



Effect of Spraying Humic acid and Iron on Growth and Yield Characteristics of Potato, *Solanum tuberosum* L.

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Abstract: An experiment was carried out at University of Anbar to study the effect of spraying humic acid and iron compound on growth and productivity of potato on Arizona cultivar class Elite spring 2016. The experiment involved spray of humic acid and iron alone and in combination with the recommended dosages of fertilizers to soil (N 240, p 120, k 400 kg ha⁻¹). The leaf feeding coefficients generally exceeded the fertilizer recommendation and the control traits. The recommendation of ground fertilizer + humic acid spraying + spraying iron compound was resulted in significant increase in plant height, dry weight of the plant, the average weight of the tuber and the yield per plant. The same treatment was also superior to the marketable plant yield, marketable yield, total yield, dry matter percentage and the growth of tubers.

Keywords: Potato, Humic acid, Fe, Leaf spraying, Yield

Solanum tuberosum L. is one of the most important vegetable crops in the Arab comes as second crop after cereals (Gaba et al 2015). Agricultural service operations have a major role to play in increasing production, including the nutritional status of the Some micronutrients sediments in calcareous soils, can absorbed readily and most suitable ways of adding these nutrients to plants by spraying during the vegetative stage to compensate for the shortage in the form of solutions or chelating compounds (Rondanini et al 2017). Therefore, the use of spraying technology has become very important for the addition of nutrients with irrigation water, to increase production and improve its quality (Gellings and Parmenter 2016). Humic acids are a group of compounds with large molecular weights similar in composition and properties that contain phosphorus, iron and sulfur. Iron is another important among the micro elements for and play significant role in the formation of chlorophyll synthesis enzymes as well as it's in the electron transport chain of this process (Kasote et al 2015). Accordingly, such an experiment designed to study the effect of spraying humic acid and the iron in the development and growth and yield of potatoes *Solanum tuberosum* L.

MATERIAL AND METHODS

The experiment carried out at University of Anbar during spring season 2016. In order to study the effect of nutrients spraying LIQ-HUMUS-18 and Seaweed Fe in the development of some of the qualities and winning potato Arizona Class elite.

LIQ-Humus-18: Humic acid 18%, organic materials 16%, organic nitrogen 1%, P₂O₅ = 1% and K₂O 13%.

Seaweed Fe: Seaweed extract 200 gml⁻¹ and Vegetable

amino acid: 100 gml⁻¹ and Fe (EDTA): 60 gml⁻¹.

The land was plowed and blessed, and divided into meadows 3M and display 0.75 M is then distributed into three replicates, each repeater contains 10 line included on 5 Experimental units with two scales for each experimental unit of space 2.25 m². The experiment was in randomized block design with three replication. The plot area was 2.25 m². The tubers were planted in the field in 1 January 2016 with distance 0.25 M between plants and 0.75 M between rows. Chemical and physical properties of the soil of the experiment field (Table 1). The recommended dosage of NPK was added in all treatments. (N 240, p 120, k 400 kg ha⁻¹) the 1st batch with agriculture was in 1 January is (K1/2, P1/2, N1/3) and 2nd batch was in 5 February is (K1/2, P1/2, N1/3) And 3rd batch was in 1 March is (N1/3). Nutrients were sprayed 50, 60 and 80 days after sowing. The five treatments were

T0- (Control),

T1: Recommendation fertilizer (RDF),

T2: RDF + spray LIQ Humus 18 1MI⁻¹,

T3: RDF + spray seaweed Fe 1MI⁻¹,

T4: RDF + spray LIQ Humus 18 + spray seaweed Fe.

Plant height (cm): The height of the plant was measured in three stages (1st stage: 6 March, 2nd stage: 11 April, 3rd stage: 30 April) from the soil contact point to the top of the plant for ten plants selected randomly from each experimental unit.

Plant leaf area (dm²): The leaf area was calculated in two stages of plant life unit on five plants selected randomly and three leaves were taken from each plant. Its' have been taken from three leaves 45 Disc known area and dried with leaves at a 65°C and then weighed after dried and calculate the area of each leaves according to the equation below and then