

## Response of date palm *Phoenix dactylifera* L. Hillawi cultivar to some amino acids

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This study was conducted at one of the orchards in the Abi Al-Khasib region of Basrah Governorate during the 2022 growing season to determine the extent of the response of the date palm Hillawi cultivar to spray with amino acids (Glycine, Arginine, and Tryptophan) concentrations of 1000, 1500, and 2000 mg. L<sup>-1</sup> per acid, to determine the effect of these acids on some vegetative and fruitful growth characteristics. The results of the study showed significant superiority of amino acid glycine at a concentration of 2000 mg. L<sup>-1</sup> in leaf length, leaf width, number of new leaves, chlorophyll, carbohydrates, length and weight of fruit, weight of fleshy part of the fruit weight bunch and reducing sugars. (4.627m, 5.477cm, 17.67, 12.240 mg.100g<sup>-1</sup>, 49.37 mg.g<sup>-1</sup>, 3.870cm, 6.057g, 4.817g, 6.823kg, 50.76%) respectively compared with control. Arginine concentration 2000 mg. L<sup>-1</sup> significantly in total protein of leaves, and total sugar and soluble solids of fruits. (4.933 mg.g<sup>-1</sup>, 60.90%, 70.42%) respectively. A tryptophan concentration of 2000 mg. L<sup>-1</sup> was significant to fruit size (6.590 cm<sup>3</sup>). A tryptophan concentration of 1000 mg l was significant to sucrose on fruits (11.260%). Amino acid supplements have a significant impact on plant development and production. Combining different amino acids yields better quality and quantity of fruit.

**Keywords:** Amino acids, vegetative characteristics, fruit characteristics, chemical characteristics, bunch weight.

### INTRODUCTION

The date palm, *Phoenix dactylifera* L., is one of the most important monocotyledonous trees in the family Arecaceae. It is one of the most important plant orders spread in the subtropical regions between latitudes 10-30 degrees north and extends to 20 degrees south of the equator (Al-Jubouri, 2002). Al-Halawi cultivar trees grow mainly in Basra and (Abu Al-Khasib) districts. The fruit is yellow in the khalal stage, light amber or amber with a tan in the wet stage, while the dates are golden brown. Al-Halawi dates have a good flavor, ripen early, and are considered one of the most popular and expensive commercial varieties (Al-Nuaimi and Jaafar, 1980).

Amino acids are the repetitive units linked together to form complex compounds with high molecular weights that are proteins and simpler compounds made of fewer amino acids that are peptides. The number 300 amino acids, but the primary building block for building all proteins, regardless of their numbers, is a group of 20 amino acids. They are called protein amino acids because they are included in protein synthesis only. It is one of the most important sources of

organic nitrogen for its role in controlling the growth and detection of cells. Proteins are among the most widespread and diverse major biological molecules in the cells and tissues of living organisms, and they constitute about 50% of the dry weight of the cell, and this diversity and proliferation reflect the main role of it in all aspects of life (Cooper and Hausman, 2007). Almost every cellular activity depends on one or more specific proteins, and proteins are divided according to their function into several types: enzymes, transport proteins, storage, structural, and protective proteins (Lesk, 2010). The main units of proteins (amino acids) are compounds containing two groups, an amine, and a carboxyl, but they differ in the R side chain, which is linked to the alpha carbon atom that determines the identity of each amino acid. Amino acids (in addition to their role in the synthesis of proteins) play important roles in the plant, as they are considered as starting compounds for the synthesis of plant hormones such as tryptophan, which is the starting compound for the synthesis of auxin and methionine, the starting compound for the synthesis of ethylene, and they are also considered among the internal factors that affect the opening and closing of stomata and maintain intracellular water balance.

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