2014 Crop Nutrient Deficiency Photo Contest Winners

IPNI is pleased to announce the winners of the 2014 Crop Nutrient Deficiency Photo Contest. As is tradition, 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) details concerning current or historical fertilization at the site.

IPNI greatly appreciates the efforts of all entrants providing photos to our annual contest. As a group you are helping to contribute to our mission to increase awareness on diagnosing crop nutrient deficiencies.

Congratulations to all of this year's winners who, in addition to their cash award, will also be receiving our most recent USB flash drive collection of crop nutrient deficiency images. For more details on this collection please see: http://ipni.info/nutrientimagecollection.

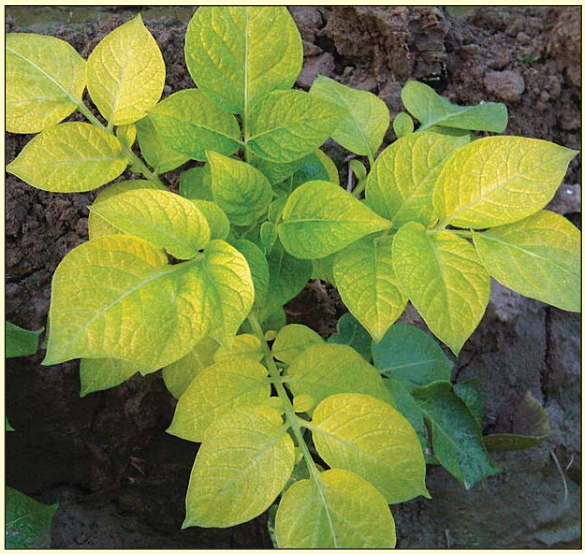
Please check back regularly with www.ipni.net/photocontest for details on submitting your entries for 2015.

Featured Category (Forage Crops)

First Prize (US$300) – Iron Deficiency in Sorghum – K.M. Sellamuthu, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India. This image captured a vivid example of Fe deficiency in a local variety of sorghum from a farmer's field near Karur, Tamil Nadu. The crop was destined for animal feed. A strong interveinal chlorosis is apparent in the plant's young leaves. Soil testing found a calcareous site with low Fe availability (2.8 mg/kg DTPA-extractable). Leaf Fe content of deficient tissue was 56 mg/kg while healthy leaves had 136 mg/kg.

Second Prize (US$200) – Iron Deficiency in Cereal Grass – Boopathi Raja, Tamil Nadu Agricultural University, Tiruchirapalli, Tamil Nadu, India. Taken at Anbil Dharmalingam Agricultural College and Research Insititute in Tiruchirapalli, Tamil Nadu, this Fe deficiency clearly shows the characteristic interveinal chlorosis on young grass leaves. The plant progressed to complete chlorosis with whole leaves become white. Soil at this experimental site had high pH (8.4) and exchangeable sodium percentage (19). Available soil Fe was 1.5 mg/kg (DTPA-extractable). Deficient leaf tissue had a Fe concentration of 15 mg/kg, which was lower than normal leaves (100 mg/kg).

Nitrogen Category



First Prize (US$150) – Nitrogen Deficiency in Potato – Bhushan Prakash Phadnis, IMT Technologies Ltd., Pune, Maharashtra, India. Taken near Machchiwara, Punjab, this example of N deficiency is a result of a farmer's decision to deliberately skip a soil analysis as means to reduce costs. The uniform pale yellow of matured leaves (chlorosis without necrosis) is very indicative of a N deficiency. The farm site had sandy loam soils with significant potential for nutrient loss through leaching. The farmer also only applied 25 kg urea/ha (12 kg N/ha) at the time of sowing. The crop is 35 days old at the time the photo was taken. Farmers usually apply urea + KCl 3 weeks after crop emergence.

