



PROPAGATION OF DATE PALM (BARHI) USING IMMATURE FEMALE INFLORESCENCES *IN VITRO*

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Abstract: This study was carried out in the tissue culture laboratory at Date Palm Research Center, University of Basrah 2/1/ 2020 - 31/12/2022. Several combinations of plant growth regulators were used in the cultivation of immature flower buds. The nutrient medium consisted of MS salts, sucrose and activated charcoal, as well as some other chemical components. The results of the study showed the following: The best callus induction from floral parts was recorded in the mixture of 1 mg L⁻¹ of Picloram (Pic) and 1 mg L⁻¹ Thidiazuron (TDZ) and the combination of (0.1 mg L⁻¹ α -Naphthaleneacetic acid (NAA) and 0.5 mg L⁻¹ TDZ) recorded the best induction, whereas the combination of (0.1 mg L⁻¹ NAA and 0.05 mg L⁻¹ Benzyle Adenin (BA)) recorded the best germination and multiplication of vegetative embryos. The plants were transferred to a culture medium devoid of plant growth regulators for 45 days. The acclimatization success rate of plantlets grown reached 65%.

Key words: Flower buds, Picloram, TDZ, BA, *In vitro*.

Cite this article

Khaun A. Muhsen, Osama N. Jaffer, Abdul Samad A. Abdullah and Khairullah M. Awad (2023). Propagation of Date Palm (Barhi) using Immature Female Inflorescences *In vitro*. *International Journal of Agricultural and Statistical Sciences*. DOI: <https://doi.org/10.59467/IJASS.2023.19.1079>

1. Introduction

Date palm tree, *Phoenix dactylifera* L., is one of the evergreen fruit trees that cultivated in subtropical regions. It belongs to the palm family Arecaceae. It is considered as a major agricultural crop in many countries of arid regions located in West Asia and North Africa. Palm trees are monoecious, dioecy plants. They differ greatly from other plants because of incipient female flowers that are contained in them. They are characterized by their structural and genetic characteristics in their high ability in the formation of the somatic embryos (SE) and the formation of organs [Zayed *et al.* (2020)]. The female flowering parts of palm trees are used as a way of rapid and safe propagation. The female and male flowers of large plants were be used to stimulate embryonic callus. This technique is especially used with, endangered plants as well as the plants that do not have the ability to produce offshoots [Abul-Soad *et al.* (2021)]. Differences in the response of cultured tissues, *in vitro* were seen in

flowering parts and these differences were determined by several factors, the most important of which are the components of the nutrient media [Mirani *et al.* (2019)]. Callus and SE are formed in many plant species from cultured tissues and organs through the addition of auxins to nutrient media, such as NAA, 2,4-dichlorophenoxyacetic acid (2,4-D) and Pic. [Ebed and Mohsin (2020)]. There are several factors that affect the response of *In vitro* plant to cultivation. It includes the type and level of auxins. The genotype and developmental stage of the plant part are also important points for achieving success. Most studies of palm propagation tissue focused on the effects of different types of auxins such as Indol Butric Acid (IBA) and NAA and 2,4-D, Indole-3-acetic acid (IAA) and Naphthoxy acetic acid (NOA) and their different concentrations in the cultivation of different plant parts [Muhsen *et al.* (2020)]. The current study tests several combinations of (Pic, NAA, TDZ, BA and Kinetine