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ECOLETTER

BIOLOGICAL INSECTICIDE NOFLY IS EFFECTIVE AGAINST WHITEFLY IN SOYBEAN

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Periodic publication on efficacy and characteristics of Futureco Bioscience products.

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INTRODUCTION

Soybean (Glycine max) is the main oil-seed crop grown and consumed in the world. Brasil is one of the two largest oilseed producers in the world along with the United States of America.

In soybean cropping, most pest species are associated with certain growth stages, but the occurrence of *B. tabaci* is possible throughout the whole growing cycle greatly increasing its damage potential and hindering its control. The damaged caused by whiteflies in soybean plants are direct, due to sap sucking and toxin injection, and indirect, caused mainly by virus transmission.

The increasing occurrence of *B. tabaci* on Brazilian soybean fields is often associated to the increasing use of chemical insecticides that can lead to the appearance and predominance of resistant strains of the pest and result in a potential risks to food safety, the environment, and all living things.

NOFLY WP is a biological contact insecticide formulated with spores of the entomopathogenic fungus *Cordyceps fumosorosea* strain FE9901, property of Futureco Bioescience and developed as a biocontrol method against whiteflies (*Bemisia, Trialeurodes, Lecanoideus, Aleurodicus*), aphids and thrips (*Frankliniella occidentalis*).

The aim of this work was to evaluate the application of NOLFY WP alone and in combination with Pyriproxyfen as an integrated pest management approach to the strategy for whitefly control in soybean, also comparing NOFLY WP efficacy with another entomopathogenic fungi based product (*Beauveria bassiana*).

MATERIALS AND METHODS

The experiments were set in Ponta Grossa, Paraná, Brazil. Three different commercial soybean fields were selected where infestation of *B. tabaci* occurred naturally. Infestation levels at the beginning of the three trials were high, with 6 to 14 nymphs of *B. tabaci* per leaf.

The treatments included in the trials were four different doses of NOLFY WP (*Cordyceps fumosorosea* strain FE9901, 18% w/W, 2x109 CFU's/g), applied 3 times every 7 days. These different doses of NOFLY WP were compared to the application of *B. bassiana* 30% 1x109 CFU's/g 2 times every 14 days at 0.25kg/ha and with the most used chemical insecticide active ingredient for the control of *B. tabaci*, Pyriproxifen (10% w/V) at 0.25 L/ha applied only once, at the initiation of the trial.

Two more treatments were included were applications of NOFLY WP at 1 kg/ha were

combined with Pyriproxyfen on an integrated pest management approach. In this treatments, Pyriproxyfen was applied at 0.25 L/ha together with NOFLY at the initiation of the assay (Application A) or in the second application (B).

Countings were made before the first application (0 days after A, 0 DAA) to distribute the different plots in the treatments, and every 7 days, just before the following application (7 DAA and 7 DAB). Three more evaluations were performed after the last application, C (5, 10 and 15 DAC). In each evaluation, 10 central leaves were selected from 5 random soybean plants per plot, and the number of whitefly adults and nymphs per leaf was counted. Phytotoxicity was also evaluated at 1 and 3 days after first application and 1 and 3 days after the second.

RESULTS AND DISCUSSION

The treatments with NOFLY presented similar to better efficacies than those presented by the biological standard based on *B. bassiana* in both cases, against eggs (Table 1) and nymphs (Table 2).

At the end of the trial, 15 days after the last application, NOFLY presented better efficacies on the number of eggs than *B. bassiana* (biological standard) with 46%, 59% and 64% of reduction compared to 37% of egg reduction achieved by the biological standard (Table 1, red square). Regarding to the nymphs control, the efficacy at the end of the trial was similar to that presented by *B. bassiana* for the 1 and 2kg/ha doses of NOFLY and higher for NOLFY applied at 3 kg/ha (Table 2, red square).

The application of NOFLY at the higher dose (3 kg/ha) showed better efficacy than the chemical standard based on Pyriproxyfen both on eggs (Table 1, 64% vs 59% respectively, purple square) and on nymphs (Table 2, 47% vs 41% respectively, purple square).

The treatment where NOFLY (1kg/ha) was applied in combination with Pyriproxyfen (applied at B, 7 days after the first application of the products) showed the best combinations efficacies results, with a reduction in eggs and nymphs of about 68 and 61% respectively (Table 3, orange squares).

