

EFFECTS OF FUNGICIDES ON SEED BORNE PATHOGEN OF GROUNDNUT

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ABSTRACT:-

The effect of fungicide on *Aspergillus flavus* link and was studied by food-poisoning technique. The sensitivity of Thiram, carbendazim, Mancozeb, Copper oxychloride, Captan and Captafol were determined. Thiram, Carbendazim and Mancozeb were found to be more inhibitory as compound to other fungicides.

As a result, investigation will be helpful in control of seed borne fungi of Groundnut seeds. By the utilization of chemical seed treatments, health of the Groundnut seeds can be maintained .So seeds can be stored for longer time and diseases can be prevented .Hence this investigation will be eco-friendly and useful in increasing productivity as well as storability of Groundnut seeds.

Keywords: - Fungicides, *Aspergillus flavus*, seed treatment,eco- friendly,Captafol, Captan, Carbendazim.

INTRODUCTION:-

The effect of fungicide on *Aspergillus flavus* link And also studied by food-poisoning technique. The sensitivity of Thiram, carbendazim, Mancozeb, Copper oxychloride, Captan and Captafol were determined. Thiram, Carbendazim and Mancozeb were found to be more inhibitory as compound to other fungicides [1].

The peanut, groundnut pea, goobers or groundnut (*Arachis hypogaea*) is a true legume rather than a nut. The plant is a bushy or creeping, annual with a peculiar habit of ripening its fruit underground .The peanut is a native of South America but was early carried to the Old World

tropics by the Portuguese explorers. The chief groundnut growing regions are India, China, Indonesia, East and West Africa, U.S.A., Poland and France.

India occupies the top position in the world with regard to acreage and production of groundnut which are 5-6 million acres and 4-5 million tons respectively. The state of India i.e. Gujarat, Maharashtra, Andhra, Karnataka and Tamil Nadu account for about 90 percent of groundnut producing area. The plants may be used for forage, stock feeding or as soil renovators. The nuts or seeds are used for roasting or salting in candy and for the preparation of peanut butter. Composition of 100 edible portion

of peanut include protein (26 g), Fat (47.5 g), Carbohydrate (18.5 g), Fiber (2.4 g) and Water (5.6 g). Peanut oil is an important food oil. The oil cake is fed to livestock. The protein in peanut is used in the manufacture of ardil, a synthetic fiber [2]

MATERIALS AND METHODS:-

The chemical control of seed-borne pathogens is done by using fungicides. The different fungicides used were systemic and non-systemic in nature. The different fungicides used were Thiram, Carbedazim, Mancozeb, Copper oxychloride, Captan and Captafol. All these fungicides can be used as seed dressers to control the seed-borne pathogens [3].

In this technique, the different concentrations of fungicides ranging from 100 to 1200 µg/mL were prepared on the basis of active ingredient. After sterilization 10 mL of prescribed fungicide concentration was added into 10 mL of PDA medium (Potato Dextrose agar medium) in sterilized beaker. After mixing well the solution was poured in sterile petriplate and allowed to solidify. After solidification a 5 mm disc of 8 days old culture of test fungus was inoculated

in the center of PDA plate. These plates were incubated at 28±1°C. All treatments along with control i.e. by adding 10 mL of sterilized distilled water in 10 mL of media was prepared. Such all treated plates were prepared in triplicates of each treatment.

The observation was recorded in the form of linear growth of fungal pathogen in millimeter (mm) daily for 8 days. The linear growth was measured up to the growth in control plate when filled completely.

The minimum inhibitory concentration (MIC) of fungicides was recorded. The percent control efficacy (PCE) of fungicides was calculated by using following formula [5]

$$\text{PCE} = 100 \times [1 - (X/Y)]$$

Where,

X = Diameter of the colony treated with fungicide.

Y = Maximum growth of fungus on control.

With the individual fungicide treatment minimum inhibitory concentration (MIC) was determined.

The minimum inhibitory concentration (MIC) of Thiram, Carbendazim, Mancozeb, Copper oxychloride, Captan

and Captafol to *Aspergillus flavus*, was recorded.

RESULT AND DISCUSSION:-

D) Effects of Fungicides on *Aspergillus flavus* Link.

1) Thiram

D) Thiram was used against *Aspergillus flavus* and observed the percent control efficacy as shown in the Table 1, as earlier mentioned the incubation period was of 8 days and different concentrations of thiram used were

100,200,300,400,500,600 and 700 µg/ml. In control, the growth of *Aspergillus flavus* was 80 mm on 8th day showing maximum growth. At 100 to 500 µg/mL concentration, on first day PCE was 88%, 89%, 95%, 98% and 98% respectively. It was noted that on 8th day the PCE was 30%, 50%, 70%, 75%, 78%, and 97% from 100 to 600 µg/mL respectively. At 700 µg/mL the PCE was 100% from 1st to 8th day. So the MIC for *Aspergillus flavus* was 600 µg/mL [5]

Conc. µg/mL	Percent Control Efficacy (PCE)							
	Incubation period (Days)							
	1	2	3	4	5	6	7	8
100	88	86	83	74	72	69	55	30
200	89	88	84	81	75	79	69	50
300	95	89	88	83	82	80	75	70
400	98	94	92	91	89	88	78	75
500	98	96	94	92	90	89	80	78
600	100	100	100	100	100	100	100	97
700	100	100	100	100	100	100	100	100
S.E±	1.76	2.00	2.44	3.44	3.90	3.99	5.67	8.71
C.D. at 5%	4.31	4.91	5.97	8.42	9.55	9.77	13.89	21.33

Table 1 :- Effect of Thiram on percent control efficacy (PCE) of *Aspergillus flavus* Link. (Ref 4).

REFERENCES:-

- 1) Chauhan, J.S., Gupta, V.K. (1968). Aflrot a new disease of Groundnut caused by *Aspergillus flavus*. Indian J. Agri. Sci. 38:568.
- 2) Reddy, G. R., Reddy, A. G. R. and Rao, K. C. (1991). Effect of different seed dressing fungicides against certain seed borne fungi of Groundnut. J. Oil Seed Res. 8:78-83.
- 3) ISTA (1976). International Rules of Seed testing; Aneexes 1976. Seed Sci. & Technol. 4; 3-49; pp50-177.
- 4) Mungikar Anil, M. (1997). An Intorduction of Biometry Saraswati Printers Publisher, Motikaranja Aurangabad.
- 5) Jayanta Saha, Raj, S. K. (1989). Effect of fungicides on the seed mycoflora of Groundnut. Ind. J. Mycol. Res. 27(2):183-189.