

Metarhizium anisopliae ICAR-NBAIR Ma 4 for management of white grubs in sugarcane



Nucleus culture and talc formulation of *M. anisopliae* NBAIR Ma4

Technology Description

Metarhizium anisopliae ICAR-NBAIR Ma 4 strain has been identified as a promising microbial biocontrol agent for management of white grubs in sugarcane based on multilocational field testing at

AICRP biocontrol centres. Talc based formulation of *Metarhizium anisopliae* NBAIR Ma4 was developed and soil application method and dose was standardized for effective management of the white grubs in sugarcane. Results of field trails indicated 70-90% reduction in the plant damage caused by the white grubs and increased yield by 40-50%. The complete data of the technology for CIBRC Registration is ready including toxicological data.

Background

Holotrichia spp. are polyphagous pests causing severe damage to several crops, particularly in sugarcane crop in India. *Metarhizium anisopliae* has been extensively used for management of root grubs in various crops in several countries. ICAR-NBAIR-Ma4 strain was found highly effective against white grubs in sugarcane and its efficacy was on par with chemical insecticide in the field trials.

Benefits /Utility

Microbial biocontrol technology using *Metarhizium anisopliae* NBAIR-Ma4 for managements of white grubs is ecologically safe and do not have any deleterious effects on non-target organisms, 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 root grubs. 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 root grubs in other crops.

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.



White grub cadaver infected with *M. anisopliae* NBAIR Ma4



Field trial in sugarcane plot

Target Market/Customer

Sugarcane is extensively grown in India and root grubs is a serious pest of this crop and sometime total loss of the crop is reported due to white grubs in several areas. This technology will be highly useful to sugarcane growers in the country especially for sugarcane growers in Andhra Pradesh, Karnataka, Maharashtra, Uttar Pradesh etc. This technology already commercialized to five firms.

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 root grub infested crops 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 4 has been generated as per CIBRC guidelines.