



ALLELOPATHY OF SOME FOREST TREES FROM VRIDDHESWAR, PATHARDI TAHSIL, AHMEDNAGAR.

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ABSTRACT:

The effects of aqueous leaf extracts of different concentrations of *Mangifera indica* L.(Family Anacardiaceae), *Semecarpus anacardium* (Family Anacardiaceae) from Pathardi Tahsil (longitude 19° 09' N, latitude 75° 10' E) Dist Ahmednagar were bioassayed on germination and seedling growth of *Pennisetum americanum* Variety 'MLBH 308'. Leaf extract of *Mangifera* exerted slight stimulation of 'Ad rt' at lower conc while at higher conc. exerted inhibitory effect on seedling growth over control. Leaf extract of *Semecarpus* exerted promontory effect 'Ad rt', 'Pl' and 'Tsg' were promoted. Promotion was neither significant at (P>0.05%) nor concentration correlated. Extract of both plant inhibited seed germination.

Keywords: Extract, Germination, Seedling growth, *Mangifera indica* L., *Pennisetum americanum* (I.) K. Schum. Variety M.L.B.H. 308, *Semecarpus anacardium* L.

INTRODUCTION:

Inhibitory effects of certain plants have been noticed by farmers and gardeners since past hundreds of year. It is also known that some plants inhibit other plants by means of chemicals they synthesize, a process known as 'Allelopathy', while some exhibit a sort of competition of a non-chemical form. There has been confusion between 'Competition' and 'Allelopathy'. Some say that 'Allelopathy' as one of the parts of competition. To minimize confusion, term 'interference' may be used to encompass both 'Allelopathy' and 'competition' (Muller, 1969 c.f. Rice, 1984). Patil (1994) worked on a common bund grown green manure plant *Glyricidia maculata* L. Leaf extracts showed inhibitory effect on seedling growth of green gram, black gram, sunflower, rice etc but promoted root and shoot growth in ground nut.

MATERIALS AND METHODS :

Plant parts of *Mangifera indica* L., (Anacardiaceae) *Semecarpus anacardium* L. (Anacardiaceae) from Pathardi Tahsil (longitude 19° 09' N, latitude 75° 10' E) Dist Ahmednagar were collected in month of August 2010, washed with tap water, blotted and then used.

Preparation of leaf extract: 10g of leaves were cut into pieces, ground in a grinder and with distilled water 10% stock solution was prepared, filtered through many layers of muslin cloth, centrifuged to remove debris and diluted to 2.5%, 5% & 7.5% concentrations. Seeds of test crop plant *Pennisetum americanum* Var. 'MLBH 308'

collected from local market were surface sterilized with 0.1% mercuric chloride and washed thoroughly. 30 seeds were placed in three Petri dishes. Germinating paper was used. 5 to 10 ml extract was added in every Petri plate. Seeds were allowed to germinate in the laboratory conditions. Measurements on 5th day were taken. Percentage inhibition or stimulation over control and ANOVA variance was calculated.

RESULT & DISCUSSION :

1 Effect of leaf extracts on Bajara 'MLBH 308' variety:

Except slight stimulation of 'Ad rt' (9.23%) and 'TSg' (5.18%) at lower concentration, *Mangifera* leaf extracts of higher concentrations exerted inhibitory effect on seedling growth. Extracts inhibited 'Ad rt', 'Pl' and 'TSg' by 45.51 to 76.98%, 1.03 to 73.40% and 49.78 to 75.62% respectively over control. Seed germination was inhibited from 10.71 to 28.57% over control (Table NO 1, Graph No 1).

Effect of leaf extract of *Semecarpus* on 'MLBH308' variety: leaf extracts of *Semecarpus* exerted promontory effect. 'Ad rt', 'Pl' and 'TSg' were promoted by 0.18 to 29.91%, 4.17 to 20.83% and 0.18 to 33.92% over control respectively. Promotion was neither significant at (P<0.05%) nor concentration correlated. Germination was inhibited by 3.46 to 10.34% over control (Table NO 1, Graph NO 2).

