



## Integrated Disease Management of Chickpea (*Cicer arietenum* L.) Blight Caused by *Colletotrichum dematium*

**Key words:** Blight, Chickpea, *Colletotrichum dematium*, Leaf extracts, *Polyalthia longifolia*.

Chickpea (*Cicer arietenum* L.) is one of the important pulse crop in India. Among several diseases affecting chickpea, blight caused by *Colletotrichum dematium* is one of the important disease. The disease causes up to 23% losses in river tracts of Karnataka especially in and around Gulbarga district. The incidence of disease ranged up to 91%. There is lack of information about effective measures for the control of the disease. Considering the potentiality of the fungus to cause major damage, different methods were evaluated alone or in combination for the control of the disease. An experiment was conducted on integrated management of chickpea blight disease by using fungicides, plant extracts and biocontrol agents singly and in combination. In the present investigation, the best fungicide, plant extract and biocontrol agents were selected based on *in vitro* evaluation. The plants were raised in the earthen pots under glass house conditions and the data was obtained from fifteen plants of each replication. The chemical carbendazim used for seed treatment 2g/kg of seed. For foliar spray carbendazim + mancozeb was used 0.05% singly and in combination with plant extract and biocontrol agent. The biocontrol agent *Trichoderma koningii* (TNAU) was used for seed treatment by treating the seeds with spore suspension of  $10^8$  cfu/ml one day before sowing and the inoculated seeds were sown in earthen pots containing fungus infected soil.

### Treatment Details

- T1 - Seed treatment with carbendazim 2g/kg
- T2 - Seed treatment with *Trichoderma koningii*  $10^8$
- T3 - Foliar spray with carbendazim+mancozeb 0.05%
- T4 -Foliar spray with leaf extract of *Polyalthia longifolia* 10%
- T5 - Seed treatment with carbendazim 2g/kg seed+Foliar spray with SAAF 0.05% + Foliar spray with leaf extract of *Polyalthia longifolia*10% fifteen days after first spray

- T6 - Seed treatment with carbendazim 2g/kg + Foliar spray with SAAF 0.05% + Foliar spray with carbendazim+mancozeb 0.05% fifteen days after first spray
- T7 - Control (Without seed treatment and foliar spray)

Suitable checks were maintained in each treatment. For treatments T3 and T6 the chickpea seedlings were raised in earthen pots and symptoms were produced artificially by spraying standardized conidial suspension of *Colletotrichum dematium*  $2.8 \times 10^6$  con/ml.

The first foliar spray of combi product of carbendazim+mancozeb 0.05% was given at the time of symptom initiation (Seven days after inoculation) and second spray was given at 15 days after the first spray (T6). In T4, *Polyalthia longifolia* alone sprayed immediately after the symptom appearance and then in combination with biocontrol agent and fungicide spray (T5). The percent disease index (PDI) of the treatments were recorded by using 0-4 scale developed based on the scales given by Mayee and Datar (1986).

The results of integrated disease management (Table 1) studies reveals that the seed treatment with carbendazim 2g/kg followed by foliar spray with carbendazim +mancozeb + second foliar spray with carbendazim+mancozeb fifteen days after first spray has shown less percent disease index (11.55%) and more disease reduction over control followed by seed treatment with carbendazim + foliar spray with carbendazim + mancozeb 0.05% + foliar spray with *Polyalthia longifolia* fifteen days after fungicidal spray (16.34%). Seed treatment with carbendazim gave less per cent disease severity followed by seed treatment with *Trichoderma koningii* (TNAU) (30.03%). Foliar spray of *Polyalthia longifolia* alone has given disease of 43.91%. Pradeep Kumar (2000) reported that, seed treatment with *T. viride* was significantly effective in increasing the seed

Table 1 . Integrated Disease Management of Chickpea Blight caused by *Colletotrichum dematium* by using chemicals, biocontrol agents and plant extracts.

Treatment number	Treatment Details	PDI (%)	Percent disease reduction over control (%)
T1	Seed treatment with carbendazim 2g/kg	21.22 (27.42)	77.78 (61.87)
T2	Seed treatment with <i>Trichoderma koningii</i> 108	30.03 (33.85)	68.56 (53.89)
T3	Foliar spray with carbendazim+mancozeb 0.05%	26.86 (31.21)	71.80 (57.96)
T4	Foliar spray with leaf extract of <i>Polyalthia longifolia</i> 10 %	43.90 (40.49)	54.04 (47.31)
T5	Seed treatment with carbendazim 2g/kg seed+Foliar spray with SAAF 0.05% + Foliar spray with leaf extract of <i>Polyalthia longifolia</i> 10% fifteen days after first spray	16.34 (23.80)	82.89 (65.56)
T6	Seed treatment with carbendazim 2g/kg + Foliar spray with SAAF 0.05% + Foliar spray with carbendazim + mancozeb 0.05% fifteen days after first spray	11.55 (19.82)	87.90 (69.61)
T7	Control (Without seed treatment and foliar spray)	95.53 (77.79)	0.00 (0.01)
S.Em±		0.491	0.511
CD at1%		1.571	1.00

\* Mean of fifteen plants

\*\* Arc sine transformed values

germination and emergence in pigeon pea against twenty two seed borne fungal pathogens including *Colletotrichum dematium*.

Jeyalalkshmi et al., 1998 found that *Trichoderma* species were effective against *Colletotrichum capsici* causing fruit rot and die-back of chillies. Sindhan 1981 reported that, benlate gave better control against bean anthracnose followed by bavistin as seed dressing chemicals.

#### LITERATURE CITED

**Jeyalakshmi C, Durairaj P, Seetharaman K and Sivaprakasam K 1998** Biocontrol of fruit rot and die-back of chilli using antagonistic microorganisms. Indian Phtopathology, 51: 180-183.

Department of Plant Pathology  
University of Agricultural Sciences  
Dharward, Karnataka 585 005

**Mayee C D and Datar V V 1986** Standard area diagrams for assessment of anthracnose of mungbean and urdbean, Phytopathometry, Technical Bulletin, Marathwada Agricultural University, Parbhani, Plate 30.

**Pradeep Kumar, Anjuna and Kumudkumar 2000** Biocontrol of Seed borne fungal pathogens of soybean (*Glycine max* L.) in Nigeria Seed Research 14: 170-176.

**Sindhan G S and Bose S K 1981** Evaluation of fungicides against anthracnose of French bean caused by *Colletotrichum lindemuthianum*, Indian Phytopathology, 34: 325-329.

**Varaprasad Rao Ch  
Narayana Y D**