

FIELD TRIALS OF NATULAR® G FOR CONTROL OF *COQUILLETIDIA PERTURBANS* LARVAE IN SELECTED RETENTION PONDS

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ABSTRACT

One of the primary pestiferous mosquitoes in the CMMCP service area is *Coquillettidia perturbans*, a mammal biting mosquito that develops in cattail habitats. Because *Cq. perturbans* larvae attach the aquatic roots of the cattails, traditional control methods can be less effective. Natular™ G, a relatively novel product, may be an option to address this situation. Spinosad is the active ingredient of Natular™ G, which is created from the fermentation of the naturally occurring soil organism *Saccharopolyspora spinosa*. To evaluate the potential of Natular™ G against *Cq. perturbans*, CMMCP conducted field trials in local retention ponds with a known history of this Eastern Equine Encephalitis and West Nile virus vector species.

INTRODUCTION

By the 1980's the use of products such as methoxychlor (an organochlorine) by CMMCP ceased, leaving no suitable pre-hatch treatments. Natular™ G is a recent addition to the larvicide options available to CMMCP, and uses Spinosad as the active ingredient. This Group 5 larvicide can be used in several different mosquito environments including temporary standing water, freshwater swamps, storm water systems, and artificial containers. Cattail marshes and freshwater emergent vegetation areas are also included in these highlighted application habitats, which makes this product suitable for species such as *Cq. perturbans* that develop in these specific environments. *Cq. perturbans* are unique because as larvae they attach themselves to the root systems of these plants to breathe. CMMCP sought to evaluate Natular™ G for use as a pre-

hatch treatment, an option not available since the 1980's.

MATERIALS & METHODS

The retention ponds chosen for this project have been monitored for several seasons. CDC traps baited solely with compressed CO₂ were used over this period to determine the abundance of *Cq. perturbans*. To gauge the viability of Natular™ G on this mosquito species, two of these retention ponds were designated as treatment sites, with two others as non-treated controls. The Natular™ G was applied in accordance with the label at the two treatment locations. Surveillance for *Cq. perturbans* began before emergence began and continued through the season using the same CDC trap configuration that had been used in prior surveillance. Collections from these treatment and non-treatment sites could be compared to one another as well as the past data

from those specific retention ponds to determine the level of control achieved from the Natular™ G applications.

The data analysis from this surveillance is not indicative of significant control. This reflection may be influenced by the collection method rather than actual level of control achieved by the Natular™ G on the *Cq. perturbans* population. Although the CDC surveillance traps are positioned in close proximity to the retention ponds, they do not exclude adult *Cq. perturbans* that may have potentially migrated from outside sources, from entering the collection chamber. The applications of Natular™ G may have been timed right, and in adequate amounts to control the *Cq. perturbans* larvae, but if non-native adults entered the surveillance traps, the results would not have reflected the control success.

If the CDC traps collected only native *Cq. perturbans* from the selected retention ponds, the results may be caused by ineffective Natular™ G, improper treatment schedule, or inadequate application. Although unlikely, the particular batch of product CMMCP utilized in the trials could have been less potent than advertised, which would have contributed to the perceived low level of control. Another potential issue with the product could have been associated with the timing of the application. As Spinosad needs to be ingested for it to be effective, if the *Cq. perturbans* population was at the late 4th instar larval or pupal

stage the Natular™ G would not successfully control the mosquitoes.

CONCLUSION

The adult mosquito surveillance conducted around these select retention ponds provided results that do not indicate successful control. It is proposed that the finding is due primary to faults with the surveillance practice of using free standing CDC traps to collect emerging mosquitoes. To address this issue, CMMCP has begun developing stationary emergence traps that will collect adult *Cq. perturbans* directly from the retention pond vegetation mats. This will remove the possibility of non-native mosquitoes skewing the trial collections. These traps will also allow for separate well defined collections within the same retention pond. Potentially, this could create an experimental design where a particular retention pond has designated treated and non-treated areas. Emergence traps could then be established in both section types, reducing the previous bias between different treatment/non-treatment retention ponds. CMMCP will incorporate this surveillance change into future evaluations of Natular™ G and similar products as pre-hatch control options for *Cq. perturbans*.

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