Pollen Quantity, Viability and *In vitro* pollen Germination of *Dimocarpus longan* Lour. Germplasm

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Abstract—*Longan (Dimocarpus longan Lour.) is an evergreen fruit tree species of Sapindaceae family and cultivated in subtropical region. Short flowering period couple with narrow genetic base are the major constraints in longan genetic improvement. Longan has three different types of flowers and the quantity and quality of pollen produce by each germplasm is different. Pollens are known to directly influence reproductive success and genetic structure of the plant population. In this study, we compare the pollen quantity, viability and in vitro pollen germination of M_1 and M_2 type flowers of nine longan germplasm. Highest pollen quantity per anther (5364) was observed in M_2 flower of Longan-06. Acetocarmine, 2,3,5-triphenyl tetrazolium chloride (TTC), 2,5-diphenyl monotetrazolium bromide (MTT) and aniline blue-lectophenol staining methods were used for pollen viability assessment. Aniline blue (0.1 %) showed best results for pollen viability (93.87 %). Different concentrations of sucrose, boric acid (H_3BO_3) and agar were used in germination medium in which 15 % sucrose + 100 ppm Boric acid + 1.0% agar showed promising results. Pollen from M_1 and M_2 flower was incubated for in vitro pollen germination at different temperature and duration. Highest germination rate (80.26 %) was observed at 25^oC for 12 hours while maximum pollen tube growth was at 25^oC for 24 hours. Pollen from M_2 flower had significantly higher pollen quantity, viability and germination percentage compared to pollen from M_1 flower.*

Keywords*: Longan, Pollen, Viability, Germination rate.*