TOXICITY EFFECT OF CULTURE FILTRATES OF SOME FUNGI ON SEED GERMINATION AND SEEDLING GROWTH OF *SORGHUM VULGARE* PERS

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Abstracts: Culture filtrate of all the tested fungi, e.g. *Alternaria alternata, Aspergillus flavus, A. niger, Chaetomium brasilense,Cladosporium herbarum, Colletotrichum dematium, Curvularia lunata, Fusarium oxysporum, Macrophomina phaseoli, Myrothecium roridum* and *Trichoderma viride* adversely affected the seed germination and seedling growth. Boiled culture filtrate of *M. roridum* produced maximum inhibition in seed germination. Both root and shoot were reduced maximum by *Myrothecium roridum* followed by *Fusarium oxysporum, Trichoderma viride* and *Curvularia lunata.* Boiled filtrates were more effective than the unboiled ones. In general, roots were more susceptible to toxins.

Keywords: Germination, Fungi, *Sorghum vulgare*

REFERENCES

Anahosur, K. H. (1976). Toxic effect of the culture filtrate of *Trichothecium roseum* on seed germination and growth of sorghum. *Indian Phytopathol*. **29** : 278-280.

Anshosur, K.H. and **Bidari, V.B.** (1974). Role of the toxins and seed microflora in soybean seed spoilage. *Curr. Res* . **3** : 130-131.

Bhale, M. S., Singh, S. N. and Khare, M. N. (1982). Influence of culture filtrate of seed-borne *Curvularia lunata* and *Trichoconiella padwickii* on seed germination. *Indian Phytopathol*. **35** : 496-497.

Brodnik,T. (1976). Susceptibility of maize seed to invasion by *Aspergillus* spp. and its effect on germinability. *Zb. Biotech. Fak.* **26** : 91-96.

Brodnik, T., Klemenc, N., Vospernik, P., and Zust, J. (1978). Influence of toxins from maize infected by *Aspergillus flavus, Penicillium rubrum* and *Fusarium graminearum* and of aflatoxin B, rubratoxin A and toxin F-2 on maize embryo growth. *Seed Sci. and Technol.* **6** : 965-970.

Christensen,C.M. and Kaufmann, H.H. (1969). *Grain Storage*: *The Role of Fungi in Quality Loss*. Univ. Minn. Press. Minneapolis.

Dake, G.N. (1980). Effect of *Myrothecium roridum* on the germination of cotton seeds. *Indian Phytopath.* **33***:* 591-593.

Dennis, C. and Webster, J. (1971). Antagonistic properties of species-groups of *Trichoderma*. I. Production of non-volatile antibiotics. *Trans. Br. Mycol. Soc.* **57**: 25-39.

Dhand, S. and Vaidehi, B.K. (1980). Seed-borne fungi of pre-harvest pigeon pea and effect of aflatoxins produced on seed germination and on seedlings. *Biol. Bull. India* **3**: 44-49.

Dienner, V. L. and Davis, N. D. (1977). Aflatoxin formation in peanuts by *Aspergillus flavus*. *Agric. Exp. Station, Auburn University Bull*. pp. 493.

Field, R. W. and King, **T. H.** (1962). Influence of storage fungi on deterioration of stored pea seeds. *Phytopathology* **52**: 336-339.

Forgacs, **J**. (1962). Mycotoxicoses—the neglected diseases. *Feedstuff* **34**: 124-134.

Forgacs, J. and Carll, W. T. (1962). Mycotoxicoses. *Adv. Vet. Sci.* **7**: 273-382.

Ghewande, M.P., Pande, R.N., Shukla, A.K. and Misra, D.P. (1984). Toxicity effects of culture filtrates of *Aspergillus flavus* on germination of seed and seedling growth of groundnut. *Indian Bot. Reporter* **3**: 107-111.

Govindaswamy, C.V. (1955). Studies of seed-borne fungi of rice. *Madras Agric. J.* **42**: 55-56.

Hepperly, P.R. and Sinclair, J. B. (1981). Relationship among *Cercospora kikuchu*, other seed mycoflora and germination of soybeans (*Glycine max*) in Pueroto Rico and Illinois, U.S.A. *Pl. Dis. Reptr*. **65** : 130-132.

