

# EARLY SPRING TREATMENTS USING NATULAR™ G30 2019 UPDATE

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## ABSTRACT

With the goal of reducing early season mammal biting mosquito species such as *Ochlerotatus abserratus* and *Ochlerotatus excrucians*, the Central Massachusetts Mosquito Control Project once again evaluated the Natular™ G30 formulation of spinosad. Created from fermented *Saccharopolyspora spinose*, spinosad can be a viable alternative to *Bacillus thuringiensis israelensis* and other traditionally used products. The Natular™ G30 formulation of spinosad is a slow release design, allowing itself to be utilized as a pre-hatch treatment. This evaluation of Natular™ G30, the fifth by CMMCP, again indicated that Natular™ G30 can be used successfully pre-hatch, to control several mosquito species that develop early in the season such as *Ochlerotatus abserratus* and *Ochlerotatus excrucians*.

## BACKGROUND

*Ochlerotatus abserratus* and *Ochlerotatus excrucians* represent two of the first mosquito species to emerge each season, having developed in scattered woodland “snow” pools. These species are both persistent mammal biters and may harbor Jamestown Canyon virus (Andreadis 2005). *Oc. abserratus* and *Oc. excrucians* are univoltine species, as they produce a single generation each year. The eggs produced by adult females during the season remain inactive until the following spring. Despite being a potential vector of Jamestown Canyon virus, *Oc. abserratus* and *Oc. excrucians* are not considered important factors in the transmission cycle of West Nile virus and Eastern Equine Encephalitis. Along with *Oc. abserratus* and *Oc. excrucians*, *Ochlerotatus canadensis* may also develop in these woodland pools. The

significant difference between these three species is that *Oc. canadensis* may produce multiple generations a year, in addition to being a potential vector of both West Nile virus and Eastern Equine Encephalitis (Andreadis 2005).

To reduce these “spring brood” species of mosquitoes CMMCP had used methoxychlor, an organochlorine, by applying the dust formulation to the frozen larval habitats. Treating these locations pre-hatch, allowed for an expanded larvicide window outside the traditional spring season. The winter applications significantly reduced the number of adult *Oc. abserratus*, *Oc. excrucians*, and *Oc. canadensis* mosquitoes that would later emerge, and as a result lower the number of service requests from the residents of CMMCP member communities. During this time period, methoxychlor was used not only against mosquitoes but many other pest

control insects. It was also used against insects in the agricultural, horticultural and veterinary fields (Extension Toxicology Network 1996). Since CMMCP discontinued using methoxychlor in the 1980s, it has not found a suitable alternative.

The majority of current mosquito larvicide options involve strains of *Bacillus thuringiensis israelensis* and/or *Bacillus sphaericus*, insect growth regulators, or surfactant oils, but the development of spinosad based products adds another alternative. Created from the fermentation of the soil bacteria *Saccharopolyspora spinosa*, spinosad has been shown to control developing mosquito larvae. Natular™ G30 is a currently available, slow release, commercial formulation of spinosad. Another benefit of Natular™ G30 is that the Environmental Protection Agency has identified it (spinosad) as a “Reduced Risk” pesticide (CMMCP 2019). Clarke Mosquito Control Products, Inc., the manufacturer of Natular™ G30, has formulated the granules to provide larval control for up to 30 days, as implied by the product name. CMMCP sought to determine if this product could be applied before the traditional larvicide season, and provide proper control of immature mosquito larvae. If successful, Natular™ G30 would allow for an increased amount of targeted *Oc. abserratus*, *Oc. excrucians*, and *Oc. canadensis* larviciding, reducing the number of adulticide service requests from residents in the CMMCP service area.

## **MATERIALS & METHODS**

Four CMMCP member communities were involved in this evaluation of Natular™ G30, Hopkinton,

Northborough, Southborough and Westborough. These were the same towns that were included in previous Natular™ G30 trials. A total of thirty-one trial sites were used to monitor Natular™ G30 efficacy. Site selection was based on historical larvae data from CMMCP field inspections, although many of the locations were involved in the Natular™ G30 field trials of previous seasons. In order to ensure consistent surveillance during the trials, recoverable dip stations (RDS) were first created at every site, both treated and untreated. Four RDS per site were flagged and at these specific points are where larval densities, water temperatures, and general observations took place throughout the course of the project. The Natular™ G30 applications at the treatment sites took place in mid-March, immediately following initial pretreatment larval observations, at a rate of 10lbs/acre. Larval surveillance was attempted twice a week, with several additional observations taking place beyond the proposed control range of 30 days. Following the conclusion of field surveillance, the data was compiled and evaluated to measure the level of larval control at treatment sites, as well as what natural fluctuations transpired at the untreated control sites.

