Mango nutrition in Florida

By Alexander Salazar

Tropical Acres Farms

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About me

- Owner of Tropical Acres Farms, Inc.
- Grew up in Jupiter, graduated from USF in Tampa.
- Began studying mangos and tropical fruit as a teen.

- Began growing commercially in 2011 in Loxahatchee Groves, FL in central Palm Beach county and Started farming in West Palm Beach in 2012.

- Currently Located in West Palm Beach, FL on historic Sturrock family property.

- We are growing over 320 varieties of mango, along with 40+ avocado, and dozens of sapodilla and 17 varieties of mamey sapote and green sapote. Focus on fruit and nursery tree production. Also sell budwood and provide consulting services to other growers.

Role of mangos in Florida's agriculture

Key Role in Agriculture

Mangos are vital for Florida's agricultural landscape, providing economic value and fruit industry growth.

Fruit Production Optimization

Florida's warm climate and diverse soil types support mango growth, and agricultural practices focus on optimizing fruit production and quality.

Nutritional Challenges

Nutritional challenges specific to the region, such as deficiencies in potassium, manganese, iron, boron, and calcium, require careful management.

Understanding Florida Soil Types

Florida has wide variety of soil types ranging from sandy, to sandy loam, to mucky to calcareous rock.

- Florida's wide variety of soil types influences nutrient availability, necessitating tailored fertilization and care protocols.
- May lack essential nutrients like potassium, manganese, and boron, requiring proper drainage and supplementation
- Highly alkaline, may exacerbate deficiencies in micronutrients, necessitating chelated nutrient products

Florida Sandy & Loamy Soils:

- Quickly drains water, ideal for farming and gardening, .
- Light, easy to work with, supports better plant growth,
- Dries out faster, improved aeration for root access

Addressing Nutritional Deficiencies

Common deficiencies in Florida soil

Potassium- most soils in south Florida are at least somewhat or severely deficient in potassium. Commonly results in yellowing, then necrosis along leaf edges, dieback in severe cases. Low potassium results in reduced yields on mango, less brilliant coloration and reduced fruit quality.

Manganese and Iron

Manganese and Iron Often occur in conjunction but can also occur separately. Symptoms are similar with yellowing of leaf's veins resulting in chlorotic leaves, with defoliation on half the stem, followed by other half, followed by dieback.

Addressing Nutritional Deficiencies

Common deficiencies in Florida soil

Boron

Boron Deficiency Causes distorted, warped looking leaves and "shot hole".

Many south Florida soils have close to zero boron.

Calcium

Calcium Deficiency can be triggered by excessive N, or too much rainfall.

Results in internal breakdown of the fruit of certain varieties. ("jelly seed" and "spongey tissue")

- Less common, but known to occur: Zinc, Magnesium, Copper.

Balancing Nitrogen for Mango Health

The problem with Nitrogen and Mangos

Mangos have some of the lowest optimal levels of N among tropical fruiting trees. They are extremely efficient at finding and synthesizing N, and will readily absorb it from both synthetic and natural sources. Once in the trunk, Nitrogen can take years to process out even without new applications.

Balancing Nitrogen for Mango Health

Negative Impacts of Over-Fertilization

Florida's climate of high annual rainfall totals and elevated humidity are already conducive to vegetative growth, and N beyond the point of necessity will only exacerbate excessive growth and make mango trees more difficult to maintain in the long run.

A program for growing mangos on the commercial level in Florida should focus on initial canopy development, followed By a regimen designed to support sustained fruit production and to enhance fruit quality, while making vegetative growth manageable

Balancing Nitrogen for Mango Health

Optimal nitrogen levels for mango trees

- Very light applications of a slow release, granular NPK fertilizer with minors after planting can assist in getting the trees established and building some canopy. We find that formulations under 10 in N are appropriate for young trees with a low P and higher K number. The K should be higher than the N, optimally in the teens. Important that the analysis at least contain boron, Manganese, iron, and zinc.

- NPK applications can be made once a month between March and November for recently planted trees.

