

Evaluation of Different Moisture Conservation Methods to Reduce Fruit Cracking in Pomegranate (*Punica granatum*) in Fruiting Stage

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Fruit cracking caused by irregular watering and moisture stress is a common problem in pomegranate that accounts for 20-40% yield loss. However, less scientific information is available on preventing fruit cracking. Therefore, this study was conducted to evaluate the different moisture conservation methods to reduce fruit cracking in the fruiting stage of pomegranate at 4-year old cultivation in Dankotuwa. Treatments were laid out in two-factor factorial RCBD with 3 blocks. Factor 01 was moisture conservation method (T1-2 kg coconut husk chips with 25 g super absorbent polymer, T2-4 kg compost, T3-2 kg coconut husk chips, T4-covering fruits with poly bags treated with 0.5 g super absorbent polymer and T5-control) and factor 02 was the mulching effect (Mulch with grass straw and No mulch). T1-T3 was buried in a trench as a 15 cm layer (in 1/3rd of canopy circle; 45 cm depth and 30 cm wide trenches). Super absorbent polymer material was analysed separately for its physical and chemical properties. Yield and quality parameters were tested through field evaluations. pH (7.46) and EC values (2.5 $\mu\text{S cm}^{-1}$) of the polymer were not at a hazardous level to the plant growth or soil and its absorption capacity was 329.66 ml g⁻¹. However, it failed to return to dry form after saturation at a considerable time by making it less practicable for repeated use. No significant interaction effect was observed in the number of flowers, healthy fruits, cracked fruits, flowers, and fruit drops ($p \geq 0.05$). Further, no significant difference was observed in any quality parameter. The number of cracked fruits was significantly affected by the moisture conservation method. Fruit cracks were reduced by 33% in the fruiting stage by burying 2 kg of dried coconut husk chips (T1) as a 15 cm thickened layer around the 1/3 of the canopy circle of pomegranate in 45 cm depth and 30 cm wide trenches. Hence, the coconut husk chip application can be recommended as an effective remedy to reduce fruit cracking in pomegranate.

Keywords: Fruit cracking, Moisture conservation, Mulching, Super absorbent polymer, Moisture stress