Caspian Journal of Environmental Sciences
Online ISSN: 1735-3866
Print ISSN: 1735-3033

The double infection diagnosis, fungal and insect on date palm offshoot *Phoenix dactylifera* with treatment pesticides and practical technique

Iyad Abid Almuhsin Ahmed*, Methaq J Al-Jboori, Zina Kh. AlBahadly

College of Science, Mustansiriyah University, Baghdad, IRAQ

** Corresponding author's Email: Iyad77m@gmail.com*

ABSTRACT

This study was carried out several times in the field during September 2019 in Baghdad Governorate and these data are the results of the last observation in the field. Cultivation of palm offshoots of the yellow Barhi variety, the first strain in quality and production were the number offshoots was 75, 25-40 kg weighed, which were divided into three groups, each one was 25 offshoots. The first group was subjected to a comparison treatment (control), while in the second group the offshoots were treated by immersion before planting with a solution containing a systemic fungicide (Biltanol) at a concentration of 1 mL L^{-1}, and then immersed in a solution containing a type of insecticide (Cinfidor) at a concentration of 1 mL L^{-1} and then planted and controlled after 2 months of planting by the same pesticides and with the same concentration. In the case of third group, it was controlled after 2 months of planting with the same pesticides above, and after a year of planting and services. A success rate was obtained as 60%, 100% and 96% in the first, second and third treatment consecutively. The insect was diagnosed as a red scale *parlatotoria Blanchardi*, while the fungus was diagnosed in the laboratory by a direct examination and using a light microscope as *Fusarium oxysporium*. The aim of the study was to reduce the number of dead offshoots after planting in the field.

Keywords: Double infection, Fungal, Insect, Date Palm Offshoot, *Phoenix dactylifera*, Pesticides.
Article type: Short Communication.

INTRODUCTION

Al Bakir (1962, 1972) reported the insect and the rate of its infection and effects on palms, however, not in an accurate manner. At the same time, he suggested the treatment of the offshoots with two large copper substances ($CuSO_4$) in the area of the fleshy cut, which is a substance used for treating some fungal diseases, and suggested its use as a liquid planted in clay-textured soils. There are also other reports about palm trees and *Fusarium* infection in the world (Maslienko *et al.* 2021; Al-Rubaye *et al.* 2022). On the other hand, other authors (Chandler 1958; Al Haydary *et al.* 1983; Matter 1991; Alyasiri *et al.* 2016) worked on the offshoot of their planting in two seasons (autumn and spring) and obtained the increased offshoots success. Al Salmany (1997) and Ines *et al.* (2013), stated using fungicide (WW Radimol MZ-75), ashes with growth regulators, i.e., indole butyric acid (IBA) in the area increased the success rate of offshoots compared to untreated ones (control). In another study, Kalib (1980) referred to choose a date of planting in two seasons exactly (autumn & spring) according to areas of their planting. Kalib (1980) and Matter (1991) emphasized to control a mother palm necessarily with insecticides in case of the production date or not, then clarified that it is one of the specific factors of the offshoots success after planting especially in non-enriched soils with essential components (micro elements) to grow plants.

MATERIALS AND METHODS

The present study conducted in October and November for two years. Three groups were used in the present study. The first group was untreated or control including offshoots that cultivated directly in the field; the second group, in which the offshoots were treated by immersion in a solution containing an insecticide, namely Confidor (1 mL

Caspian Journal of Environmental Sciences, Vol. 20 No. 4 pp. 855-858 Received: Feb. 09, 2022 Revised: April 26, 2022 Accepted: July 06, 2022
DOI: 10.22124/CJES.2022.5779

Publisher: University of Guilan, Iran

L^{-1}) and systemic fungicide called Biltanol (1 mL L^{-1}) then cultivated in the field. The third group was treated in addition to immersion by treated with the same pesticides and concentrations above after two months of planting, then the insect and fungi could be observed by pathological changes in the offshoots.

RESULTS AND DISCUSSION

The results of the study showed after a year of cultivation offshoots in the field. The first group (control) of offshoots exhibited a percentage of success (60%), and this normal case for offshoots losses. A success achievement depends on an offshoot type, agricultural service, a soil type, control operations and a climate. Pathogens are one of factors to succeed offshoots, where the infection develops in palm offshoots especially after cutting from the mother and planting especially in the first year of planting (Kibblewhite *et al.* 2008; Van Seventer & Hochberg, 2017). In the case of the second group, in which the offshoots were treated by immersion in a solution containing an insecticide, i.e., Confidor (1 mL L^{-1}) and systemic fungicide, i.e. Biltanol (1 mL L^{-1}) and then planting in the field followed by treating with the abovementioned pesticides after two months of planting or in October and November (months of Autumn and Winter), infection happened after planting offshoots especially in the first year, coincidence with the period of low temperature and increasing moisture especially falling heavy rains. Shading to protect offshoots with clothes or leaves causes creating a micro climate to provide a typical environment to spread a scale insect on the green part of offshoots (Fig. 1) and also the fungi on other parts of the offshoot apical buds especially white leaflets non-colourful (Fig. 2) led to an infection of fungus.

