

## Easy-to-Handle Fruit Fly Lure Plugs

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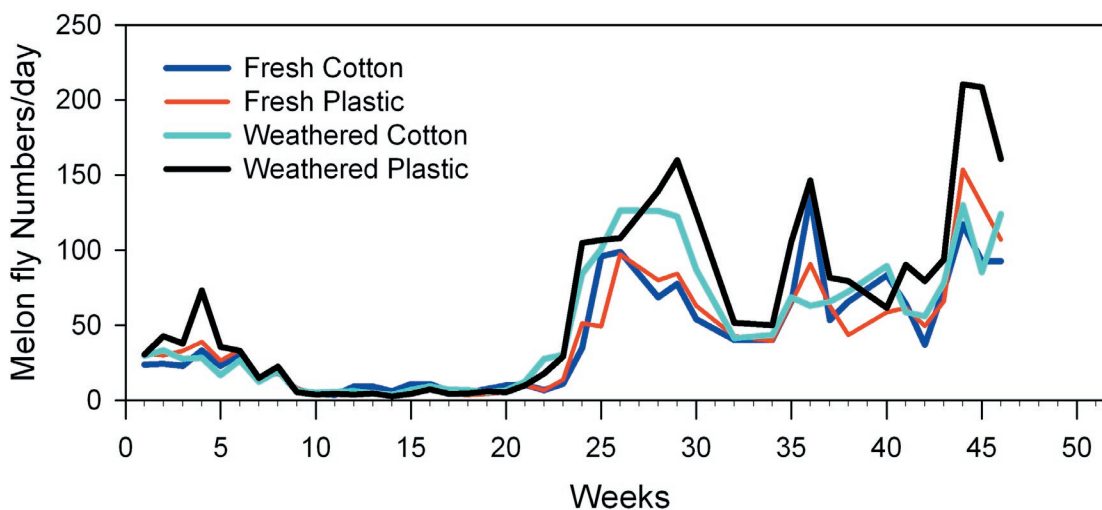
Many of the *Bactrocera* fruit fly males are attracted either to methyl eugenol or to cuelure. Of the four invasive pest fruit flies established in Hawaii, Oriental fruit fly males are attracted to methyl eugenol whereas the Melon fly males are attracted to cuelure. Because of this specificity, both of these lures can be used for detection, species identification, population monitoring, and mass annihilation leading to suppression or eradication of the target fruit fly.

These lures are commonly formulated as liquid concentrate, which is infused into cotton wicks and used in association with some killing agent (soap water, etc). When lure is used in a trap, we expect a natural decline in its effectiveness to attract flies due to weathering via lure evaporation and chemical breakdown. As a standard practice, the lures need to be replaced with a fresh lure when its ability to attract flies declines to less than 50% of a fresh lure.

Because liquid lures are sold in bulk, you may have to buy more than what you need. Then you have to treat them on cotton wicks with recommended quantities of lure, and store the unused lure safely. The safety concerns related to handling and storage of chemicals may hinder the technology adoption process (especially among small farms and backyard growers). To overcome these problems, researchers in collaboration with the industry partner (Scentry Biologicals Inc., Billings, MT in this case) have developed lure impregnated plastic matrix plugs that are individually wrapped and ready to use.

Before recommending it for use, we wanted to compare new plastic matrix formulation with traditional cotton wick lure. Both cotton and plastic plug lures were allowed to weather under farmers' field conditions and compared with fresh cotton and fresh plastic plugs replaced each week.

After 46 weeks of testing, there is no decline in the number of Melon flies caught by the weathered cuelure in cotton wicks and cuelure plus in plastic matrix plugs compared to the fresh lures (Figure 1) and experiment is still on-going. With this finding, we are hoping that the lure will last for an entire year, which may allow for feasibility of an increased number of traps per unit area of land. However, growers will still have to change the killing agent as needed, as the lure will outlast one service of killing agent.



**Figure 1.** Comparative efficiency of weathered and fresh Cuelure in cotton wick and plastic matrix plugs to catch male melon fly.

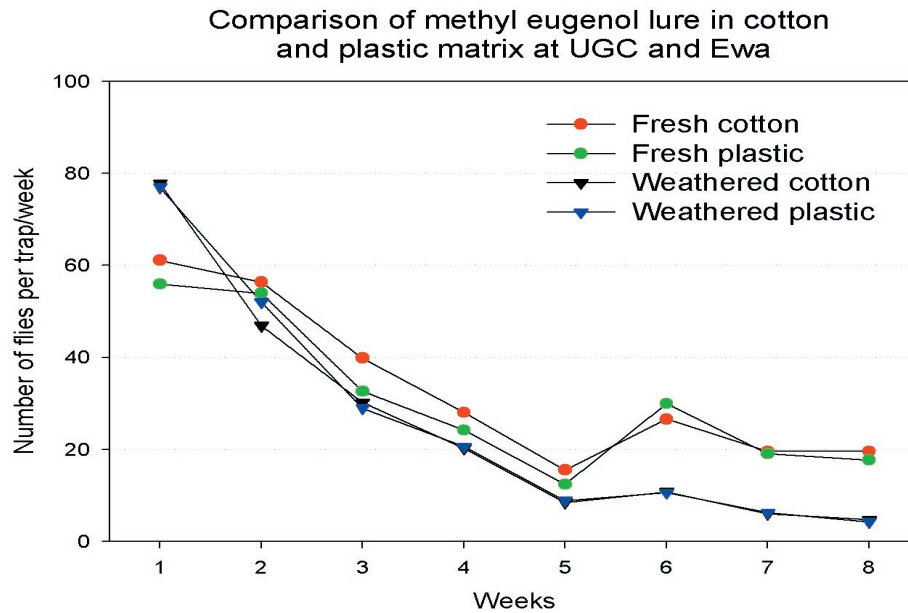


Cue-Lure Plastic Plug



Methyl Eugenol Plastic Plug

We were not as fortunate with the evaluation of methyl eugenol. Oriental fruit fly attractancy of both the cotton wick lure and the plastic matrix plugs (with 2 g methyl eugenol) declined to less than half of fresh cotton or plastic plug in the fifth week of weathering. This suggests that they need to be changed each month (Figure 2). We found some prolonged effectiveness by increasing the amount of methyl eugenol in the plastic plugs and currently are evaluating the effectiveness 10 g methyl eugenol plastic plugs.



**Figure 2.** Comparative efficiency of weathered and fresh methyl eugenol in cotton wick and plastic matrix plugs to catch male oriental fruit fly.

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