Veris Soil Sensors:

industry and apps

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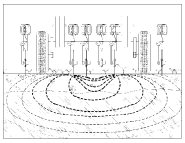


In 1996, Veris developed the world's first commercial on-the-go soil mapping system.

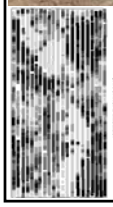
Veris soil sensing machines are produced at its factory in Salina KS; systems have been sold in 40 states and >30 foreign countries.

Sensors for commercial use

Soil EC

Soil OM

Soil pH



Soil Electrical Conductivity

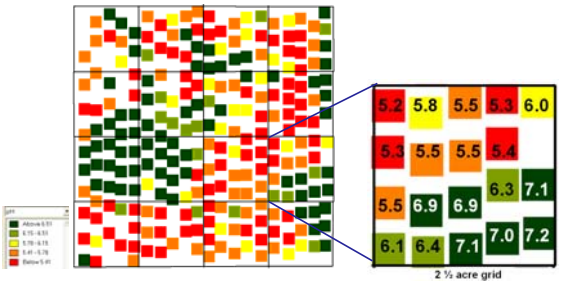
↑ *finer*
Texture
↓ *coarser*

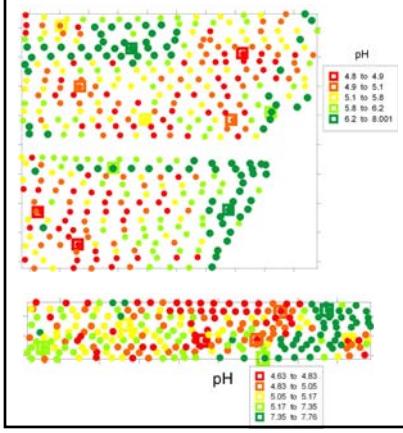
+ salinity

Organic Matter

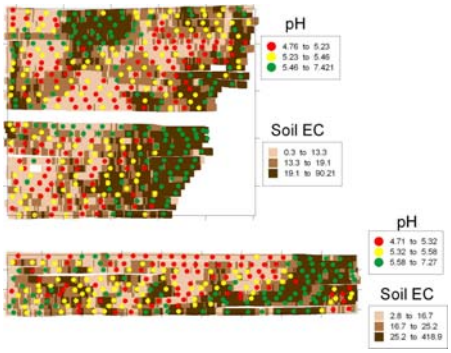
Soil pH

Real-time pH Sensing: the importance of dense data





Soil EC and pH



Adoption Status

Veris systems in 40 states, and 30 countries

Applications

Precision Agriculture: *applying the correct product(s)…in the correct amount…in the correct place…at the correct time.*

Seed Populations

Nitrogen

Organic Matter, Cation-Exchange Capacity, pH, Water-Holding Capacity, Soil Texture

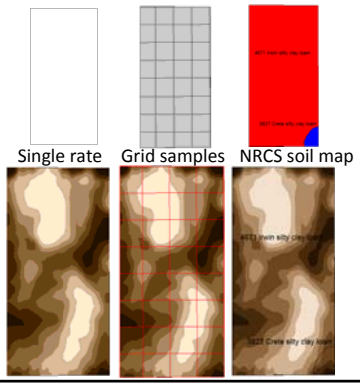
Hybrid by environment

Soil amendments

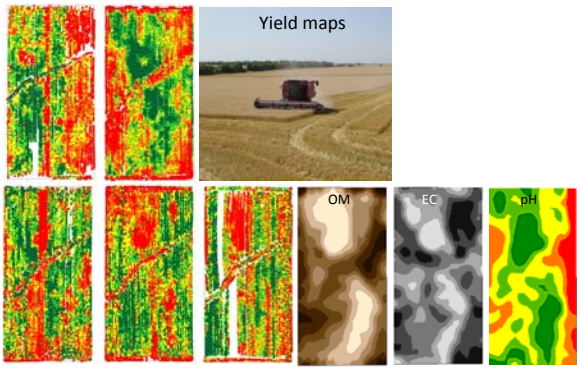
Soil fungicides, nematicides, herbicides

