

## MEDFLY MALES STERILIZATION THROUGH X-RAY SOURCE

Gómez, Maylen P.<sup>1</sup>; Virgínio, Jair F.<sup>1</sup>; Damasceno, Itala<sup>1</sup>; Alacedo, Aline<sup>4</sup>; Paranhos, Beatriz J.<sup>2</sup>; Walder, Júlio M.M.<sup>3</sup>; Malavasi, Aldo<sup>1</sup>

<sup>1</sup> Biofábrica Moscamed Brazil, Distr. Ind. São Francisco 992, 48.908-000, Juazeiro-BA, Brazil. E-mail: [maylen@moscamed.org.br](mailto:maylen@moscamed.org.br)

<sup>2</sup> Embrapa Semiárido, BR 428, km 152, CP 23, 56.302-970, Petrolina-PE, Brazil.

<sup>3</sup> Centro de Energia Nuclear na Agricultura- CENA/USP, Av. Centenário 303, 13416-000, Piracicaba-SP, Brazil

<sup>4</sup> Faculdade de Ciências Biológicas. Universidade de Pernambuco, Campus III, Petrolina-PE.

**Background:** Gamma rays from Co-60 source have been used for a long time to sterilize fruit flies males in SIT programs worldwide. The production of Gammacell Co-60 was discontinued and the IAEA/FAO joint division has supported the development of a new irradiator with a X-ray source, which has been used by Moscamed Brazil since December 2010. Studies were carried out to achieve a desirable sterility by using X-ray machine in males of *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae), *tsl*-Vienna 8 strain.

**Methods:** Pupae from the same lot were irradiated with X-ray in the doses of 105, 115, 125, and 135 Gy, at 48 to 24 h before emergence. Sterility, emergence, flyers, and mortality under stress after 48h were compared to control not irradiated.

**Results:** Irradiated males induced high sterility on medfly females. The females fertility did not show statistic difference among all X-ray doses [1.3 % (105Gy), 0.51 % (115 Gy), 0.32 % (125 Gy), and 0.43% (135 Gy)], but they were significantly different from control (73.1 %). There were not statistical differences on emergence, flyers and mortality under stress among doses and control. The percentage of emergence and flyers were 93, 95, 93.7, 91.3, 95.7%, and 88.7, 89, 87.7, 85, 90.3% for 105 Gy, 115 Gy, 125 Gy and control, respectively. Mortality under stress were 5.5, 5.0, 8.7, 4.1, and 6.0 % for the doses of 105 Gy, 115 Gy, 125 Gy, 135 Gy, and control, respectively.

**Conclusions:** Results indicate that X-ray doses used did not affected the quality of medfly males, and 115 Gy could be a recommended doses as standard sterilization since the sterility is higher than 99%. The results also show the feasibility by using X-ray machine in SIT programs.

**Key words:** *Ceratitis capitata*, irradiation, sterility

Session: SIT, mass rearing, quality control