

ドリアン‘モントン’は開花期の低夜温で受精が抑制され着果不良になる

Low night temperature inhibits fertilization and consequently reduces fruit set in ‘Monthong’ durian

タイのドリアン品種 ‘モントン’ を供試して、開花後7日間の花房の温度を夜間(20:00~08:00)15°Cもしくは25°Cに設定し、結実率と生殖器官の発達を観察した。25°C区では受粉28日後も約30%の着果率を維持したが、15°C区では著しい落果(花)を生じ受粉21日後までに全て落果した。いずれの処理区でも、花粉管は花柱内を伸長した。15°C区の胚珠では、受粉7日後までに発達不良となり受精しなかったが、25°C区では胚珠が正常に発達し受精した。以上より、‘モントン’ では夜間温度が15°Cでは受精が阻害され、落果不良となることが明らかとなった。

The effect of nighttime (2000 to 0800h) temperature on fruit set and reproductive organ development in ‘Monthong’ durian was examined by exposing the flowers to 15 or 25°C for 7 nights from pollination. About 30% of the flowers set fruits at 28 days after pollination (DAP) at 25°C, whereas all flowers or fruits abscised by 21 DAP at 15°C. Pollen tubes elongated at both treatments. At 15°C, ovules remained at mature stage before accepting the pollen tube. Ovule development at 25°C proceeded to the endosperm nuclei division stage, which was indicative of fertilization. A night temperature of 15°C, therefore, inhibits fertilization and consequently reduces fruit set in ‘Monthong’ durian.

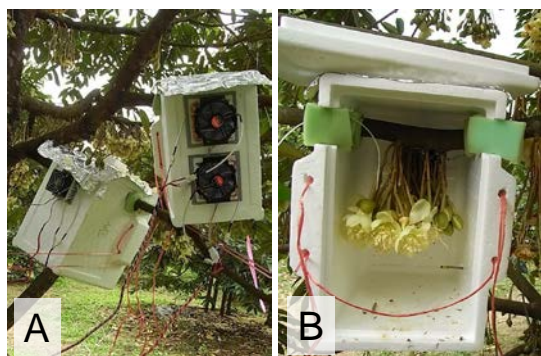


図1 使用中の温度制御装置の概観。A: 装置を取り付けた箱の背面、B: 正面内部。

Fig. 1. Temperature controller set on a flower cluster. A: A polystyrene foam box equipped with Peltier devices was used as controller. B: Inside the controller (The lid was left open during daytime).

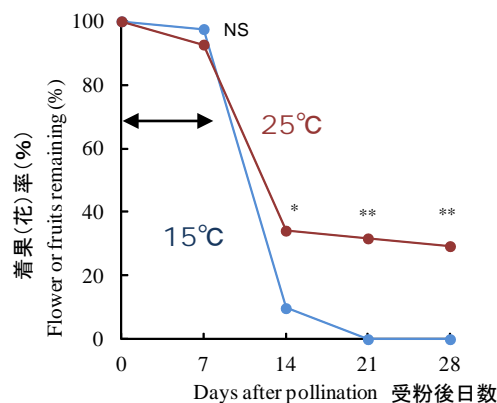


図2 受粉後の着果(花)率。*と**はそれぞれ $P < 0.05$ と $P < 0.01$ で有意差があり、NSは有意差がないことを示す。矢印は温度処理期間。Fig. 2. Percentages of flowers or fruits remaining after pollination. Asterisks (* and **) indicate significant differences between the treatments based on Fisher's exact test at $P < 0.05$ and $P < 0.01$, respectively. NS indicates a non-significant difference. Arrow shows the duration of temperature treatment.

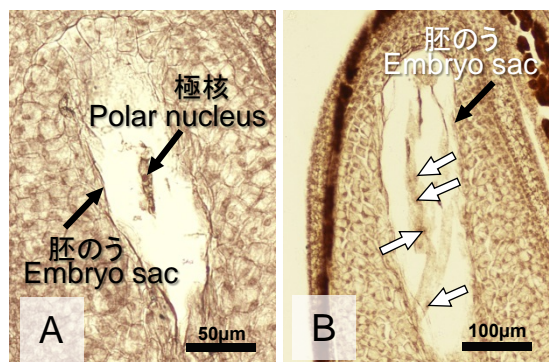


図3 温度制御下での受粉7日後の胚珠の様子。A: 胚のう完成期の段階にとどまり受精していない(15°C)。B: 胚乳核(白矢印)が分裂し始め、受精したことが確認できる(25°C)。

Fig. 3. Micrographs showing the morphological development of ovules at 7 days after pollination. A: Ovule at the mature stage containing an embryo sac with a fused polar nucleus (15°C). B: Ovule at the endosperm nuclei division stage (25°C). White arrows indicate endosperm nuclei.