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EFFECT OF POLLEN EXTRACT AND IT CONCENTRATION ON SOME PHYSICO-CHEMICAL OF FRUIT AND YIELD CHARACTERISTICS OF DATE PALM (*PHOENIX DACTYLIFERA* L.) CV. KHADRAWI

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Abstract:

The experiment was carried out in one of the private orchards in the Ktaiban, Shatt Al-Arab region, Basral, Iraq during the growing season of 2021. Fifteen date palms were selected from the female cultivar Khadrawi at the age of 7 years. The date palm fruits of Khadrawi cultivar were sprayed with 0, 10%, 20% pollen extract of Khikri or Ghanami Ahmer. The main effect of the pollen cultivar was not significant in the characteristics of fruit length and weight, total soluble solids, carbohydrates, and titratable acidity content in fruit pulps of the date palm Khadrawi cultivar after 90 days of pollination, except for the fruit diameter in which the pollen cultivar Ghanami Ahmer excelled. As for the main effect of spraying fruits with the pollen extract, the treatment of fruit spraying with a concentration of 20% pollen extract was superior in all the above-mentioned characteristics compared to the control treatment. The results of the study indicated that the interaction treatment between the pollen cultivar Ghanami Ahmer and the fruit spray with a concentration of 20% pollen extract led to significant differences in the length, diameter, weight of the fruit, and its total carbohydrate content compared to the other interaction treatments. Whereas, the interaction treatment between the pollen cultivar Khikri and the fruit spray with a concentration of 20% pollen extract led to a significant superiority in reducing the percentage of total titratable acidity compared with the other interaction treatments.

Keywords: Carbohydrates, *Phoenix*, pollination, titratable acidity, total soluble solid

INTRODUCTION

The date palm (*Phoenix dactylifera* L.) tree belongs to the Arecaceae family and the Arecales order. It is one of the most important semi-tropical fruit trees in Iraq from an economic and nutritional (Al-Rawi and Al-Mohemdy, 2001; Mousawi et al., 2001). Date palm trees are unisexual and dioeciously plant. Therefore, female flowers need artificial pollination to ensure that the fruits are set and the crop has an economic return. The results of previous studies showed that the source of pollen used in the pollination process has a significant effect on the characteristics of date palm fruits through its effect on the physical and chemical characteristics of the fruits and their ripening time (Osman et al., 1974; Denney1992; Ibrahim, 1996). The effects of pollen source on the characteristics of date palm fruits are known metaxenia. The phenomenon of metaxenia still attracts the attention of researchers and farmers specialized in the production of date palms all over the world (Ream, 1976; Khalifa et al., 1980; Shafaat and Shabana, 1980). Khadrawi is one of the most important commercial female cultivars in Iraq. Its fruits are of good quality desired by the Iraqi consumer. The two male cultivars, Khakri and Ghanami Ahmar, are among the important males in Iraq, which pollen grains are used to pollinate female cultivars, including the Khadrawi cultivar (Al-Baker, 1972; Ibrahim and Khalif, 2003). Researchers and farmers are now interested in using plant extracts in agriculture as alternatives to plant growth regulators and growth stimulants because they are natural substances that do not leave any harmful effect on human health or the environment (Fayyad, 2005). Researches indicated that date palm pollen grains are rich in protein (31. 11%), carbohydrates (13. 41%), fats (20. 74%), ash (4.57 %), water content (28.80%), and fibers (1.37%), (Hassan, 2011; Basuny et al., 2013). The results of a study showed that spraying date palm leaves with pollen extract improved the physical and chemical characteristics and yield of the fruits cv. Alshoithi cultivar (Ebtihaj et al., 2018). Sayed et al. (2018) found that spraying with pollen extract of date palm, Zaghloul cultivar at a concentration of 800 mg L^{-1} led to an improvement in yield and fruit quality. The current study was conducted with