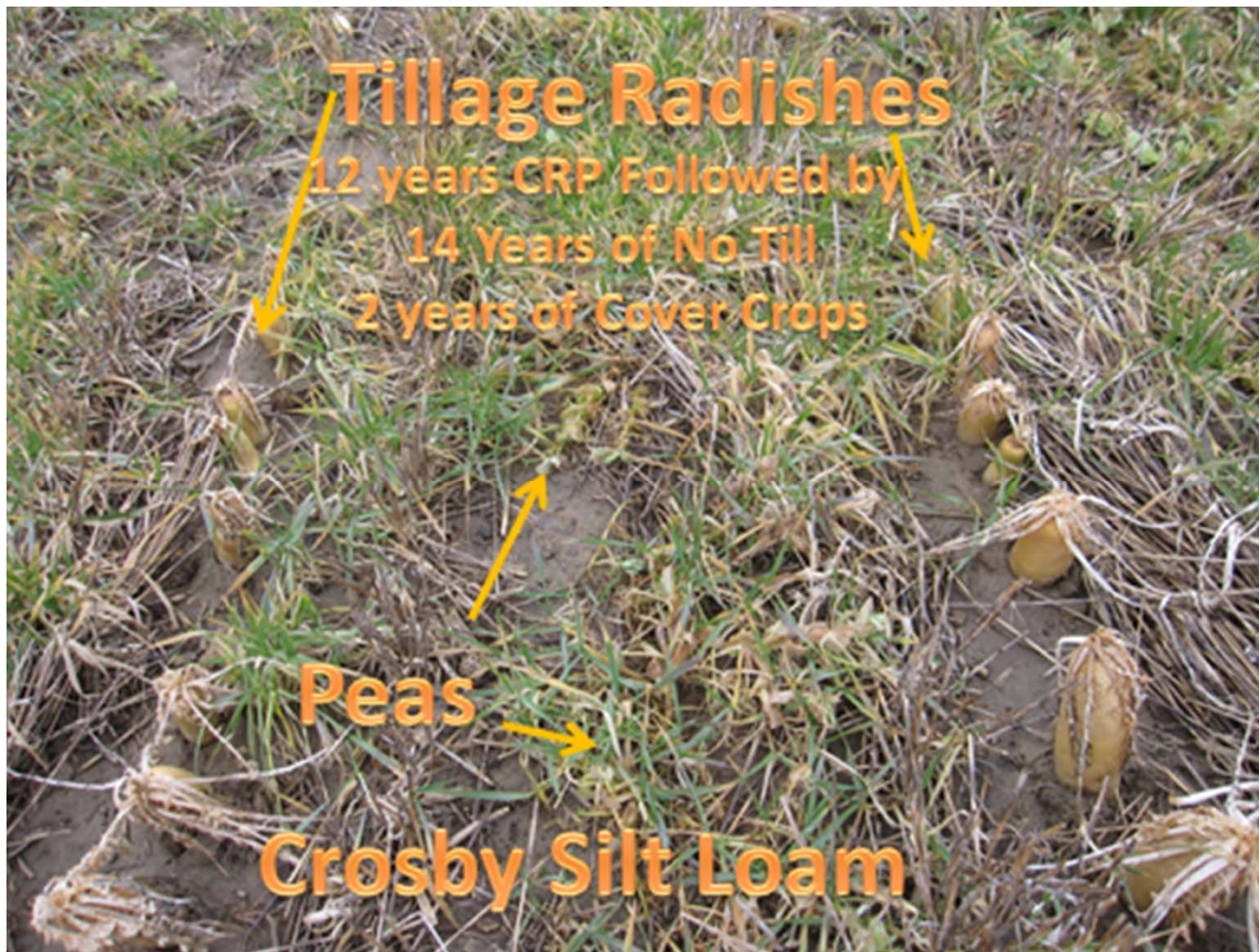
Narrow Wave Colter



