Research Paper :

Management of Asian soybean rust incited by *Phakopsora pachyrhizi* Sydow by indigenous technology knowledge in India

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SUMMARY

The Asian soybean rust, *Phakopsora pachyrhizi* Sydow is the economically important disease, which causes significant yield loss in India. The present study comprised of thirteen different treatments taken up at MARS, UAS, Dharwad during *Kharif,* 2008 and 2009. The treatments were applied thrice with first one immediately after appearance of rust symptoms in the field and subsequently at 10 days interval. Thirteen different treatments comprising of botanicals, bioagents and micronutrients were evaluated against soybean rust. The pooled analysis over two years revealed that among the ITK measures, application of cow urine@10%+*Pongamia pinnata* oil@0.5% recorded minimum Per cent Disease Index (PDI) of 37.9 followed by cow urine@10% alone (40.24). The maximum seed yield of 10.10 q/ha was recorded in seed treatment with cow urine 10%+*Prosopis juliflora*@5% followed by spraying with cow urine@10% potasium phosphonate @3% (10.04q/ha).The positive check recorded minimum disease pressure (24.75 PDI) and maximum seed yield of 11.02q/ha.However,the highest disease pressure was in untreated check (77.3 PDI) with seed yield of 7.65q/ha. The elicitors like *Pongamia pinnata* oil, potasium phosphonate,$MnSO_4$,*Adathoda vessica* along with cow urine be used in developing Integrated Disease Management strategies against Asian soybean rust in India which will help in reducing the chemical pesticides in long term sustainable management. The present findings drawn the first line of research on utilization of Indigenous Technology Knowledge in managing rust and enhancing both yield and quality parameters of soybean in India.

Key words : Indigenous Technology Knowledge, Management, *Phakopsora pachyrhizi*

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* Sydow, has been known to drastically reduce yields in Asia. In areas where the pathogen occurs in most virulent form yield losses up to 80% 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* 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 limited areas in the Western hemisphere, and it is not known to cause severe yield losses in soybean.

Most 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, Hartman *et al.*, 1992).The recommendations differed, but were based upon avoiding the conditions that promote disease development or were practices that 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 pepper (Shamarao Jahagirdar, 1998: Shamarao Jahagirdar *et al.*, 2000: Shamarao Jahagirdar

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