

GUIDELINES FOR SOIL SAMPLING

Margaret Lloyd, PhD
University of California, Small Farms Advisor
Yolo, Solano and Sacramento Counties

Principles of soil sampling

- The area sampled should be as uniform as possible, representative of the field, and using the same sampling protocol across years to make meaningful comparisons.

Uniformity: the sampled area should be as uniform as possible

- Divide non-uniform fields into blocks, based on
 - Cropping history, varieties
 - Observed differences in crop development yield
 - Differences in soil series (SoilWeb Ap)
- Designate blocks and use the same ones for future plant tissue and soil sampling

Representative: the sampled area needs to be representative of the block and intended use of the field

- Avoid sampling:
 - Unusual areas such as corners, edges, wet/low spots, etc.
 - Former borders or fence rows
- Sample in a W-shaped pattern, by walking a zigzag course across the entire block, or walking a diagonal line
- Sample where roots are
 - Orchards: in wetting zone
 - Field crops: in beds, not in furrows
- Do you know of past 'fertilizer banding'?
 - If banding occurred and the band locations are known, avoid bands or sample bane one time for every 20 cores
 - If banding occurred and locations are not known, take pairs of random samples at a right angle for the bands a distance that equals half of the band spacing.

Protocol

- Taking a soil sample
 - Remove residue from the soil surface
 - If a soil auger/probe is not used, dig a hole to the sampling depth, and take an even slice of the sampling profile (ex. 1" slice from top to bottom). The soil removed for sampling should represent an equivalent amount of soil from each depth.



University of California

Agriculture and Natural Resources

Cooperative Extension

- Take a minimum of 20 cores for the block, which are mixed in 1 clean bucket, from which a single subsample is removed for lab testing
- For general fertility testing
 - Sampling depth should be 6" or the tilling depth
 - Best to do in the spring or fall
 - Conduct samples the same time year after year
 - Do not sample after fertilizer has been added
 - Conduct it early enough so that results are available before a scheduled fertilizations
 - Frequency: every 3 years is common, best to do before crops with high demands (ex. Tomatoes have a high K demand), between the same crops in crop rotation
- For Nitrate-N testing
 - Before preplant or sidedress application
 - Depth: 6" to 3', depending on the rooting depth and risk of leaching between sampling and phase of high crop uptake
 - Frequency: every year; preplant, before fertilization or both
- Sample handling
 - Crumble cores and mix well in a clean plastic bucket. Do not use a metal bucket when analyzing micronutrients
 - Follow the instructions from the lab
 - Fill a subsamples, usually 1-2 cups in a labeled plastic bag (ziplock)
 - Nitrate-N: keep samples in fridge
- Record in your methods
 - the block (name?),
 - number of cores,
 - sampling pattern,
 - depth,
 - date,
 - tool used to collect the sample,
 - observations (soil, crop etc.).

REFERENCES

University of California Soil and Water Short Course, UC Davis November 17, 2015