- Once a tree has been determined to be large enough to bear fruit, Nitrogen-containing fertilizer should be discontinued immediately. Fruiting size trees may be loosely defined as any tree with a canopy of 4 to 5 ft in height and width, with a trunk girth in excess of 1.5 inches.

Effective Nutritional Protocols

Nutrient strategies for fruiting trees

- Potassium sulfate fertilizer with 0 nitrogen can help boost Or replenish potassium levels in trees that are producing size.
- Fruit production will exhaust potassium stores in mango trees in south Florida. Analysis will often be 0-0-50 or similar. Granular is preferable, but soluble forms are more commonly available and will work also.
- May be applied in 2 large doses, one in Fall months to influence bloom and fruit set/retention, and the second in March or April to influence fruit development and final quality.
- Applications may also be split up quarterly if preferred.

Effective Nutritional Protocols

Nutrient strategies for fruiting trees

- Optimally minor elements would be combined in the Potassium fertilizer but unfortunately such a fertilizer is not commonly available except by special order.
- Foliar applications of micronutrient sprays can be an effective means of delivering minor elements to the canopy. Applications may be made once a month or every other month. some elements don't translocate well. (e.g. Boron and Calcium)
- Granular micro applications can be beneficial as well with products such as Azomite.
- If deficiencies persist, applications to the root zone using chelated products may be necessary to make a correction.

Mulching Mango Trees

Advantages of mulching for young trees

- Inhibits weed growth, preventing competition for nutrients and water.
- Mulch helps retain soil moisture, ensuring trees have enough water for growth.
- Adds some organic matter and nutrition to the soil..
- As trees get to production size, applications of mulch should be discontinued to discourage excessive growth and reduce soil moisture on fruiting trees. Dry soil is actually desirable for encouraging flowering on fruiting size trees

Compost for Mango Trees

- In addition to mulch, Top dressing the soil with compost is beneficial to young mango trees. Compost (or manure) should *never* be placed in the planting hole however, as this can be highly detrimental to the roots.

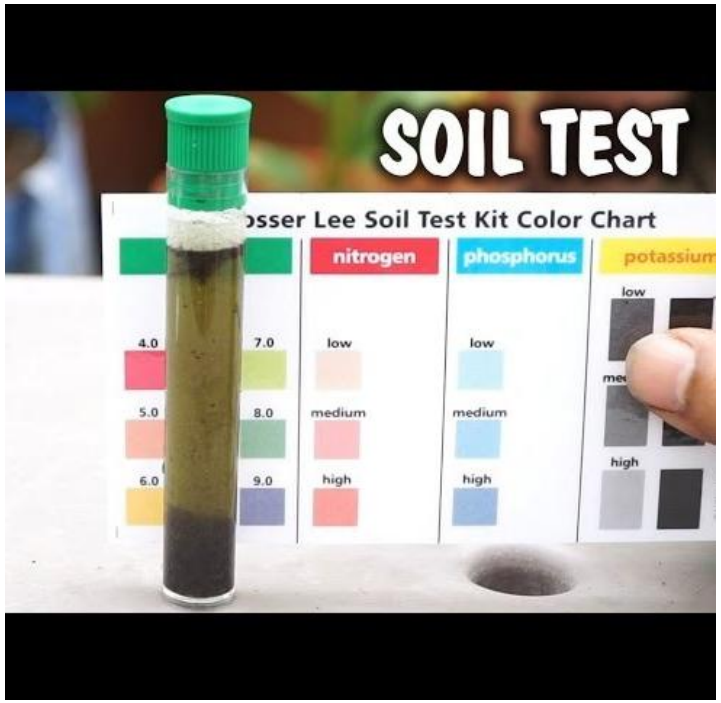
- Compost may be reapplied periodically but is normally discontinued once the trees have reached fruiting size.

Conclusion and Q&A

Final Nutritional Management Recommendations

Soil Nutrient Testing

- Analyze soil to determine necessary nutrient levels



Balanced Fertilization

- Provide essential nutrients to support tree growth.
- Manage nutrient levels, especially nitrogen, to prevent excessive vegetative growth.

Conclusion and Q&A

Any Questions?

Thank you for your time.

Contact Us

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