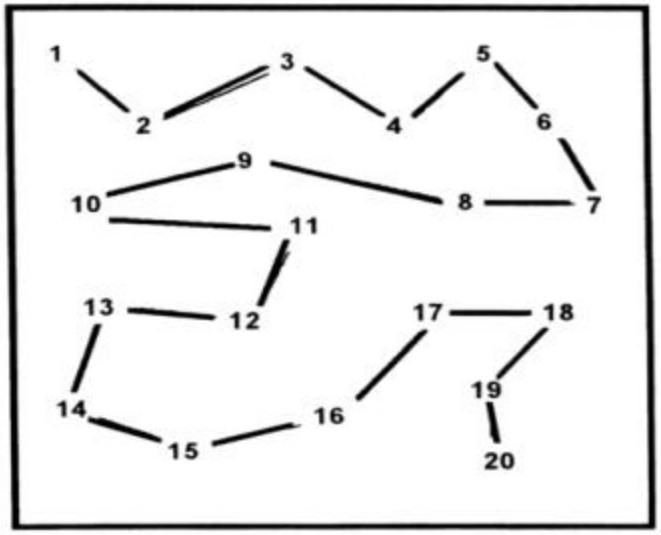
Finding the Value In Precision (Geo-Referenced) Soil Sampling

Conclusion Number 1

History adds value to soil test information



How much confidence would you place in a single soil test result without history?

Effectiveness of Soil Testing as a Guideline to Fertilizer Rate and Crop Response

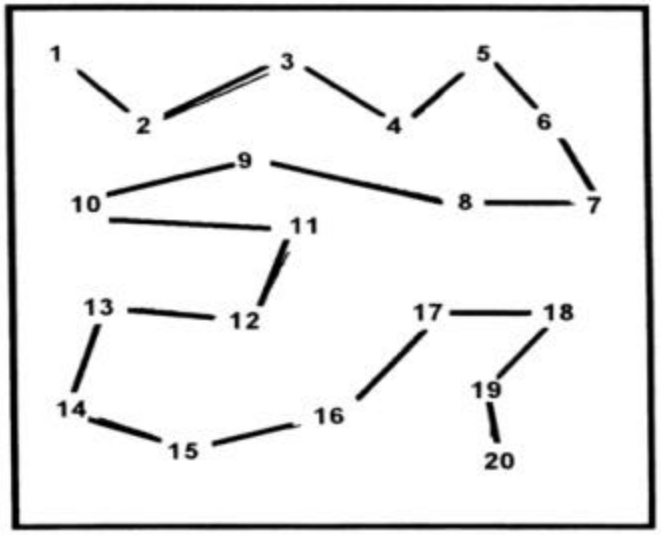
Optimum fertilizer rate to apply for a specific field and/or year.	**Fair**
Relative yield response for a specific location and/or year.	**Fair**
Average long-term optimum fertilizer rate to apply over a number of years.	**Fair-Good**
Relative long-term yield response averaged over a number of years.	**Good**
Probability of a yield response.	**Very Good**
Soil fertility status over time.	**Very Good**

Traditional soil sampling systems, how well are we doing?

- Lack of a field identification system that allows for comparison of soil test results over time.
- No convenient method for tracking nutrient applications.
- Lack of uniformity in sampling system.
- Inconsistent sampling technique - time, depth, number of cores, etc.