Managing differences in productive capacity

Alternatives & Competition



Alternatives & Competition



Sensors for research use

Vis-NIR and other sensors

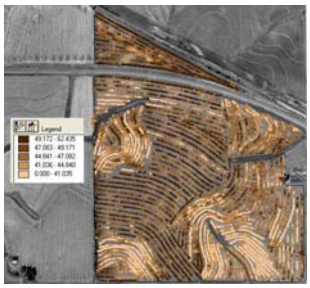
Veris Vis-NIRS systems are proven on large-scale C measurement projects.

2008: 500 ha/9 fields

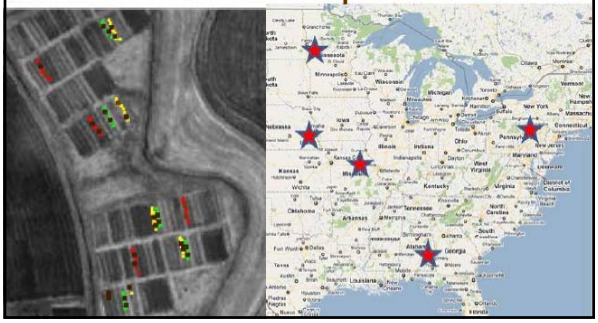

Measuring Soil Carbon Under Cap-and-Trade: Accurate, Affordable Field Verification Using Veris Spectroscopic Sensors

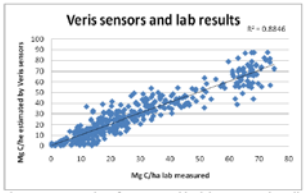
Executive Summary

Veris
www.veristech.com



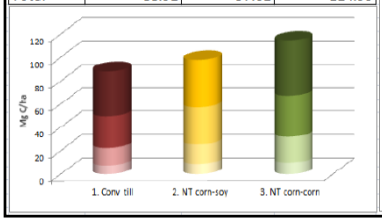
2009-2010: 5 states…3 farming practices in each…replicated plots…570 lab samples…over 800 0-60 cm Vis-NIR-EC-Force probe insertions

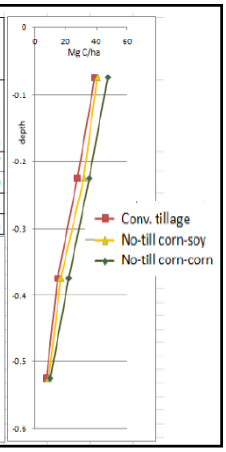




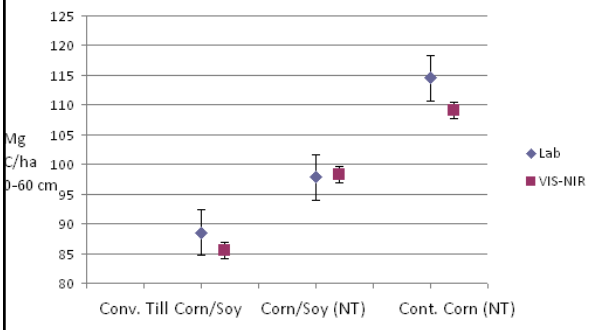
Site	R^2	RPD	RMSE	Std Dev.
Alabama	0.78	2.39	1.06	2.61
Minnesota	0.65	1.77	7.17	12.67
Missouri	0.64	1.71	4.98	8.40
Nebraska	0.89	3.42	4.39	14.05
Pennsylvania	0.89	3.32	5.67	18.33

Nebraska	Treatment 1 Conv. till corn-soy	Treatment 2 No-till corn-soy	Treatment 3 No-till corn-corn
0-15	38.86	40.56	47.35
15-30	27.29	31.75	35.37
30-45	14.84	16.76	21.99
45-60	7.53	8.75	9.82
Total	88.52	97.82	114.53





Sensors reduce confidence intervals



Alternative Vis-NIR configurations—Arctic Circle model

Alternative Vis-NIR configurations—Core Scanning

Thank You!