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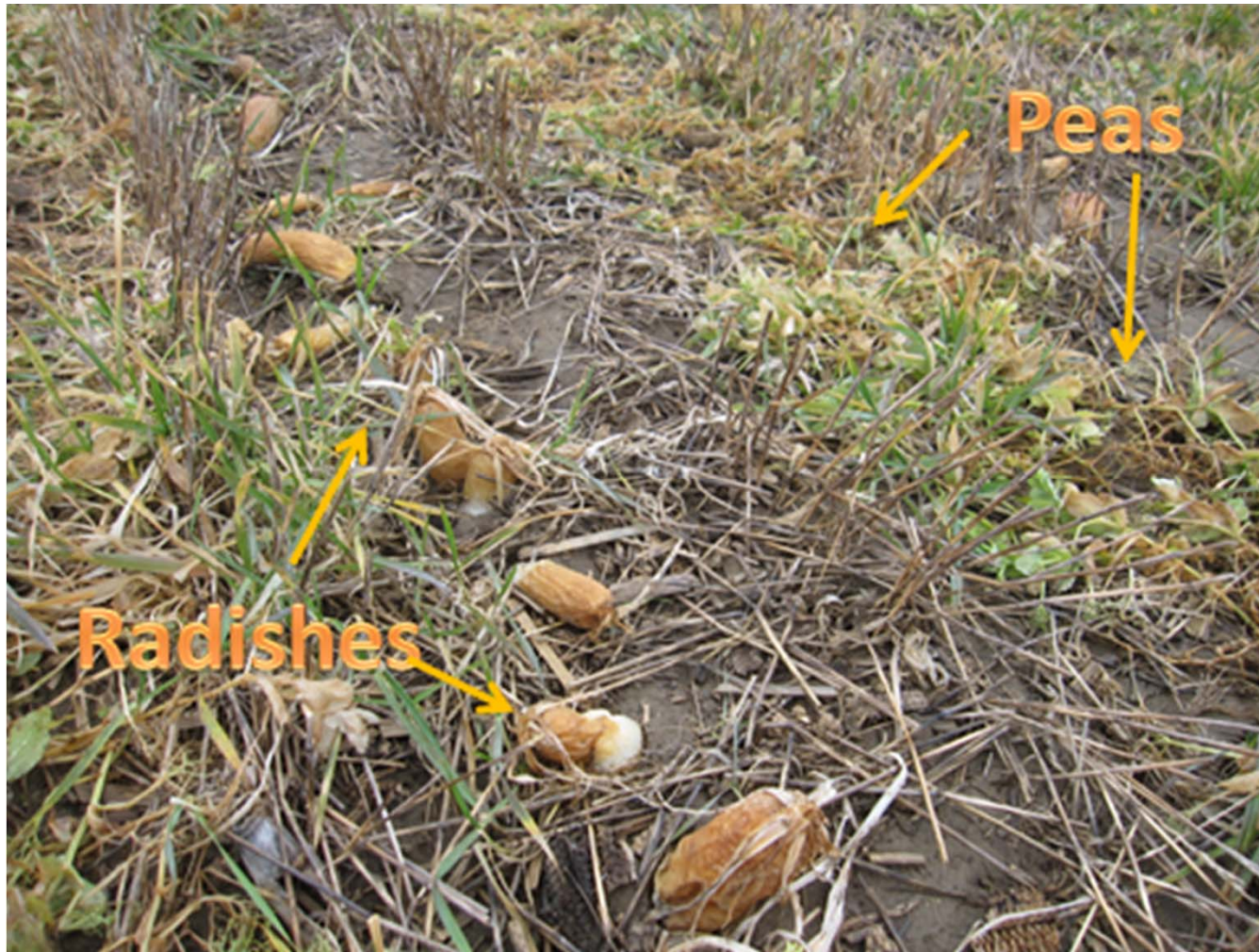




