

SOP 40 Nutrient assessment of cool season vegetable production

Updated 5/12/14

Materials needed:

- Soil probe
- 2 buckets
- Screw driver (to clean probe)
- Water sample bottles
- 2 Preweighed centrifuge tubes with 2N KCl
- 2 preweighed soil drying tins
- Nitrate quick test strips
- Centrifuge tubes with 0.01 N CaCl₂
- drying oven (55 to 60 °C)
- cooler (optional)
- lettuce (harvest) knife
- gloves
- bucket(s) or bin(s) to hold and weigh samples in field
- field scale (ADAM CPWplus-15) for fresh matter weight (10 to 15 kg capacity with accuracy of ± 5 g)
- portable lab scale (sartorius M-prove) for dry matter analysis (600 to 1000 g capacity with accuracy of ± 0.1 g)
- bins to weigh fresh and dry weight samples
- pre-weighed paper bags (lunch size bags for small samples (< 500 g) and grocery size for large samples)
- tape measure
- data sheet/clip board/markers

Procedures:

1. Record ranch name, grower, field, crop type, plant and harvest dates, irrigation method
2. Before listing beds, sample soil from depths of 0-1, 1-2 ft and determine mineral N (NO₃ & NH₄), exchangeable K, and Olsen P levels.
3. Sample irrigation water and analyze for NO₃-N, and NH₄-N and Total N (if recycled water)
4. Determine previous crop and time interval between incorporation and planting of current crop.
5. Record all fertilizer applications (rate and fertilizer composition) between bed listing and harvest
6. Sample soil from 0 to 1 foot depth 2 to 3 days before planting and before each potential fertilizer application (sidedress, fertigation, etc). Analyze soil samples for NO₃-N using the quick nitrate strip test, and also extract soil with 2N KCl for laboratory analysis of mineral N.
7. Measure final plant stand 2 to 3 weeks before harvest (3 locations x 50 ft of bed)
8. Measure biomass yield of crop from 3 to 4 locations in field a few days before harvest and determine % N content of dry tissue.
9. Analyze the tissue for total N analysis by combustion at the UC Davis analytical lab. Also determine P and K levels in tissue.
10. Record marketable yield of crop (supplied by grower) and actual harvest date

11. After harvest, but before residue incorporation, sample soil at depths of 0-1 and 1-2 ft depths and analyze for soil mineral N (NO₃-N and NH₄-N)

Notes/Comments:

* Some growers may choose not to disclose the amount of applied N or yield information