EFFECT ON SEED BORNE FUNGI ON SEED GERMINATION OF SOYABEAN

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ABSTRACT

The present study was aimed to investigate the effect of seedborne fungi on seed germination of soyabean for this study 42 matured seed of soyabean are taken from which 8 cultivars were tested for the presence of seed borne fungi and germination by agar plates method at room temp from the investigation it is seen that 62.1% of soyabean seed infected with phomopsis spp. Which ware did not germinate there was a inverse relationship between germination percentage of seed infected by phomopsis spp. Some seed samples show better germination and less seed infection by seed borne phomopsis spp.

Keywords: *Seed germination, Seedborne fungi.*

INTRODUCTION

Soyabean (Glycine Max L.) is one of the valuable crop in the world. Not only as an oil seed crop but also feed for livestock's. Soyabean is a domesticated crop. It is has been dully recognized by many researchers and organization for its economic importance and its domestic demands for various uses. The production of this crop is indispensible in the country to enrich the stable cereal crop with sufficient and high quality to over the problem of malnutrition.

Soyabean contain 40% protein 20% fat, 23% carbohydrates and reasonable amount of minerals and vitamins. It groups in tropical, subtropical as well as temperate region. The seed borne Myloflora are destroyers of foodstuff and grains during storage which ware shift later for human consumption by producing mycotoxins seed borne fungi may affect on the seed germination of soyabean which was to poor crop and reduction in plant growth and reduce productivity of the crop. That fungi includes. Asspergillus SPP cercospora kikuchi hardner, and macrophomina phaseolina are the other fungi. Which were contributing to lower seed quality in Soyabean.

From the many parts of the world it is seen that there was a association of fungal species with soyabean seed. The diaporthe phaseo lorun var. Sojae was the predominant organisms isolated from soyabean seed in USA seed borne Aspergillus SPP was isolated from 85% of the seed lots of soyabean cultivar "Lee 68". It is investigated that when seed were incubated at 30^0C there was a main factor are found which leads to low germination, When soyabean seed was infected by phomopsis spp one species of there fungi was also isolated from Sri Lanka and found lowering seed germination in soyabean, also there was an inverse co-relation between germination and infection in soyabean seed.

Thus the present study was concluded to detect and identify that how the seed borne fungi affect the seed germination in soyabean.

MATERIALS OF METHODS

Sample Collection:

For this experiment we collect 42 soyabean genotypes in matured grp from

which 36 consisting advance breeding lines and 8 cultivates are tasted for seed borne fungi and their effect on germination at room temp.

METHODOLOGY

Twenty two randomaly selected seeds from each advanced breeding line or cultivars ware surface disinfected by soaking in 0.6% Sodium hypochloride Sol^{n} upto five minutes after that rinsed with sterile distilled water for one minute after that that seeds were placed on Agar plate of 10 cm having five seeds per plate. Then five replications of five seeds each for each genotype were incubated at room temp after five days the number of germinated seed, number of seed infected by phomopsis spp. And other fungi were recorded.

RESULT AND DISCUSION

In the present investigation the germination percentage of genotype ranged from 11.9 to 1000.0 while the percentage of seed infected by phomopsis spp. And other fungi respectively varied from 4.0 to 110.0 and zero to 62.0 when germinated on PDA at room temp. This indicate that the material utilized in this investigation had a wide range in seed quality.

Percentage of germination and infection by phomopsis spp. And other fungi in surface sterilized seed of 42 soyabean genotypes incubated at room temp.

