

## Zyrox Fly Granular Bait Profile

- ▶ Contains a unique active ingredient to help with resistance management
- ▶ Bait matrix is both highly attractive and palatable to flies
- ▶ Lower bulk density means fewer pounds required to fill stations and fewer pounds to lift and store

## Fly Control with You in Mind

Syngenta is dedicated to providing you with products that help protect your customers and their valued assets. With proven attractiveness and efficacy, Zyrox is another example of what Syngenta has achieved through advanced scientific research and industry expertise. Featuring an active ingredient from a novel class of chemistry, Zyrox can provide exceptional control and be used in any IPM or IRM program. Choose Zyrox to help ensure your customers can live without the nuisance of flies.

FOR LIFE UNINTERRUPTED™



To learn more about Zyrox, please visit [www.SyngentaPMP.com](http://www.SyngentaPMP.com) or call 1-866-SYNGENT(A) (796-4368).

<sup>1</sup> Kaufman PE, Gerry AC, Rutz DA, and Scott JG, Monitoring susceptibility of house flies (*Musca domestica* L.) in the United States to imidacloprid. *J Agric Urban Entomol* 23:195-200 (2006).

<sup>2</sup> Butler SM, Gerry AC, and Mullens BA, House fly (Diptera: Muscidae) activity near baits containing (z)-9-tricosene and efficacy of commercial toxic fly baits on a southern California dairy. *J Econ Entomol* 100:1489-1495 (2007).

<sup>3</sup> Gerry AC and Zhang D, Behavioral resistance of house flies, *Musca domestica* (Diptera: Muscidae) to imidacloprid. *US Army Med Dep J* 54-59 (2009).

<sup>4</sup> Scott JG, Leichter CA, Rinkevič FD, Harris SA, Su C, Aberegg LC, Moon R, Geden CJ, Gerry AC, Taylor DB, Byford RL, Watson W, Johnson G, Boxler D, and Zurek L, Insecticide resistance in house flies from the United States: Resistance levels and frequency of pyrethroid resistance alleles. *Pestic Biochem Phys* 107:377-384 (2013).

<sup>5</sup> Darbo JM and Mullens BA, Assessing insecticide resistance and aversion to methomyl-treated toxic baits in *Musca domestica* L. (Diptera: Muscidae) populations in southern California. *Pest Manag Sci* 60:901-908 (2004).

<sup>6</sup> University of California, Riverside, Brad Mullens, Ph.D. PRO12703, 2012.

PROFESSIONAL PEST MANAGEMENT

# FLIES HAVE SOMETHING NEW ON THEIR MENU.

Technical Bulletin

FOR LIFE UNINTERRUPTED™

  
Granular bait

syngenta®

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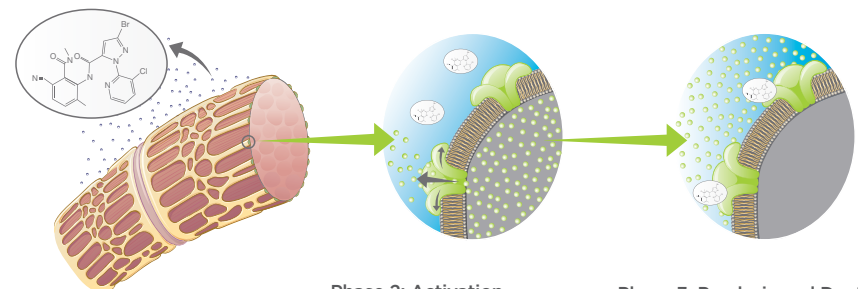
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## AN ADVANCED SOLUTION FOR FLY CONTROL

House flies can be a major nuisance on your customers' properties, but they are also capable of mechanically transmitting pathogens that can threaten human and animal health. Zyrox® fly granular bait from Syngenta Professional Pest Management is designed to help control flies with an effective active ingredient incorporated into an attractive bait matrix.

### Unique Science Inhibits Fly Activity

Zyrox contains *cyantraniliprole*, a second generation active ingredient from the anthranilic diamide class of chemistry. *Cyantraniliprole* disrupts muscle contraction in a fly by depleting calcium ions, which paralyzes the fly and inhibits activity almost immediately after ingestion.



**Phase 1: Exposure**  
Flies ingest the active ingredient in Zyrox.

**Phase 2: Activation**  
The product binds to the ryanodine receptors in the fly's muscles and causes them to open.

**Phase 3: Paralysis and Death of Flies**  
Calcium flows out of the open ryanodine receptors, depleting calcium needed for muscle contraction. The resulting muscle paralysis leads to insect death.