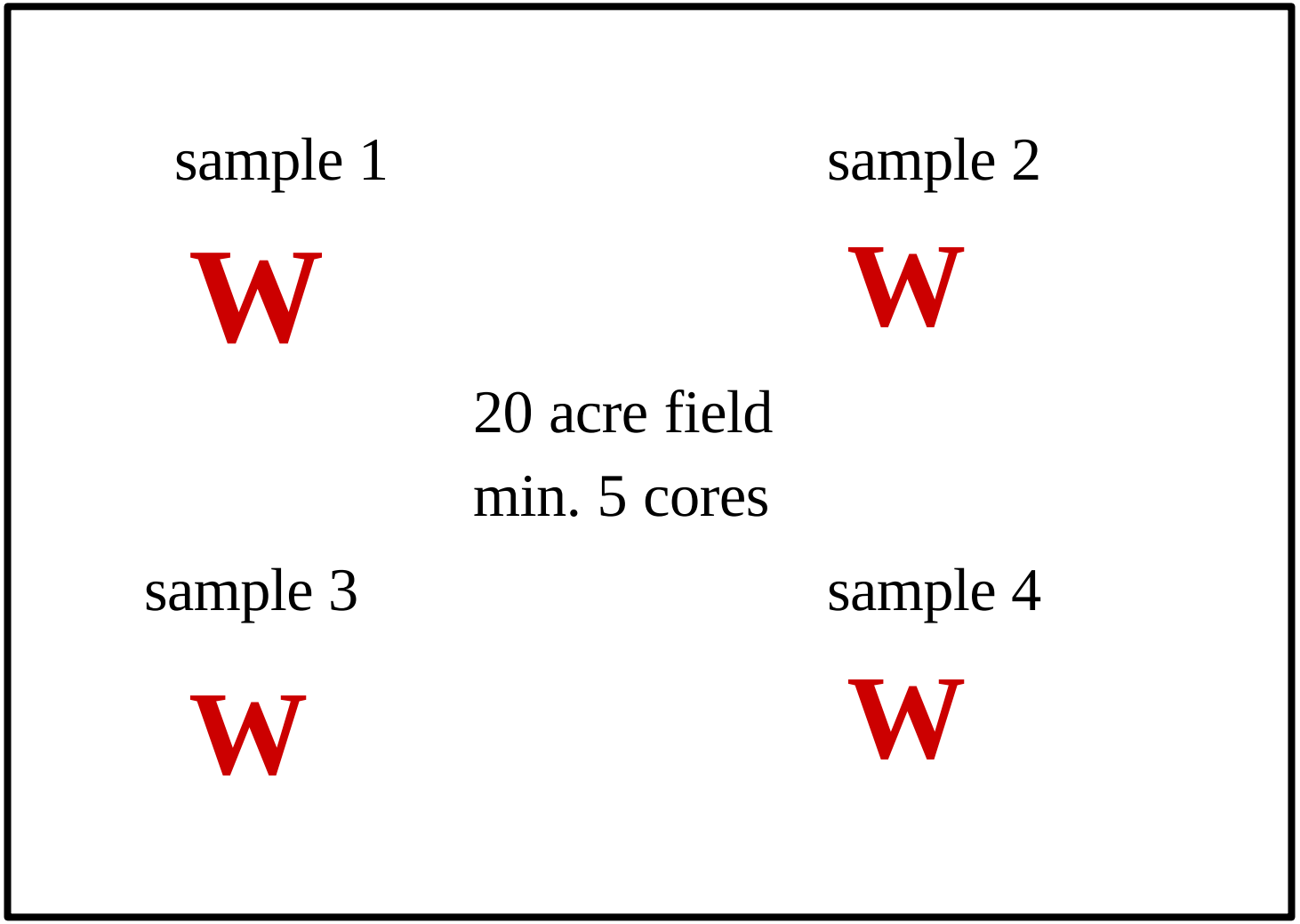
Conclusion Number 2

***The ability to geo-reference has tremendous potential for increasing the value of soil testing*.**



Geo-referenced field boundaries and sample points add value.

Wisconsin Soil Sampling System



Conclusion Number 3

- The merits of precision soil sampling and variable rate application of crop nutrients or lime should be considered separately.

The ability to vary the application rate of fertilizer was a technological breakthrough.

