

RE
OK ASSESSMENT OF MANGO (*Mangifera indica* L., ANARCADIACEAE)
AND PASSION FRUIT (*Passiflora edulis* f. *flavicarpa* DEG.,
PASSIFLORACEAE) POLLINATORS IN THE SAN FRANCISCO
VALLEY, NORTHEASTERN BRAZIL

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This study tried to understand aspects of the pollination ecology of fruit crop grown in the São Francisco Valley, in irrigated projects from Petrolina-PE/ Juazeiro-BA, NE of Brazil, during the years of 2005/2007. The works carried out in the crops of the *Mangifera indica* L.(Anacardiaceae), under conventional tillage for the varieties Tommy Atkins and Haden and *Passiflora edulis* f. *flavicarpa* Deg. (Passifloraceae). For the *M. indica* the panicles presented male and hermaphrodite flowers, in the proportion of 2:1, dicogamy was registered. The anthesis was diurnal, asynchronic, with the liberation of a strong sweet odour. The nectar production was continuous with an average value of 0.045µL/flower. The inflorescences showed visual differences between the varieties under study, interfering in the visitors' behaviour. The inflorescences of the variety Tommy Atkins displayed red colour rachis and higher number of flowers per panicle. In the Haden variety the rachis showed pink colour with less flowers, giving the panicle an open aspect. Twenty varieties of flower visitors were registered belonging to the orders Diptera, Hymenoptera and Lepidoptera. *Apis mellifera* was the most frequent. Among the Diptera, *Belvosia bicincta* (17.7%) and *Musca domestica* (10.2%) were the most frequent visitors in conventional and organic crops respectively. The diversity and number of visits were bigger in the organic crop. The use of agrotocics during the flowering period reduced the visit of bees (50%) and Diptera (20%). Because of its behaviour, frequency and active movement in the inflorescences, *Apis mellifera* was considered as the most efficient pollinator of the crop. In the pollination experiments the reproductive success was only registered for natural pollination, in both varieties, and in spontaneous pollination in Tommy Atkins variety. The relation fruit/panicle in the variety Tommy Atkins was (1.8) and (0.71) for Haden and the relation fruit/flower was considered low in both varieties. These differences can be due to the higher number of flowers per panicle registered in the variety Tommy Atkins. Throughout the fruit development, the abort rates registered in the first 15 days were 60.92% and 58.3% for Tommy Atkins and Haden, respectively.

The highest rates registered on the 28th day was 98.85% in Tommy Atkins and on the 50th day, 92.6% in Haden. The complete development of the fruits occurred in 120 days. After pollination the phases identified were “chumbinho” (7days), pea size (23 days), olive (33 days), nut (40 days), egg (50 days) and the fruit in the final stage. In *Passiflora edulis* f. *flavicarpa* the floral anthesis occurred between 12.00h and 13.00h. The time for style complete deflexion was 71.4 ± 12.4 min (n=10). The pollen grains presented 94% viability and the stigmas were receptive during the entire anthesis. The nectar volume was in average 100 μ L, with 48% of sugar concentration. The number of pollen grains/flower was 140.595 ± 34.175 (n=5) and 426 ± 77 ovules/ovary (n=20). The highest frutification rates were obtained after cross pollination (74%), confirming the existence of a system of self-incompatibility. Were registered 10% of flowers with four stigmas, which when manually pollinated, produced bigger fruits with a higher number of seeds (477.77 ± 76.83 , n=9). Probably caused by a characteristic called secondary gymnogonese. A positive correlation was

found between the number of seeds and the weight of the fruits. The identified flower visitors were *Apis mellifera*, *Trigona spinipes*, *Xylocopa grisescens*, *X. frontalis* and *X. cearensis*. *Apis mellifera* and *T. spinipes* were considered pollen and nectar robbers, respectively. Bees of the genus *Xylocopa* were more frequent in the flowers during the dry season and *A. mellifera* during the wet season. The effective pollinators were *X. grisescens* and *X. frontalis*, and thus it was found that they were limited in number in the studied areas. However they were found to be more frequent in other plant species during the rain season which indicates competition with the passion fruit flowers. In general, it was observed a frutification increase for the crops studied when there was natural pollination, which indicates the importance of the flower visitors for the production. However, there is a pollinator restriction, especially for the native species that find in the scattered vegetation surrounding the crop's area, the place for nesting and feeding.