Genotype	Non germinated seed with			Total seed with	
	Germination	Phomosis spp.	Other fungi	Phomopsis spp.	Other fungi
F77-1797	100.0	0.0	0.0	10.0	18.0
D77-6166	96.0	6.0	0.0	22.0	30.0
F77-1880	93.0	0.0	0.0	6.0	34.0
Centennial	92.0	8.0	0.0	12.0	0.0
D76-9695	91.0	6.0	0.0	14.0	22.0
F77-1790	90.0	8.0	0.0	10.0	36.0
F77-1995	89.0	10.0	0.0	66.0	22.0
F77-940	88.0	12.0	0.0	38.0	28.0
C079-S01	86.0	12.0	0.0	14.0	42.0
D77-7926	84.0	14.0	2.0	34.0	20.0
F76-8757	86.0	16.0	0.0	36.0	16.0
F77-7142	84.0	12.0	0.0	26.0	22.0
Wright	85.0	10.0	2.0	50.0	18.0
D77-12	81.0	18.0	0.0	62.0	14.0
Hutton	80.0	20.0	4.0	38.0	22.0
N76-1507	82.0	22.0	0.0	40.0	24.0
D78-5576	76.0	24.0	0.0	42.0	10.0
F77-1576	74.0	22.0	2.0	30.0	24.0
Braxton	74.0	26.0	0.0	54.0	28.0
F77-1793	72.0	22.0	4.0	34.0	34.0

R74-39K	70.0	24.0	2.0	66.0	20.0
Cobb	68.0	24.0	6.0	26.0	58.0
F77-2000	66.0	26.0	2.0	30.0	14.0
F77-7450	68.0	30.0	4.0	34.0	34.0
Forrest	68.0	34.0	0.0	42.0	6.0
N75-2213	66.0	32.0	4.0	64.0	8.0
F76-8827	64.0	34.0	0.0	52.0	18.0
D76-9454	64.0	36.0	2.0	42.0	6.0
D78-5502	64.0	34.0	0.0	50.0	26.0
Self	64.0	32.0	0.0	54.0	0.0
Tracy (m)	62.0	26.0	4.0	62.0	14.0
D77-6103	62.0	38.0	0.0	60.0	0.0
D78-3238	60.0	40.0	2.0	66.0	2.0
N77-114	54.0	46.0	0.0	86.0	34.0
V75-345	52.0	48.0	0.0	74.0	10.0
V76-600	50.0	44.0	4.0	80.0	14.0
F77-7016	48.0	42.0	10.0	52.0	4.0
F77-1840	42.0	58.0	2.0	74.0	0.0
N77-1602	40.0	60.0	0.0	58.0	6.0
R75-579	42.0	60.0	0.0	80.0	0.8
Exxex	34.0	68.0	0.0	100.0	8.0
N77-179	32.0	62.0	0.0	82.0	0.0
Nathan	30.2	64.0	0.0	94.0	4.0
Mean	62.0	32.4	1.4	50.5	16.8
Standard deviation	20.9	24.0	2.4	25.3	12.7

Table 2. Coefficients of correlation between germination percentages and percent of seed infection by Phomopsis spp. And other fungi at room temperature.

Percent of seed infection Non-germinated seed with	**Germination percentage**
Phomopsis spp.	-0.99**
Other fungi	-0.17
Total seed with	
Phomopsis spp. Other fungi	0.83** 0.51**

An average 32.4 of the seed infected by phomopsis spp. Did not germinate as compared to only 1.4% of the seed infected by other fungi as shown in table among these 42 genotypes 62.2% of the phomopsis infected seed and 8.8% of seed infected by other fungi failed to germinate at room temp. furthermore 94.8% of the

non-germinated seeds were found infected by phomopsis spp. Earliar findings also indicated that non germinated seed and low rate of germination were associated with heavy infection of phomopsis spp.

Seed infection by phomopsis spp. and other fungi explain a large proportion of the variation in seed germination which was indicated by high coefficient of determination between germination and seed infection by these seed borne fungi however of which the infection by phomopsis spp. had great influence. Data from this study and other shows that examination of soyabean seeds for seed-borne fungi including phomopsis spp. and germination are important to determine seed quality in soyabean.

CONCLUSION

From this investigation it appears that phomopsis spp. are the predominant fungi associated with nongerminated seed in soybean increase of seed infection by seed borne phomopsis spp. and other fungi seems to reduce the germination of which phomopsis spp. are more harmful to germination of soyabean seed.

Examination of soyabean seed lots for seed-borne fungi with more attention to phomopsis spp. would be a useful criterion, in addition to germination test for determining seed quality in soyabean.

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