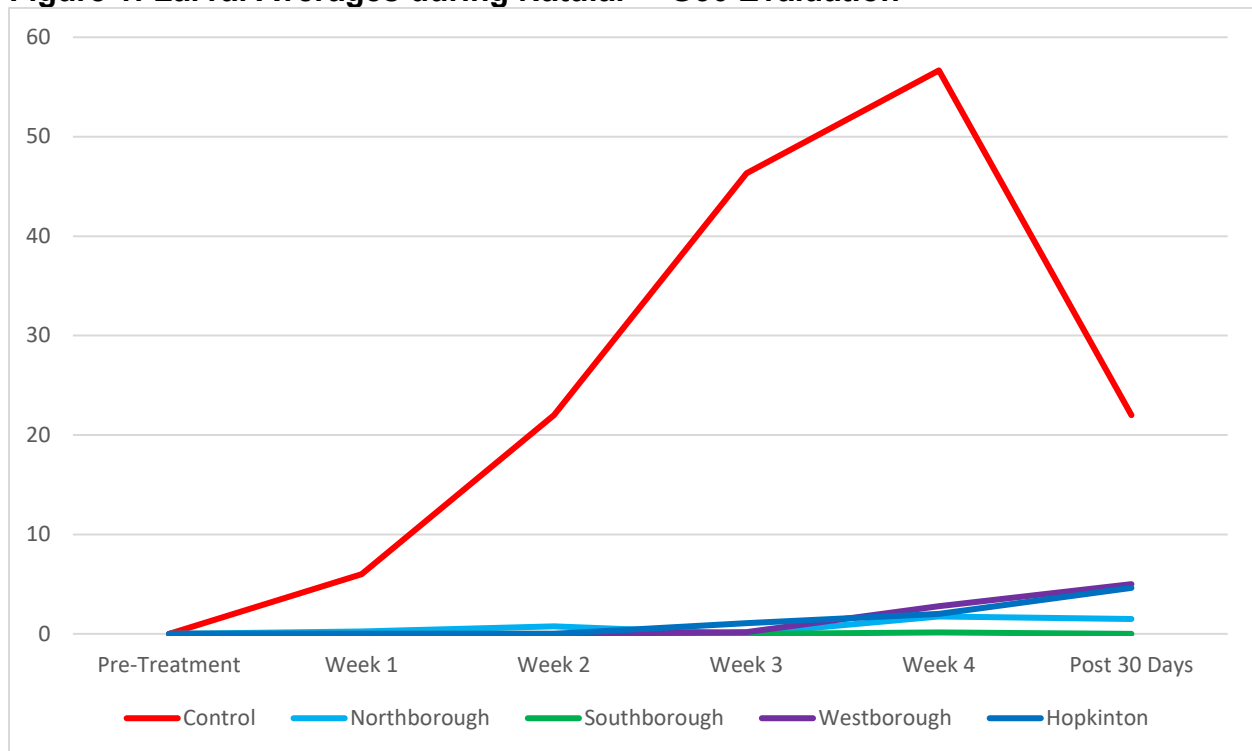
## **2019 RESULTS**

Once the field collected data was grouped by town and treatment status, the relative success of the Natular™ G30 treatments could be measured. Compared to the control (untreated) sites, all of the treated sites remained relatively free of mosquito larvae for several weeks, only observing routine larvae towards the end of the purported treatment window. These findings were

in direct contrast to the control (untreated) sites, which experienced rising levels of mosquito larvae for the majority of the project timeframe. The eventual drop in larval density for the

control sites could have been the result of adult emergence, as observed larvae had entered advanced development stages.

**Figure 1: Larval Averages during Natular™ G30 Evaluation**



## DISCUSSION

This particular evaluation of Natular™ G30 once again showed viability for the product as a pre-hatch option for early season mosquito species. All treatment sites experienced consistently depressed levels of mosquito larvae, primarily in mammal biting species such as *Ochlerotatus abserratus* and *Ochlerotatus excrucians*. During the same time period, untreated sites experienced increasing levels of mosquito larvae, with advancing

development stages and adult emergence. The 2019 Natular™ G30 field trials, the fifth assessment of this product, reinforced the potential for this product as a viable option for CMMCP against spring mosquito larvae in woodland pools.

## ACKNOWLEDGEMENTS

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identify, treat and monitor the sites used in this project.

## REFERENCES

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