the Day and Cold at Night, or Vice Versa

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Abstract/Excerpt

PDF

Do root temperatures warm during the day and cool during the night benefit plant growth? Tomato (*Lycopersicon esculentum* Mill.) seedlings were grown at a constant 20C air temperature but with varied root temperature, either 28/12C or 12/28C day/night for 8 days. Eight seedlings were grown in troughs in continuously flowing nutrient solution containing 200 µM \batchmode \documentclass[fleqn,10pt,legalpaper]{article} \usepackage{amssymb} \usepackage{amsfonts} \usepackage{amsmath} \pagestyle{empty} \begin{document} \(^{14}\mathrm{NO}_{3}^{-}\) \end{document} excess amounts of other mineral elements. The flow rate was 0.6 liters/day per trough on the first day, when plants weighed 20 mg, and increased with plant size. After 8 days, \batchmode \documentclass[fleqn,10pt,legalpaper]{article} \usepackage{amssymb} \usepackage{amsfonts} \usepackage{amsmath} \pagestyle{empty} \begin{document} \(^{15}\mathrm{NO}_{3}^{-}\) \end{document} was provided for 12 h when roots were warm, and eight plants were harvested at the end of labeling or 12 h later. During the treatments, weight per plant increased more in leaves, 3.5 to 44 mg, than roots, 4.3 to 19 mg, and least for stem, 12 to 30 mg. The whole-plant relative growth rate did not differ among treatments, 0.17 to 0.19/day, but was less than for plants grown at a constant 20C root temperature, 0.22/day. Uptake of \batchmode \documentclass[fleqn,10pt,legalpaper]{article} \usepackage{amssymb} \usepackage{amsfonts} \usepackage{amsmath} \pagestyle{empty} \begin{document} \(^{14}\mathrm{NO}_{3}^{-}\) \end{document} from the media and exudation from the stem of decapitated plants were greater when roots were warm than when roots were cold, regardless of light. After labeling for 12 h at the warm root temperature, ^{15}N enrichment in plant tissues was greater with roots warm during the day, 0.20, 0.15, and 0.16, than in those with roots warm during the night, 0.16, 0.11, and 0.10, for roots, stems, and leaves, respectively. Enrichment with roots warm during the day was 22%, 33%, and 62% greater, for roots, stems, and leaves, respectively, than with roots warm during the night. However, uptake of \batchmode \documentclass[fleqn,10pt,legalpaper]{article} \usepackage{amssymb} \usepackage{amsfonts} \usepackage{amsmath} \pagestyle{empty} \begin{document} \(\mathrm{NO}_{3}^{-}\) \end{document} at night by roots that were warm during the night was sufficient so that plants grown at out-of-phase root temperature grew as fast as plants grown at in-phase root temperature. Research supported in

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Our Growing Tomatoes Guide covers everything from planting through harvesting! Tomatoes a successfully with tips on transplanting, tomato stakes and cages, the best varieties, and more. stems. Be sure to water the transplant thoroughly to establish good root/soil contact and preve first week or so to prevent excessive drying of the leaves. Should I bring them inside at night? chilly spring weather? I live in northern Indiana and sadly our temperatures are about 10 degre will grow well in well-drained sites that receive full sun for most of the day. The soil pH should b with lush, vigorous foliage but little fruit production. There are tomatoes that ripen in 55 days a their crop. Some produce vines that will sprawl 25 feet if not maintained by pruning, while othe small as marbles to as large as grapefruits. When purchasing tomato seedlings, select stocky ideal transplant is less than six inches tall, as broad as it is high. Useful tomato growing tips fo garden or indoor pot. Planting, Spacing, Caring, harvesting tips. The tomato plant is well know growing methods that make it one of the most favorite among others. Here we are going to lea growing tips, which we can apply to get an outstanding harvest. In this article, we'll attempt to e present tomato cultivation system improves and overcomes the usual non- automatic method. either the day or night, or both, is effective. Night temperatures of 52 to 56 deg F are recomme cold treatment, night temperatures should be raised to 58 to 62 deg F. Cool daytime temperatu weather. On bright sunny or partly cloudy days, temperatures of 65 to 75 deg F accompanied b is used to give healthier, more stalky seedlings that will give increased yields and earlier harve say. The tomato is a facultative short day plant which flowers and fruits earliest if the day is no