Level Of Technology

INTEGRATED CROP MANAGEMENT PLANNING & PROFIT ANALYSIS

GPS, SOIL SAMPLING, GIS YIELD MONITORING, PROBLEM SOL VING

VARIABLE RATE

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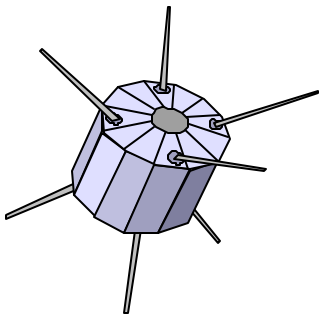
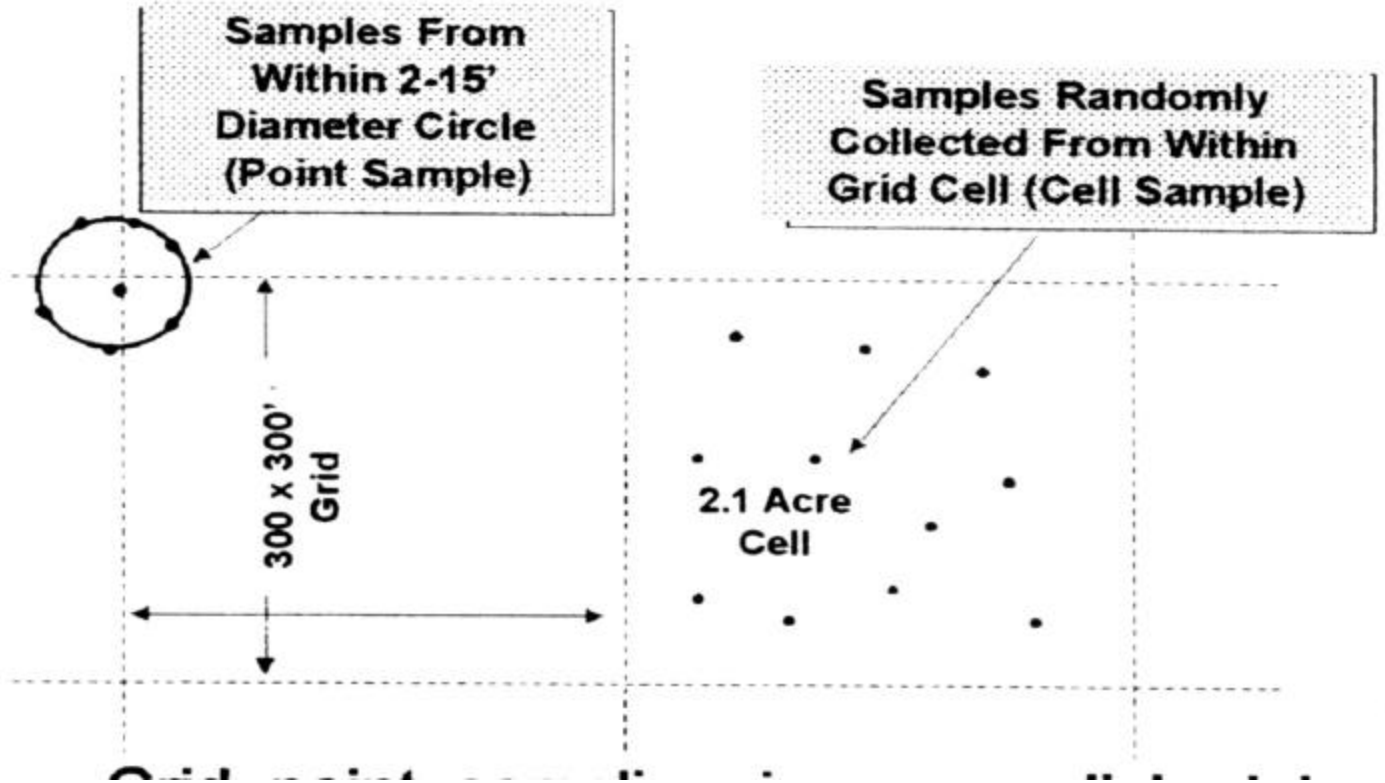


