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Mycoflora associated with seeds of sunflower and effect of fungicide

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Abstract
The sunflower oil is deteriorate due to seed borne fungi. In the present study some seed-borne fungi were isolated from seeds of sunflower which were collected from different location which include Aspergillus flavus, A. niger, alternaria alternate, curvularia lunata, fusarium oxysporum, penicillum digitatum, f. semitectum for this agar plate method and standard blotter method are used several pathogenic fungi were also observed among all of observed fungi Alternaria speciaes were found in more amount in both the method among both method standard blotter method was found to be more better as compared to agar plate method.

Keywords: seed borne fungi, deterioration, agar plate method, standard blotter method

Introduction
Among all oilseed crop sunflower is an important oil seed crop. It is the second most annual oi seed crop in all oilseed crop. It is considered as commercial crop because its production gives large amount of economy to the government.

The scientific name of sunflower is Helianthus annuus L. having family composite with genus Helianthus and order Asterales, This crop grows in tropical and subtropical region structurally this plant grows with monohead with large flower the stem of the flower can grow up to 2 to 4 meters tall and the flower head have a width of 25 to 32 cm the flower of this crop have inflorescence which have thousands of tiny flower it have yellow petals the sunflower commonly grows up to the height of 5 to 11 ft.

The sunflower seed contain 45 to 50 % oil and 23 % protein, it include large amount of unsaturated fats, crude protein and fibres and important nutrients. It is rich source of linoleic acid it contains some amount of selenium, copper, zinc, vitamin E and B

The seeds of sunflower play an important role in successful cultivation and yield of crop but the fungi which are associated with seed have ability to deteriorate the crop by showing its adverse effects.

The fungi associated with sunflower seeds are Absidia corymbifera, alternaria alternate, Aspergillus flavus, Aniger, A terreus, C globosum, Fusarium, and penicillium the seed borne fungi decreases protein, carbohydrates, cholesterol content, iodine value and increase acid quantity. Low quality with reduced and discoloured oil content of sunflower seeds are reported to be caused by these seed borne fungi.

In the current paper we discussed the effect of seed borne fungi of sunflower.

Material and Method
a. Collection of Sample
For this study we collected the seeds of sunflower from different location the present Experiment was carried out at normal room temperature in this experiment about 100 seeds of sunflower were used.

b. Isolation and Identification of Fungi
For the isolation and identification of fungi standard blotter method and agar plat method were used in case of blotter method we used the seeds having surface sterilized condition by using 2.5 % NaOcl for the duration one minute and the moistened blotter paper were used for untreated seeds.

While the PDA was used in agar plate method having conc of 18 to 20 ml. which was keeped in petri plates having diameter 6 to 9 cm for every case five seeds were used in both condition i.e. in treated and in untreated condition this procedure was done up to four times after that this petri plates were incubated at 23 to 26^{o}c up to one week in this period we observe some fungi and it can be identified by viewing their characters.

c. Multiplication of fungi
For the isolation of fungi PDA culture was used in the formed of tubes which was stored in refrigerator up to 4c in the duration of 2 to 3 weeks 2 % PDA culture multiple was seen after that pathogenicity test will also checked for this plastic pots replicates used upto 4 times each pot have diameter about 8 to 10 cm in these pot about 220 gm and soil were mixed which was sterilized again mixed with seeds of sunflower with 20 quantity.

d. Management of seed borne fungi
For the management of seed borne fungi some chemicals were used which include Bayleton, Topsin, captan and Vitavax the process of using this fungicides is that each fungicide were used in 1 mg sol^{n} which was dissolved with 20 ml of PDA in petri plates. One set of agar plate is used in case of control which was without use of fungicide all these plates were inoculated up to one week the temperature required for inoculation is up to 20 to 25o c after some time Growth was calculated and the inhibition percentage were calculated by following formulae.

$$\% \text{ Inhibition} = \frac{\text{Diameter of colony in control} - \text{diameter of colony of fungi in fungicide}}{\text{Diameter of colony of control}} \times 100$$

Result and Discussion

Isolation of Fungi

For this purpose agar plate and Blotter paper method were used for this study the two sets of seeds were evaluated i.e. treated seed and untreated seed in this about 13 fungi were isolated with different genera these isolated fungi were identified by seeing their characters the isolated fungi include alternaria alternate, A. helianthi, Aspergillus flavus, A funigatus, A. niger, curvularia lunata, fusarium soloni,

Table 1

Sr. No.	Isolated fungi	NSI	Mean + S.E	NSI	Mean + S.E	NSI	Mean + S.E	NSI	Mean + S.E
1	Alternaria alternata	2	16.53+4.32	4	22.5+2.05	2	15.01+2.67	4	21.22+1.32
2	Alternaria Helianthi	0	0	3	15.0+0.12	1	0	2	12.51+2.48
3	Aspergillus flavus	6	32.81+2.56	6	34.01+2.05	6	26.12+1.32	5	25+1.64
4	Aspergillus fumigates	0	0	2	11.02+0.06	0	0	0	0
5	Aspergillus niger	4	25+2.61	2	15.6+4.13	2	14.3+0.01	1	5+0.02
6	Curvularia lunata	2	10+0.06	1	9.89+0.02	1	0	2	10+0.02
7	Drechstera lectrumera	3	11.92+3.01	2	12.11+2.21	3	10+0.02	1	11+0.01
8	Fusarium moniliforme	2	14.86+0.02	3	17.2+2.4	1	10.2+0.00	1	15+0.04
9	Fusarium soloni	1	21.05+0.16	0	16.7+1.7	0	5+0.05	2	10+0.05
10	Macrophomina phaseolina	1	11+0.05	1	0	1	0	0	0
11	Mucor Mucedo	3	12.0+3.01	1	1.06+3.5	1	10+0.05	1	15+0.06
12	Penicillium SPP.	4	6.32+1.41	3	16.71+1.76	0	0	0	0
13	Rhizopus SPP.	3	11.50+1.30	4	20.61+1.67	2	15.0+0.01	2	7.2+2.6

NSI = No. of sample infected out of 7 seeds sample, SE = standard error.

