

Intimacies and intricacies of rearing the Queensland fruit fly larval parasitoid, *Diachasmimorpha tryoni* (Cameron) (Hymenoptera: Braconidae)

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Research into the use of parasitoid wasps (Hymenoptera: Braconidae) to control the Queensland fruit fly *Bactrocera tryoni* (Froggatt) (Diptera: Tephritidae) is gaining momentum. The parasitoids are harmless to human health, self dispersing and, if properly implemented are a good control option. Hawaii, Mexico and Australia have successfully introduced non-native parasitoid wasps to control various fruit fly species. Native Australian species have been overlooked in their native environment. Rearing *B. tryoni* on an artificial diet is a well established technique but establishing a colony of the larval parasitoid, *Diachasmimorpha tryoni* (Cameron) from wild material is challenging. The complexity lies in enticing the parasitoids to mate, search and oviposit into hosts larvae contained within an artificial diet. Mating is pivotal to produce female offspring in these haplodiploid parasitoids. In this study, mating was encouraged by segregating male and female parasitoids from the time of eclosion until females reached their optimal mating period.

Reducing the size of the parasitoid enclosure forced the parasitoids to walk over the artificial diet, eliminating the necessity for long range cues, which under field conditions are provided by the infested fruit. Thus, the parasitoids were only required to use short-range cues produced by larval feeding to locate the larvae for oviposition. Oviposition into larvae contained within an artificial diet and increasing parasitism rates over subsequent generations demonstrated the parasitoid culture adapting to laboratory rearing conditions. This is encouraging and suggests that large numbers can be readily reared under Australian conditions for use in augmentative release programs.