IMPLEMENTATION

Grid Sampling

- Point Sampling
- Cell Sampling



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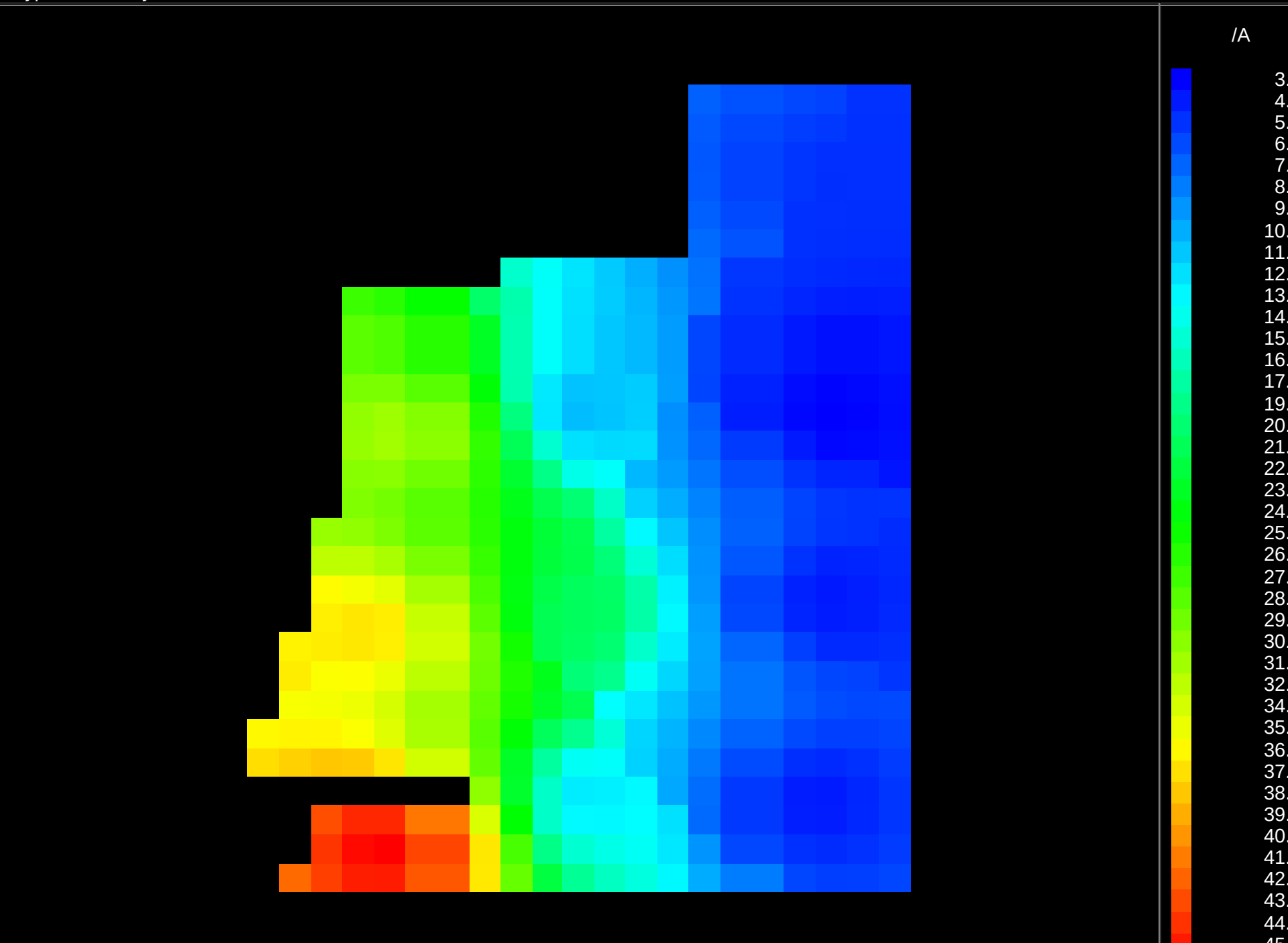
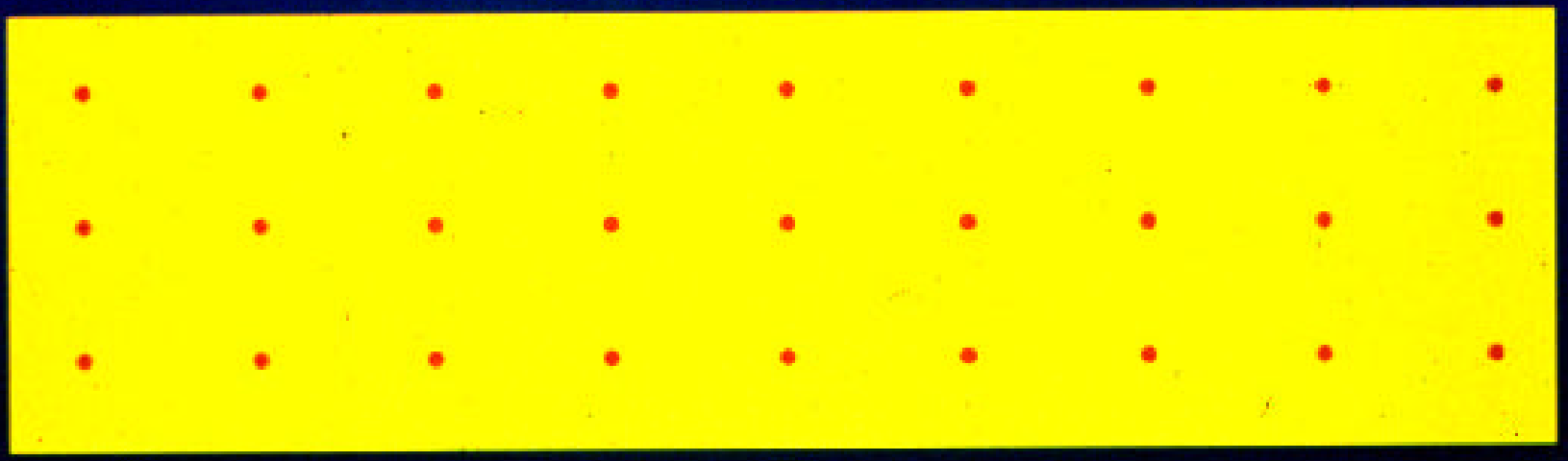
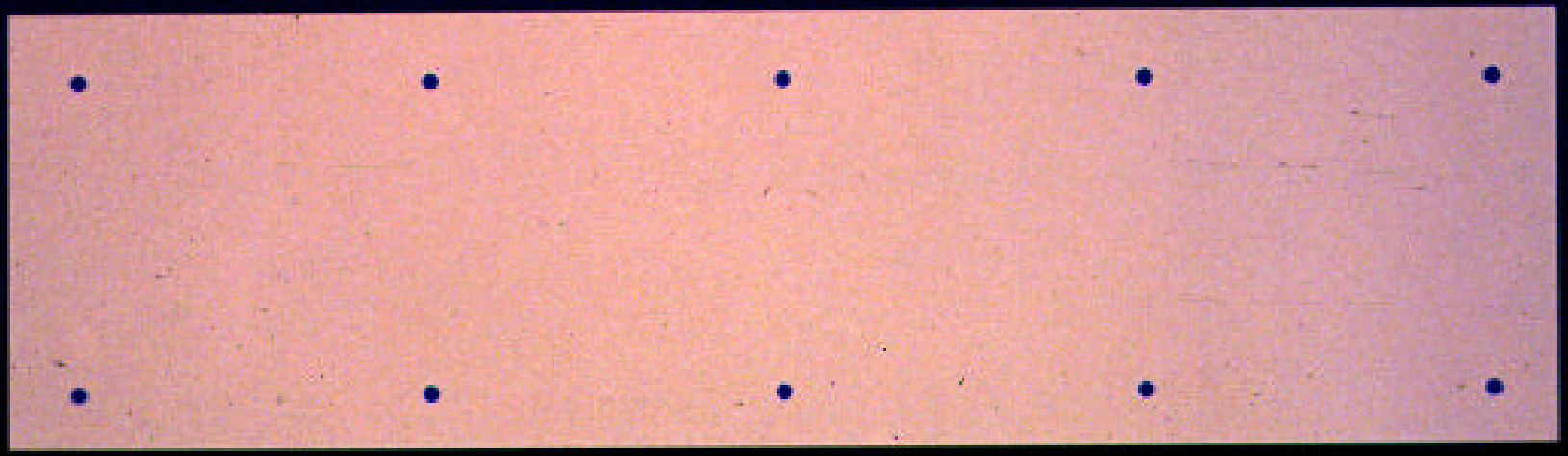


