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POLYVINYL ALCOHOL FILM AS AN OVIPOSITION SUBSTRATE FOR DIAMONDBACK MOTH (LEPIDOPTERA: PLUTELLIDAE)

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Paper toweling (Biever & Boldt 1971) and aluminum foil (Shelton et al. 1991) have been shown to be adequate artificial oviposition substrates for the diamondback moth (DBM), *Plutella xylostella* (L.), and these materials often are used in the culturing of DBM. In experiments where exact numbers of eggs and exact placement of eggs are desired, removal of the eggs from these substrates becomes necessary. This is usually accomplished by syringing with water or the use of substances, such as KOH, to release the eggs from the substrate. These methods can be laborious and result in excessive mortality of the eggs. We found that a polyvinyl alcohol (PVA) film product (Solvay™ Original Water Soluble Stabilizer, Item No. 486-08, Sulky of America, Harbor Heights, FL), sold for stabilizing fabric and transferring designs to fabric, could be used as an effective oviposition substrate for DBM and provide an easy method of collecting individual eggs. Twenty-cm by 25-cm sheets of PVA film were laid on a flat surface, so that they did not touch. A 10% solution of macerated cabbage leaf was then prepared in a food blender and filtered through a nylon stocking into a hand-pumped mister bottle. A fine mist was sprayed over the sheets until they were covered in fine droplets. The sheets were then left to dry *in situ* for about 3 h. When dry, the sheets exhibited a puckered surface where the cabbage-water droplets had fallen. The surface provided numerous edges, furrows, and dips, which were ideal for DBM oviposition. The sheets were hung inside the cages by wetting a finger, running a line of water across the ceiling of the cage and then pressing and sticking the top edge of the prepared sheet against the line of water. When hung overnight in the DBM cages, the sheets were usually loaded with eggs by the following morning. After oviposition, the sheets were stored in a refrigerator at 4°C between sheets of paper kitchen toweling to prevent the soluble sheets from sticking together. To free the eggs, the sheets were carefully dissolved in water (when a stirrer was used, it was not allowed to touch the sides or bottom of the container to prevent crushing of the floating eggs)

and the water filtered through chiffon squares that were held in place above plastic funnels by elastic bands. Filtering the water has to be done carefully and slowly to prevent damage to the eggs. The eggs accumulated on the chiffon squares. Dark color squares of chiffon worked well because the yellow DBM eggs were easy to spot on the dark background. Pouring the water through all areas of the chiffon resulted in an even spreading of the eggs over the chiffon; it was difficult to separate individual DBM eggs when they were all clumped together. Once all the water was poured through the chiffon, a very fine, gentle spray of distilled water was used to clean the DBM eggs of any residual PVA. The chiffon squares were then removed from the funnels and left to dry on a flat surface. Once dry, the DBM eggs were easily picked off the chiffon squares with a fine camel hair brush. This technique provided an easy and reliable method for acquiring large numbers of undamaged DBM eggs for experimentation.

SUMMARY

Sheets of polyvinyl alcohol film treated with an aqueous extract of cabbage leaves were found to be effective oviposition substrates for diamondback moth, *Plutella xylostella* (L.). This technique provides an easy and reliable method for acquiring large numbers of undamaged diamondback moth eggs for experimentation. This is Florida Agricultural Experiment Station Journal Series No. R-10429.

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