

SUITABLE LARVAL DIETS FOR *ANASTREPHA FRATERCULUS* (DIPTERA: TEPHRITIDAE).

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Background: The genus *Anastrepha* (Diptera:Tephritidae) is the largest and most economically important genus of true fruit flies in the American tropics and subtropics. It is indigenous to the Americas, presently with no distribution outside the Western Hemisphere. Among other species, the South American fruit fly, *Anastrepha fraterculus* (Wiedemann, 1830) is highly economic important in South America, especially in Brazil. Attempts to improve diet quality for mass rearing *A. fraterculus* have been ongoing for more than twenty years. The diets currently used throughout the world were based on combined ingredients taken in account their availability, physical properties and economics with little emphasis on nutrient value. A mass rearing system and Sterile Male Technique (SIT) for *A. fraterculus* are underway and will remain a challenge. A technique to mass rear *A. fraterculus* is the start point for the development of SIT. The objective of the present work was to identify appropriate ingredients for suitable larval and adult diets to be used as a platform to develop a protocol for mass rearing the South American fruit fly.

Methods: A screening of eleven different larval diets (four replications) was performed in order to find suitable and economic diets for further comparison tests. The efficacy of the diets was determined by statistical analysis including egg hatching, pupal recovery, pupae weigh, adult emergence and adult flying ability. The general procedure for quality control tests were based on protocols specified in the International Fruit Fly Control Manual (FAO/IAEA/USDA, 1998).

Results: The final goal of a fruit fly mass rearing production system is a consistent result of healthy and competitive adults. This success is very dependable of high control quality of all laboratory procedures and specially a suitable and economic diet for larvae. From the results of these larval diets experiments, there is clear evidence that the source of protein is determinant for getting healthy and competitive adults. Showed by fly ability test. From six diets tested, three of them with 9.0, 10.0 and 13.0% of protein and 20.0% of cane bagasse as the bulk agent presented the best results for egg hatching, pupal recovery, pupal weight, adult emergence and fly ability when is compared with the other diets with less protein content. Since there were no statistical differences among these three diets it is clear that is more economically feasible to recommend the diet with 9% of protein.

Conclusions: It is clear that protein in diet larvae improves larval development, pupal recovery and adult fly ability. Larval diets with 9.0% of protein show to be adequate for a mass rearing program with focus on SIT. The bulk agent sugar cane bagasse improves larval feeding by facilitating the larvae movement though out the diet mass.

Keywords: South American fruit fly, SIT, pupae, mating, fly ability