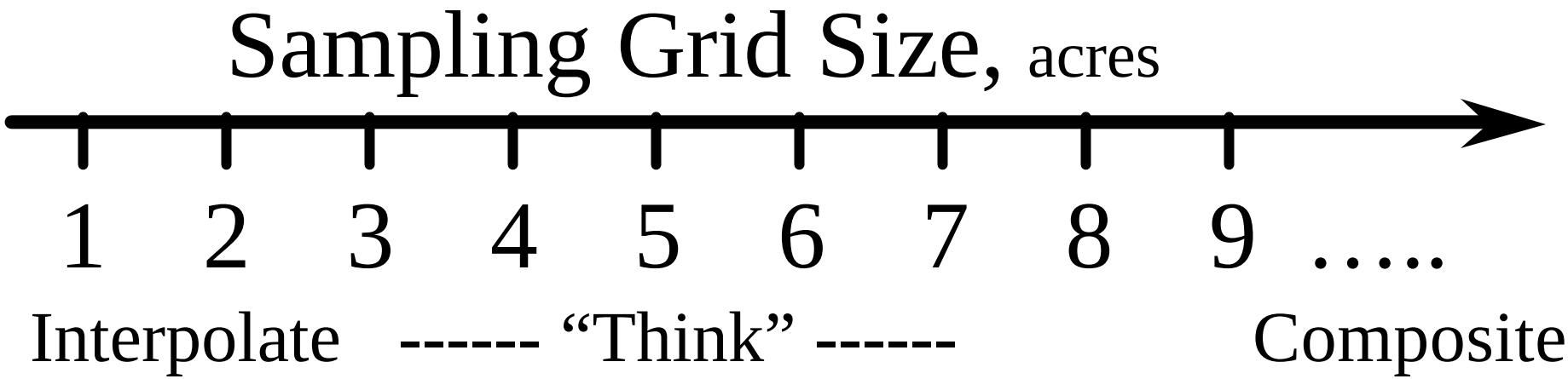
Relation Between Grid Size and Acres per Sample

