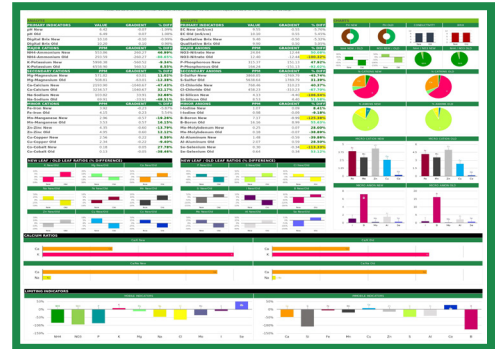


To maintain optimal plant growth, quality, and yield, nutrients must be balanced and abundant. As plants grow, they strive to balance nutrients between new and old leaves. Generally, a balanced report shows slightly lower levels (5%) of nutrients in new leaves. Wide gradients between new and old leaves reflect imbalances such as nutrient excesses, deficiencies, or toxicities. If mobile nutrients (see below) are not available in sufficient quantities, the plant will use old-leaf nutrients for new-leaf growth and the imbalance will appear as a **lower ppm value in the old leaves**. If immobile nutrients (see below) are not available in sufficient quantities, the plant will grow slower and will not achieve full leaf size, fruit size, or optimal fruit quality, and will appear as a **lower ppm value on the new leaves**.



Be sure to ask Apical about these additional agronomy services:

- Target Range Charting** - Crop-specific graphic representation of lab report data compared to target nutrient ranges
- Detailed Recommendations** - Prescribed nutritional and biological plan based on lab reports

Total Sugars

- Total Sugars (TS) is a general indicator of plant health and vigor.
- Higher TS is usually indicative of good Calcium uptake and crops with desirable qualities (health, yield, flavor, shelf life, etc.).
- Generally, as TS increases, insect and disease pressure decrease.

Leaf Extract pH

- Lower pH readings usually indicate low levels of light, low microbial activity, a low concentration of cations, an excess of anions, or too much water.
- High pH often indicates excessive heat, an excess of cations, low total anions, or insufficient water.

Leaf Extract EC

- Electrical Conductivity (EC) should gradually rise through the crop cycle.
- Low EC (< 5 mS/cm) can be caused by excess Phosphorous, Sulfur, compacted soils, or low soil pH.
- High EC (> 18 mS/cm) is often caused by excess Nitrate, Potassium, loose soils, or high soil pH.

Mobile Nutrients (Phloem) — Nitrogen, Phosphorus, Potassium, Magnesium, Chloride, Iodide, Sodium, Molybdenum, Selenium

- Deficiencies of mobile nutrients are indicated by **lower ppm readings in old leaves compared to new leaves** due to nutrient translocation to new growth as compensation.
- These deficiencies can be caused by excessive levels of competing nutrients (antagonism), relative soil deficiencies, or low microbial activity in soil.
- An excess of mobile nutrients is indicated by **higher ppm readings in old leaves compared to new leaves**.
- Excesses are often caused by over-fertilization, loose soil, soil type, or plant bioaccumulation.

Immobile Nutrients (Xylem) — Calcium, Silicon, Sulfur, Iron, Manganese, Zinc, Boron, Cobalt, Copper

- Deficiencies of immobile nutrients are indicated by **lower ppm readings in new leaves compared to old leaves**, as the plant is unable to transport immobile nutrients to new growth.
- Deficiencies are often caused by improper pH, temperature, ORP, soil-compaction, or antagonism.
- Deficiencies often occur during periods of rapid growth, low micro-nutrient soil levels, and low microbial activity.
- An excess of immobile nutrients is indicated by **higher ppm readings in new leaves compared to old leaves**.
- Excesses are often caused by soil type and/or low pH.