Table 2: Effect of fungicide on mean diameter of fungal colonies on agar medium (22 to 25°c)

Treatment	Alternaria alternata	A-flavus	A- niger	Curvularia lunata	D.tetramera	Rhizopus sp.	Penicillium sp
Control	3.450 A	4.401 A	4.376 A	3.107 A	2.912 B	2.613A	3.215 A
Bayleton	1.392 C	1.897 B	1.632 B	1.865 B	1.427 B	0.52D	1.480 B
Vitavax	2.201 B	1.901 C	2.235 B	1.892 B	1.352 B	2.106AB	1.596 C
Topsin	1.316 C	2.015 B	1.791 B	1.105 C	0.692 D	1.320 C	0.912 B
Captan	3.096 A	2.721 A	2.316 B	2.286 A	2.081 A	1.621BC	0.51

Management of seed borne fungi

Mycoflora associated with sunflower seed can be managed to a great extent and the use of pathogen free seed is of paramount importance efficacy of seed treatment is one of the several factor that influence cost, risk and benefits of seed treatment some chemicals, thermotherapy and the plant extract were evaluated against seed borne fungi.

Treatment with seed dressing fungicide

For the treatment of mycoflora associated with sunflower seeds four fungicides are used here they are used in the form of fungicides with seed dressing they can give satisfactory effect against sevan fungi they are Alternaria alternate, Aspergillus flavus, A-niger, Dreshlera tetramera, Rhizopus SPP which were isolated from seeds of sunflower among all four fungicide Baylean and Topsin gives better result the inhibition percentage of Bayleton is 81.05% Rhizopus SP. Is 60.27%, A niger gives 57% in case of antifungal property Topsic seen to be better the result of vitavax is not much more as compaired to Topsin & Bayletor the other result was shown in graph of each fungicide.

Objectives

1. The current study was aim to discuss the detection of seed borne fungi
2. Evaluating the different method of detection of seed borne fungi.
3. To find out information about different diseases caused due to seed borne fungi.
4. To study adverse effect on crop due to association of these seed borne fungi.

Conclusion

Sunflower (Helianthus annus. L) considered as a commercial oil crop all over the world this crop is widely cultivated in over all the world for the production of edible oil and also for seed consumption the crop is attacked by numerous seed mycoflora and these pathogen may affect the crop resulting in reduction of seed quantity and quality the direct impact of storage fungi on the economical part of the plant but by using different fungicide the mycoflora associated with seed can be reduce but also need of study is necessary to find out the effect of fungi on sunflower seed.

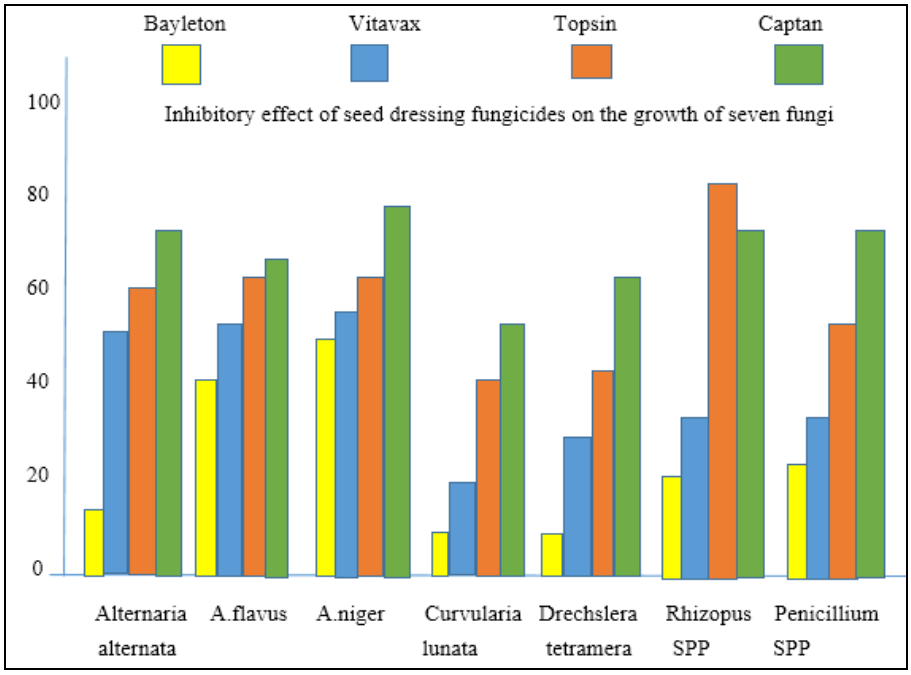

Fig 1

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