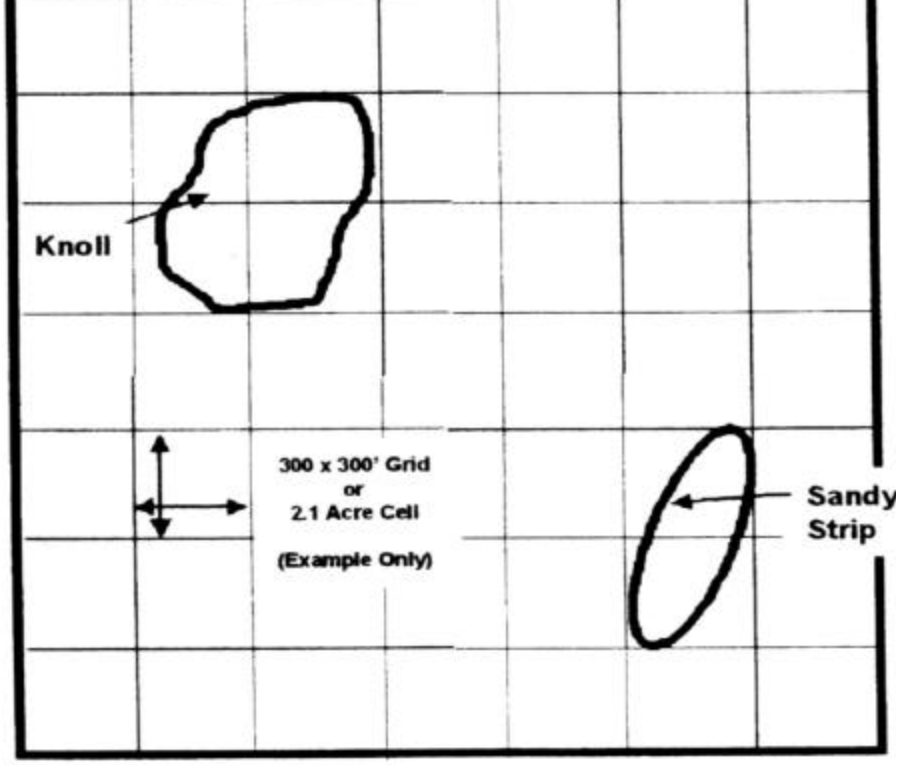
Grid Size (ft)	Acres per Sample
100 x 100	0.23
208 x 208	1.00
250 x 250	1.43
295 x 295	2.00
330 x 330	2.50
360 x 360	3.00
440 x 440	4.44

What is Realistic?

