

Research Paper :

In vitro evaluation of the different botanical extracts against *Rhizoctonia solani* infesting soybean



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SUMMARY

Samples were collected and isolation was made from the root rot infected soybean plant which yielded the pathogen, which was identified as *Rhizoctonia solani* Kuhn. The infected plants showed browning and rotting of collar region and brown discoloration of infected tissues with easy uprooting and root decay. It was observed that the botanical extracts of *Allium sativum*, *Zingiber officinale* and *Eucalyptus* sp. inhibited the mycelium of the test fungus to the extent of 100 per cent followed by *Azadirachta indica*, *Ocimum sanctum*, *Hibiscus rosa-sinesis* and *Pongamia pinnata*.

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Key words : *In vitro*, Botanical extracts, *Rhizoctonia solani*, Soybean

Soybean [*Glycine max* (L.) Merrill.] belongs to family Leguminaceae. It has become miracle crop of the 21st century due to its multifaced advantages. On the global scale soybean has come to the top of the list of oilseed crops and contributes over one third of the total supply of the vegetable oil over pool. The crop is suffered by many fungal diseases of which root rot caused by *Rhizoctonia solani* is most destructive and occurs at pre-emergence or post-emergence stage of seedlings and causes significant losses in yield. It is soil borne disease and creates great problems in its management. Apart from soybean, *R. solani* is reported to cause sheath blight of rice, collar rot of passion fruit, banded sclerotial disease of maize, *Rhizoctonia* leaf blight of sunflower and *Rhizoctonia* rot of carrot, etc.

During the ancient time noticeable successes in plant disease management were achieved. Plant originated medicines for tree dressings, fumigation and seed treatment against different diseases were suggested in the past (Nene and Thaplyal, 1993). Later with the advent of chemistry, many chemicals were introduced in plant disease control. As they

showed quicker results, people started using them on large scale. Therefore, the use of 'Natural plant products' remained neglected.

Now a days use of fungicides in plant protection is widely used because fungicides help to reduce disease incidence and thus, boost up the crop yield that meets the hunger of exploded population. However, fungicides are not a long term solution to maintain crop health. Applications of the synthetic chemicals have many ill effects on eco-system. Besides, their non-targeted effects and hazardous nature, petroleum based fungicides are more expensive and some loose their effectiveness because of development of resistant strains of pathogens. In this context, use of plant extracts, to control plant diseases is fully justified. During past several years, some noticeable success of disease control was achieved by using plant products, as they are economical and eco-friendly. There are the distinct possibilities for future and can be successfully exploited in the modern agriculture, especially within the framework of Integrated Disease Management System.

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