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BIOASSAYS WITH BELA PLUS FOR CONTROL OF SOIL FUNGI IN CHILI GREEN PEPPER (*Capsicum annuum*) CULTURE IN VILLA DE ARISTA, S.L.P. MÉXICO

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INTRODUCTION. Pests and diseases in cultures are a factor that limit agriculture production all over the world, due to the losses during the development of culture and the stored products.

Developing a management scheme to reduce the risk of infection, or the damages caused by these organisms require of knowledge of biology and their conditions of development. In order of correctly apply control methods to be compatible with the ecosystem formed around of culture.

One of the most relevant parts of a pests and disease management scheme, is the diagnostic and the efficiency of control method, which indicates the difference between success or failure of a culture production.

OBJECTIVES

- To perform an evaluation of the culture to diagnostic the presence of pathogens agent in the culture of chili green pepper.
- To demonstrate the grade of inhibition that presents the product Bela plus over the complex of fungi that cause the wilting in the culture of chili green pepper.

MATERIALS AND METHODS. Through a mobile laboratory, researchers of IntraKam, S.A. de C.V., perform at in the Municipio de Arista, in San Luis Potosi State, Mexico, a field inspection and effectiveness tests (bioassays) of Bela plus on the complex of fungi inductees of the wilting in the culture of green pepper, in field and laboratory. The work was performed of the next way:

1. Once detected the presence of the wilting in the culture, it was collected samples of soil and vegetal tissue, and prepared to be inoculated in a PDA medium culture. For the analysis of vegetal tissue, was sample the root of those plants that showed the typical symptoms of wilting; in the case of the soil samples, these were taken from around area the radicle of plants with the symptoms of the disease. For the diagnostic and development of the fungi it was cultured a sample of soil and other of vegetal tissue, of each of the places of sampling (three places of sampling). These cultures were the absolute control.
2. At same time samples were cultured in the culture medium for determinate the fungi species present, it was performed a bioassay, to demonstrate the effectiveness of Bela plus on the fungi causing the disease. For this, were taken vegetal tissue with the symptoms of the disease (wilting) induced by the fungi and after applying. The treatment of disinfection, that were cultured in media culture treated with product Bela plus. The treatments were: 3, 5 and 7 ml of Bela plus per liter of culture medium (PDA). It was used like commercial control the ingredients Benomyl, 5 g of product formulated per liter of culture medium. It was used three repetitions per treatment.
3. At same time, it was realized a bioassay (humid chamber) to determinate the effect of product Bela plus on phytopathogen fungi present in the culture.

The absolute control, the culture medium treated and the samples prepared in humidity chamber, were placed in incubator to constant

temperature of 28 °C during 5 days, in order that the fungi had the optimal conditions for its development.

The way it was measured the effect of products on the development of fungi was the presence of mycelium and the growth of this, which was measured at 72, 96 y 120 hours.

RESULTS. Once that the growth started and sporulation of the fungi in media culture no treated showed up (absolute controls), were observed in the composed microscope. With some identification keys were determinate the species of fungi present in the culture (Table 1).

Table 1. Species located in the culture of chili green pepper.

LOT	SPECIES LOCATED
Lot 1	<i>Alternaria alternata</i> , <i>Fusarium oxysporum</i> , <i>Phytophthora</i> sp
Lot 2	<i>Fusarium oxysporum</i>
Lot 3	<i>Fusarium oxysporum</i> y <i>Phytophthora</i> sp

Growth of the fungi in the treated media culture was measured on all the doses of Bela plus treatments and with the commercial control (Table 2).

Table 2. Growth of mycelium in the treatment.

TREATMENT	72 h	96 h	120 h
Bela plus 3 ml	yes	yes	yes
Bela plus 5 ml	no	no	no
Bela plus 7 ml	no	no	no
Benomyl 5 g (PF)	no	yes	yes
Tiabendazol 3 g (PF)	yes	yes	yes
Absolute Control	yes	yes	yes

CONCLUSIONS

- The causal agent of the disease known like wilting del green pepper in this study was: *Fusarium* sp, *Alternaria* sp y *Phytophthora* sp.
- The product Bela plus showed a higher inhibition of the causal agents of the wilting del chili with doses of 5 and 7 ml. per liter compared with commercials control.

LITERATURE CITED

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