Sampling soils for testing

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Importance of taking good soil samples

- Economics
- Nutrient Management

When to take soil samples

- Anytime is acceptable
- Spring vs fall – differences exist
- **Be consistent**

Where to take soil samples

Avoid sampling areas such as:

- Dead furrows or back furrows
- Lime, sludge or manure piles
- Animal droppings
- Near fences or roads
- Rows where fertilizer has been banded
- Eroded knolls
- Low spots

Goals of a soil sampling program

The most common objectives are to:

1.) Obtain samples that accurately represent the field from which they were taken;

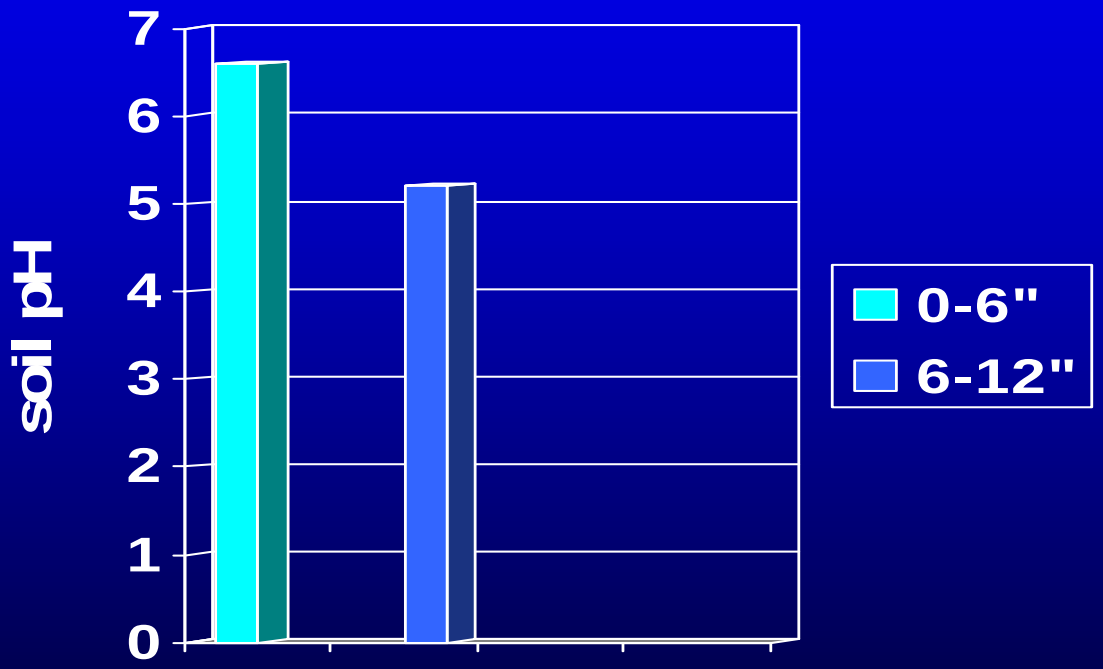
2.) Estimate the amount of nutrients that should be applied to provide the greatest economic return to the grower; and

3.) Provide some estimate of the variation that exists within the field and how the nutrients are distributed spatially.

Guidelines for sampling conventional fields (not site specific)

