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RESEARCH NOTE

An improved method for rearing green peach aphid *Myzus persicae* (Sulzer)

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INTRODUCTION

Green peach aphid, *Myzus persicae* (Sulzer) (Homoptera: Aphididae) is an extremely polyphagous species which has been reported to feed on more than 500 species of host plants from 40 plant families including several agriculturally important crops under field as well as in green house conditions (Blackman and Eastop, 2007). In addition to direct losses caused by sucking the vital cell sap from the plant-parts by both nymphs and adults, the aphid is capable of transmitting more than 150 viral diseases in different hosts particularly in Solanaceous vegetables (Cloyd and Sadof, 1998). Bioassays to evaluate *M. persicae* control methods generally requires a consistent supply of healthy aphids.

Gorham (1997) reared *M. persicae* in various styles of cages using whole plants and plant parts as food. Foods commonly used include germinated Chinese cabbage, *Capsicum annuum* (Bosland and Ellington, 1996). Factors such as micro-climate, quality and longevity of the host culture medium, and infestations from predatory or parasites challenges to the development of a successful rearing protocol (Loomans & Murai, 1997). Cage design is critical for maintaining microclimate, and choice of pupation medium can restrict or eliminate parasitoid infestations.

It has been found that previously described methods are highly prone to parasitoid infestations. In addition, the methods are often inefficient and some required considerable specialized equipment. Here, we describe a protocol for rearing aphids and other small insects using whole plant as a host plant.

The laboratory population was initiated from adults collected on *C. annuum* in polyhouse. The culture was maintained at 26 ± 3°C and 37 ± 7% relative humidity in a room that received natural light from a large window.

Adults from pure progeny were released on younger leaves of four week old potted plants (with one adult / leaf) of *C. annuum* in the lab. The released aphids were covered with leaf cages in order to restrict their movement on the selected leaf of the plant. The modified cage was prepared with the help of two lightweight, transparent plastic plates of equal size (9.5cm × 9.5cm × 3cm). The leaf was inserted carefully through the cut made on one side of the plate lower plate and it was covered with second plate (upper plate) kept over the lower plate in an inverted position. The edges of the two plates were fixed tightly with binding pins in such a manner that the upper plate can be removed and re-fixed easily. Before using the second plate as cover of the cage, its bottom surface was

cut out and a piece of muslin cloth was fixed tightly with some adhesive material at the cut portion for the purpose of aeration. The cage was supported with the help of small wooden sticks fixed in the pot. (Fig. 1 a and b).

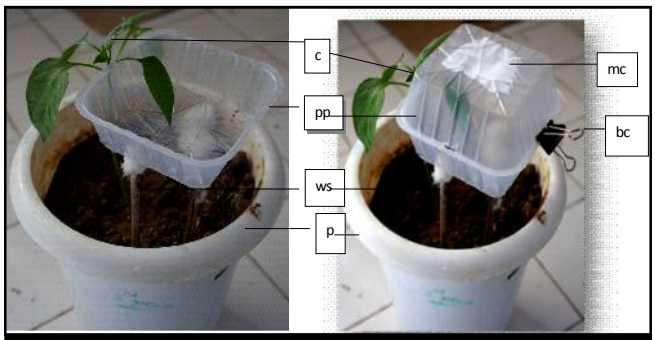

Fig. 1 : Cross-section (a) and top view (b) of the prepared rearing box. *c* = capsicum, *p* = pot, pp = plastic plate, *ws*= wooden stick, mc= Muslin cloth , *bc* = binding clip

The adult apterous aphids were released on leaves inside such individual leaf cages and observed on the following day. All the newly born nymphs (one day old). The neonate nymphs were allowed to develop within individual cages. The potted plants were slightly watered on alternate days and observed daily.

The culture only requires approximately 10 min attention twice a week. Within 2 weeks of continued ovipositing effort, 4 separate age cohorts of aphids can be generated, first instars, second, third and fourth instars, and adults, approximately 110-130 pure aphid population adults can be reared from one leaf of *C. annuum* in a single generation.

We have used the method described above to successfully rear in our labs, and we have also adapted them to successfully rear multiple generations of *M. persicae*. Our rearing system for *M. persicae* can be used for other small insects *viz.*, thrips and other aphid species for study continuously rearing biology, and to get pure progeny of each instar for bioassay.

Conclusion :

The method requires little specialized equipment and minimal interference in the aphid lifecycle yet it can produce consistent numbers of aphid separated into age specific cohorts. This method is also useful in studying the biology of the aphid.

Cages thus constructed from plastic plate possess the following desirable features:

- They are as transparent as glass, and do not “sweat” or concentrate heat like the glass cages.
- With this material, they can be made of any size and shape desired.
- They may be ventilated by cutting any number and size of openings in the side.
- The completed cage is very neat and smooth within, making it easy to observe specimens at all times.
- It restricts parasitoids in the culture.

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