Second Prize (US$100) – Nitrogen Deficiency in Maize – Arnab Pari, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, West Bengal, India. This photo was taken at a field experiment located near the village of Madandanga in Gayeshpur, West Bengal. This hybrid maize crop is in tasseling stage. The N omission plot had deficient plants with yellowing of leaves followed by stunting of growth. Total N concentration in deficient leaves was 1.35%.

Abbreviations and notes: N = nitrogen; P = phosphorus; K = potassium; Fe = iron; Zn = zinc; DTPA = diethylene triamine pentaacetic acid; DAP = diammonium phosphate; KCl = potassium chloride.

Phosphorus Category

First Prize (US$150) – Phosphorus Deficiency in Lentil – Onkar Singh, Command Area Development, Chambal, Kota, Rajasthan, India. This photo was taken from a pot experiment conducted by the Adaptive Trial Centre, Agriculture Research Station, in Kota, Rajasthan. Phosphorus deficient lentil plants were observed in the control treatment, which shows the purpling of lower leaves due to anthocyanin pigmentation and normal, green upper leaves. The P concentration in the plant tissue was 0.16%. The experimental soil had a pH of 7.8 and a low available P concentration of 12 kg/ha (Olsen extraction).

Second Prize (US$100) – Phosphorus Deficiency in Guava – U.K. Shanwad, University of Agricultural Sciences, Raichur, Karnataka, India. This photo of a one-year-old guava plant with P deficiency was taken at a farmer field in Raichur District, North Karnataka. The site had a soil with a pH of 7.7 and 8.2 kg available P/ha. Tissue testing of the affected leaf tissue determined a P content of 0.016%.

Potassium Category

First Prize (US$150) – Potassium Deficiency in Mango – S. Srinivasan, Tamil Nadu Agricultural University, Killikulam, Vallanad, Tamil Nadu, India. Taken near Tirunelveli, Tamil Nadu, this photo of a three-year-old mango plant shows a close-up view of K deficiency. The symptom was noticed during the dry season in trees grown on red soil with a pH of 5.6. The deficiency shows irregularly distributed yellow spots in the oldest leaves and necrosis at a later stage along the leaf margins. Under acute deficiency, the upper leaves can also show marginal chlorosis and necrosis. Potassium content in the affected tree was found to be low at 0.24%. The extractable K content of the soil was also low at 23 kg/ha.

Second Prize (US$100) – Potassium Deficiency in Soybean – Claudinei Kappes, Mato Grosso Foundation, Rondonópolis, Mato Grosso, Brazil. This K deficiency was spotted on the experimental station of the Mato Grosso Foundation near Itiquira city. Soybean was in R2 stage (full flowering). Soybean and maize had been cultivated at this site without K application for the last four years. Available soil K (Mehlich-1) was low at 24 mg/kg, while plant analysis recorded leaf tissue K at 1.6%.

Secondary and Micronutrient Category

First Prize (US$150) – Magnesium Deficiency in Coffee – Luis Fernando Cristancho Sierra, Federacion Nacional de Cafeteros de Colombia, Cundinamarca, Colombia. The photo is from a three-year-old plantation near Nilo, Cundinamarca. This Mg deficiency is characterized by interveinal chlorosis of the older leaves and productive branches. The crop was planted under highly acidic soil (pH of 4.1). Magnesium concentration and saturation in this soil were low at 0.12 $cmol_c$/kg and 3.0%, respectively. Leaf tissue analysis reported a low Mg concentration of 0.20%. Besides the low soil pH, traditional fertilization that omits Mg, promotes the depletion of soil Mg.

Second Prize (US$100) – Zinc Deficiency in Maize – Saad Drissi, Hassan II Agronomy and Veterinary Institute. Rabat, Morocco. This photo of a Zn deficient maize plant was taken in northwestern Morocco just prior to crop harvest. The plant shows an example of severe Zn deficiency, marked by white bands between the midrib and the margin of leaves. Shoot Zn content at harvest was insufficient at 7.8 mg/kg. The soil was 89% sand with a very low amount of DTPA extractable Zn (0.13 mg/kg).