

# Instruction Sheet

## Ball Trap & Torula Yeast Bait Pellets for Trapping *Drosophila suzukii* and Fruit Fly species attracted by Torula Yeast

### You Will Need:

- AR934A Ball Trap
- AT800 Torula Yeast Bait Pellets
- Sugar
- Apple cider vinegar
- Water

### BACKGROUND

The *Drosophilla suzukii* is a damaging pest around 2.6 to 2.8 mm in length, beige-yellow in color with brown bands on the abdomen. In June 2009, *Drosophilla suzukii* was trapped over a wide area in Northern California and is now considered established in California. This damaging pest causes economic damage to berry crops such as fresh berries, strawberries, raspberries, blueberries and blackberries. This is caused by white legless maggots on the inside of the fruit pulp.

It is known that this pest has as many as 13 generations, and multiple hosts which allows them to reproduce throughout the season. As the egg hatch time is only about one day, the larvae begin feeding inside the fruit. Due to this, the fruit begins to collapse around the feeding site. Furthermore, the mold and infestation by secondary pests may lead to further damage.

ISCA Technologies introduces the AR934A Ball Trap and AT800 Torula Yeast Bait Pellets for the monitoring and mass trapping of *Drosophilla suzukii*. AT800 Torula Yeast Bait Pellets include borax (a natural mineral), which maintains acidity of the torula yeast solution at suitable level, and slows down decomposition of captured insects. With a long field life of more than 4 weeks (depending on ambient temperature), the AR934A Ball Trap and AT800 Torula Yeast Bait Pellets is a convenient, environmentally friendly tool used to monitor and mass trap this pest. Since the flies are attracted to the trap, it can also be used in organic orchards.

### ASSEMBLING THE TRAP



#### STEP 1

Mix 18 oz of water with 6 teaspoons of sugar (or similar ratio if mixing larger quantities) in a container or in the yellow basin of the Ball Trap.



#### STEP 3

Attach the clear plastic top of the Ball Trap to the yellow basin. For added attraction, open the lid of the lure receptacle and fill with apple cider vinegar. Close the lid.



#### STEP 2

Pour mixture into the yellow basin of the Ball Traps. Add 3 Torula Yeast Bait Pellets into the yellow basin of each Ball Trap.



#### STEP 4

Use the string as a hanger and hang the completed trap. Allow 2 to 3 days for the fermentation process before the mixture is attractive to flies. Refill the apple cider vinegar when it evaporates. Refill the mixture in the yellow basin with water when it evaporates to less than half the volume.

## OTHER INFORMATION

1. Depending on weather and environmental conditions, the field life of the sugar and Torula Yeast mixture is around 4 to 8 weeks. For your first time of use, you should monitor the level of attraction based on a) how strong you want the attraction and b) the level of fruit fly infestation, to determine when you should dispose the solution and start with a new mixture. The duration of the fruit fly attraction typically declines gradually after 4 weeks, but will continue to be effective for approximately 4 more weeks with water replenishment.
2. Trap density is dependent on many factors, such as: purpose (e.g. detection, monitoring, mass trapping, or mass trapping used in combination with other pest control methods), infestation level fruit/crop use and economic damage threshold. For monitoring purposes, we recommend placing 1 to 2 trap(s) per acre in the early part of the season and doubled in October if sting levels go above the monitoring threshold of 3%. For mass trapping purposes, we recommend placing 1 to 2 trap(s) per tree.
3. Environmentally friendly *Drosophila suzukii* management solutions such as the AR934A Ball Trap and AT800 Torula Yeast Bait Pellets are effective for managing low to medium levels of this damaging pest. At high levels of infestation, additional measures such as the use of insecticides, may be needed to supplement the environmentally friendly solutions.
4. The effectiveness of your *Drosophila suzukii* control measures is contingent on the effectiveness of control measures in host trees in your vicinity. If *Drosophila suzukii* is not well controlled in host trees in your vicinity, it can reproduce and migrate to damage your fruits. In such situations, one should where possible extend control efforts to host trees in your vicinity.
5. Management practices recommended for your type of fruit tree should be practiced, such as cultural and sanitation practices. For example, eliminating any fruit that has fallen on the ground and any infested fruit remaining on trees may reduce populations of flies that might infest next year's fruits or later ripening varieties.
6. The University of California Cooperative Extension (UCCE) and ISCA Technologies conduct on-going research on *Drosophila Suzukii*. You should periodically check for updated information, which can be found over the internet and the ISCA Product Support website: <http://www.iscotech.com/exec/customersupport.htm>. At this website, instruction sheets are periodically updated to incorporate latest information from research efforts. The password to access these instruction sheets is: isca951, or contact ISCA for the latest password.
7. The standard disclaimer for the information and use of ISCA's products can be found in the ISCA Technologies Standard Terms and Conditions of Sale. You may request that a copy be sent to you or you can view this at the ISCA website at: <http://www.iscotech.com/exec/sales.htm>.

