Effective Biological Insect Control

Outperforms Chemical Insecticides

www.bigsis.tech

BigSis™

WORKING WITH MOTHER NATURE

For a Perfect Storm ...

Growers depend on chemical insecticides to control pests

1. Consumers demand more sustainable food

2. Regulatory pressure reduces product choice

3. Climate change increases pest pressure

4. Insect resistance to remaining control tools

... a Perfect Solution

BigSis SIT solutions are so benign that no permit is needed for commercial sale of our SWD Solution in England and four USA states (CA, WA, OR, FL).

BigSis SWD Solution ... ... Season-Long Control

Helping tackle a major threat

Adult Male SWD

The invasive fruit fly, spotted wing drosophila (SWD), attacks high-value soft fruit, including blackberries, raspberries, strawberries, blueberries and cherries.

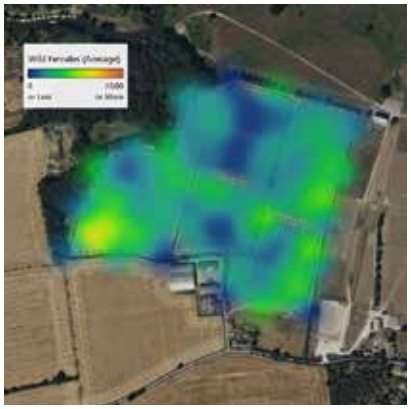
Currently SWD control relies on chemical insecticides and extra labour for hygiene and more frequent picking. A more sustainable and effective approach is urgently needed.

SWD control as a service

BigSis SWD Solution provides soft fruit growers with a powerful new tool for preventative control of this damaging pest.

BigSis SWD Solution is sold as a season-long SWD control service.

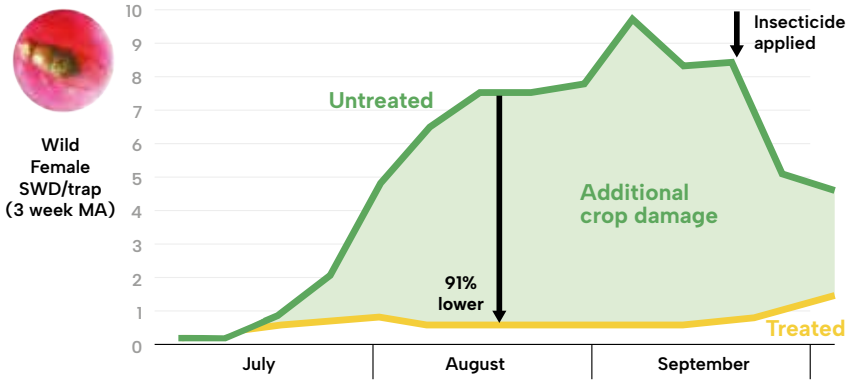
BigSis releases sterile male SWD regularly throughout the season and provides progress reports.



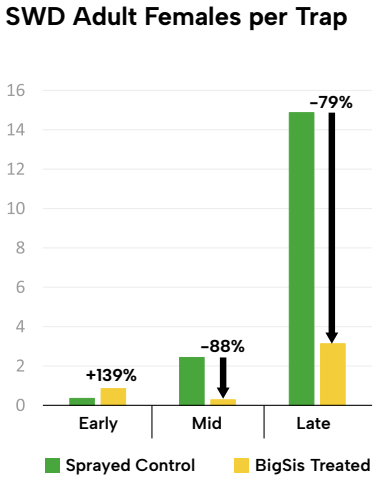
Heat Map

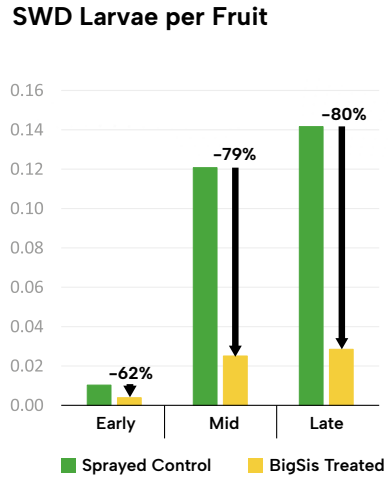
Strawberries: Up to 91% suppression of SWD

Publication: https://doi.org/10.3390/insects13040328



Raspberries: Up to 80% fewer larvae vs one spray





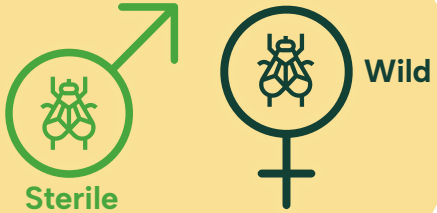
How SIT Works

The Sterile Insect Technique (SIT) has been used for sustainable and effective insect control for over 70 years.

