

blade was applied. In clay soil, the higher water depth provided higher plant height, stem diameter and higher manganese content in the top growth, but there was no difference between variables analyzed in the lowest water depth.

**Keywords:** Manganese behavior, transgenic maize, water retention

**Financial support:**

**(8468 - 366) Effect of the application of olive mill waste on some chemical properties of a soil of the Southwest of Buenos Aires, Argentina.**

Minoldo Gabriela<sup>1</sup>; Laurent Gabriela<sup>1</sup>; Suñer Lilitiana<sup>2</sup>

Universidad Nacional del Sur<sup>1</sup>; Universidad Nacional del Sur, Comisión de Investigaciones Científicas<sup>2</sup>

The southwestern area of Buenos Aires Province on Argentina has suitable ecological conditions for growing olive trees. Is for that, several oil mills in the area next to Coronel Dorrego city have been established. Since oil is extracted by two-phase system, an olive mill waste composed of pomace plus waste water is obtained (Spanish "alperujo"). For the year 2017, the olive production was about 20000 t, which represents around 15000 t of wastes. Alperujo could be used as soil amendment due to its fertilizing properties. The objective of this experiment was to study the effect of alperujo on some chemical soil properties of a 50 years old olive orchard. The soil in which the experiment was performed classify as *Petrocalcic Paleudolls*. Two laboratory experiments were conducted: one, was carried out on soil columns, where the horizons were placed following sequence and thickness of horizons at profile (Ap-A2-Bt-BC) within acrylic tubes. Alperujo was mixed with soil of the Ap horizon at a rate of 0, 20, 40 and 80 t ha<sup>-1</sup>. Four irrigations were performed totalizing 669 mm. Cation exchange capacity (CEC), exchangeable cations; Ca<sup>2+</sup>+ Mg<sup>2+</sup>, Na<sup>+</sup> y K<sup>+</sup> and exchangeable sodium percent (ESP) were determined before and after application of alperujo. The other experiment consisted of soil + alperujo (0-5-10-20-40 t ha<sup>-1</sup>) incubations for 75 days. Soil organic matter (SOM), total nitrogen (Nt), extractable and inorganic phosphorous (Pe and Pi, respectively) and pH were determined. Soil CEC of the Ap horizon increased from 17,10 to 24,35 meq 100g<sup>-1</sup> as alperujo doses increased. At the same time, the Ca<sup>2+</sup>+ Mg<sup>2+</sup> increased from 13,0 to 18,10 meq 100g<sup>-1</sup> and K<sup>+</sup> from 2,66 to 4.91 meq 100g<sup>-1</sup>. Exchangeable sodium increased significantly for doses 40 and 80 t alperujo ha<sup>-1</sup>, however the ESP did not step up to risky values (highest value 5.39% at 40 t ha<sup>-1</sup>). In leachates the electrical conductivity (EC) diminished from 1.90 dS m<sup>-1</sup> (L1) to 0.42 dS m<sup>-1</sup> (L4). The pH values were variable. The cations showed the following tendency to leaching: Ca<sup>2+</sup>+Mg<sup>2+</sup> > Na<sup>+</sup> > K<sup>+</sup>. The Ca<sup>2+</sup>+Mg<sup>2+</sup> fell from 17.63 me L<sup>-1</sup> (L1) to 5.22 me L<sup>-1</sup> (L4). Na<sup>+</sup> decreased after L4 (1.66 – 1.01 me L<sup>-1</sup>) and K<sup>+</sup> stayed between 0.42-0.73 me L<sup>-1</sup>. After the mineralization process, the greater differences for SOM, Nt and Pi were observed for the dose of 40 t ha<sup>-1</sup>. This increase in Pi is explained by a pronounced increase in Pe at the beginning of the incubation together with a drop in pH. The latter stabilized after 75 days.

