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EFFECT OF POLYALTHIA LONGIFOLIA (SONNER) THW. ON SEED MYCOFLORA, SEED GERMINATION AND VIGOUR INDEX OF GROUNDNUT CV. TLG-45

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ABSTRACT

The present study was carried out to investigate the effect of leaf extract of *Polyalthia longifolia* (Sonner) Thw. on seed mycoflora, seed germination and successive seedling vigour of Groundnut Cv. TLG-45, was tested by using standard blotter method (De Tempe (1953). Plants make many biopesticides that have biological functions, including defense against external and internal seed-borne fungi. The root and shoot length, percentage germination of seeds and seed vigor index was found to be more in case of *Polyalthia longifolia.* The effect of plant extract on decrease seed mycoflora and increase seed germination and vigour index of Groundnut Cv. TLG-45 was observed.

KEYWARDS: Groundnut Cv. TLG-45, Seed mycoflora, Seed germination, Vigour index and *Polyalthia longifolia* (Sonner) Thw.

INTRODUCTION

TLG (Trombay Latur Groundnut) 45 is a new large-seeded groundnut (*Arachis hypogaea*) variety, was released during 2007 for cultivation by the Central Sub Committee on Crop Standards, Release and Notification of Varieties, Ministry of Agriculture, Government of India. (Kale et al. 2008). One such control measure is the use of biopesticides or plant extracts that may be toxic to a specific seed-borne pathogen (Dwivedi and Shukla 1989).

Botanicals are easily available, cost-effective, or economically achievable and are easy to prepare; even farmers can prepare them easily. (Suleiman and Omafe 2013). The crop is susceptible to a variety of plant pathogens like microorganisms, resulting in poor yields and quality of the produce. Patil et al. (1995) studied the semi-dwarf, early maturing and high yielding new groundnut variety, ATG 24. The study on the effects of *Polyalthia longifolia* (Sonner) Thw. leaf extracts on groundnut Cv. TLG-45 seeds found that the extracts significantly increased the percentage of seed germination, improved the vigour index, and reduced seed-borne mycoflora.

MATERIALS AND METHODS

The seed sample of groundnuts was collected from the Oil Research Center, Latur, field places, and market places of Maharashtra region. During the present study, *Polyalthia longifolia* (Sonner) Thw. was selected. These plants were surface sterilized with 0.1% $HgCl_2$ and washed repeatedly with sterile distilled water three times. The different concentrations of *Polyalthia longifolia* prepared for seed treatment ranged from 1 to 10%. The effect of plant extracts on seed mycoflora, seed germination and vigour index was recorded. The identification of plants was confirmed using the flora of Maharashtra (Cooke, (1958), Naik, (1979 & 1998), Singh et al. (2001) and Almeida, (2003). The root and shoot length (cm) of the Groundnut of the selected 10 normal seedlings from each blotter paper were measured, and the seedling vigour index was calculated.

EXPERIMENTAL RESULTS

Results noted in the Table 1 and Fig. 1. indicate that *Polyalthia longifolia* found to be effective in controlling seed mycoflora and increasing the percentage of seed germination and vigour index. At 10.0% concentration, seed mycoflora seems to be decreased to 10.00% as compared with control (70.00%). At the same concentration, it was also noticed that the seed germination and vigour index were remarkably increased upto 84.00% and 600 respectively. In the control they were 55.00% and 150 respectively. The study also highlighted the importance of seed treatment in managing external and internal seed-borne pathogens and improving seed germination and vigour index. The finding suggest that *Polyalthia longifolia* are valuable tool in reduced seed mycoflora and increase the seed germination and vigour index of Groundnut Cv. TLG-45.

Table 1: Effect of *Polyalthia longifolia* (Sonner) Thw. on seed mycoflora, seed germination and vigour index of Groundnut Cv. TLG-45.