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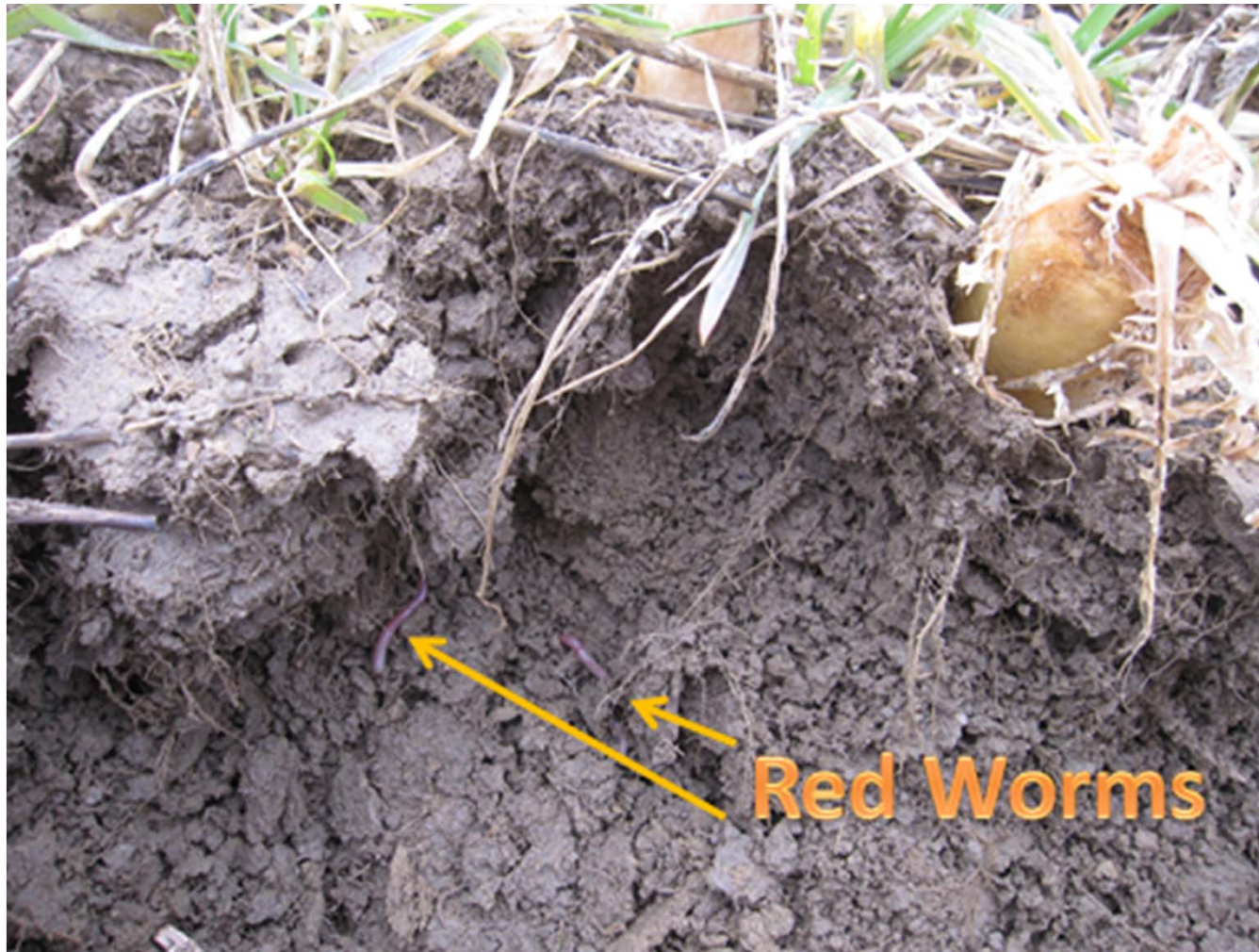