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Table 1: EGGS - Average Efficacy on 3 trials

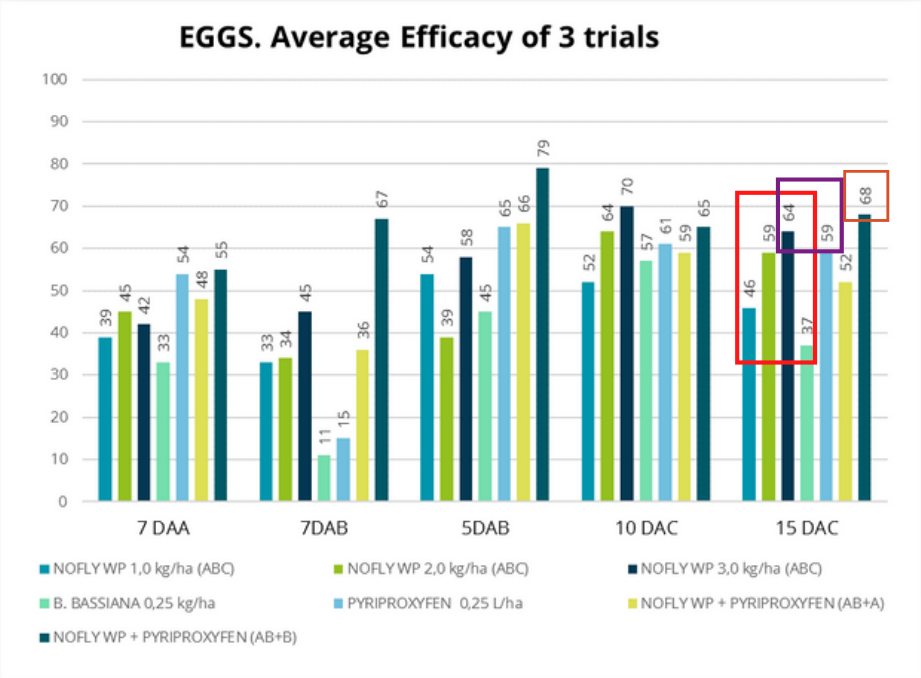
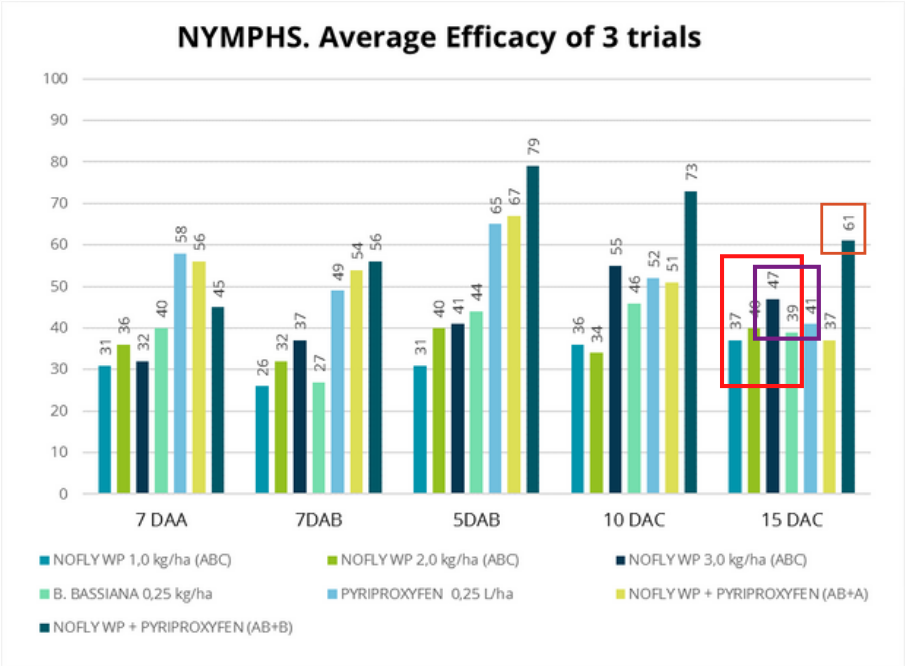


Table 2: NYMPHS - Average Efficacy on 3 trials



CONCLUSIONS

NOFLY is a better tool to control whiteflies in soybean crops than the currently biological product used based on *Beauveria bassiana* applied alone or in combination with other pest control products.

NOFLY is a potentially great tool to reduce broad spectrum chemical insecticides applications for the control of whiteflies.

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