Islam, M. S., Rahman, H., Pervez, Z., Mahmud, M. R. and Alam, A. (2012). Studies on seed borne fungi in rice cultivars grown in non-saline tidal zones of Patuakhali and their effect on seed germination. *Bangladesh Res. Pub. J.* **6 *:*** 286-290.

Kanta, S. (1982). Effect of culture filtrate of some fungi on seed germination and seedling of *Phaseolus mungo*. *Biol. Bull. India* **4**: 78-84.

Kulik, M.M. (1973). Susceptibility of stored vegetable seeds to rapid invasion by *Aspergillus amstelodami* and *A. flavus* and effect on germinability. *Seed Sci. Technol.* **4**: 799-804.

Lalithakumari, D., Govindaswami, C. V. and Vidhyasekaran, P. (1972). Isolation of seed-borne fungi from stored groundnut seeds and their role on seed spoilage. *Madras Agric. J.* **59** : 1-6.

Luke, H. H. and Wheeler, H. E. (1955). Toxin production of *Helminthosporium victoriae*. *Phytopathology* **45** : 453-458.

Mishra, **R.R. and Kanaujia**, **R.S.** (1973). Studies on certain aspects of seed borne fungi. II. Seed borne fungi of certain oilseeds. *Indian Phytopathol.* **26**: 284-294.

Narain, A. and Das, D. (1970). Toxin production during pathogenesis of *Colletotrichum capsici* causing anthracnose of chillies. *Indian Phytopathol.* **23**: 486-490.

Narain, A. and Prakash, O.M. (1968). Toxic metabolites of *Aspergillus niger* and its role in onion root disease. *Indian Phytopathol.* **21**: 217-220.

Nwigwe, C. (1974). Effect of *Diplodia zeae* and *D. phomopsis* on the germination of seeds of maize (*Zea mays*). *Plant Dis. Reporter* **58**: 414-415.

Padamanabhan, D. (1967). Effect of fusaric acid *in vitro* culture of embryo of *Phaseolus vulgaris* L. *Curr. Sci* . **36**: 214- 215.

Pawar, V. H. and Thirumalachar, **M.J.** (1966). Necrocitin as a wilt toxin (antifungal antibiotics from *Myrothecium roridum). Hindustan Antibiotica Bull*. **8:** 126-128.

Rai, B. and Singh, D.B. (1977). Effect of fungal metabolites on seed mycoflora and seed germination of mustard. In Symposium on *Physiology of Microorganisms*. **p**p. 325 – 430. Todays Tomorrow's Printers & Publishers. New Delhi.

Rati, E. and Ramalingam, A. (1974). Effect of *Aspergillus flavus* on the germinating seeds of some tropical crop plants. *Indian Phytopathol.* **22**: 579-582.

Scheffer, R.P. and Pringle, R.B. (1961). A selective toxin produced by *Periconia circinata. Nature* **191**: 912-913.

Sinclair, **J.B.** (1978). The seed-borne nature of some soybean pathogens, the effect of *Phomopsis* spp., and *Bacillus subtilis* on germination and their occurrence in Illinois. *Seed Sci. & Technol*. **6**: 957-964.

Singh, P.N. and Gupta, K. (1984). Seed-borne fungi of *Medicago sativa* L. I. Effect of culture filtrates of some isolates in seed germination and root-shoot growth. *Seed Res.* **12**: 123-127.

Singh, P.N., Sindhu, I.R. and Singhal, G. (1984). Effect of fungal metabolites on seed germination and seedling growth of some cucurbits. *Geobios* **11:** 212-216.

Tripathi, R.K. (1974). Head fungi of sorghum: Phytotoxin and their effect on seed germination. *Indian Phytopathol.* **27**: 499-501.

Vidhyasekaran P., Subramanian, C.L. and Govindaswami, C.V. (1970). Production of toxin by seed-borne fungi and its role in paddy seed spoilage. *Indian Phytopathol.* **23:** 518-528.

Yeh, **C.C.** and **Sinclair**, J.B. (1980). Effect of *Chaetomium cupreum* on seed germination and antagonism to other seed-borne fungi of soybean. *Plant Dis*. **64**: 468-470.