

Sexual Competitiveness of Vienna 4/Tol-94 ‘Genetic Sexing’ Sterile Mediterranean Fruit Fly Males in Israel

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The sterile insect technique (SIT) is used as an environment-friendly means of suppressing Mediterranean fruit fly (*Ceratitis capitata*; ‘medfly’) populations in the Arava valley of Israel. The technique depends on released sterile males effectively wresting the reproductive potential away from wild, fertile males. Studies carried out in other countries have indicated that sterile males may sometimes be of inferior sexual competitiveness in comparison with their wild counterparts and that this may inhibit SIT efficacy. In the present study, field-cage experiments were conducted to investigate the sexual competitiveness of sterile male medflies (genetic sexing strain Vienna 4/Tol-94) produced in and shipped from Guatemala, in the presence of wild males in Israel. In addition, we checked whether pre-release chilling affects their sexual success. Sterile and wild males were found to be similar in mating frequency, latency until mating, insemination probability, and duration of copulations during which no sperm were stored. There was, however, weak evidence that copulations involving sperm storage were shorter for sterile males. Chilling did not influence any element of male sexual performance. In both experiments, copulations culminating in sperm storage by females were longer than those that failed, suggesting that processes occurring early on in copulation may sometimes be the source of sexual failure. Overall, these results indicate a high standard of vigor in the sterile male medflies used in the SIT program presently followed in Israel.

KEY WORDS: *Ceratitis capitata*; medfly; field cages; mating, sterile insect technique.

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