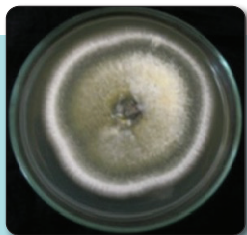


Metarhizium anisopliae ICAR-NBAIR Ma35 for management of fall armyworm *Spodoptera frugiperda* in maize



Nucleus culture of *M. anisopliae* NBAIR Ma35

Technology Description

Metarhizium anisopliae ICAR-NBAIR Ma 35 strain has been identified as a promising microbial biocontrol agent for management of fall armyworm (FAW) *Spodoptera frugiperda* in maize based on multilocal field testing at AICRP biocontrol centres. Talc based formulation of *Metarhizium anisopliae* NBAIR Ma35 was developed and foliar application method and dose was standardized for effective management of fall armyworm *Spodoptera frugiperda* in maize. Results of field trails indicated 60-80% reduction in the plant damage caused by the fall armyworm and 45-55% increased maize yield.

Background

Fall armyworm *Spodoptera frugiperda*, an invasive pest which has been reported to cause serious damage to the maize crop in India from 2018 onwards and warranted immediate control measures for this pest. Promising strain of *Metarhizium anisopliae* ICAR-NBAIR Ma 35 has been identified at ICAR-NBAIR for management of FAW *Spodoptera frugiperda* in Maize. Talc based formulation of *Metarhizium anisopliae* NBAIR Ma-35 was developed and dose was standardized for effective management of FAW in maize.

Benefits /Utility

Microbial biocontrol technology using *Metarhizium anisopliae* NBAIR Ma-35 for management of FAW *Spodoptera frugiperda* in maize is ecofriendly, safe and do not have any adverse effects on non-target organisms and other living organisms in the environment, unlike the chemical insecticides which are highly hazardous and pollutes soil, water and environment. Apart from this, the technology is as effective as chemical insecticide application and cheaper than chemical insecticides.

Scalability

It can be scaled up to large quantities using large-scale fermenter of 500-1000 litres capacity depending on the need.

Business and commercial potential

This technology has a wide scope of commercialization and there is a high demand for biocontrol agents for management of fall armyworm. At present, very small quantities of microbial BCAs are produced in the country against very high demand. There is scope for label expansion of this technology for management of other lepidopteran pests.

Financial requirement

The cost of production of this product may around 100/- per kg and it can be sold at 200-250/kg. An investment of 15-20 lakhs for equipment, other infrastructure etc. is required to produce 100 tonnes/ annum.



Talc formulation of *M. anisopliae* NBAIR Ma35



FAW cadaver infected with *M. anisopliae* NBAIR Ma35



M. anisopliae NBAIR Ma35 treated maize field

Target Market/Customer

Maize is extensively grown in India and fall armyworm is a serious pest of this crop and results in total loss of the crop is reported in several states. This technology will be highly useful to maize growers covering more than 25 states in India.

Social Impact of the Technology

- The present technology is an ecofriendly strategy of obtaining healthy and robust crop which can reduce the usage of chemical insecticides for fall armyworm infested maize crop and thereby minimize the risks associated with insecticides on environment and non-target organisms including human beings.

Toxicology data

- Toxicology data for primary culture and wettable powder formulation of *Metarhizium anisopliae* ICAR-NBAIR Ma 35 yet to be generated as per CIBRC guidelines.