**Keywords:** alperujo, soil, chemical properties

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**(8369 - 3018) Effect of the K-N application levels on two oil palm genotypes in nursery stage**

Maria do Rosário Lobato Rodrigues<sup>1</sup>; Emmanuelle Lamade<sup>2</sup>; Jean Ollivier<sup>2</sup>; Bernard Dubos<sup>2</sup>; Ricardo Lopes<sup>3</sup>; Wenceslau Gerales

Teixeira<sup>3</sup>

Brazilian Agricultural Research Corporation – Embrapa Western Amazon<sup>1</sup>; CIRAD<sup>2</sup>; Brazilian Agricultural Research Corporation<sup>3</sup>

Recently some researchers focus on the identification of planting material presenting a better efficiency towards nutrient applications and consumptions. Our work is focusing on the internal functioning of the mineral reserves of the plant, especially the absorption processes and the remobilization of some nutrients essential to oil palm as potassium, in addition with nitrogen. An experimental has been conducted in controlled conditions, with the objectives to study the effect of K-N gradient on the mineral allocation at the plant scale and to compare two progenies (G1 and G2), presenting contrasting leaf potassium content (G1 will be characterized as K- and G2 as K++). Pre-germinated seeds, after 3 months of pre-nursery, were transferred to plastic pots (6 kg) with a growing medium composed of 50 % sand and 50 % vegetal commercial compost. The plants were submitted to four potassium levels (K0, K1, K2, K3) and two levels of nitrogen (N1, N2) in a block design with three repetition. A first set of measurements started with three months, a second eight months on 36 plants by progeny (G1 and G2) belonging to N1K0, N1K1, N1K2, N1K3, N2K0 and N2K3 treatments. The results concerning foliar mineral analyses show out high levels for nitrogen (N), potassium (K) and magnesium (Mg) for G2 genotype. The levels were N%=2.26 (±0.17), K%=1.64 (±0.21), Mg%=0.476 (±0.04) for G2. For Genotype G1 the foliar levels were N%=1.89 (±0.20), K%=1.478 (±0.24), Mg%=0.394 (±0.04). The evaluations of chlorophyll content, using SPAD 502 (Minolta, Japan) on the three youngest leaves of each plant, showed an increase of the chlorophyll content from leaf rank one to leaf rank three. The chlorophyll content was higher in K- of leaves than in K+ ones for the two measurement dates. The results concerning the biomass showed differences between genotypes in all evaluations. Leaf and roots biomass were higher for G1 in both dates of measurements. G1 and G2 showed contrasted "above ground/roots" ratios that increased during plant growth (first sampling of G1=1.65 (±0.21) and G2=1.80 (±0.19), second sampling G1=2.18 (±0.40) and G2=2.63 (±0.78). Significant differences were observed for starch between G1 and G2 with higher concentration for G1 compared to G2. The first investigations undertaken just after germination stage for the two genotypes do confirm their potassium characterization K- for G1 and K++ for G2. This difference could be a genetic characteristic plant?.

**Keywords:** *Elaeis guineensis*, starch, nutritional efficiency

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**(6666 - 257) Effectiveness of a micronutrient delivery system fertilizer in jatropha plants is related to enhanced photosynthesis, gas exchange and biomass allocation**

Alexandre Bosco de Oliveira<sup>1</sup>; Wagner A. Vendrame<sup>2</sup>

Federal University of Ceará<sup>1</sup>; University of Florida<sup>2</sup>

This study aimed to compare the growth and physiological changes in *Jatropha curcas* L. (jatropha or physic nut) young plants fertilized or not with a commercial product based on a micronutrient delivery system (MDS), under different doses of NPK. Measurements of growth, chlorophyll content and leaf gas exchange were performed in the greenhouse, where plants were arranged in a split-split plot design. Plants were grown for 120 days in 3.9 L pots containing local soil, with or without MDS (main plot), combined with NPK doses (0; 1.8; 4.7 and 7.4 g L<sup>-1</sup>) in subplots. Dose-response curves showed that most variables were positively responsive to NPK doses in plants growing without MDS, whereas slight responses or even opposite behavior was observed in MDS-fertilized plants. MDS application under low NPK doses resulted in higher biomass allocation in leaves and roots, increases in number of leaves and chlorophyll content, plant height, stem diameter, shoot and root dry weight, stomatal