

# Effects of some cultural practices on mango inflorescence and fruit pest infestation and damage in Reunion island: recent progress, on-going studies and future steps

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**Background/Rationale.** In Reunion island, mango bug (*Orthops palus*), blossom gall midge (*Procontarinia mangiferae*) and fruit flies (Diptera: Tephritidae), particularly *Bactrocera zonata*, are major pests of mango. On the other hand, mango growers are challenged to produce "more", notably via pest and disease crop loss reduction, and "better", via fruit quality improvement and reduction of the adverse environmental impacts of pesticide applications. Studies are therefore undertaken in mango growing areas of the island, aiming at improving orchard and tree management via the assessment of cultural practices contributing to crop protection, as alternative to synthetic pesticides. Those encompass pruning, soil mulching and harvest date, against respectively mango bug, blossom gall midge, and fruit flies.



Optimizing harvest date by characterizing fruit maturity - fruit fly infestation relationship

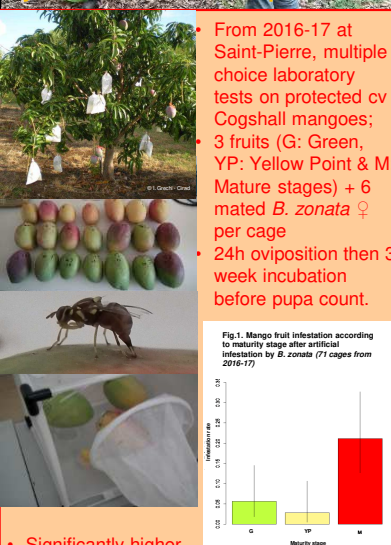


Methodology & main results

Assessing pest regulation potential of pruning by studying Mango bug – Powdery mildew – Microclimate interactions.



Assessing soil mulching physical barrier effects vs blossom gall midge

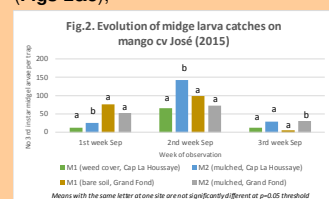


- Significantly higher infestation in M as compared to G & YP fruits (Fig.1).
- However, some G fruits infested, as also shown in West Africa with *B. dorsalis* (1).

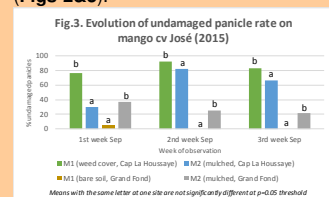
- In 2017 at Bassin Plat on cv Cogshall mango trees, according to the approach followed to study sorghum panicle-feeding bugs - grain mold - climate interactions in West Africa (2&3):
- in view of assessing the potential effect of pruning on the impacts of both mango bug & co-comitant powdery mildew (*Oidium mangiferae*) (4) and their interactions on mango inflorescences;
- study of empirical relationships between microclimate (measured with Hygro- & Thermo-boutons®) in the vicinity of panicles exposed to a range of ventilation conditions on the one hand;
- and infestation/infection by the pest & pathogen under natural conditions, on fungicide- and insecticide-sprayed vs unsprayed trees on the other hand.

In 2017, cv Cogshall at 2 orchards of CPEA St-Paul with the 3 soil cover modalities. Same observations plus soil microclimate (using Tinytags® data loggers) and biological activity (using Bait-Sticks®)

- Further to a preliminary study in 2011 at CPEA Saint-Paul (5);
- In 2015, at 2 private orchards of cv José mango trees (Cap La Houssaye & Grand Fond), with tarpaulin « mulching » compared to resp. high weed cover and bare ground;
- Weekly counts of midge larvae fallen into water-filled bottom halves of 5L water boxes, assessment of flowering & fruiting rates, and of midge damage to panicles;
- At Cap Lahoussaye, no effect of mulching on flowering nor fruiting; more midge catches but less midge damage under mulching than on weed-covered control (Figs 2&3);



- At Grand Fond, positive influence of mulching on flowering & fruiting; less midge catches and panicle damage under mulching than on bare ground control (Figs 2&3).



## Future prospects

- Evaluation of prophylactic harvest of green aborted fruits against fruit flies (including newly introduced invasive *B. dorsalis*) (1) & study of its compatibility with proposed ground cover options;
- Study of compatibility between ground cover options, irrigation & conservation biological control of pests by natural enemies (6);
- Study of effects of pruning on pests other than mango bug-powdery mildew (viz. blossom midge, scale insects, longhorn beetle),

**References:** (1)Diatta et al. 2013, *Fruits* 68:507–516; (2)Ratnadass et al. 2003, *Crop Protection* 22:853-858; (3)Ratnadass et al. 2003, *Crop Protection* 22:837-851; (4)Atiama, 2016. PhD Thesis dissert., Univ. Réunion; (5)Amouroux, 2013. PhD Thesis dissert., Univ. Réunion; (6)Jacquot, 2016. PhD Thesis dissert., Univ. Réunion



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