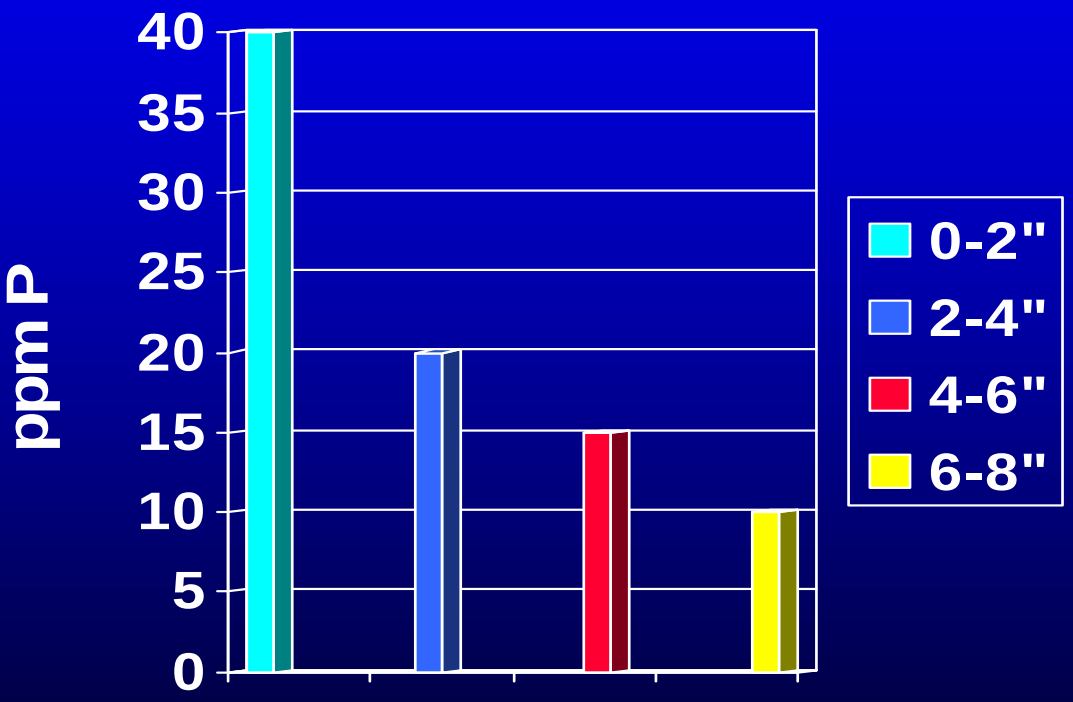
Be consistent in depth of sampling

Impact of sample depth on measured soil pH levels



- 6 inch sample – pH = 6.6
- 8 inch sample – pH = 6.2

Impact of sample depth on measured soil test P levels



- 6 inch sample = 25 ppm P
- 4 inch sample = 30 ppm P
- 8 inch sample = 21 ppm P

Research indicates that where the objective is to get an average P and K soil test value, a composite of 20 cores will be within about 10% of the true mean

about 85% of the time

Most north central states recommend 10-20 cores per sample

WI Soil Test Program

More samples per field – allows for the elimination of “outliers”

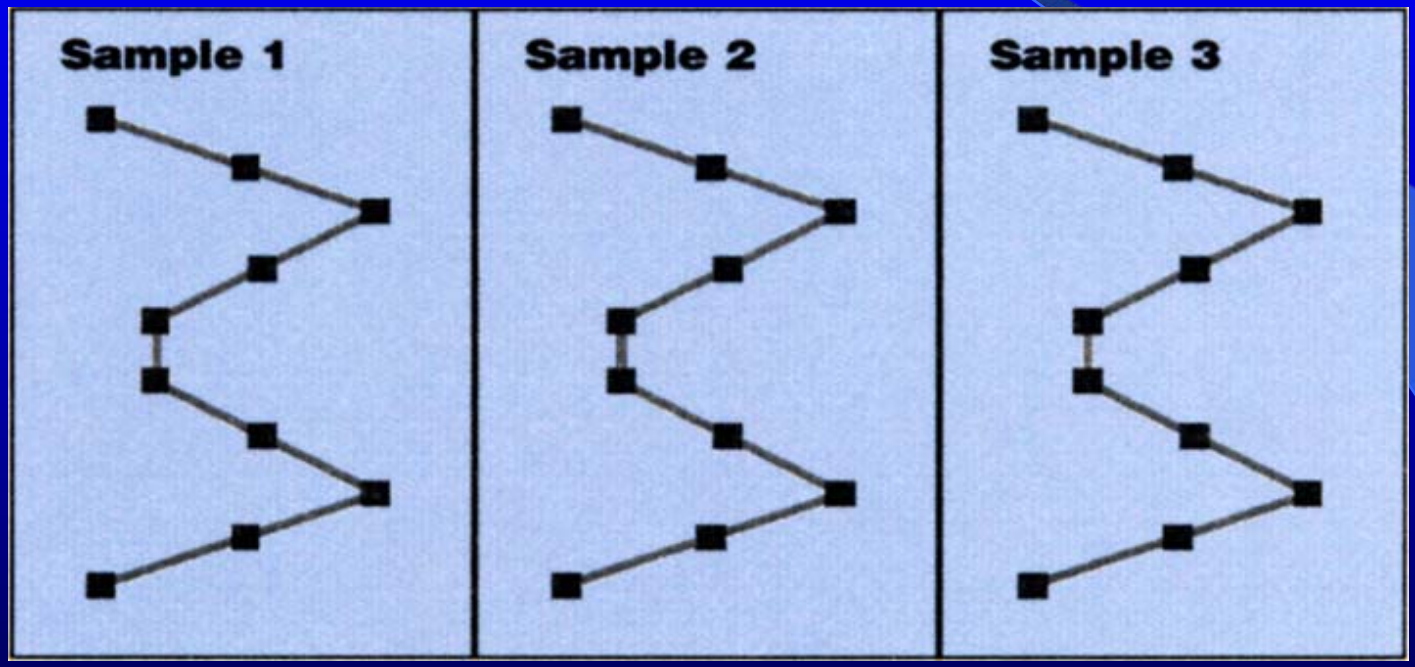
- 1 or 2 samples per field – none can be eliminated
- 3 or 4 samples per field – one can be eliminated
- 5 or more samples per field – up to two can be eliminated

