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Research Article

Bio-formulations and indigenous technology methods in the management of Asian soybean rust

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ABSTRACT

The present study comprised of thirteen different treatments taken up at MARS, UAS, Dharwad during *Kharif* 2008 to 2010. The treatments were applied thrice with first one immediately after appearance of rust symptoms in the field and subsequently at 10 days interval except chemical check. The pooled analysis over three years revealed that among the ITK measures application of cow urine@10 per cent+*Adthoda vessica@0.5* per cent recorded minimum per cent disease index (PDI) of 39.1.The maximum seed yield of 10.77 q/ha was recorded in seed treatment with cow urine 10 per cent+*Prosopis juliflora*@5 per cent followed by10.60q/ha in cow urine@10 per cent+ neem oil@0.5 per cent. The positive check recorded minimum disease pressure (28.4 PDI) and maximum seed yield of 12.08q/ha.However,the highest disease pressure was in untreated check (84.5 PDI) with seed yield of 8.19q/ha. There was no significant difference with respect to reducing and non-reducing sugars in different treatments. The economics of the disease revealed maximum net income of Rs.15,925 with B:C ratio of 1.45 in cow urine 10 per cent+ *Prosopis juliflora* @0.5 per centfollowed by Rs.15,475 in cow urine 10 per cent +neem oil@0.5 per cent with B:C ratio of 1.41.The minimum net income (Rs.11,475) and B:C ratio of 1.1.12 was recorded in control.

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INTRODUCTION

The Asian soybean rust is the economically important disease not only in the Sub-continent but also rest of the soybean growing regions of the world. The predominantly associated pathogen, *Phakopsora pachyrhizi*, has been known to drastically reduce yields in Asia. In the areas where the pathogen occurs in the most virulent form, yield losses up to 80 per cent have been reported. Basically the pathogen was confined to eastern hemisphere before it had appeared in epiphytotic form in Hawaii region in 1994. At present, the pathogen has been reported from different continents such as Africa, Asia, Australia, South America and Hawaii. The rapid spread of *P. pachyrhizi* Syd. and potential for severe yield losses makes this, the most destructive foliar disease of soybean. Soybean rust could have a major impact on both total soybean production and production costs in the India. In India, the disease was first reported on soybean in 1951 (Sharma and Mehta, 1996).Two *Phakopsora* species are known to cause soybean rust (Ono *et al.*, 1992).The more aggressive species is *P. pachyrhizi,* known as the Asian soybean rust. *Phakopsora meibomiae*, the less virulent species, has only been found in limited areas in the Western hemisphere, and it is not known to cause severe yield losses in soybean.

Most of the research on control has been focused on the use of fungicides and host plant resistance. Some cultural practices have been recommended that minimize the impact of rust (Desborough,1984). The recommendations differed, but were based upon avoiding the conditions that promote disease development or were practiced to achieve optimized overall yields. Research on biological control has been limited in the management of soybean rust. In recent years the studies on use of Indigenous Technology Knowledge (ITK) measures in the managing the crop diseases have been demonstrated successfully in crops like sorghum, tomato, banana and black