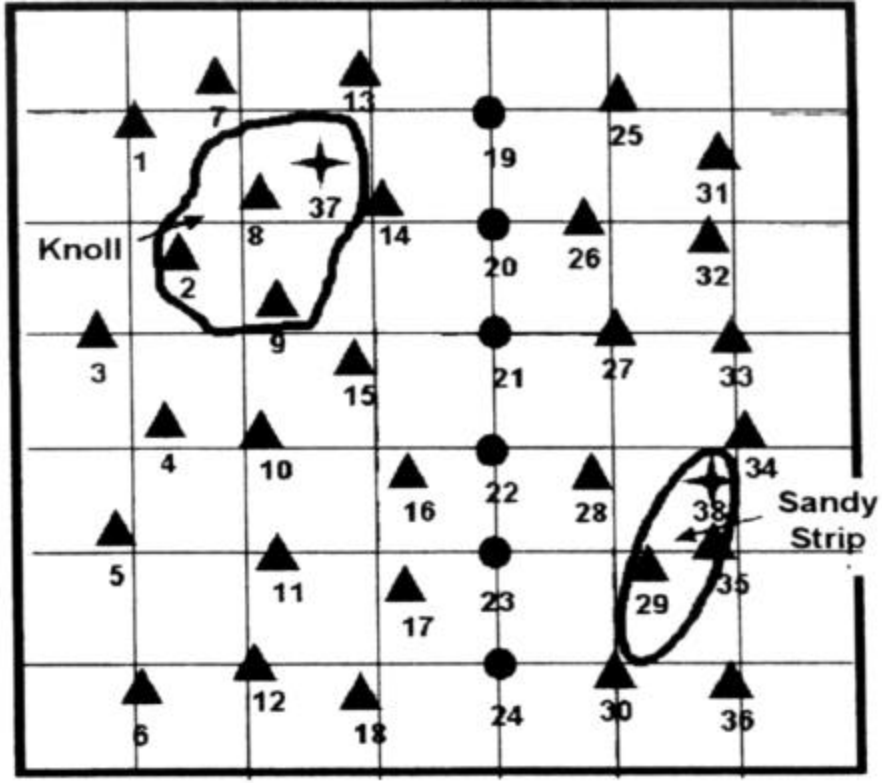





Sampling Grid Size, acres
1 2 3 4 5 6 7 8 9 …..
Interpolate ------ “Think” ------ Composite



