

The effect of soil moisture conservation techniques on almond seedling growth and survival rate

Abdelrazeq M. Mohsen*, Ayed Salama

College of Agriculture, Hebron University, Palestinian Authority, Tel. +970 599233970; email: abdolrrazeq86@gmail.com (A.M. Mohsen), Tel. +970 599795472; email: ayedg@hebron.edu (A. Salama)

Received 9 April 2022; Accepted 2 September 2022

ABSTRACT

This study was carried out in the semi-arid eastern slopes of Bethlehem during 2018/2019, in completely randomized design. The aim of this study is to evaluate and compare the effects of using different soil moisture conservation techniques on almond seedlings, in order to increase seedlings survival rate during the first year after planting under drought conditions. Four soil moisture conservation techniques (cocoon, superabsorbent-hydrogel, black plastic mulch and half-moon) and the control were examined to measure their impact on the survival rate, average increase in plant height, average increase in stem diameter, leaf area, branch length of almond (*Prunus amygdalus*, var. Um Al-Fahm) seedlings in addition to the soil moisture content during the first year after planting. The results of this study revealed significant positive effects for all the treatments compared to the control. At the end of the first summer season, the cocoon treatment was superior over the other treatments in term of survival rate (66.8%), average increase in plant height (22.75 cm), stem diameter (0.25 cm), branch length (94.33 cm), leaf area (4.83 cm²) and soil moisture content followed by black plastic mulch. Cocoon is highly recommended in such conditions due to the highest results in term of soil moisture content, growth parameters and survival rate. Also, black plastic mulch revealed good results and it could be recommended due to the lower time consuming and implementing effort.

Keywords: Cocoon; Superabsorbent-hydrogel; Black plastic mulch; Half-moon; Drought; Fruit growth parameters; Soil moisture

* Corresponding author.

Presented at the 1st Palestinian-Dutch Conference on Water, Sanitation and Hygiene (WASH), and Climate Smart Agriculture (CSA), 5–6 September 2022, Nablus, Palestinian Authority

1944-3994/1944-3986 © 2022 The Author(s). Published by Desalination Publications.

This is an Open Access article. Non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly attributed, cited, and is not altered, transformed, or built upon in any way, is permitted. The moral rights of the named author(s) have been asserted.