

Studies on pollen germination, stigma receptivity, pollinating agents and mode of pollination in pomegranate (*Punica granatum* L.) under valley conditions of Garhwal, Himalaya

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ABSTRACT : The pollen grains of Ganesh and Kandhari exhibited the largest size ($28.14 \times 26.51 \mu$) in acetocarmine and ($27.07 \times 22.26 \mu$) in glycerin, respectively. The pollen viability in both cultivars was recorded as 92.83% and 95.85%, respectively. Sucrose solutions of 10% and 20% showed the highest pollen germination (25.07% and 27.21%) while 20% and 15% sucrose solutions exhibited the longest pollen tube length (28 μ and 49.78 μ) after 24 hours, in both of the cultivars, respectively. The stigma was 80% receptive on the day of anthesis in Ganesh, and one day before anthesis, 100% receptivity was recorded in Kandhari. Honey bees (*Apis mellifera*, *A. indica* and *A. dorsata*), black ants (*Componatus* spp.) and lemon butterfly (*Papilio demoleus*) appeared to be the most important insect for pollination. Hand pollination resulted in the highest fruit set (60% in Ganesh and 80% in Kandhari) followed by bag selfing and open pollination. The findings of present investigation reveal that the pomegranate cultivars Ganesh and Kandhari are self pollinated in nature and can be used for the future breeding programmes because these cultivars produce plenty of fertile pollen grains with good germination.

Key Words : Pomegranate (*Punica granatum* L.), pollen viability, germination, stigma receptivity, pollinating agents, mode of pollination, receptivity.