

# UF/IFAS Nutrient Management Recommendation Series: Strawberry<sup>1</sup>

Shinsuke Agehara, Thomas Obreza, and Rao Mylavarapu<sup>2</sup>

This publication presents to growers the official UF/IFAS nutrient management recommendations for strawberry based on crop nutrient requirements determined by the UF/IFAS vegetable program and soil tests performed by the UF/IFAS Extension Soil Testing Laboratory.

## General Information

- UF/IFAS fertilization and liming recommendations are advisory in nature and emphasize efficient fertilizer use and environmentally sound nutrient management without losses of yield or crop quality.
- Recommendations assume that nutrients will be supplied from commercial fertilizer, and expected crop yields and quality will be typical of economically viable production.
- Recommendations assume straight fertilizers (i.e., single nutrient sources) will be used to apply nutrients. If multi-nutrient fertilizers are used, the fertilizer analysis should align with recommended nutrient rate ratios.
- Consider UF/IFAS recommendations in the context of the overall nutrient management strategy. Evaluate fertilizer rates, timing, placement, and source for efficiency and consider the return on fertilizer investment.
- If organic soil amendments are applied, understand and account for nutrient contributions and other benefits of adding organic matter.

- For best results, follow these recommendations in their entirety. The UF/IFAS recommendation is a holistic combination of fertilizer rates plus nutrient management aspects including irrigation.

## Soil Test Interpretations for Strawberry

Table 1. For crop production on acidic, mineral soils. Extractant: Mehlich 3.

Nutrient	Interpretation (mg/kg)		
	Low	Medium	High
P	≤25	26 – 45	>45
K	≤35	36 – 60	>60
Mg	≤20	21 – 40	>40

## Fertilizer Rates

Table 2. Target pH range and recommended annual N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O fertilizer rates for strawberry. Phosphorus and potassium rates are based on the interpretation of a Mehlich-3 soil test.

Crop	Target pH	lb/acre/cropping season						
		N	P <sub>2</sub> O <sub>5</sub>			K <sub>2</sub> O		
			Low	Med	High	Low	Med	High
Strawberry	6.5	175	120	100	0	150	100	0

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2. Shinsuke Agehara, associate professor, Department of Horticultural Sciences; Thomas Obreza, former professor (retired); and Rao Mylavarapu, professor, Department of Soil, Water, and Ecosystem Sciences; UF/IFAS Extension, Gainesville, FL 32611. Part of the UF/IFAS Nutrient Recommendation Series, edited by Lakesh Sharma, assistant professor, Department of Soil, Water, and Ecosystem Sciences.

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- Indicated fertilizer rates, plus the nutrients already in the soil, will satisfy the crop nutrient requirement for this cropping season. Excessive fertilization has been shown to reduce vegetable quality.
- On soils that have not been farmed within the past two years or where micronutrients are known to be deficient, apply 5 lb Mn, 3 lb Zn, 4 lb Fe, 3 lb Cu, and 1.5 lb B per acre. Because some micronutrients can build up in the soil, soil testing should be used to monitor micronutrient status every two years, avoiding micronutrient toxicity. When deciding on micronutrient applications, consider which micronutrients are added to the crop via fungicides.
- When the soil tests low in magnesium (Mg), applying up to 35 lb Mg/acre might be needed. When liming is recommended, Mg can be supplied in fertilizer or from dolomitic limestone. Calcium (Ca) concentrations are typically sufficient in most soils farmed continuously or where the Mehlich-3 Ca index is >300 ppm. Ca is added during liming activities and from calcium carbonate present in irrigation water drawn from aquifers in Florida. These sources should be considered when determining Ca fertilizer needs.
- If relay crops are planted on the same beds following or before strawberry crop termination, additional fertilizers may be applied using drip irrigation. Squash and cucumber planted as relay crops may not need substantial additional fertilizers.

## Fertilizer Timing

See Table 3.

## Fertilizer Placement

- Depending on the nutrient, inject, band, or incorporate fertilizer into the soil. Rates in Table 3 should be followed for optimum yield and quality.
- Applying fertilizers through drip irrigation (fertigation) can increase the efficiency of leachable nutrients, such as N and K.

## Fertilizer Sources

- Supply most of the N in the nitrate form if soils were treated with multipurpose fumigants or if the soil temperature will stay below 60°F for up to one week following transplanting or germination.
- Growers who consider applying preplant N are strongly encouraged to use slow-release N sources, like sulfur-coated urea or isobutylidene diurea (IBDU), or

controlled-release (CRF) sources, like polymer-coated fertilizers.

## Water Management

- Fertilizer and water management are linked. Maximum fertilizer efficiency is achieved only with close attention to water management.
- Supply only enough irrigation water to satisfy crop requirements. Excess irrigation may result in the leaching of N and K, creating possible plant deficiencies.
- Consult EDIS publications #AE354, “Automatic Irrigation Based on Soil Moisture for Vegetable Crops” (<https://edis.ifas.ufl.edu/publication/AE354>) and #AE260, “Principles and Practices of Irrigation Management for Vegetables” (<https://edis.ifas.ufl.edu/publication/CV107>).

## References

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Table 3. N and K fertilizer timing for drip irrigation.

Nutrient	Nutrient injection rate (lb/acre/day) <sup>1</sup>							Low content	Total (lb/acre) <sup>3</sup>
	Time period in the growing season <sup>2</sup>								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr		
<b>N<sup>4</sup></b>	1.5 – 2.0	1.0 – 2.0	1.0 – 1.5	0.75 – 1.0	0.5 – 1.0	0.5 – 0.75	0.5 – 0.75	1.5 – 2.0	175
<b>K<sub>2</sub>O</b>	0.6 – 0.8	0.6 – 0.8	0.6 – 0.8	0.6 – 0.8	0.6 – 0.8	0.6 – 0.8	0.6 – 0.8	0.6 – 0.8	150

<sup>1</sup> Based on a double-row configuration with beds on 4-ft centers with no preplant N or K.

<sup>2</sup> Planting date of October 1st and end-of-harvesting date of April 30th. Total amounts may increase or decrease depending on the length of the growing season. Strawberries can be planted as early as September 25th and harvested as late as the end of April in west-central Florida, depending on cultivars and market prices. Growers are encouraged to omit N and K fertilization during transplant establishment with sprinkler irrigation, and growers who double-crop may choose to cease fertigation late in the spring when the strawberry plants are removed and resume fertigation when the double-crop is planted.

<sup>3</sup> These are the recommended total seasonal N and K<sub>2</sub>O amounts. Some growers on high-organic matter soils may do well with less than 175 lb N/acre, and other growers on sandy soils, prone to leaching, may require slightly more, but rarely more than 200 lb/acre. Extra seasonal N applications should depend on plant leaf or petiole sap testing, rainfall, or season extension. K<sub>2</sub>O injection rates shown are typical for soils with low to medium levels of Mehlich-3 extractable K; the total of 150 lb K<sub>2</sub>O/acre is for soils testing low in K.

<sup>4</sup> Strawberry cultivars have differing N requirements early in the season. Growers should choose N rates within the ranges shown in the table for the different periods in the season that are appropriate for the particular cultivar and that will target 175 lb N/acre for the season. The lower N amounts in the range are adequate for those cultivars with moderate N demand that would easily become too vegetative with excessive N. Other varieties have a greater N demand, especially early in the season. Rarely is more than 0.5–0.75 lb N/acre/day required in the last 60 days of the season when too much N can reduce fruit firmness and shipping quality under the warmer growing conditions.