## Resistance Management and Flexibility

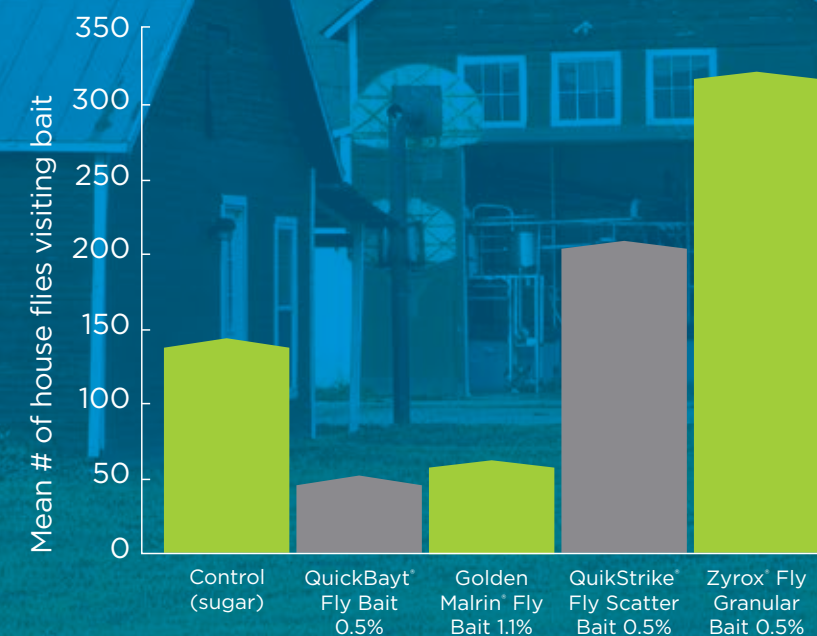
Resistance in house flies has been well-documented<sup>1-5</sup>, and new active ingredients are essential in overcoming resistance issues. The active ingredient in Zyrox is a unique compound, classified as a Group 28 (Diamide) by the Insecticide Resistance Action Committee (IRAC). This means Zyrox can be used as an effective tool to control flies, particularly as a rotational product in Integrated Pest Management (IPM) and Insect Resistance Management (IRM) programs. Because of the targeted mode of action, Zyrox can also be used indoors in a bait station, as directed by the product label.

### Formulated for Results

Due to increased behavioral aversion and physiological resistance in house flies<sup>3,5</sup>, certain fly baits may not be as effective as they once were. However, Zyrox is formulated with a highly palatable matrix that will attract and control flies, even without requiring a pheromone to lure them in.

Once a fly ingests Zyrox, effects can be seen within minutes. Coordinated movement stops rapidly, followed by lethargy, paralysis and death of the fly, providing quick relief and protection from nuisance flies. In addition, university trials have proven Zyrox is up to five times more attractive than other baits currently on the market.<sup>5</sup>

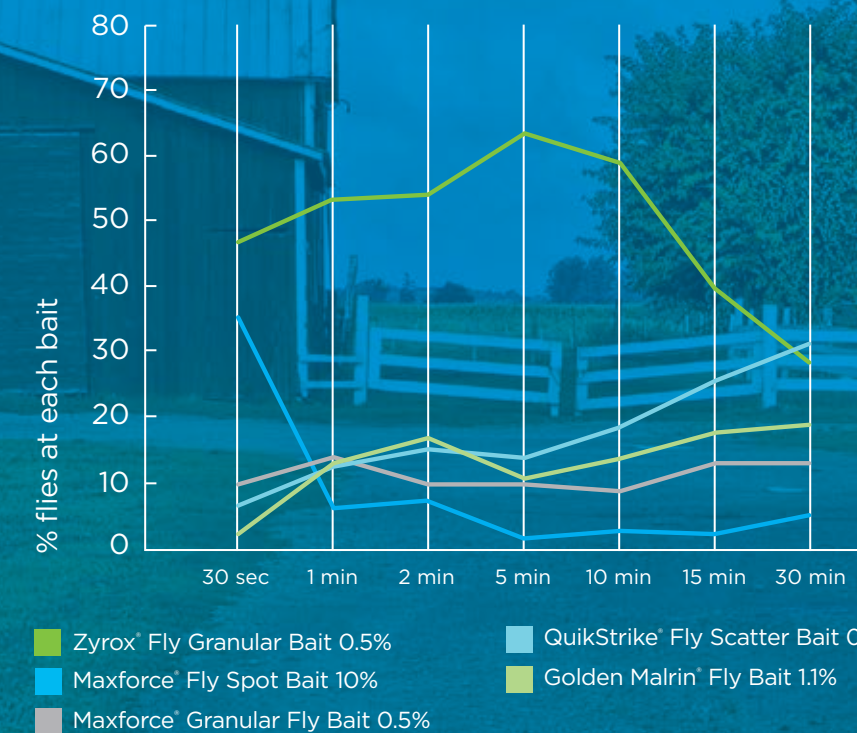
House Fly Attraction Field Trial – California



