When all the other control techniques fail, sanitation is your best bet for suppressing fruit fly populations. Which is why we have been looking for effective methods of killing larvae in infested fruit since the start of the Area-Wide program. Currently, we have eight methods that we have tested using augmentoria to collect the escaped flies.

1. **Tilling crop:** Tilling contributes to some reduction in fruit fly emergence and prevents additional egg laying in discarded fruit, or in young fruit of abandoned plants. Tilling does not kill all larvae. In 2000 we recovered 1,263 melon flies in a 5x10 ft augmentorium placed over a tilled zucchini field. Figure 1 compares tilling to burying fruit. Over the duration of a crop, the flies that pupated early in the cropping cycle will have had time to emerge before the field is tilled. This may be a problem considering each infested fruit can have 20 or 30 larvae per sting, so it is important to keep the fruit fly population low while the crop is young.

2. **Burying fruit:** Burying fruit can be effective if it is done properly. Figure 1 compares the emergence from fruit buried at different depths. Fruit buried over 1.5 ft deep had no emergence. Figure 2 shows that pupae were not recovered within 8 cm (3.1 inches) of the soil surface when the fruit was buried greater than 12 inches deep. To be safe, bury the culled fruit at least 1.5 ft below the soil surface.

3. **Bagging fruit:** Bagging has been popular with growers since the project started. We have found manufacturers who make biodegradable plastic bags. These bags will be tested in an upcoming sanitation trial. If the bags show promise, we will make them available to growers who prefer bagging fruit for disposal. Instead of overloading landfills with plastic, this bag will provide an easy means to build a compost pile.

4. **Drowning fruit:** One test that involved the drowning fruit for 48 hours killed 89.8% of the fruit fly larvae. A grower on Maui uses this method with his tomato culls on a regular basis.

5. **Feeding culled fruit to animals:** This is a popular method adopted by several growers in Maui and Waimea. Care must be taken to keep flies from pupating in the feed lot. More on this subject will be discussed in a following newsletter.

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Big Island Master Gardeners Certified to Spread the Word
C. Hiraki

UH-CES County Extension Agent Randy Hamasaki and HAW-FLYPM Extension Agents Jari Sugano and Carla Hiraki trained and certified 18 master gardeners to help teach others about the HAW-FLYPM program. The workshop focused on addressing the fruit fly problems of backyard growers by featuring demonstrations on trapping and trap-making, sanitation techniques, and protein bait sprays. Under Master Gardener Coordinator Andrew Kawabata, the Hilo-based group are now equipped to radiate this information and technology on to their communities. HAW-FLYPM’s master gardener education program plans to hold similar workshops on Maui and Oahu in the coming months.

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