Research Paper :

Integrated management of Asian soybean rust caused by *Phakopsora pachyrhizi* in India

SHAMARAO JAHAGIRDAR, P.V. PATIL, R.H. PATIL, BURHANUDDIN BOHRA AND B.N. VYAS

International Journal of Plant Protection (October, 2010), Vol. 3 No. 2 : 289-292

See end of the article for authors' affiliations

Correspondence to :
SHAMARAO JAHAGIRDAR
All India Co-ordinated Research Project on Soybean, Main Agricultural Research Station, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

SUMMARY

In this study, different treatments comprising of achook (0.15% Azadirchtin EC), a neem based product alone and combination with different fungicides were evaluated during *Kharif* 2008 and 2009 under natural epiphytotic conditions at MARS, UAS, Dharwad. The treatments were applied thrice with first one immediately after appearance of rust symptoms in the field and subsequently at 10 days interval. The study over two years revealed that spraying with achook (0.15% Azadirachtin EC)0.5%-hexaconazole0.1%-achook(0.15%Azadirachtin)0.5% recorded minimum (38.41) Per cent Disease Index (PDI) followed by 42.91 PDI in case of spraying with achook (0.15% Azadirachtin EC) 2%.However,application hexaconazole 0.1% alone recorded minimum incidence of 23.81 PDI. The untreated check recorded maximum PDI (77.45 PDI). Maximum seed yield of 12.30q/ha was recorded in hexaconazole 0.1% followed by 11.21q/ha in achook (0.15%AzadirachtinEC) 0.5%-Hexaconazole0.1%Achook (0.15%Azadirachtin) 0.5%.Minimum seed yield of 6.96q/ha was recorded in untreated check. The present findings will open a new window of opportunity for utilization of achook (0.15% Azadirachtin EC) as one of component in development of spray schedule against Asian soybean rust in India.

Key words : Asian soybean rust, *Phakopsora pachyrhizi*, Ecofriendly, Botanicals, Integrated management

Accepted :
August, 2010

Asian soybean rust is an economically important disease occuring in the soybean growing regions of the world. The predominantly associated pathogen, *Phakopsora pachyrhizi*, 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 as the most destructive foliar disease of soybean. Soybean rust has a major impact on both total soybean production and productivity in India. In India it 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 *Phakopsora. pachyrhizi,* known as the Asian soybean rust. *Phakopsora meibomiae* is relatively the less virulent species has been limited to western hemisphere and not known to cause severe yield losses in soybean.

Most of the research on control has focused on the use of fungicides and host plant resistance. Some cultural practices have been recommended which 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 both in India and abroad. In recent years, the studies on use of Indigenous Technology Knowledge (ITK) measures in the managing the diseases have been demonstrated successfully in crops like sorghum, tomato, banana and black pepper (Jahagirdar, 1998: Jahagirdar *et al.*, 2000; Jahagirdar *et al.*, 2008).The soybean growers of the subcontinent are seriously facing the infestation of rust disease in the last few years with a yield loss ranging from 30-100%.There are no resistant cultivars at present for Asian soybean rust and continuous application of fungicides has further aggravated the concern over pesticide resistance. Hence, keeping these points in view, the present study was aimed at development