Winners of IPNI 2011 Crop Nutrient Deficiency Photo Contest

IPNI has announced the winners of our 2011 Crop Nutrient Deficiency Photo Contest. "Our response this past year has been terrific as the diversity and quality of images submitted seems to improve with each year," noted IPNI President Dr. Terry Roberts. "Our contest has evolved into a world-wide forum for all with a keen eye and access to growing crops to share their unique examples of crop nutrient deficiency and we are very pleased to continue to support this effort."

As has become the custom, our judges were challenged with the task of choosing the winners of each category by evaluating the overall visual quality of each image along with any supporting data provided. IPNI extends our congratulations to all winners and we thank all entrants for submitting images to our annual contest maintained on the web at www.ipni.net/photocontest. We look forward to collecting your entries in 2012!

Best Overall Image

Grand Prize (USD 200): Boron (B) Deficiency in Oil Palm. Jose Alvaro Cristancho Rodriguez, Postdoctoral Researcher in Soil and Water Management, Cenipalma, Colombia, captured this image of a 2-year old oil palm hybrid crop (*Elaeis oleífera x Elaeis guineensis*, Jacq.) in the Altamira estate, Casanare, Colombia. Wrinkled leaflets/frond characterize this B deficiency. The B content in frond 9 was 10 mg/kg and in frond 17th was 12 mg/kg. This acute B deficiency could be a result of the planting material and also because of liming applications and high rates of N applied in 2009 and 2010.
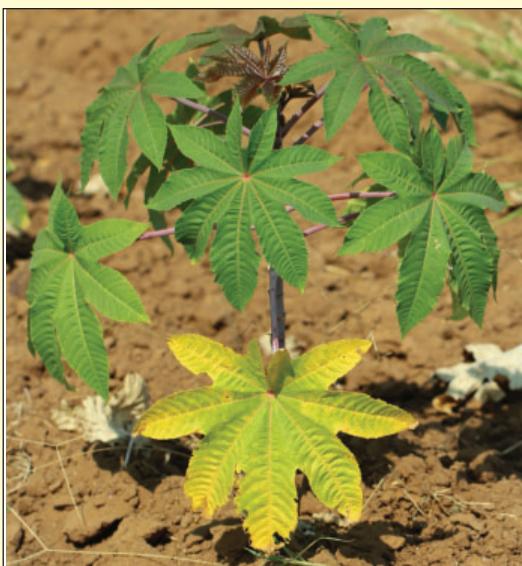
Nitrogen Category

1st Prize (USD 150): N-Deficient Castor. Dr. Prakash Kumar, Agricultural Research Officer, Department of Agriculture, Government of Rajasthan, India, took this close-up of N deficiency in castor (*Ricinus communis* Linn.) in Dodua, District Sirohi, Rajasthan. The soil had 136 kg/ha of N. Thirty (30) days after the crop was sown, it's older leaves turned pale green or yellow while younger leaves remained green.

Runner-up (USD 75): N-Deficient Wheat. Sala Florin, Banat's University of Agricultural Sciences and Veterinary Medicine, Timisoara, Romania, provided an interesting example on N deficiency in wheat—taken at the end of tillering and the beginning of stem elongation stage. This field was located in Voiteg, Romania, and was fertilized with liquid swine manure (2 m applicator width) in the fall season, which was incorporated at a depth of 12 to 15 cm. While moving the applicator to the edge of the plot, a portion of the field did not receive any manure and N deficiency occurred in the spring season.
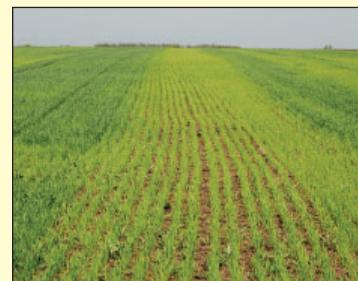
Abbreviations and notes: Mn = manganese; N = nitrogen; P = phosphorus; K = potassium; Fe = iron; B = boron; C = carbon; ppm = parts per million.

