

Cherimoya (*Annona cherimola* Mill.) dichogamy system.

González, M.¹ and Cuevas, J.²

¹Estación Experimental-Fundación Cajamar. Paraje las Palmerillas nº 25, 04710 Santa María del Águila, El Ejido, Almería, España.

²Dpto. Producción Vegetal. Universidad de Almería, La Cañada de San Urbano s/n, 04120, Almería, España.

Annona cherimola (Mill.) represents an extreme case of dependence on a pollination vector, a beetle of genus *Carpophilus* not present in foreign areas. This and cherimoya dichogamy strongly limit its cultivation out of its place of origin, the interandean valleys in the border between Perú and Ecuador. Nonetheless, certain level of natural fruit set is observed in Southeast Spain and attributed to the activity of autochthonous insects. As in most dichogamous species, the flower cycle of cherimoya has been so far described based on morphological changes; in this case the degree of petal's aperture. This description demands basic information about the orderly function of the sexual verticils. With this aim, we have characterized cherimoya flower cycle at both, morphological and physiological levels, and established the parallelisms between them. Flower female phase based on petal position lasted 24-26 hours, but 28-32 hours when the functionality of gynoecia was taken into account. Male phase was shorter. It started when the basal stamens of the androecia ring gradually opened shortly after mid-day of the second day of flower cycle. Anther dehiscence occurred well before the petal position marks the beginning of male phase. The strict dichogamous behaviour of cherimoya in our location and the elevated synchrony among flowers of the same tree and among trees of the same genotype (clones) limit pollen transfer and explain the low levels of pollination achieved in absence of human intervention (less than 10 pollen grain per flower at the end of cycle). Wind and autochthonous insects play no role in cherimoya pollination as bagging experiments showed. The time in which fertilization was possible (effective pollination period; EPP) was established in 24 hours and was limited by receptivity of stigma, since the ovules remained apparently fertile during the whole flower cycle (about 42 hours). Stigma receptivity was, however, variable and its duration affected by humidity. During cloudy days, a prolongation of stigma receptivity was detected overlapping with the period of anthers' dehiscence. This brief and occasional overlap may explain some levels of self-pollination observed in a low percentage of flowers and the documented consecution of certain levels of natural fruit set in selected locations of Spain. Finally, an increase in flower temperature over the ambient (phenomenon called thermogenesis) was measured during the female period. Its importance on aroma liberation to attract insect will be discussed.