Leaf extract Conc. (%)	Seed Mycoflora (%)	Seed germination (%)	Vigour index
0.0 (Control)	70	55	150
1.0	69	57	165
2.0	68	58	178
3.0	65	60	180
4.0	63	70	230
5.0	45	75	250
6.0	35	78	380
7.0	25	80	510
8.0	20	80	545
9.0	15	82	590
10.0	10	84	600
S.E. ±	6.87	3.23	53.21
C.D. at 5%	15.32	7.20	118.65

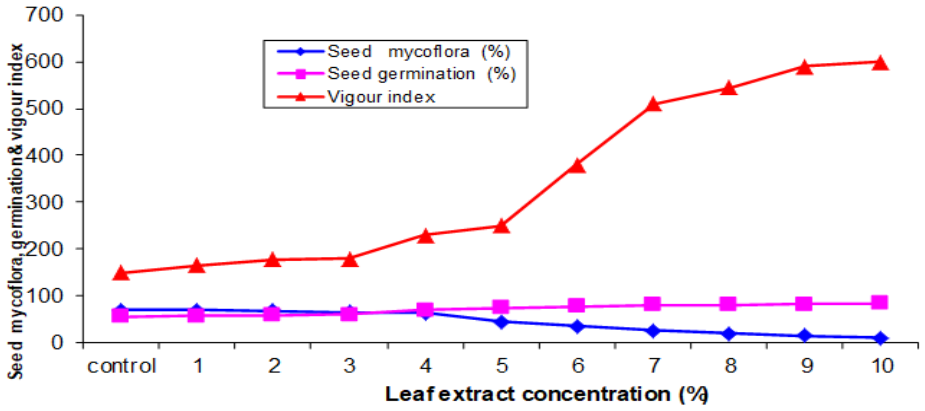

Fig.1. Effect of *Polyalthia longifolia* (Sonner) Thw. on seed mycoflora, seed germination and vigour index of Groundnut Cv. TLG-45.

DISCUSSION

De Tempe (1953) studied the blotter method for seed health testing**.** Cooke Theodore (1958) published flora of the Presidency of Bombay Presidency. Naik (1979) published Flora of Osmanabad. Dwivedi and Shukla (1989) studied research paper on effect of seed treatment of seed mycoflora, germination *Cassia hirsute.* Naik (1998) published flora of marathwada particularly dicotyledonous family. Patil et al. (1995) studied Semi-dwarf, early maturing and high yielding new groundnut variety. Nwachukwu and Umechuruba (2001) screened antifungal activities of Some Leaf Extracts on Seed-borne Fungi of African Yam Bean Seeds, Seed Germination and Seedling Emergence. Singh et al. (2001) published Flora of Maharashtra state. Almeida (2003) published flora of Maharashtra. Begum et al. (2004) screened and evaluation of mycoflora associated with pea seeds and some control measures.

Keshawamurthy (2005) studied the medicinal Plants of Karnataka. Khare (2007) observed Indian Medicinal Plants. Kale et al. (2008) observed TLG 45, a large-seeded groundnut variety for Marathwada region of Maharashtra in India. Prashith Kekuda et al. (2010) studied on Effect of Methanol Extract of *Polyalthia longifolia* Thw and *Abrus pulchellus* Wall on Germination and Mycotic Infection of Sorghum Seeds. Damale and Raut (2011) observed Efficacy of chemicals and bioagents on Mungbean seed germination, vigour index and association of fungi in storage. Rajendra Mehta et al. (2015) studied effect of Seed Mycoflora on Seed Germination of Some Medicinal Plants. Suleiman and Omafe (2013) screened activity of three medicinal plants on fungi isolated from stored maize seeds *Zea mays* L.

CONCLUSION

Studies on the leaf extracts of *Polyalthia longifolia* (Sonner) Thw. extracts on seed health generally indicates that they possess significant antifungal properties which help to reduce seed mycoflora, increase seed germination, and improve the seedling vigor index of Groundnut Cv. TLG-45.

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