

UF/IFAS Nutrient Management Recommendation Series: Carrot¹

Robert Hochmuth, Vivek Sharma, Thomas Obreza, and Rao Mylavarapu²

This publication presents to growers the official UF/IFAS nutrient management recommendations for carrot grown on mineral soils 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 the 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 Carrot

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, P₂O₅, and K₂O fertilizer rates for carrot on mineral soils. Phosphorus and potassium rates are based on the interpretation of a Mehlich-3 soil test.

Crop	Target pH	lb/acre/cropping season						
		N	P ₂ O ₅			K ₂ O		
			Low	Med	High	Low	Med	High
Carrot	6.5	200	120	100	0	120	100	0

1. This document is SL523, one of a series of the Department of Soil, Water, and Ecosystem Sciences, UF/IFAS Extension. Original publication date September 2024. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication. © 2024 UF/IFAS. This publication is licensed under [CC BY-NC-ND 4.0](#)

2. Robert Hochmuth, regional specialized Extension agent IV, UF/IFAS Extension Northeast District; Vivek Sharma, assistant professor, Department of Agricultural and Biological Engineering; 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.

- 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 in vegetable production 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 medium or lower in magnesium (Mg), applying up to 40 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 used continuously for vegetable production 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.

Fertilizer Timing

- If water-soluble N fertilizer is used, it should be applied in approximately eight split applications to reduce leaching losses and lessen the danger of fertilizer burn. Carrot season is typically long, often 140–150 days or more, so multiple split applications are needed.
- Broadcast all P_2O_5 , all micronutrients, if any, and no more than 20%–25% of the N and K_2O in the bed at planting.
- Additional supplemental sidedress applications of 30 lb N/acre and 20 lb K_2O /acre should be applied only if total water application (rainfall plus irrigation) amounts exceed 3 inches within a three-day period or exceed 4 inches within a seven-day period.

Fertilizer Placement

- Right placement is an important factor in N use efficiency. Apply the remaining post-planting N and K_2O during the growing season in sidedress bands or topdress applications to wider beds, depending on the bed configuration.
- Broadcast or sidedress fertilizer depending on the nutrient. Rates in Table 2 should be followed for optimum yield and quality.

Fertilizer Sources

- Supply 25%–50% 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.

Water Management

- Fertilizer and water management are linked. Maximum fertilizer efficiency is achieved only with close attention to water management.
- Supply only optimum irrigation water to satisfy crop requirements. Excessive irrigation may result in the leaching of N and K, creating possible plant deficiencies.

Reference

Morrow, M., V. Sharma, R. Hochmuth, C. Barrett, and M. Burani-Arouca. 2023. “Carrot (*Daucus carota*) Production in the Sandy Soils of North Florida: Nitrogen Fertilization Guidelines: AE588/AE588, 7/2023.” *EDIS* 2023 (4). <https://doi.org/10.32473/edis-ae588-2023>