Recommended sample intensity for “uniform” non-site-specific fields

Suggested sample number*	**Field size** (acres)
2	1–10
3	11–25
4	26–40
5	41–60
6	61–80
7	81–100

**10 cores/sample minimum*

Recommended W-shaped sampling pattern for a 20-acre field



*Each sample should be composed of at least 10 cores

Options for sampling site specific fields

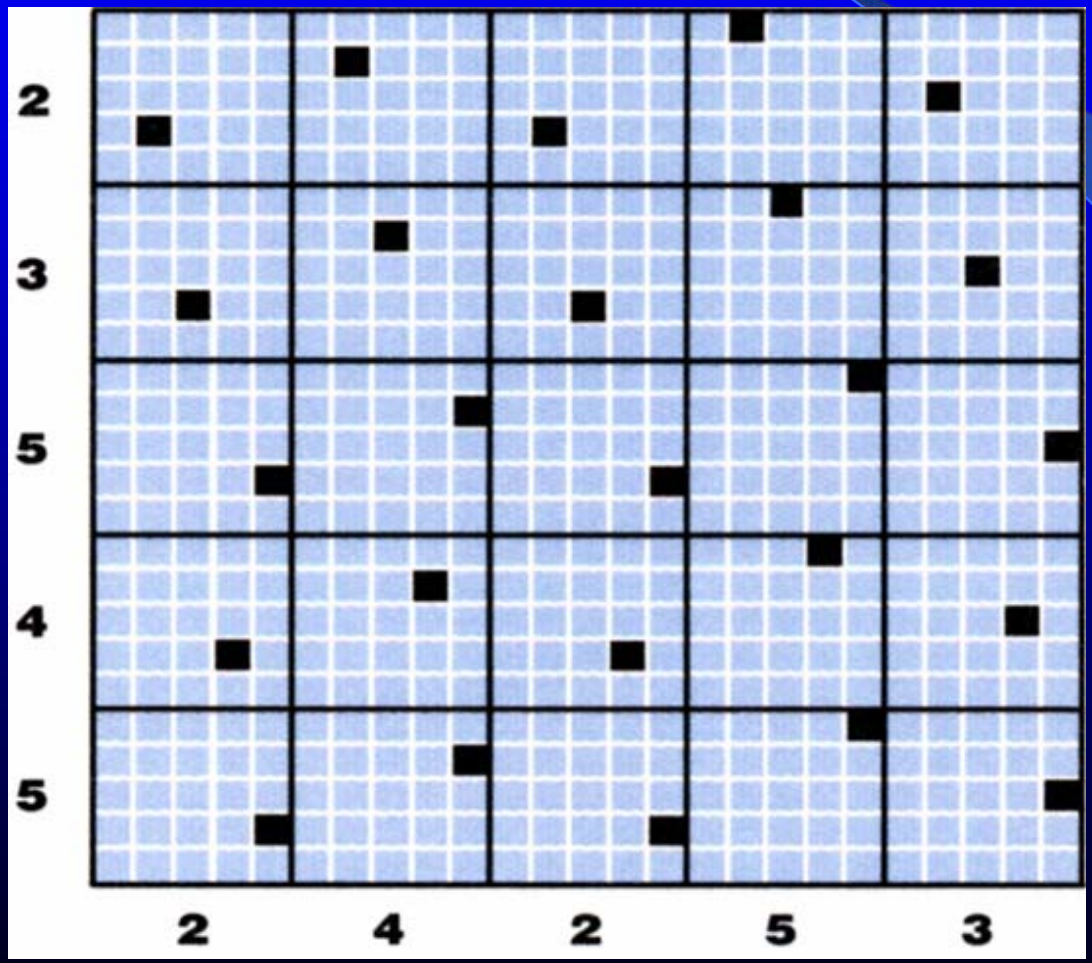
- Grid sampling
- Management zone sampling

Grid sampling

Unaligned systematic grid point method

- 300 ft. grid – if P and K are in the non-responsive categories
- 200 ft. grid max. – if P and K are in the responsive categories

An unaligned grid pattern for sampling site-specific fields



Management zone

Use various layers of information:

- Yield maps
- Aerial photos – bare soil or canopy
- Soil EC measurements
- Others

How often to sample

- Field crops - every 3 to 4 years or once in a rotation
- High value crops – may need to sample more frequently (1-2 years)

Fields requiring special sampling procedures

- Chisel plowing and offset disking - 3/4 of tillage depth
- Till-plant and ridge tillage - Sample ridges to the 6-inch depth and between rows (furrows) to a depth of 4 inches
- No-till – 0-2 in. sample for pH, 0-6 for nutrients