How SIT controls insect pests

1. Produce sterile male insects

2. Release sterile males to mate with wild females



3. Females have no offspring

Myths and Truths

Some well-known SIT projects are large-scale initiatives backed by government agencies. This can create preconceptions about how SIT "must" be used. BigSis is harnessing the full versatility of this powerful solution to make it available commercially.

✘ Myth: SIT only works for wide-area control

✔ Truth: SIT is practical at farm-scale for most pests

For most species, males and females are not likely to travel far if they can find food, shelter and a mate. So field sizes as small as ten acres can use SIT; "border effects" are similar to other control solutions.

✘ Myth: SIT is only useful for eradication

✔ Truth: SIT is ideal for preventative control

The mating instinct of the released sterile males makes them highly effective at finding the few wild females present when pest pressure is low. Hence SIT is ideal for preventing pest population explosions, maintaining a low level throughout the season and so minimising yield loss.

✘ Myth: SIT only works for single dominant pests

✔ Truth: SIT can control secondary pests in parallel

BigSis' versatile platform can quickly and cheaply develop solutions for secondary pests and release these in conjunction with the main pest solution.

BigSis Reinvents SIT ...

BigSis hasn't just automated insect production, we've revolutionised it. We use robotics and artificial intelligence to rear insects individually, millions at a time.

Sex sorting is done with computer vision, making light work of this otherwise impossibly laborious task. Removing females avoids crop damage from flies piercing fruit to lay eggs.

BigSis sterilises the male insects with a proprietary x-ray system that leaves them fitter than other methods. Taking advantage of our exquisite handling of each insect, we can ensure that x-rays are targeted at the insect's gonads and so greatly reduce the fitness penalty of sterilisation.

These innovations combine to reduce the cost per acre of SIT solutions by up to 90%. BigSis is taking SIT mainstream.

... and its Implementation

The BigSis solution does more than cut the cost of SIT. It also transforms how it is delivered in three important ways.

1. **Farm-scale, season-long control solutions will be sold through distributors.**

   Growers trust distributors to recommend an integrated pest management (IPM) solution appropriate to their farm. Distributors will take orders but not hold stock; BigSis produces and releases the sterile male insects and monitors the wild pest population.

2. **Local native strains are used in each micro-production unit, optimising mating compatibility and minimising regulatory hurdles.**

   Some species exhibit significant differences in mating compatibility across geographies; working with local native strains avoids this problem. It also avoids environmental concerns associated with trans-boundary movements of insects.

3. **Micro-production units will be deployed in each country or state.**

   Automation enables efficient small-scale production. Hence BigSis can minimise regulatory hurdles, facilitate logistics, reduce transport miles and maximise biological compatibility.

A Platform Technology ... ... For Many BigSis Solutions

BigSis' platform technology has the potential to create solutions for dozens of agricultural and other insect pests.

Thanks to low regulatory hurdles, BigSis new solution development is significantly faster and cheaper than for chemical or biotech solutions.

✔ BigSis Codling Moth Solution

Yield loss is not inevitable!

After decades of controlling codling moth with standard chemical insecticide programs, it is easy to forget that the residual yield loss, typically 2–3%, is not inevitable.

The sterile insect technique (SIT) program that has been running in Canada for over 20 years has reduced the yield loss to below 0.2% in over 80% of orchards.

BigSis Codling Moth Solution aims to bring this valuable yield gain to apple and pear growers, driving excellent return on investment. We are working towards launch from 2027.

✔ Future Solutions

Building a broad portfolio

BigSis is focusing initially on important pests of fruit and vegetables. We aim to address a large number of pest species including flies, moths, beetles and weevils.

Subsequently it will address key row crop pests including fall armyworm and soybean looper.

In the longer term, we envisage developing chemical-free solutions to control stored grain, animal nuisance and mosquito pests.

BigSis chemical-free insect control solutions increase crop yield and quality.

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