

Popularization of Rodent and Dry Root Rot Control Technologies in an Adopted Village of Indian Arid Zone

Bhagwan Singh*, R.S. Tripathi and Shalander Kumar¹

ICAR-Central Arid Zone Research Institute, Jodhpur 342 003, India

Received: December 2012

Abstract: Diseases and rodent pests are the main factors responsible for low yield of rainfed crops in arid regions. There is a considerable scope for increasing the production of pearl millet, mung bean, moth bean, clusterbean and sesame crops by adoption of technologies generated by the Central Arid Zone Research Institute. There is a need to disseminate technologies on disease and rodent management in the farming community. Therefore, a four year study (2006-2009) was taken up to popularize improved technologies in adopted village Dantiwada of Jodhpur District. Twenty nine demonstrations on clusterbean varieties (RGC-936 and RGM-112) and 15 demonstrations on moth bean varieties (CAZRI moth-1, CAZRI moth-2, CAZRI moth-3 and RMO-435) were conducted during 2006-2009 with seed treatment of Marusena-3, a bio-formulation of *Bacillus firmus* developed by CAZRI, Jodhpur, for controlling dry root rot disease. Plant mortality due to dry root rot in improved moth bean varieties was lower (17-23%) in treated plots as compared to 39 to 63% in untreated plots. The seed yield increased by 11-16% in improved clusterbean varieties and by 25-30% in local variety compared to control. On rodent management, 18 demonstrations on poison baiting with two rodenticide (zinc phosphide and bromadiolone as alone and also as follow up) were conducted in fields having pearl millet, mung bean, moth bean, clusterbean and sesame crops. Rodent control was successfully achieved with single treatment of zinc phosphide (2%) by 57 to 65% within 4 days of treatment. Single treatment with bromadiolone (0.005%) yielded 75 to 78% rodent control in these crops 15 days after treatment. Double baiting i.e. treatment of zinc phosphide followed by bromadiolone, the rodent control success 15 days after treatment was 82-84%. Adoption of rodenticidal treatments increased yield by 18 to 27% compared to control. Nine training programs were organized on dissemination of these technologies where 269 farmers/farm women were benefitted. Level of farmer's knowledge about management of disease and rodent pest increased significantly by 60-65% after training and demonstration.

Key words: Rodent, dry root rot, marusena, rodenticide.

In Indian arid regions, pearl millet, mung bean, moth bean, clusterbean and sesame are the major crops grown under rainfed conditions, which are subjected to moisture stress of short and long durations (Kar *et al.*, 2009), making them vulnerable to infection by *Macrophomina phaseolina* causing dry root rot (Lodha, 1986). Farmers grow local strains or improved varieties of these crops. However, varieties resistant to this disease are not available to farmers thus cultural and biological management strategies are the only available options. One of the bio-agent isolated from native soil of the region is a bacterium *Bacillus firmus*, which has shown antagonistic activities against *M. phaseolina* in

laboratory and field tests (Singh *et al.*, 2012). CAZRI has developed a formulation of this bacteria named as Marusena-3.

Besides the dry root rot, rodents are another important factor responsible for low yield of these crops (Tripathi, 2004). There is a considerable scope for increasing the production of these crops by adoption of technologies like seed treatment with Marusena-3 and rodenticidal baiting generated by Central Arid Zone Research Institute, Jodhpur. Keeping this in view, a study was undertaken to popularize these two improved technologies among the farmers of Dantiwada village of Jodhpur District. Seed coating of clusterbean and moth bean with a bio-formulated product Marusena-3 of *B. firmus* and rodent management practices were popularized through various extension

*E-mail: singhbhagwan776@gmail.com

¹Present address: International Crop Research Institute for Semi-Arid Tropics, Patancheru 502 324