Phosphorus Category
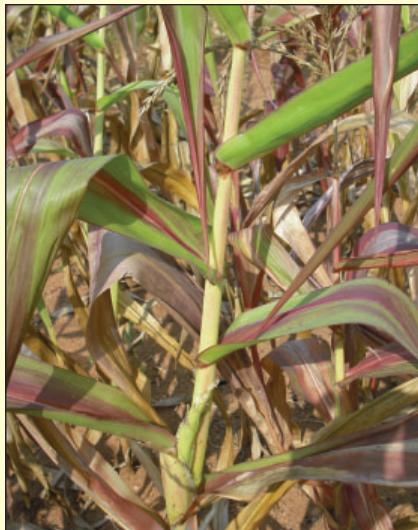
1st Prize (USD 150): P-Deficient Hybrid Maize. Dr. Ch Srinivasa Rao, Principal Scientist (Soil Science), Central Research Institute for Dryland Agriculture, Hyderabad, India, submitted this conspicuous example of P deficiency in a hybrid maize crop at seed-filling stage. Symptoms of P deficiency included purple pigmentation, stunted growth, reduced leaf size, and small cobs, and led to complete failure of maize crop. The soil was coarse-textured (an Alfisol), with 12% clay content, 3.2 g/kg organic C and 4.8 kg/ha (low) Bray-P. Leaf tissue analysis also registered a lower value of 0.12% P.

Runner-Up (USD 75): P-Deficient Soybean. Luiz Antônio Zänao Júnior, Agricultural Resaerch Institute of Paraná, Brazil, shot this close-up showing P deficiency in soybean at flowering (R2) stage. The photo shows P deficiency through a side-by-side comparison of a plot that received 120 kg/ha of P_2O_5 (left) and a P-omission plot (right). In the P omission plot, the soil had low available P (0.77 mg/kg - Mehlich-1), and leaf analysis also indicated a low P content (0.1%). P-deficient soybean plants had small leaflets and showed stunted growth.

Potassium Category

1st Prize (USD 150): K-Deficient Coconut. Dr. Jeena Mathew, Scientist, Soil Science, Central Plantation Crops Research Institute, Regional Station, Kayamkulam, Alleppy, Kerala, India, submitted this classic example of K deficiency in 30-yr old palm (cv. West Cost Tall) grown in a coastal sandy loam soil with pH 4.2 to 4.5. The shot was taken at a farmer's field in Edava Panchayath, Trivandrum district, Kerala. Symptoms of K deficiency included yellowing in older leaves progressing from the margin towards the base. Tips of the leaflet were withered and necrotic, the midrib was green, but the leaves had an orangish tinge with some leaves having a scorched appearance.

Runner-up (USD 75): K-Deficient Sesame. P. Jeyakumar, Associate Professor, Tamil Nadu Agricultural University, Tamil Nadu, India, shot this characteristic example of K deficiency in sesame (Gingelly, cv. TNAU Sesame TMV 3) wherein K-deficient plants exhibited yellowing of leaf tips followed by drying in matured leaves. Under acute deficiency, the younger leaves also showed yellowing and tip drying. The capsules became small and slender. Potassium content in the affected plants was found to be low at 1.17%.
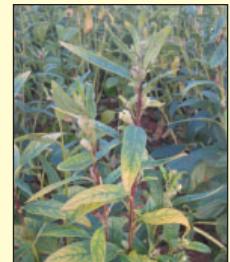
Other Category (Secondary and Micronutrients)

1st Prize (USD 150): Mn-Deficient. Basil Matthew Stewart, E.E. Muir & Sons, Victoria, Australia, provided this example of Mn deficiency in hydroponically grown basil at harvest stage. Symptoms appeared as a yellowing of tissue in-between veins, visible on upper, middle, and lower leaves. Hydroponic feed solution analysis revealed a Mn level of 0.17 ppm (ideally it should be >0.5 ppm) and petiole sap analysis found a Mn level of 0.8 ppm (ideally it should be >2.0 ppm). The supply of Mn was increased by 100% and new growth showed no signs of the deficiency.

Runner-up (USD 75): Fe-Deficient Guava. P. Jeyakumar, Associate Professor, Tamil Nadu Agricultural University, Tamil Nadu, India, submitted this interesting case of Fe deficiency in a 2-year old guava (*Psidium guajava*) grown in the eastern block farm of the university. The interveinal areas of leaves appear yellow while the midrib and veins are green in color. The leaf Fe content was 65 ppm. Rapid tissue analysis also confirmed Fe deficiency.