

PLANT NUTRITION TODAY

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UGLY PICTURES HELP TO GROW BEAUTIFUL POTATOES



Potatoes are one of the most important crops in the human diet. They are grown worldwide, with China being the largest potato-producing country, followed by India and Russia. There are hundreds of potato varieties, representing a wide range of colors, shapes, sizes, flavors, and cooking properties.

Potatoes have a fairly shallow fibrous root system. Compared to other crop species, they are less able to utilize moisture and nutrients from deeper zones in the soil. Additionally, potatoes have relatively low root length density (about one-fourth that of wheat) and also have relatively few of the root hairs that are critical for the uptake of many plant nutrients.

IPNI recently teamed with Dr. Dharma Pitchay at Tennessee State University and Dr. Terry Tindall of Simplot to develop an e-Book of potato nutrient deficiency symptoms that will assist farmers to recognize and diagnose emerging nutrition problems.

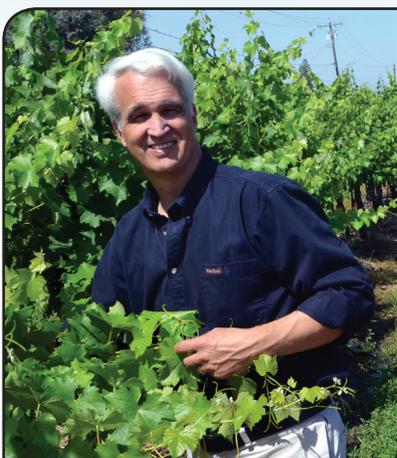
Nutrient deficiencies do not immediately result in visible symptoms. Plant growth and metabolism is usually hindered for some time before visual symptoms occur. This period of so-called "hidden hunger" occurs with low levels of chronic nutrient deficiency

and is far more common than visible deficiency symptoms. By the time obvious visual symptoms first appear, the plant can no longer properly function and there is already a loss of yield and quality.

Nutrient deficiencies too often result in permanent loss of potato yield and quality. Tuber formation and development is often disrupted, with the full impact not observed until harvest, or during storage, or when cooking.

Other stresses cause abnormal symptoms to appear on potato leaves that may not be directly related to nutrient deficiency. In these situations, there may be an adequate nutrient supply in the soil, but unfavorable conditions restrict uptake by the roots. Additionally, plant disease, insect damage, herbicide impacts, and excessive salinity are examples of non-nutrient factors that cause leaf disorders and stunting.

Good nutrition is essential for supporting potato plant health and provides defense against plant disease and stress. Nutrient deficiency results in secondary plant damage that is not readily visible. A variety of nutrient-induced disease resistance mechanisms have been reported for potatoes. For example, balanced NPK applications will induce disease resistance. Similarly, sulfur and magnesium fertilization enhances



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Potato Deficiency Collection



resistance to potato scab bacterial infection. Potassium deficiency increases susceptibility to various diseases and insect pests.

This new guide to potato nutrient deficiencies is being provided as a component of the IPNI mission to develop and promote scientific information about the responsible management of plant nutrition for the benefit of the human family. With good nutrient

planning, we will not see these ugly nutrient-deficient potatoes in farmer fields, but only beautiful and tasty tubers!

Plant Nutrition Diagnostics: POTATO

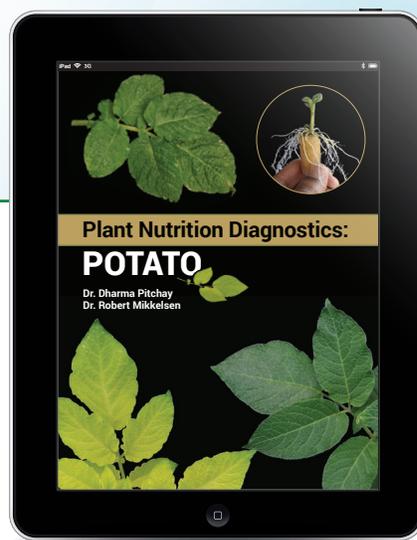
Provides comprehensive image collections plus descriptions of nutrient deficiency symptoms for potatoes. Get your copy of **Plant Nutrition Diagnostics: Potato** at the IPNI Store <https://store.ipni.net>

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