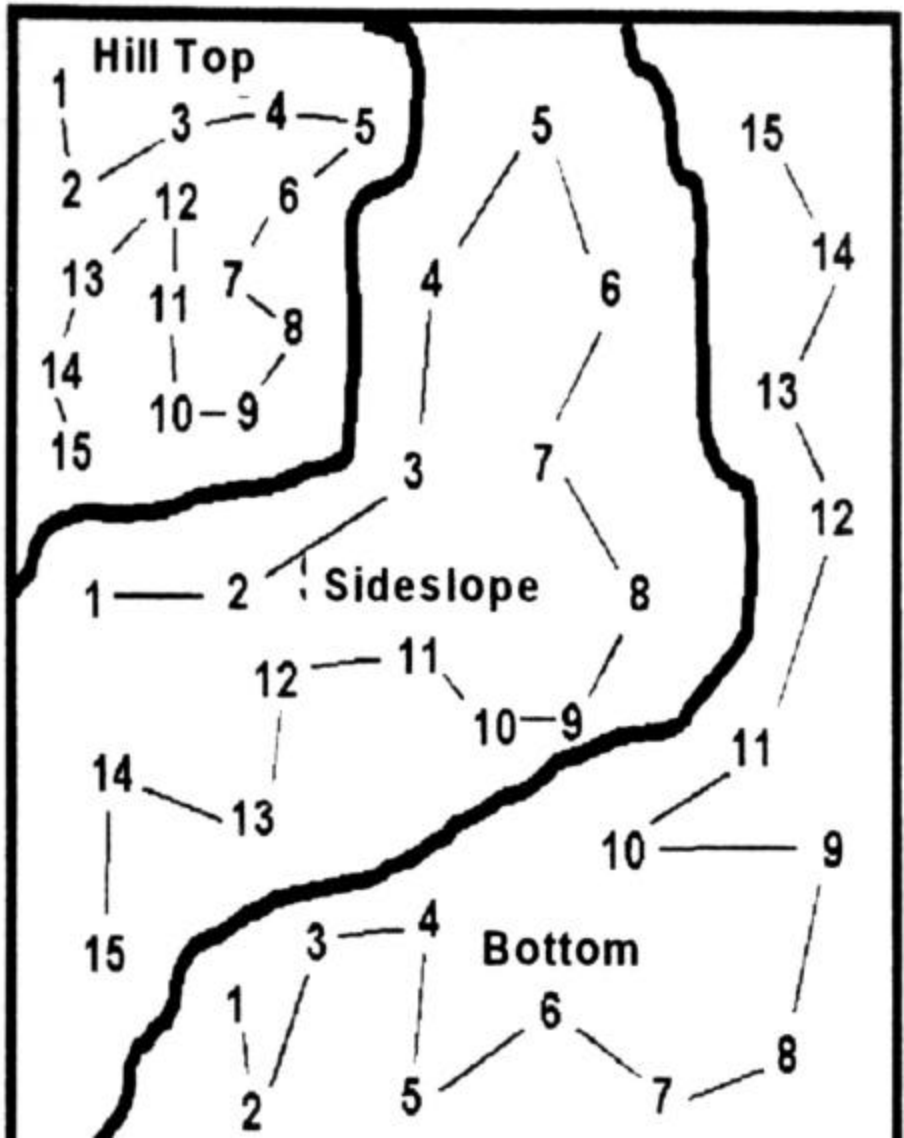
Field Grid Layout



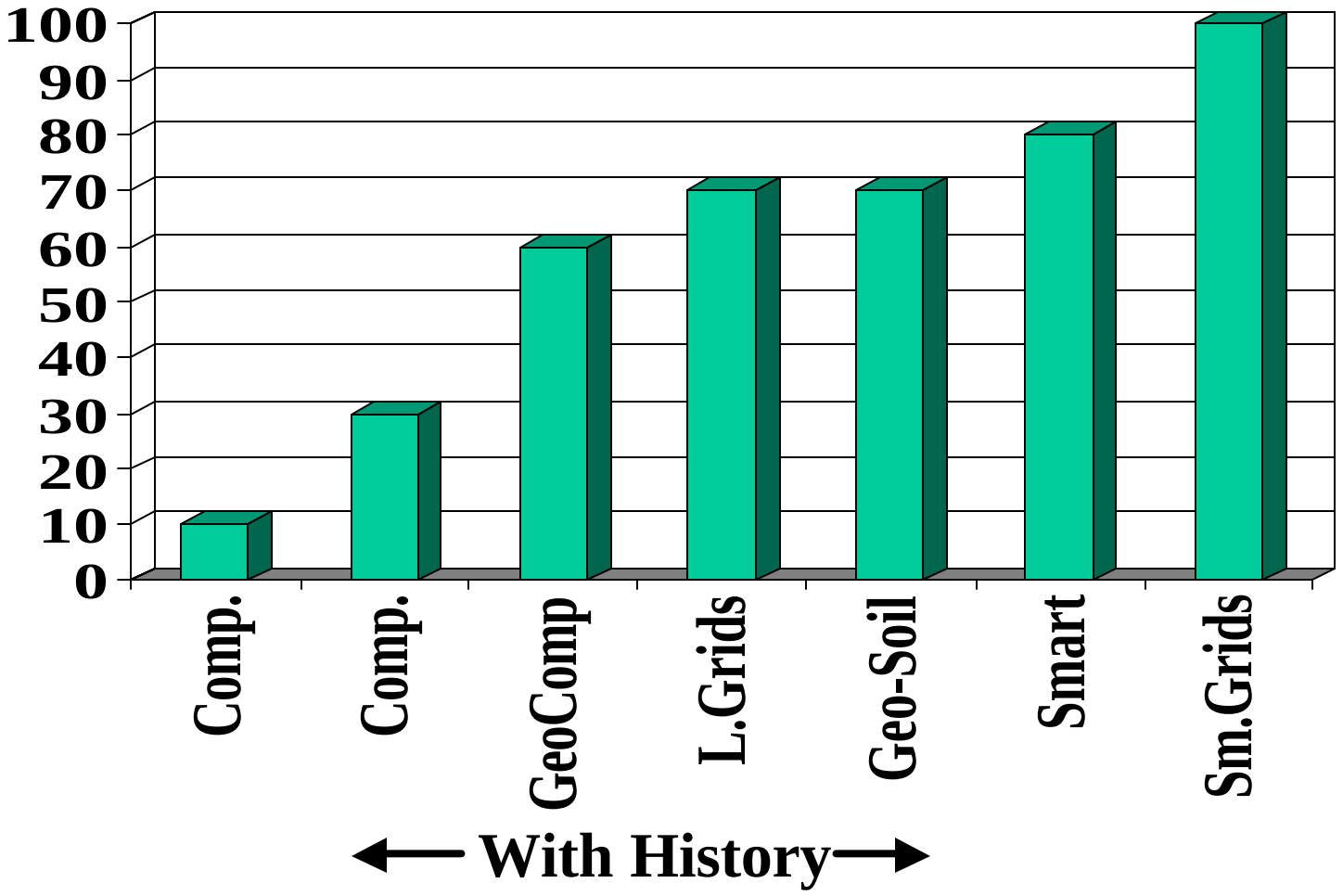
Directed Grid Sampling

Use a “smart” sampling scheme that helps identify the variability and differences in the field.

Management Zones?



Soil Sampling Systems
Decision-making Value



Geo-referenced Soil Sampling- Finding the Value

- Provides a permanent record of field boundaries
- Provides a history of sample locations
- Versatility. Value to all sampling systems.
- Adding value to the data allows the opportunity to reposition this service with growers.