This graph illustrates fly bait attractiveness on a dairy farm in Southern California over four different test days. Zyrox was found to be nearly one and a half times more attractive than QuikStrike®, almost five times more attractive than Golden Malrin® and approximately six times more attractive than QuickBayt®.

Source: University of California, Riverside, Brad Mullens, Ph.D. PRO12703, 2012

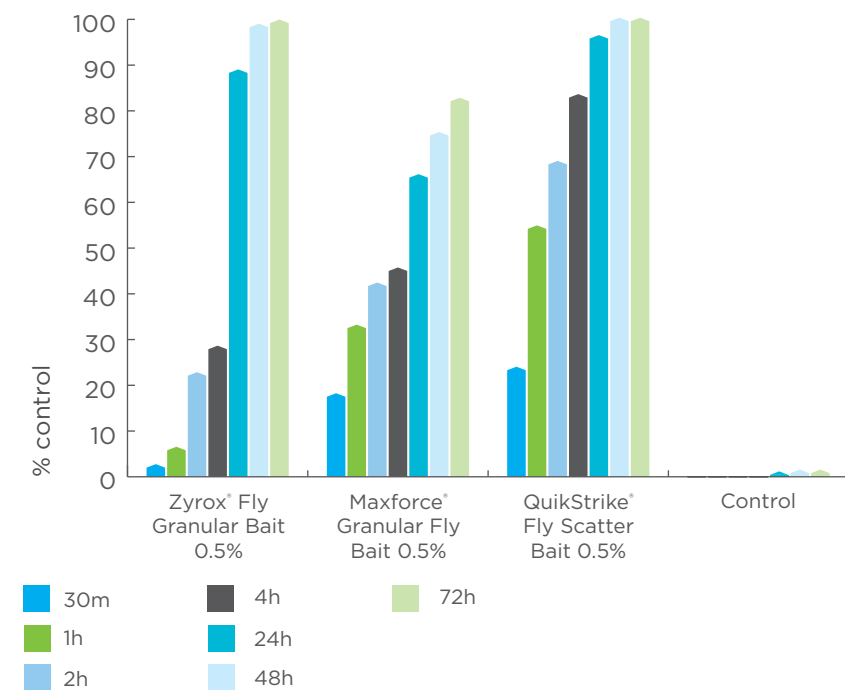
House Fly Attraction Lab Trial – Florida



This graph illustrates bait preference during a 30 minute laboratory evaluation. Even without the use of a pheromone, which was present in the other products, Zyrox attracted almost five times more flies than the other products tested within five minutes. After 10 minutes, the percentage of flies visiting Zyrox declined as flies began to experience paralysis after consuming Zyrox.

Source: University of Florida, Phil Koehler, Ph.D. PRO12714, 2012

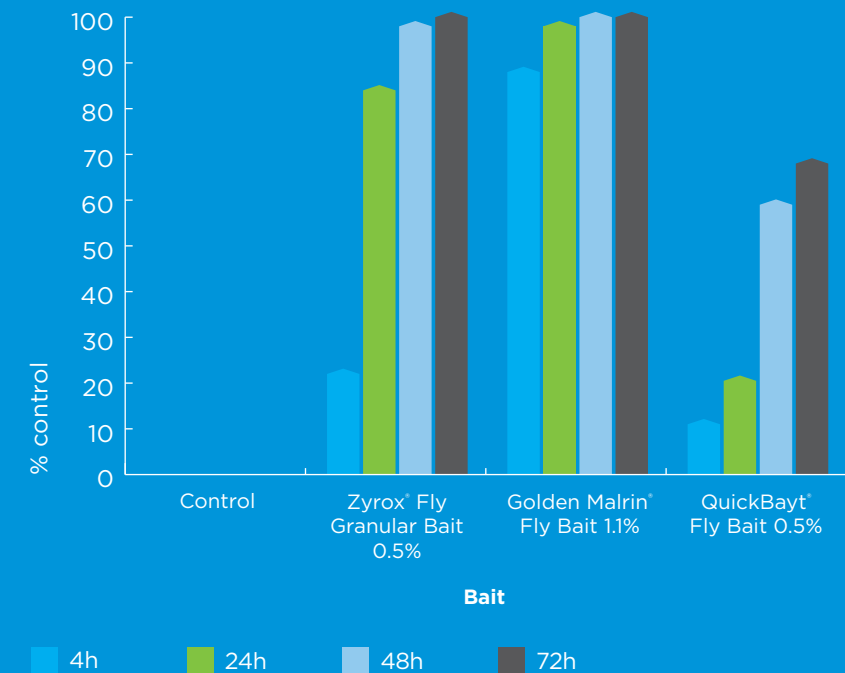
**Performance against Challenging Fly Strains:  
University of Florida**



