



**MINISTRY OF AGRICULTURE
ZAMBIA AGRICULTURE RESEARCH INSTITUTE**

Report on the effectiveness of MICROBEBIO X3 insecticide
against the Tomato Leaf Miner (*Tuta absoluta*) in Potatoes.

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INTRODUCTION:

MICROBEBIO X3 insecticide is said to be effective against most lepidopteran (butterflies and moths) caterpillars by killing them after spraying.

In this trial to evaluate the effectiveness of the insecticide on the tomato leaf miner (*Tuta absoluta*), a potato field was selected because that's where there was infestation by the pest, at the time of evaluation and potatoes are in the same family as tomatoes, egg plants, e.t.c.

OBJECTIVE:

To evaluate the effectiveness of MICROBEBIO X3 insecticide against the Tomato leaf miner (*Tuta absoluta*).

METHODOLOGY

- ✓ MICROBEBIO X3 insecticide was diluted at two concentrations of 30 and 40ml/ltrs of water in a potato field at Mr. Cassin's farm in Lusaka west
- ✓ A commercial insecticide known to be effective against the Tuta pest in the Solanaceous family of (Tomato, egg plants, Irish potatoes, etc.) was also evaluated at the same dosage formulations
- ✓ A Control treatment was also set up where only water was sprayed
- ✓ The numbers of live *Tuta absoluta* live larvae were recorded for each Treatment at both dilution formulations were recorded each of the three (3) weeks

RESULTS:

MR CASSIN'S POTATO FIELD ON FARM						
Chemical	REP	DILUTION	Tuta larva (WK 1)	Tuta larva (WK 2)	Tuta larva (WK 3)	Mean no. of larvae
X3	1	30ml/ltr	4	7	4	5
X3	2	40ml/ltr	1	3	2	2
COMMERCIAL	1	30ml/ltr	6	6	9	7
COMMERCIAL	2	40ml/ltr	4	2	3	3
CONTROL	1	WATER	23	18	14	18.3
CONTROL	2	WATER	19	15	20	18

- It was observed that amongst the three (3) treatments; X3, Commercial and Control, the mean numbers of live *Tuta* larva found were smallest in the X3 treatments at both dilution dosages of 30 and 40ml/16 ltrs of water.
- This was also demonstrated by the Control with the highest mean numbers for the live larvae of 18-18.3 insects. It showed that the pest was present and alive in the areas where the insecticides were not applied.
- The dilution of 40ml of insecticide/16 ltrs of water was seen to be killing more larvae than the 30ml/16ltrs of water in both the commercial and the X3 Biorational insecticide.
- This means that at higher concentration of the insecticide (40ml/16 ltrs water), the bigger larvae are also killed leaving fewer live larvae, whereas at lower concentration (30ml/16 ltr) only the young larvae are killed thereby leaving more live ones.

CONCLUSIONS AND RECOMMENDATIONS

- MICROBEBIO X3 insecticide was observed to perform well by having a small number of the average number of live *Tuta* larvae in the three (3) weeks that spraying was conducted
- MICROBEBIO X3 insecticide has shown to be effective against the *Tuta absoluta* at concentration dilution of 40ml/16 litres of water because it kills more larvae at this rate
- There's need to provide the information on the technical aspects of insecticide such as the insecticide user guide, active ingredients, pre-harvest interval (p.h.i), restricted entry interval (r.e.i), dosage or dilution formulations and so forth, by the suppliers of the insecticide
- There's need to pack the insecticide in smaller volumes to cater for small scale farmers and small fields apart from the big volumes of 5 ltr containers from which this was evaluated
- It is highly recommended that this experiment be carried out at the Mount Makulu Central Research Station in Chilanga during the rainy season especially when the environmental conditions are favorable for pest population build up. This will help give a comprehensive and holistic test for the insecticide different seasons under rain-fed conditions.