Influence Of Chelated Calcium And Mulches On Some Chemical And Qualitative Characteristics Of The Potato Plant

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Abstract

A field experiment was conducted at the Agricultural Research Station affiliated to the College of Agriculture -University of Basrha to study the effect of four types of mulches (rice straw (organic), transparent polyethylene, black polyethylene and without mulches) and four concentrations of chelated calcium (0, 1.5, 3 and 4.5 ml L-1) on some chemical and qualitative characteristics of the potato plant cv. "Purin". The experiment was carried out in a single-split plot design with a randomized complete block design (R.C.B.D) with three replicates. The least significant difference (L.S.D) test was used to compare the means at 0.05 probability level. The results can be summarized as follows: There are no significant effect of mulches factor on all the traits under experiment except total carbohydrates, as the black polyethylene mulching treatment showed a significant increase in this trait. As for chelated calcium, the spraying treatment at a concentration of 4.5 ml L-1 showed the highest significant effect on each of carbohydrates, percentage of nitrogen, phosphorus, potassium, dry matter, starch, specific gravity and vitamin C.

Introduction

Potato plant (Solanum tuberosum L.) is one of the most important vegetable crops it is native to Peru and Chile in the Andes Mountains of South America as well as the alpine zone with an elevation of 3000-4000 m in Mexico [1]. It ranks fourth among the most cultivated crops after rice, wheat and maize [2]. It consists of high starch (16.1 100 g-1), vitamin C (17.1 mg 100 g-1), protein (2.1 100 g-1), potassium (443 mg 100 g-1) and essential amino acids and it is considered as the nutrient rich food [3]. It also contains 18 amino acids out of 20 essential amino acids necessary for the human body, especially lysine, which gives it a high nutritional value [4.[

Interest in growing potatoes locally has clearly increased in the last two decades, as the cultivated area in Iraq for the year 2021 reached about 19175 hectare, with a productivity rate of 24.316 tons h-1, and a total production of 466,100 tons [5].While total global production reached 375 million tons for the year 2022, China leads, reaching 95.50 million tons, followed by India with 56.00 million tons[6.[

Mulch is known as one of the agricultural practices that includes placing organic or artificial materials on the soil to provide a more suitable environment for plant growth [7]. This method began to be used since the end of the seventeenth century AD as one of the important agricultural processes to improve plant growth and increase production by influencing the Physio-biological activities of the soil as well as influencing the local environment (Micro Climate) for plant growth [8]. In addition to controlling soil moisture, it reduces water evaporation from the soil surface by 10-45% which makes it easier for the plant to secure its need for water and

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