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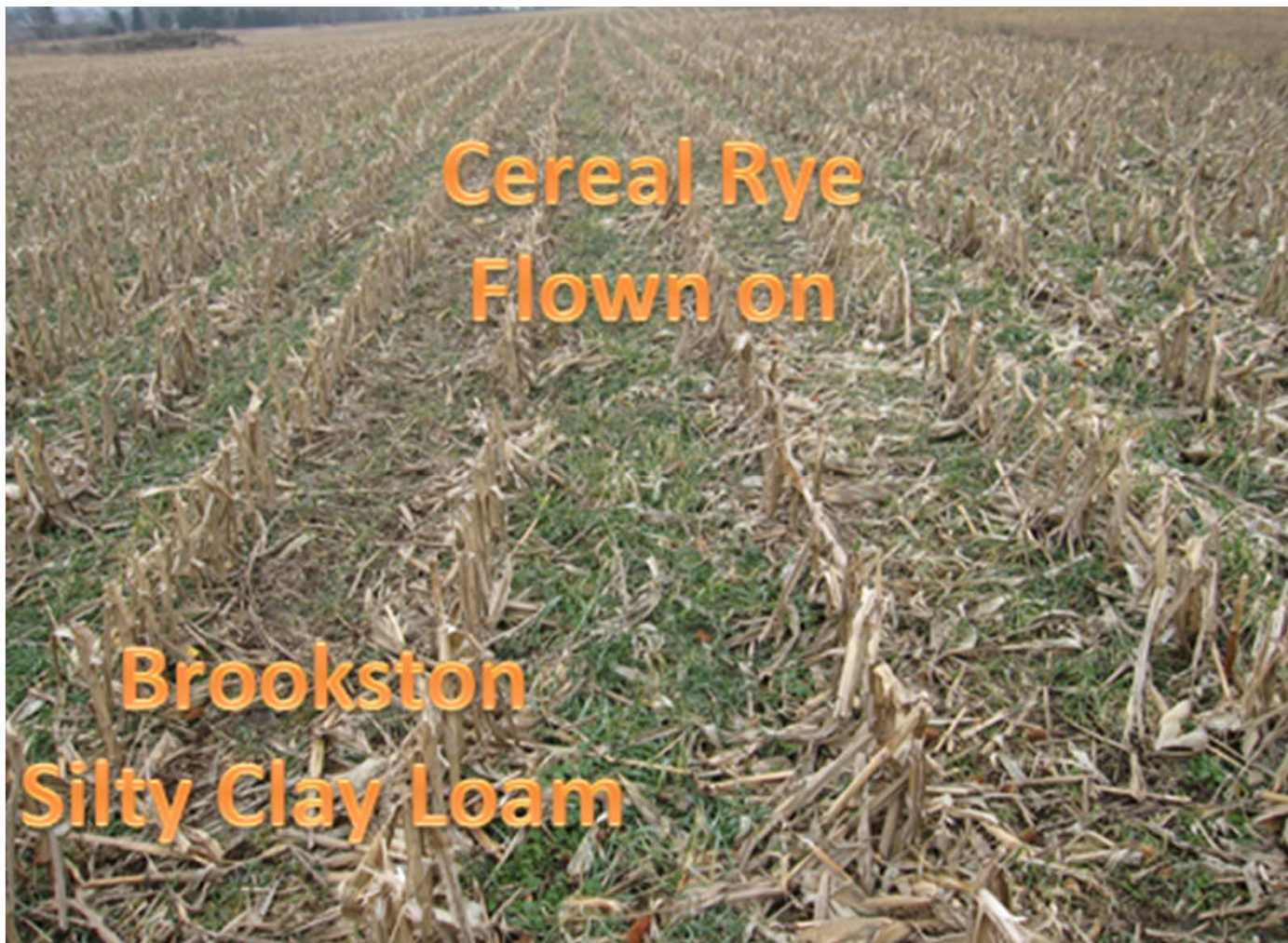




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Wheat 20 Years of NoTill



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Getting on The Wagon



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A group of approximately 20 people, mostly men, are gathered outdoors in a field. In the foreground, a woman in a bright yellow jacket stands next to a deep soil pit, gesturing towards it. A line of men, some wearing rubber boots, are sitting on hay bales, looking towards the woman. Other people are standing in the background. A yellow excavator is visible in the distance. The scene appears to be a field demonstration or educational event.

Soil Information

**Share Your Knowledge
Share Your Story**

The Key to Earthworms and Quality Soils Conservation Systems:

- ~Conservation Tillage
- ~Controlled Traffic
- ~Cover Crops
- ~Controlled Drainage



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