

Efficacy of Advance Science's MacroAlgae/Thymol/Lemongrass blend against *Nosema ceranae* in Cage Trials

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Introduction:

Nosema is a small parasite that resides in the gut of honeybees and is a worldwide problem for bees and beekeepers. There are two types of *Nosema*- *Nosema apis* and *Nosema ceranae*. It has been shown that whenever colonies die from CCD that *Nosema* is nearly always present. Of thirty CCD affected colonies observed, 100% were positive for *N. ceranae* and 90% for *N. apis*. Here, a blend of MacroAlgae, Thymol and Lemongrass is trialled in cage trials to assess its efficacy against *Nosema ceranae*.

Materials & Methods:

A frame of sealed brood was taken from a *Nosema ceranae* free colony and maintained in an incubator at 35°C and 65% relative humidity. Emerging bees were placed in cages and fed sugar syrup. Bees were then divided into groups to receive the following; (1) control- 1:1 sugar syrup, (2) Bulk inoculation- spore solution containing 18,000 spores in 6µl/bee in sugar syrup and (3) Individual inoculation- bees were starved for 2 hrs before being individually fed with the 1µl of the spore solution.

Treatments were then administered to each group. Treatments were (A) MacroAlgae/Thymol/Lemongrass blend and (B) Thymol/Lemongrass blend. Spore counts were taken 7 and 14 days after inoculation. Analysis was carried out by CRA-API.

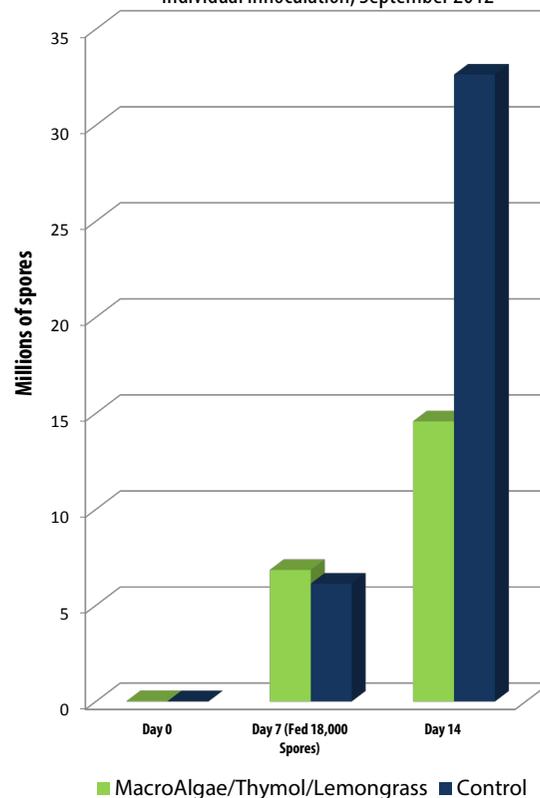
Results & Conclusions:

Spore counts were similar in both groups on day 7 (when spores were fed). There was a significant difference in spore counts 7 days later between control and treated group with the treated groups having half the amount of spores present as the control groups.

Graph.1. Spore counts over 14 days when fed sugar syrup or sugar syrup supplemented with MacroAlgae/Thymol/Lemongrass

MacroAlgae/Thymol/Lemongrass reduces *Nosema ceranae* spores by 56 % in 7 days

Individual inoculation, September 2012



Results & Conclusions continued:

In order to assess the efficacy of adding the MacroAlgae to the blend, a blend **without** MacroAlgae was tested and compared to a blend **with** MacroAlgae. Graph.2 shows % reduction of spores for both treatments. Addition of MacroAlgae results in a 91% difference in spore reduction compared to a blend without MacroAlgae. Consumption was also monitored between these two groups with no significant difference in consumption noted with bees consuming slightly more of the blend containing MacroAlgae.

These results demonstrate the efficacy of this blend in reducing spores found in the honeybee gut over a short period of time and suggest that it may be beneficial as an in-hive treatment. Further tests are required to assess its efficacy in the field.

Graph.2. Spore counts over 14 days when fed sugar syrup or sugar syrup supplemented with MacroAlgae/Thymol/Lemongrass

MacroAlgae increases spore reduction by 91%
Bulk Inoculation September 2012