These graphs illustrate the performance of Zyrox against laboratory-reared fly strains selected for resistance (behavioral aversion) to *imidacloprid* based baits. In these trials, flies could choose between each tested product and an alternative food option, just as they would in their natural environment. Results showed that Zyrox provided effective control of these fly strains, making it a good fit for IRM programs.

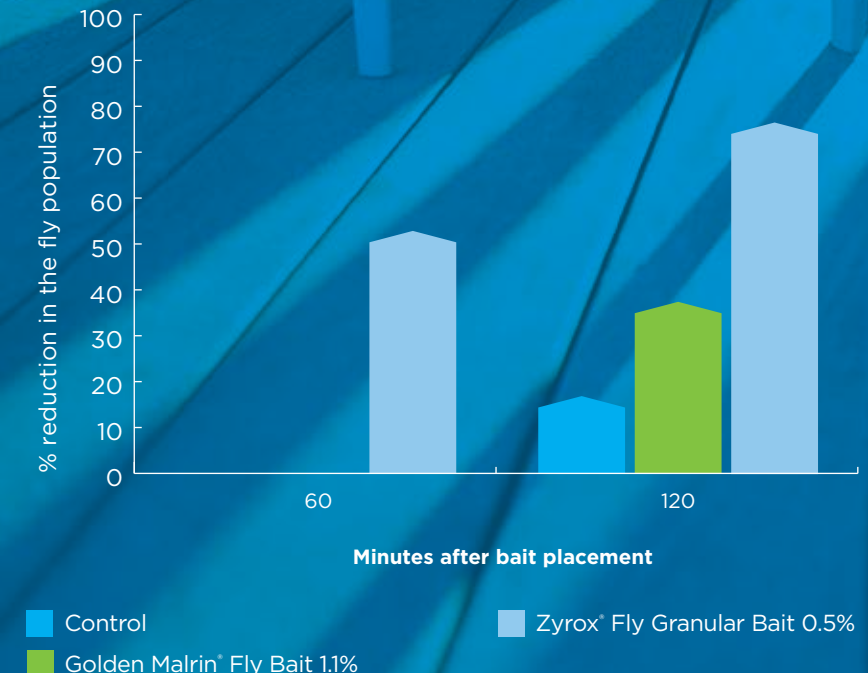
Source: University of Florida, Phil Kaufman, Ph.D. PR107607, 2010

**Performance against Challenging Fly Strains:  
New Mexico State University**



Source: New Mexico State University, Jimmy Pitzer, Ph.D. PRO12717, 2012

**Reduction in Fly Populations**



This graph illustrates the simulated reduction of a fly population, which was estimated using the Scudder Technique typically used by health departments. Zyrox outperformed the control and competitor fly bait, providing a 77.5 percent reduction of flies within two hours.

Source: University of Florida, Phil Koehler Ph.D. PRO12709, 2012

**Resourceful Use of Bait**

The bait matrix of Zyrox has a lower bulk density than most other competitor fly baits. This allows for comparable surface area coverage and volume to other baits, but with fewer pounds of bait to carry, move and store. The typical use rate is 3.2 ounces per 1,000 square feet, and the high rate of 6.4 ounces per 1,000 square feet is recommended for high-level fly infestations.

