J. Mycopathol Res. 32 (1) : 67-70 (1994) *Printed in India*

Effect of certain organic compounds on seed-mycoflora of cauliflower

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Impact of different organic compounds with alcoholic group on seed mycoflora of cauliflower collected from different localities of Aligarh were tested. All the compounds tested were toxic to the seed-borne fungi to a varying degree. Isoamyl alcohol was found to be highly effective in reducing fungal mycoflora of the seeds.

Key words : Seed mycoflora, cauliflower seeds, organic compounds, control

INTRODUCTION

Vegetables occupy an important position in human diet particularly in India where major population is vegetarian. Diseases and pests are responsible for heavy damages to vegetable crops every year (Neergard, 1977 ; Maude and Dudley, 1971). Amongst various diseases the losses due to seed-borne pathogens are of no less importance. The losses alone due to *Alternaria* leaf spot are much higher (Anonymous, 1987).

Although, studies have been made on seed mycoflora of cauliflower and their control by fungicides but it is desirable to test different organic compounds with alcoholic groups having fungitoxic properties for the control of seed mycoflora.

In the present investigation, an attempt has been made to determine the seed mycoflora of samples collected from Aligarh and to control it with some organic compounds having OH-groups.

MATERIALS AND METHODS

Cauliflower seed samples were collected from farmers field just after harvest of the crop. Standard Blotter technique (ISTA, 1966) was used for isolating seed mycoflora. Sample Local-1 were kept in sterilized petriplates and exposed to organic compounds for 1 hr. Untreated sample Local-1 were served as control. A lot of four hundred seeds from each sample/treatments were taken and incubated for 7 days at 20±2°C.

RESULTS AND DISCUSSION

In all thirteen fungi were isolated from the four samples, the maximum number of fungi twelve was from Local —1 and —3 followed by Local—4 (ten) and Local

Table 1. Frequency of occurrence of external seed mycoflora from different samples of cauliflower (*Brassica oleracea* L.)

Fungi Isolated	Local - 1	Local - 2	Local - 3	Local - 4
Alternaria alternata	*4.2	1.2	5.0	2 0
A. brassicicola	12.2	11.2	5.7	7.7
A. tenuissima	9.0	0.0	0.2	6.0
Aspergillus flavus	6.5	0.2	4.2	8.7
A. niger	11.2	10.2	7.7	4.5
Aspergillus sp.	1.0	0.0	2.0	0.0
Chaetomella horrida	6.5	6.0	0.5	4.5
Cladosporium oxysporum	1.7	0.0	1.2	0.5
Curvularia pallescens	0.0	0.0	0.0	0.5
Pusarium sp.	10.0	5.5	3.2	0.0
Monilia sp.	4.2	2.2	2.5	0.0
Penicillium sp.	8.0	12.2	12.0	11.0
Rhizopus nigricans	10.0	6.75	9 0	2.5
% Germination	84.5	78.25	81.00	91.25

*Data shows the frequency = $\frac{\text{No. of seeds containing particular fungus}}{\text{Total no. seeds used}} \times 100$

Table 2. Effect of organic compounds with OH group on frequency of seed-borne fungi of cauliflower

Fungi Isolated	Control*	Ethanol	Methanol	2-Methyl propanol	2-Methoxy ethanol	Isoamyl alcohol	Benzyl alcohol
Alternaria alternata	** 4.2	2,0	0.0	1.2	3.5	0.0	1.5
A. brassicicola	12.2	6.0	0.0	2.0	2.5	0.0	1.0
A. tenuissima	9.0	1.0	4.0	1.5	2.2	2.0	3.5
Aspergillus flavus	6.5	0.0	0.0	0.0	0.0	0.0	0.0
A. niger	11.2	0.0	2.5	0.0	0.0	0.0	0.0
Aspergillus sp.	1.0	0.0	0 0	0.0	0.0	0.0	0.0
Chaetomella horrida	6.5	2.0	0.0	0.0	1.0	1.0	2.0
Cladosporium oxysporum	1.7	0.0	0.0	0.0	0.0	0.0	0.0
Fusarium sp.	10.0	5.5	3.5	0.0	1.5	0.0	0.0
Monilia sp.	4.2	0 0	0.0	0.0	0.0	0.0	0.0
Penicillium sp.	8.0	0.0	1.0	2.0	0.0	0.0	0.0
Rhizopus nigricans	10.0	0.0	0 0	6.0	0.0	4.0	3.0
% Germination	84.5	86.2	78.0	87.5	87.5	96.2	92.0

* Control sample, Local-1

** Data in the table shows the frequency

—2 (nine). *Alternaria alternata, A. brassicicola, Aspergillus flavus, A. niger, Chaetomella horrida, Penicillium* sp. and *Rhizopus nigricans* were recorded from almost all samples. *Curvularia pallescens* was confined to sample Local—4. Results presented in Table 1 indicate that highest frequency of occurence (12.2%) was of *A. brassicola.*

It was clear from Table 2 that treatment with organic compounds resulted in the elimination of most of the fungi from the seeds. The fungi whichever recorded had very low frequency of occurrence. Isoamyl-alcohol was found to be most effective amongst all the chemicals in reducing seed mycoflora, closely followed by Benzyl alcohol. These chemicals not only reduced the number of fungi and their frequency of occurrence but also improved the germination percent. Methanol, however, adversely affected the germination. This reduction might be due to toxicity of the chemicals not only on the seed-mycoflora but also on its germination due to deep penetrability. The elimination of important pathogenic fungi viz , *A. brassicicola* an *A. alternata* was notable. Similar results have been obtained by Khan and Kumar (1989) for wheat seeds.

REFERENCES

Anonymous (1987). Studies on seed pathology of certain vegetables. Final Report. ICAR Research Scheme. Dept. of Bot., A M. U., Aligarh.

ISTA (1966). International rules for seed testing. *Proc. Int. Seed. Test. Ass.* **31** : 1-152.

Khan, M. I. and Kumar, R. (1989). Impact of different alcohols on the seed mycoflora of wheat. *Indian J. Appl. Pure Bio.* **4** (1) : 7-8.

Maude, R. B. and Dudley, C. (1971). Dark leaf spot (*Alternaria brassicicola*) of cabbage. *Nat, Veg. Res. Sta. Warwick Ann. Rep.* 76 p.

Neergard, P. (1977). *Seed pathology.* The Macmillan Press Ltd. London and Basingtoke, 831 p.

(Accepted for publication 23 December 1993)