

PestWest **EDGE**ducational Brief



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Small Flying Infections

PestWest Demi-Diamond Walk-By Monitoring System

Dark-Eyed Fruit Fly (DEFF) *Drosophila repleta*



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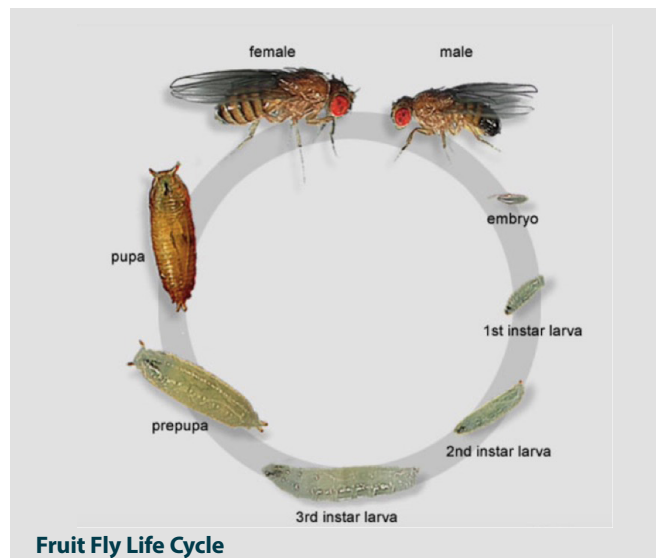
PEST BIO:

Dark-Eyed Fruit Fly (DEFF), *Drosophila repleta*

- Adult length 3.5 mm or .13 inches (larger than *D. melanogaster*)
- Dark reddish-brown eyes
- Individual bristles or hairs arising from separate dark spots on mesonotum (top surface of the second thoracic segment)
- Narrow yellow bands on the abdomen
- Many generations per year leading to explosive populations
- Egg placement begins with a two day old inseminated female and continues for 20 to 30 days
- Males survive about 40 days and females about 70 days when reared at 18°C or 64°F and males 22 days and females 28 days when reared at 28°C or 82°F
- Complete generation is 8 days at 29°C or 84°F
- Eggs are 0.6 to 0.7 mm long and 0.2 mm wide with filaments to prevent sinking (duration is about 1.0 to 1.5 days)
- Produce eggs at approximately 15 per day (average 430 per female lifetime at 25 to 30°C or 77°F to 86°F)
- At lower temperature, produce more eggs at approximately 26 per day (average 940 per female lifetime at 19 to 25°C or 66 to 77°F)
- Larvae are 0.9 mm at hatching and 6.5 mm at maturity (undergo 3 instars lasting about 4 days at 29°C or 84°F)
- Pupae seek dry location and are 4.0 to 4.3 mm long and 1.4 to 1.5 mm wide (duration is about 6 days at 24°C or 75°F)
- Flies are most active early and late in the day
- Attracted to animal excrement (Harrison et al., 1954)
- Prefers areas of gut fermentation* or fecal wastes
- Major pest in confined poultry and swine operations
- Endophilic species or thrive inside structures

Capinera, J.L., 2001, HVP. 223-224.

* The human gut is unique amongst mammals; the upper gut is a near sterile, digesting carnivorous gut (like a dog's or a cat's) evolved to deal with meat and fat. The lower gut (large bowel or colon) is full of bacteria and is a fermenting, vegetarian gut (like a cow's or horse's) evolved to digest vegetables and fiber.



COMMUNICATION:

- Modify structural inhabitant behavior.
- Educate personnel regarding DEFF to facilitate behavioral control.
- "Nudge" influence or set teamwork oriented goals by breaking them down into small chunks and agree on a course of action.

DEMI-DIAMOND WALK-BY MONITORING:

- Convenient size for easy use by pest management professionals.
- Perfectly designed monitor for adult flies in small structural spaces.
- Demi-Diamond boards with high-quality glue for secure captures in moist environments.
- Yellow color glue board background for sharp contrasting identification of DEFF.
- Demi-Diamond provides spatial walk-by monitoring for efficient isolation of DEFF hot spots (high-end fermentation sources).
- Demi-Diamond DEFF glue boards can be archived to provide an accurate visual record of infestation levels and insect species for third-party audits.
- Ideal for food processing and warehouses, hospitals, clinics, supermarkets, restaurants, delis, pet stores, convenience stores, homes, and many others.

DEMI-DIAMOND DIRECTIONS FOR USE:

- Wash hands before and after use.
- Peel off and discard the contact paper from the Demi-Diamond glue board monitor.
- Insert the glue board into the assembled Demi-Diamond station or other device designed for such use (do not to touch the glue).
- Do not use near, or around, insecticide treated areas.
- Place Demi-Diamond stations near observed DEFF activity (multiple placements will be required).
- Place Demi-Diamond stations in restrooms for census (especially if on a septic system or recycling/dry-flush toilets or portable toilets are used).
- Label, address, number, or placard Demi-Diamond(s) in the section provided.
- Replace the glue board every 4-6 weeks (or when fly-full or soiled).
- 3 ml reservoir at the base of the monitor for DEFF attractants.

SOURCE REDUCTION:

- Only 15% of the total fly population are adults at any one time (it is essential to locate and eliminate micro-sources of heat, water, food, and harborage (space) to eliminate ongoing egg, larval, and pupal stages).
- Sewer systems are aging and long-forgotten subterranean infrastructures which are becoming more and more a potent insect source.
- Inspect/investigate for failing or broken sewer lines, urinals, toilets (including no-flush or recycle toilets, and portable toilets), floor drains, leaking grease traps under floors, elevator pits, sump basins, and roof systems. Correct as required.
- Inspections for source locations can be conducted using a laser thermometer (floor temperature) and gas sniffer (sewer-like odorants).
- Conduct a floor temperature survey to determine possible sources (preference for warmer temperatures).
- Floor temperature is essential (temperatures >70°F favor emergence, and <60°F reduce activity).

CULTURAL EXCLUSION:

- Doors and windows in good repair (16 mesh fly screen).
- No open door policy.
- Restrict openings in roofs and other structural elements.
- Maintain air circulation positive building pressure (air intake should exceed air exhaust by >10%).
- Structural maintenance programs to avoid delayed maintenance issues and sanitation deficits (repair cracks in flooring, separations in wall-coverings, and plumbing leaks).
- Contract professional mop and linen services.
- Contract a grease-tap service.
- Contract with a licensed plumber for periodic or spontaneous sewer-line camera investigations.
- Proper food product rotation (first-in, first-out; last-in, first-out).
- Place short-threshold perishable produce products in walk-in cooler.
- Clean trash containers daily and use 6 mil trash bags (good for sharps and heavy-wet garbage).
- Clean under loading dock areas.
- Keep dumpster pads clean (hold provider to contractual obligation).
- Avoid exterior, building-close irrigation over-watering.



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Integrate Demi-Diamond walk-by monitoring systems with the exclusive range of PestWest Quantum® X LED flying insect management glue board systems.



The Demi-Diamond® Fruit Fly Adhesive Glue Board



The Demi-Diamond® Range of Walk-By Monitoring Systems

Where allowed, use everyday items as potent adult DEFF attractants within the Demi-Diamond 3 ml reservoir.

- Red wine (Hottel et al., 2011)
- Moist cat food (Wegner et al., 2010)
- Feed them and they will come!