

2013 Crop Nutrient Deficiency Photo Contest Winners

IPNI is pleased to announce the winners of the 2013 Crop Nutrient Deficiency Photo Contest. Photo submissions were strong across all four categories with many excellent examples received from around the globe. In the majority of cases, preference was given to well-photographed entries that provided: (1) a good representation of the impact of the deficiency to the whole plant, (2) adequate soil and/or plant tissue nutrient analyses information, and (3) some details concerning current or historical fertilization at the site.

IPNI extends our thanks to all entrants for taking the time to submit their images to this annual contest. We also congratulate all of this year's winners who, in addition to their cash award, will also receive a complimentary version of our most recent USB flash drive collection of nearly 600 crop nutrient deficiency images. For more details on this collection please see: <http://ipni.info/nutrientimagecollection>.

We encourage all participants to check back regularly with the contest website maintained at www.ipni.net/photocontest for details on submitting your entries for 2014.



Best Overall Image

Grand Prize (US\$200) Phosphorus Deficiency in Guava - N.D. Yogendra, University of Agricultural Sciences, Bangalore, India, captured this image of P deficiency in three-year old guava plants (var. Lalith) grown in a P deficient soil at the Regional Horticulture Research and Extension Center. Available (Bray) P content in the soil was quite low (less than 0.9 mg P/kg). Leaf tissue analysis also recorded a low value of 0.065% P. The purpling of guava leaf tissues was due to the accumulation of reddish-purple anthocyanin pigments.

Nitrogen Category



1st Prize (US\$150) Nitrogen Deficient Coconut - P. Malathi, Tamil Nadu Agricultural University, Coimbatore, India, provided this shot of N deficiency in coconut. Yellowing of older leaves was noticed in two-year old coconut trees with low soil available N content of 188 kg/ha and total leaf N content of 0.8%.

Runner-up (US\$75) Nitrogen Deficient Rice - G.R. Mahajan, Indian Council of Agricultural Research Complex, Goa, India, captured a field image of N deficient rice plants showing yellowing of older leaves followed by younger ones. During the later stages of rice growth, drying of leaf tips was observed. The image was captured from the experiments on organic rice cultivation. Only farmyard manure (FYM) was applied to the rice crop using a N equivalent concept. Lab analysis showed an N content of 0.3% and chlorophyll concentration of 0.64 gram per fresh leaf weight in the youngest fully expanded leaf of this crop. Comparatively, the healthy plant leaves that received both FYM and fertilizer N had 2.7% N content.



Abbreviations and Notes: N = nitrogen; P = phosphorus; K = potassium; Fe = iron; Zn = zinc; ppm = parts per million; DTPA = diethylene triamine pentaacetic acid.

Phosphorus Category



1st Prize (US\$150) Phosphorus Deficient Lettuce - J. Hong, Wuhan Institute of Agricultural Sciences, Hubei, China, submitted this close-up shot of P deficiency in lettuce at rosette stage. Some physical and chemical properties of the soil in which lettuce was grown were: pH 7.8, 0.7% organic matter, 3.3 mg/kg available P, 70 mg/kg available N, and 135 mg/kg available K.

Runner-Up (US\$75) Phosphorus Deficient Maize - K.M. Sellamuthu, Tamil Nadu Agricultural University, Coimbatore, India, shot this close-up showing P deficiency in hybrid maize (var. CP 808). The deficiency symptoms were observed in 30 day-old maize plants with poor root growth. Soil was acidic (pH 5.3) with low available P (Bray-P) content of 9 kg/ha. Total P content in the leaf tissue was 0.1%.



Potassium Category



1st Prize (US\$150) Potassium Deficient Corn - M.K. Rakkar, North Dakota State University, Fargo, USA, submitted this classic example of K deficiency in corn (var. Pioneer 4086) at V8 to V9 growth stage showing chlorosis of outer edges of older leaves. This photo was taken from an experimental plot that received 34 kg K/ha. Soil analysis showed 50 ppm K, while plant analysis recorded the plant tissue K at 0.4%.

Runner-up (US\$75) Potassium Deficient Bt Cotton - J. Prabhakaran, Tamil Nadu Agricultural University, Coimbatore, India, shot this characteristic example of K deficiency in Bunny Bt cotton (var. NCS 145) with marginal scorching and reddening of matured leaves. The leaf K content was 1.2%, which was significantly lower than the required K content of 2 to 3%.



Other Category (Secondary and Micronutrients)



1st Prize (US\$150) Iron Deficiency in Cowpea - K.M. Sellamuthu, Tamil Nadu Agricultural University, Coimbatore, India, provided this example of Fe deficiency in a 30-day-old cowpea crop. Cowpea leaves exhibited interveinal Fe chlorosis in younger leaves. The experimental soil was a black calcareous soil with low DTPA-extractable Fe of 1.7 mg/kg. Leaf Fe content was 90 mg/kg.

Runner-up (US\$75) Iron Deficiency in Guava - K. Venkatesan, Tamil Nadu Agricultural University, Coimbatore, India, submitted this interesting case of Fe deficiency in guava. The deficiency symptoms first appeared in younger leaves as interveinal chlorosis followed by complete chlorosis and then turning into papery white color in severe cases. The soil pH was characteristically high and no micronutrients were applied. The Fe content of a deficient young leaf was 15 ppm, while it was 79 ppm for a healthy leaf.

