FIELD TRIALS OF NATULAR® G30 FOR PRE-HATCH CONTROL OF MOSQUITO LARVAE IN SELECTED SPRING BROOD LOCATIONS

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ABSTRACT

Early each spring season, several particular mosquito species begin to develop in the woodland pools created from melted snow. These species include *Ochlerotatus abserratus*, *Oc. excrucians*, potentially *Oc. canadensis*, and are known mammal biting mosquitoes. Lacking a suitable pre-hatch control option for these species, CMMCP conducted field trials of Natular™ G30. The active ingredient of this product, spinosad, is biologically derived from the fermentation of the soil organism *Saccharopolyspora spinosa*, and released for up to 30 days according to the manufacturer. Results from this field trial were mixed, with a subset of treatment sites experiencing significant control, while the other demonstrating delayed larval development, but eventual pupation.

INTRODUCTION

CMMCP has been without a suitable product for pre-hatch treatments since use of the organochlorine methoxychlor ended several decades ago. Natular™ G30 is an extended release version of the Natular™ G granule. Both utilize spinosad as the active ingredient, which is categorized as one of the only Group 5 insecticides. It is also the first larvicide evaluated by the EPA as a Reduced Risk product. According to the Clarke Mosquito Control Products, Inc., these granules are effective against mosquito larvae in a variety of environments for up to 30 days, depending on habitat conditions (CMMCP 2015). CMMCP sought to test this product as a pre-hatch for spring brood mosquito species such as *Oc. abserratus*, *Oc. excrucians* and possibly *Oc. canadensis*, with the hopes of having a viable option for pre-hatch control available to the program. While *Oc. abserratus* and *Oc. excrucians* are univoltine, having one generation per year, *Oc. canadensis* is generally considered multivoltine, with the potential for more than one generation per season. Additionally, *Oc. canadensis* has shown the ability to harbor West Nile virus and Eastern Equine Encephalitis (Andreadis 2005). Isolated pre-hatch larvicide treatments for these species would lessen the need for larger adulticide events upon adult emergence.

MATERIALS & METHODS

Fifteen total sites were selected from two neighboring towns, and chosen primarily from historical larval surveillance records. Many of these had also been used in previous pre-hatch trials of FourStar® Bti CRG. Twelve of these sites were treated with Natular™ G30 at an application rate of 10lbs/acre. The three other sites were not treated and instead used as control references. The Natular™ G30 applications took place April 1st, 2015, with the majority of sites still frozen over from the winter season.

Observations were taken approximately twice a week at each site. Notes included number of larvae per dip, development stage of larvae, and water temperature. The final larvae checks took place in early May, past the 30 days of estimated effective control from the Natular™ G30 extended release granules.

Results were mixed with the sites in one town showing significant sustained control, while the sites in the adjacent town showing initial control, but eventual pupation, indicating failure. The continuous control subset of sites numbered four, with the delayed but ultimate development subset of treatment sites comprising the other eight. With the variations in success level being associated with town (and applicator), differences in application coverage could have occurred, although with a consistent application rate this may not have occurred. Unidentified differences between the sites of the two towns may have potentially played a role in the disparity of control shown.

CONCLUSION

This field trial of Natular™ G30, involving treated and non-treated control sites, presented mixed results through larval surveillance. One subset of sites maintained control while the other experienced delayed but eventual development. These mosquito larvae ultimately entered the pupal stage, representing a failure. Having significant control in one collection of treatment sites, but not the other, indicates a difference in application or site characteristics. An expanded field evaluation of Natular™ G30 will be conducted in the spring of 2016. This future trial should produce more information on the viability of this product for use as a pre-hatch treatment against local mosquito species.

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