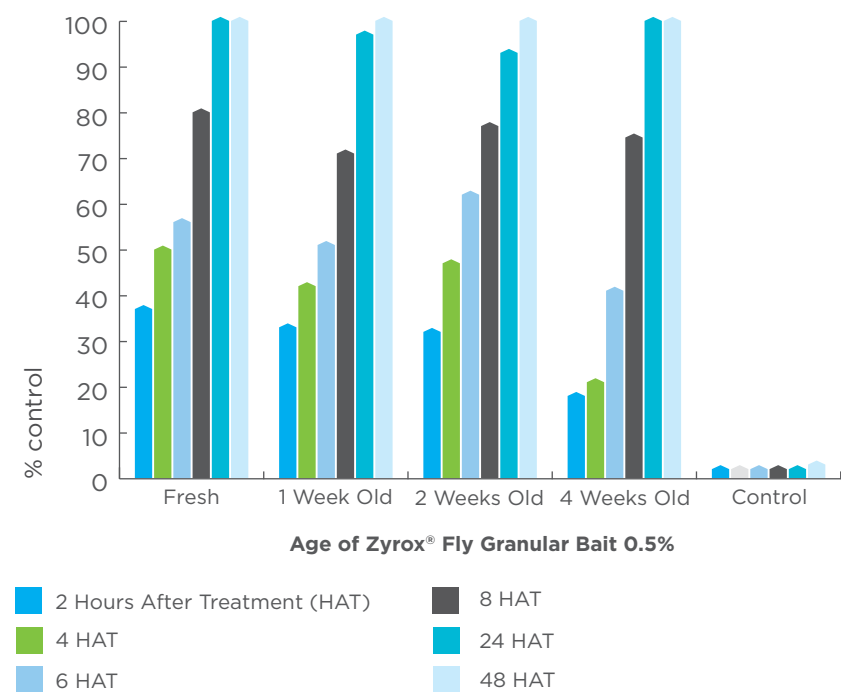


Zyrox<sup>®</sup> Fly Granular Bait 24 g (0.85 oz) | Maxforce<sup>®</sup> Granular Fly Bait/QuickBayt<sup>®</sup> Fly Bait 36 g (1.3 oz) | Golden Malrin<sup>®</sup> Fly Bait 52 g (1.8 oz)

One pound of Zyrox can fill a bait station 19 times, versus one pound of the above competitor products that would fill a bait station 13 times or less.



### Zyrox Palatability over Time



Results of this trial show that Zyrox remained palatable and effective against flies for up to four weeks, even after being exposed to environmental conditions.

Source: Purdue University, Grzesiek Buczkowski, Ph.D. PRO12701, 2012

### Flexible Application for Maximum Control

Zyrox has been approved for use both indoors (in a bait station) and outdoors in the most common areas where high fly densities result in customer complaints. Outdoors it can be applied to areas used for storing waste in refuse dumpsters that are fenced in or inaccessible to children and pets, such as around the following areas. For a complete list of application sites, please read the label.

- ▶ Restaurants
- ▶ Taverns
- ▶ Hotels
- ▶ Grocery stores
- ▶ Supermarkets
- ▶ Bakeries
- ▶ Warehouses
- ▶ Sports complexes

Zyrox can also be applied to outdoor areas of commercial operations such as:

- ▶ Canneries
- ▶ Beverage processing plants
- ▶ Dairy, meat and poultry processing plants
- ▶ Fruit and vegetable processing plants
- ▶ Seafood processing plants
- ▶ Kennels
- ▶ Schools
- ▶ Recycling plants
- ▶ Zoos
- ▶ Military installations

For production animal accounts, Zyrox fills a critical resistance management gap for:

- ▶ Poultry/broiler houses
- ▶ Caged layer houses
- ▶ Swine production structures
- ▶ Livestock housing structures
- ▶ Horse stables

### Zyrox in the Fly Bait Market

|                              | Zyrox <sup>®</sup> Fly Granular Bait  | Golden Malrin <sup>®</sup> Fly Bait   | QuickBait <sup>®</sup> Fly Bait and Maxforce <sup>®</sup> Granular Fly Bait | QuikStrike <sup>®</sup> Fly Scatter Bait  |
|------------------------------|---|---|---|---|
| Signal word                  | No signal word  | Caution   | Caution   | Caution   |
| Active ingredient            | Cytraniliprole (0.5%)   | Methomyl (1.1%)   | Imidacloprid (0.5%)   | Dinotefuran (0.5%)  |
| IRAC Group                   | 28  | 1A  | 4A  | 4A  |
| Ounces per 1,000 square feet | 3.2-6.4   | 8   | 5.7-6.3   | 8   |
| Re-application               | 7 days as needed  | As needed   | 7 days as needed  | As needed   |
| Use restrictions             | Do not apply outdoors when raining; must be used in bait station when used indoors; do not apply more than 32 ounces per 1,000 square feet per year | Do not use around commercial dumpsters which are not enclosed; do not use inside homes or any place where children or animals might be present; do not use where milk is processed or stored; do not use in serving areas while food is present | Do not apply inside food processing plants or restaurants                   | Do not use around commercial dumpsters which are not enclosed; do not use inside homes or any place where children or animals might be present; do not use in serving areas while food is exposed |