## *Drosophila suzukii* (Spotted Wing)

### Background

Spotted wing *Drosophila* (SWD) was detected in California in the spring of 2009. Additional survey activities have determined that SWD is present in multiple counties within the southern and central portions of that State. Although the species of *Drosophila* found in California is a non-quarantine pest, it is still important for growers and producers of various fruit and berry crops to be aware of its presence in order to control and manage the insect.

SWD is a small fly that primarily affects ripe or ripening fruit of cherry, peach, plum, raspberry, strawberry, apple, grape, blueberry, and persimmon crops. This insect differs from common vinegar flies in the genus *Drosophila* because it can impact ripening fruit in the early stages of development, while the common fruit fly only damages ripe or overripe fruit.

SWD thrives at cooler temperatures (68° F) typically experienced during most of the early summer and fall—the same time at which berry and fruit crops ripen. This is a significant concern because, since different berry and fruit crops ripen at different times of the season, SWD may move from one crop to another as the season progresses. Consequently, SWD populations can damage several different varieties of ripening fruit during a single growing season.



Figure 1. Male SWD.



Figure 2. Female SWD.

### Description

SWD is a small fly (2 to 3 mm) with bright red eyes, a pale brown thorax, and an abdomen with black horizontal stripes. The insect resembles common vinegar flies in the genus *Drosophila*. However, the adult males differ from other native *Drosophila* males in that they possess a dark spot along the front edge of the wing near the wingtip. SWD larvae are small, white, and cylindrical. Adult SWDs are active in warmer climates; their eggs and larvae cannot survive at freezing temperatures. SWDs have a high reproductive rate, with the potential to complete at least 15 generations each year.

### Damage

SWD damage to fruit first shows up as near-microscopic scars in the fruit surface left by “stinging” (ovipositing) females laying eggs. Within 1 day, SWD

larvae hatch to begin feeding inside the fruit. In as little as 2 days, the fruit begins to collapse around the feeding site with “dents” appearing on fruits such as cherries. Thereafter, mold and infestation by secondary pests may contribute to further damage.

### Distribution

SWD is present in Japan, China, Korea, Thailand, India, and Spain. In recent years, the pest was also introduced and became established in Hawaii. The discovery of SWD in California is the first incidence of *D. suzukii* in the continental United States.

### Detection

*D. suzukii* is trapped easily in “McPhail”-type traps, bell-shaped traps that are baited with torula yeast and borax pellets dissolved in water. It has also been found in a variety of other traps commonly used to detect and control *Tephritidae* fruit



Figure 3. Damage caused by *D. suzukii* on cherries.

flies. Growers and producers of cherry, peach, plum, raspberry, strawberry, apple, grape, blueberry, and persimmon crops are encouraged to conduct their own detection activities and report their findings to their local county extension office.

## Control Measures

The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) is currently working with its stakeholders to identify all host species for SWD and determine the extent of its geographical distribution. The following are APHIS' preliminary recommendations for growers regarding the management and control of *D. suzukii*:

1. Apply environmentally safe toxicants (i.e., GF-120 and other products approved by the U.S. Environmental Protection Agency) across production fields and border areas to reduce any current SWD populations while

minimizing effects on predators, parasitoids, and honeybees. Over time, these materials may need to be reapplied (at weekly or bi-weekly intervals) to ensure that the treatments remain effective.

2. Use good sanitation and cultural practices to prevent further SWD spread and establishment. Infested fruit that remains in the field allows eggs and larvae to develop fully and, consequently, serves as a source for increased fly populations. All fruit showing damage and signs of infestation should be removed from the field and destroyed, either by burial or disposal in a closed container.

Implementing the most appropriate control and management strategies is critical to the overall elimination of this fly. A single, unmanaged field will serve as a source of SWD infestation to any surrounding area. In this regard, APHIS strongly encourages all growers within infested areas to participate in SWD control and management efforts.

**To learn more, please contact your local county extension office.** Contact information for all cooperative extension offices is available online at [www.nifa.usda.gov/Extension/](http://www.nifa.usda.gov/Extension/).

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**CAUTION:** Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife--if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

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