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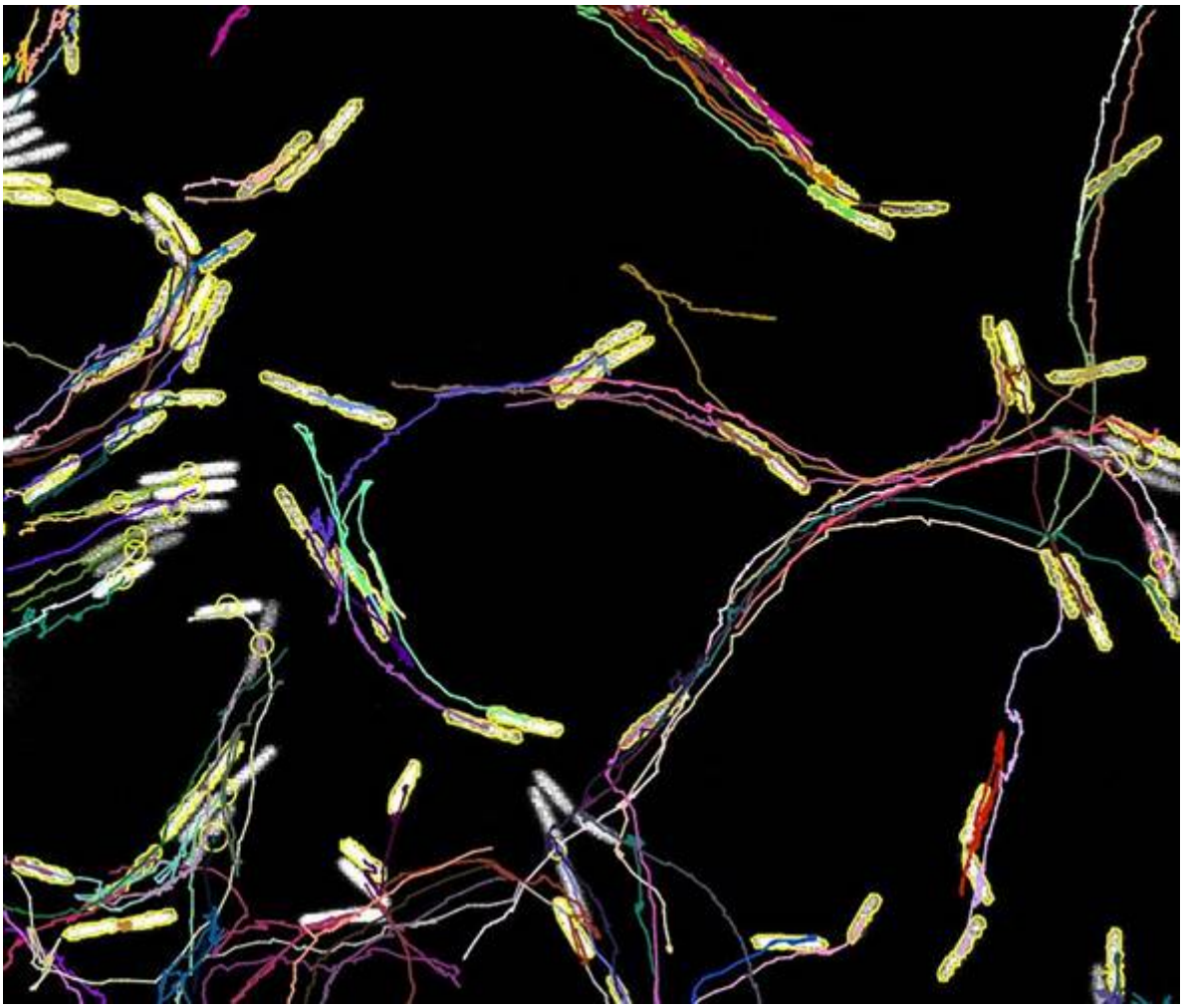

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

EFFECT OF THE INOCULATION OF DROUGHT STRESS TOLERANT PGPBs AND PHOSPHORUS FERTILIZERS ON IMPLANTATION, NODULATION AND YIELD IN PEANUT CROP (Arachis hypogaea L.) IN ARGENTINA AGRICULTURAL AREA

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Peanut production in Argentina is recognized worldwide due to its high grain quality. In the south east of Córdoba province the peanut production is prominently influenced by the main seasonal climate fluctuations of El Niño-Southern Oscillation events. In consequence, years of substantial increase in rainfall or severe drought, affect crop development and yield. Also, low values of phosphorus were detected in this region. Phosphorus fertilizers are normally used to correct P deficiencies. A sustainable alternative to reduce the use of agrochemicals and contribute to stress tolerance is the inoculation of Plant Growth Promoting Bacteria (PGPB). The aim of this study was to analyze the beneficial effect of inoculation with drought stress tolerant PGPBs and their combination with a phosphorus fertilizer on growth, nutritional status and yield of peanut plants in field trials in the south east of Córdoba. Peanut field trials were carried out in three locations of Córdoba agricultural area differing in soil P content: Ucacha (UC) (high P); Monte de los Gauchos (MdG) (moderate P); Rio Seco (RS) (low P). Peanut seeds of cultivar Granoleico were treated as follows: 1. Uninoculated and unfertilized; 2. Inoculated with *Pseudomonas* sp. SAS7; 3. Inoculated with *Pseudomonas* sp. NVAM24; 4. Fertilized with phosphorus (TSP (NPK 0-46-0)); 5. Inoculated with *Pseudomonas* sp. SAS7 and fertilized; 6. Inoculated with *Pseudomonas* sp. NVAM24 and fertilized. All seeds were inoculated with Bradyrhizobium sp. SEMIA 6144. Forty days after sowing (DAS) implantation parameters were determined: root length, lateral roots number and plant dry weight (DW). Eighty DAS nodulation parameters were determined: nodule number and dry weight. At harvest, the main components of yield, shoot P and N content, and growth parameters were determined. The results indicated that in UC and MdG the unfertilized treatments had no differences with those having phosphorus fertilizer, except for the parameter root DW where the treatment 3 had a greater value than treatment 6. However, in RS (low soil P) a significant increase of the phosphorus fertilizer on implantation parameters was observed. In UC, both treatments inoculated with SAS7, 2 and 5 significantly improved the nodulation parameters determined. The peanut yield in UC indicated that treatment 4 had the lowest value, while in RS the lowest value was detected in treatment 6. In MdG the greatest values of peanut yield were observed in parcels of treatments 2 and 6. In conclusion, the phosphorus

fertilizer had a significant impact only on implantation parameters in soils with low phosphorus content (RS), while the treatment with SAS7 alone maintained or increased the values of nodulation parameters and yield compared to fertilized treatment. Application of drought stress tolerant PGPB improves peanut yield in agricultural soils of Cordoba and constitutes a promising strategy to employ in an sustainable agricultural context.

Palabras clave: Peanut - phosphate solubilizing bacteria - drought stress - Phosphorous deficiency - P fertilizer