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### Response of Four Potato Cultivars to Soil Application with Organic and Amino Acid Compounds

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A field experiment was implemented at Vegetable field, Department of Plant Production, Agricultural Technical College, Mosul, Iraq during spring season of 2018 to study the response of four potato cultivars (Actrice, Arizona, Riviera and Universa ) to four organic and amino acid compounds (Azomine 4 ml/l, Tecamin Max 3 ml/l, Delfan plus 3 ml/l and Humibest 4 g/l) as soil application. These compounds were applied near the plant roots three times, the first after complete tubers emergency 45 days after planting, the second after 60 days and the third after 75 days of planting. The four potato cultivars were sown on 1st February in loamy soil, sprouted seed tubers were planted at 25 cm apart within the row. The treatments were arranged incomplete randomized block design with three replicates. The area of each plot was 6.75m<sup>2</sup> (3linex3m long x 0.75 m wide). All experimental areas received the recommended dose of organic and mineral fertilizers. Samples of three plants from each treatment and each plot were randomly taken after 90days of planting and growth characters recorded were plant length, shoot number, leaf area, fresh and dry weights of shoots/plant. The total chlorophyll content in fully expanded leaves after 80 days of planting was measured as SPAD units using Minolta Chlorophyll Meter (model SPAD 502). The mineral contents were estimated using the wet ash procedure for the dry powdered. The results were statistically analyzed according to the Statistical Analysis System (SAS) (SAS, 1998) and compared with the means by Duncan multiple range P=0.05 level (Al-Rawy and Kalaf, 2000). The results indicated that Riviera cultivar recorded the highest values of the investigated growth parameters viz., 58.60 cm plant height, 4.91 shoot number, 198.04 g. fresh weight, 42.36 g. dry weights, and 2060.75 cm<sup>2</sup> leaf area/plant

and 42.04 total chlorophyll in leaves. On the contrary, the lowest values of vegetative growth parameters were found by Actrice cultivar. The highest values of vegetative growth parameters (except fresh weight of plant) were obtained with the application of Azomin to the soil. The effect of cultivars and organic and amino acid compounds on chemical composition of potato tubers reported that Arizona cultivar recorded the highest values of tuber hardness, dry matter %, starch % and P%, while the highest values of N % and K % were recorded in Riviera cultivar. On the other hand, application of Azomin to the soil increased significantly all the parameters of chemical composition of potato tubers compared with other treatments. Table 7 reveals the effect of interaction treatments between cultivars and organic and amino acid compounds on chemical composition of potato tubers. The highest values of tuber hardness (11.54kg/cm<sup>3</sup>), dry matter % (24.82), starch %(18.11), N %(2.31) and P % (4.22) were recorded from the interaction treatments between Arizona cultivar and Azomin, while the highest values of K% (2.67) were recorded from the interaction treatments between Riviera cultivar and Azomin. It can be concluded from this study that Riviera cultivar is the best compared with the other three cultivars because it recorded the highest values of most growth and yield parameters. On the contrary, applying Azomin as amino acid compounds to the soil increased significantly plant height, shoot number, dry weight of whole plant, leaf area/plant, total chlorophyll in leaves, plant tuber number, tuber average weight, tuber volume, plant tuber yield and total and marketable tuber yield.

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