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EFFECT OF STORAGE CONDITION ON GERMINABILITY AND MYCOFLORA INCIDENCE ON SESAME

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ABSTRACT:
Sesame is a valuable crop for oil content and is used in our daily diet. The sesame seeds stored for 6, 12 and 18 months in three types of containers viz. jute, cloth and polyethylene bags. Storage of Sesame seeds in polyethylene bag showed greater germinability and lesser seed invasion by the fungal flora than jute and cloth bags during storage.

Key words :- Sesame, container, germination, mycoflora.

INTRODUCTION

Sesame is a valuable crop for its oil content and is used in our diet. Like to the food grains, sesame is also stored for varying periods before consumption or next planting season.

During storage the atmospheric condition plays an important role in the survival or elimination of organisms. Variation in the climatic conditions occur after transfer of seeds from field conditions to the storage containers. Since information on the incidence of mycoflora and germinability during storage is meagre in sesame, an experiment was conducted on this aspect.

MATERIALS AND METHODS

Sesame cv. AKT-64 seeds were used in the various phases of this study, produced in 2015 (rainy season). The seeds were cleaned, dried with moisture content equilibrated to 9% and packed in 3 types of containers, viz. jute, cloth (pervious to moisture) and polyethylene bag, 700 gauge (moisture-proof) of size 20 cm x 30 cm respectively.

The containers were sealed and stored in wire-mesh almirah in masonry building having cement walls, roof and floor, under ambient temperature (9.3- 45.1^{o}C) and relative humidity (31.2-91.2%) for 18 months. Then 100 g seeds were taken in a round plastic container. Sufficient quantity (40%) of gum solution was added, to form a thin layer over the seeds. A required quantity of fungicides (0.3 g/ 100 g) was then added and the container was closed and shaken vigorously till formation of a uniform coating of fungicides over the seeds. The observations on germination and fungal flora was recorded at 6-month intervals. The germination percentage was recorded (ISTA, Zurich 1985) From 400 seeds of Sesame, the fungi isolated following standard blotter and agar-plate methods (ISTA, Zurich 1976) were noted.

RESULTS AND DISCUSSION

The maximum percentage of incidence of fungi was observed in jute and cloth bags. Polyethylene bags provided much protection to sesame seeds in preventing the development of fungal colonies both quantitative and species-wise. This finding confirms the result of Dwivedi, Shukla (1990) Lambat et al. (2011) and Lambat et al. (2017).

The incidence of various fungi recorded at different periods of storage is given in Table 1.With the advancement in the storage period, the incidence of storage fungi increased rapidly. Christensen (1973) and Srivastava and Gupta (1980) also reported increase in the percentage of storage fungi and loss in the field fungi under storage. This fluctuation (occurrence or non-occurrence of a number of fungi, at different intervals) may be attributed mainly to the fluctuation in the atmospheric relative humidity and temperature during the period of storage, which influenced the growth and

development of fungi. Requirement of relative humidity and temperature vary for the growth and development of different fungi. This might have resulted in the appearance of a particular fungus at one instant and non-appearance at the other. The increase in the number of infected seeds was due to increase in mycoflora. It is better to store in polyethylene bag to preserve greater seed germinability and lesser seed invasion by the fungal flora during storage. The seeds treated with fungicides were better than the untreated ones. Thiram (0.3%) proved superior, showing maximum germination percentage, followed by captan, carbendazim and captafol (Table 1). The finding confirms the result of Lambat et al (2017)

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Table No. 1: Effect Of Storage Containers On Mycoflora And Germinability Of Sesame During storage

Treatment	Fungus-infested (%) seeds of Sesame at									Initial
	6 months			12 months			18 months			
	JB	CB	PB	JB	CB	PB	JB	CB	PB	
Alternaria alternate	4.25	4.50	3.50	0.25	0.50	0.75	---	-----	----	5.75
Aspergillus flavus	5.50	5.00	1.50	10.75	10.50	6.25	19.75	18.00	8.25	0.50
A. melleus	---	---	---	3.25	4.25	0.50	8.50	9.25	5.50	---
A. niger	3.50	2.00	4.75	9.75	8.50	6.75	20.25	20.00	12.00	0.25
A. Parasiticus	1.75	1.00	0.25	3.50	3.0	1.0	6.25	6.0	3.75	----
Chaetomium spinosum Chivers.	1.75	1.50	0.25	3.25	3.50	1.50	3.75	3.50	2.00	0.25
Curvularia Lunata	1.00	0.50	---	0.50	---	---	0.25	---	---	0.50
Fusarium equiseti	2.75	2.75	0.75	2.00	2.00	0.25	1.00	0.75	---	---
F.manliforme	1.75	1.25	0.50	2.75	2.0	0.75	2.75	2.0	1.75	---
Macrophomina Phaseloina	5.75	4.75	4.0	3.75	3.0	2.0	2.0	1.25	0.50	1.75
Penicillium oxalicum	0.50	---	---	1.75	1.25	0.50	5.75	5.00	3.00	---
Rhizoctonia Solani.	1.75	1.00	0.75	1.00	1.00	----	----	---	---	0.50
Rhizopus nigricans.	2.00	1.50	1.00	4.25	3.25	3.00	12.50	11.00	5.00	-----
Total organisms	12.00	11.00	10.00	13.00	12.00	11.00	11.00	10.00	9.00	7.00
Total incidence (%)	32.25	25.75	17.25	46.75	42.75	23.25	80.75	76.75	41.75	16.50
Germination (%)	----	----	---	---	---	---	---	---	----	---
Control (untreated)	86.00	86.00	87.00	80.00	82.00	86.00	48.00	50.00	55.00	88.00
Carbendazim (0.3%)	92.00	93.00	94.00	87.00	88.00	92.00	57.00	59.00	64.00	94.00
Captan (0.3%)	92.00	94.00	94.00	88.00	89.00	93.00	60.00	62.00	70.00	95.00
Captafol (0.3%)	90.00	92.00	92.00	86.00	87.00	91.00	54.00	56.00	65.00	94.00
Thiram (0.3%)	93.00	94.00	95.00	88.00	90.00	92.00	58.00	60.00	68.00	96.00

J.B.: Jute Bag, CB: Cloth Bag, P.B.: Polyethylene bag