Fusarium oxysporium:

this pathogen works, as shown in the pictures, to infect the stem of the fronds and thus prevents the delivery of nutrients to grow from fronds at the top of the offshoot through the bottom. It cuts off the supplies to ease the infecting process of offshoot from the apical bud because of its weakness. Thereafter, the infection continues to the centre of the apical bud with gathering rains in it, followed by leading to its fermentation. This process tend to death of an offshoot due to attracting one type of flies to the smell of the fermentation for completing its life cycle. The treatment was performed by the immersion, control and watching the offshoot apical bud through a period of planting and services to get results (100 %). The results of the third group showed that the offshoots were not immersed but were treated with the above pesticides and with the same concentrations for two months after planting showed the results of 96%, which indicates that immersion plays a role before planting in reducing the rate of infection of offshoots after planting. This study was in agreement with some studies in the field and the insect was diagnosed in the laboratory and in the field (Shafie *et al.* 2017; Mahfoud *et al*. 2018; Guettouchietal 2018; Khawla *et al.* 2019) called red scale insect, *Parilatoria blanchardi*. In the case of fungus, it was diagnosed in the laboratory by direct examination and using a light microscope as *Fusarium oxysporium*.

CONCLUSION

From these results can be concluded that all treated groups exhibited a success rate (100% and 96%) compared with control group. The rate of death in offshoots after separating them from the mother and planting them without treatment was low. The offshoots that are immersed before planting and treated with insecticides and fungicides and the treatment continues after planting in the field, displayed a high success rate with continuous follow-up to the growing top area after protecting offshoots with leaves and clothes. The offshoots that were not immersed before planting, planted and treated later, The rate of death may be observed due to the presence of the infection in some areas of the plant parts, and the infection can be transmitted to the leaves through touching hands of farmers or insects, especially fungal belts.

Fig. 1. Red scale insect infection *Parilatoria blanch.*

Fig. 2. (A, B, C, D, E, F, G, H). The stages of infection of offshoots by fungus, *Fusarium oxysporium.* The fungus appears on other parts of the offshoot apical buds especially white leaflets non-colourful.

REFERENCES

Al Bakir, AA 1962, Iraq date palm. *Ministry of Agriculture Magazine*, 63 p.

Al Bakir, AA 1972, Date palm, present futures trading and planting. Baghdad, Iraq, 32 p.

Al Haydary *et al*. 1983, date palm offshoot and problem of expended to date palm Orchard. First lecture in SAK 23-25 March 1983, pp. 694-697.

Al-Rubaye, TS Al-Rubaye, D, Shaker, M & Risan, MH 2022, Screening for bioactive secondary metabolites in Actinomycetes isolated from soils around old buckthorn and palm trees. *Caspian Journal of Environmental Sciences*, 20: 519-526.

Al Salmany, IN 1997, Study of some factors are effect on rooting offshoots of date palm, MSc. Dissertation, Iraq.

Alwahshi, KJ, Saeed, EE, Arjun, Sham, A, Alblooshi, MM, El Tarabily, KhA & AbuQamar, S 2019, Molecular Identification and Disease Management of Date Palm Sudden Decline Syndrome in the United Arab Emirates, *International Journal of Molecular Sciences*, 20: 923

Alyasiri, II, Najat, AS, Ahmed, ZI & Ahmed, RN 2016, Identification and Diagnosis of Some Pathological Phenomena on the Date Palm caused by Fusarium Species in Iraq. *International Journal of Current Microbiology and Applied Sciences*, 5: 692-70.

Blumberg, A 2008, Date palm Arthropod pests and their management. *Entomology*, pp. 411-448.

Chandler, W 1958, Production of evergreen orchard. Translation book by Arabic Office for Publishing, Cairo, Egypt.

El Shafie, HAF, Abdel Banat, BMA & Al Hajhoj, MR 2017, Arthropod pests of date palm and their management. Date palm centre research excellence, King Faisal University. Al Hofuf, 31982- Alihsaa. Kingdom of Saudi Arabia.

Guettouchietal, A 2018, physiological and anatomical effects of *Parlatoria blancherd* Tang. on Deglet Nour variety of date palm in Biskra region.

Ines, BC, Amine, E, Imen, A, Lamia, K, Ahmed, N, Frederique, C, Noureddine, D, Néji, G & Tatiana, V 2013, Fungal diversity in adult date palm (*Phoenix dactylifera* L.) revealed by culture-dependent and culture-independent approaches. *Journal of Zhejiang University Science B*, 14.

Kalib, H 1980, Planting of date palm. Practical of date palm planting. Political copy office, Kuwait.

Kibblewhite, MG, Ritz, K & Swift, MJ 2008, Soil health in agricultural systems. *Philosophical Transactions of the Royal Society of London, Series B, Biological Sciences*, *363*: 685-701.

Mahfoud, B, Mohamed Azzedine, I & Abdellah, K 2018, First attempts to repel scale insets using plant extract: effect on the date palm scale *Parlatoria blanchardi* Tang. (Hemiptera: Diaspididae) search (2018).

Maslienko, LV, Voronkova, AK, Datsenko, LA & Efimtseva, EA 2021, Antagonistic effect of the promising fungal producer strain of micro-bio-preparation T-1 Trichoderma sp. on oil flax *Fusarium blight. Caspian Journal of Environmental Sciences*, 19: 883-890

Matter, AA 1991, Planting and production of date palm. Wisdom Copy Office, Basra, Iraq.

Syeda, FM 2019, Mycoflora Associated with Date Palm (*Phoenix dactylifera*) from Ad Darb, Jizan, Saudi Arabia, *Microbiology Research Journal International*, Past name: *British Microbiology Research Journal*, 27: 1-11.

Van Seventer, JM & Hochberg, NS 2017, Principles of Infectious Diseases: Transmission, Diagnosis, Prevention, and Control. *International Encyclopaedia of Public Health*, 22–39.

Bibliographic information of this paper for citing:

Almuhsin Ahmed, I,A, Al-Jboori, M,J, AlBahadly, Z,K 2022, The double infection diagnosis, fungal and insect on date palm offshoot *Phoenix dactylifera* with treatment pesticides and practical technique. Caspian Journal of Environmental Sciences, 20: 855-858.