CONCLUSION :

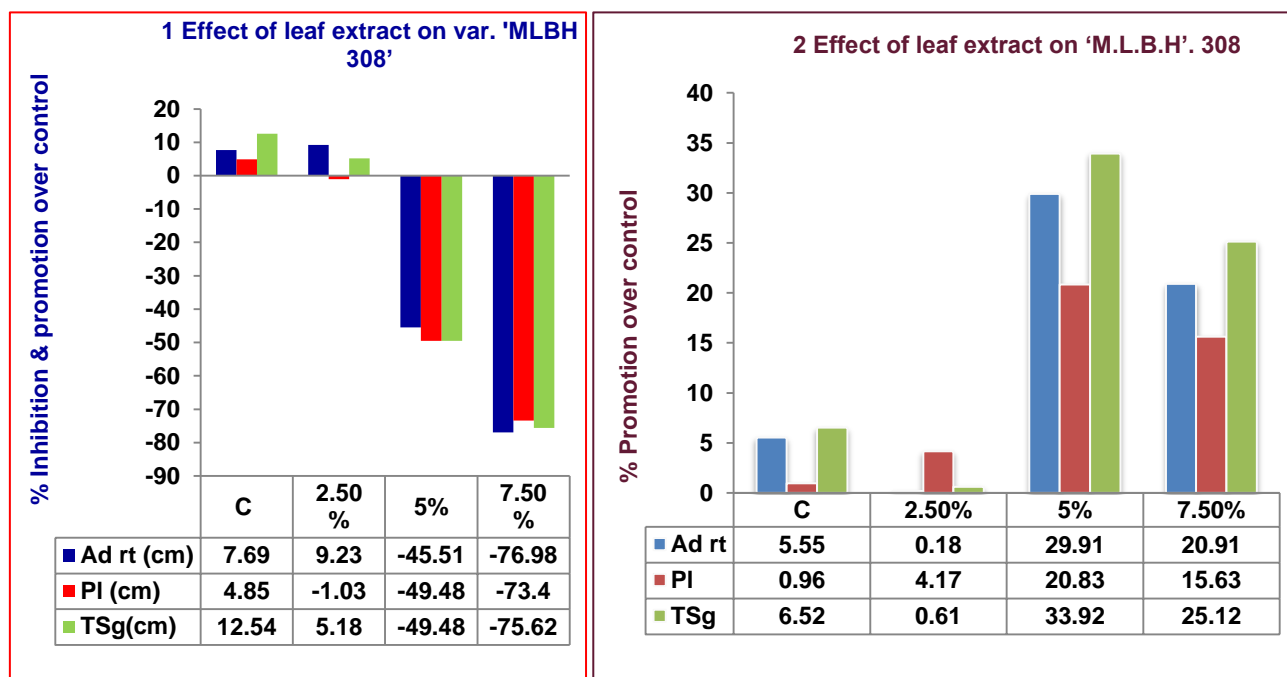
The multipurpose forest trees viz. *Mangifera*, *Tectona* and *Semecarpus* are allelopathic. They are stimulatory as well as inhibitory to the crop plants.

BIBLIOGRAPHY

Kaletha, M.S.Bhatt, B.P.and Todaria, N.P.(1996).Tree-crop interactions in traditional Agroforestry systems of Himalayas.I.Phytotoxicity effects of farm trees on food crops. *Allelopathy Journal* 3 (2): 247-250.
 Mohmed-Saleem, M.A. and Fawusi, M.O.A.(1983). Agri. Ecosyst. Environ.10, 347-352 in Narwal, S.S

2004. '*Allelopathy in Crop Production*'. Scientific Publisher, Jodhpur (India).
 Molisch Hans (1937)."*The Influence of one plant on another: Allelopathy*'. Edited by Narwal S.S., (2001)Translated by L.J.La Fleur & M.A.Bari Malik. Scientific Publisher, Jodhpur (India).
 Narwal S.S. and P.Tauro (1994). '*Allelopathy in Agriculture and forestry*.' Scientific Publisher, Jodhpur (India).

Graph No:22 Effect of leaf extract of *Semecarpus anacardium* L .on seedling growth of varieties of *Pennisetum Pennisetum americanum*(L.) K. Schum.



Graph No: 1 Effect of leaf extracts of *Mangifera Indica* L. on germination &seedling growth of *Pennisetum americanum* (L.)K.Schum.

Table No. 1 Effect of extracts of *Mangifera Indica* L. on germination &seedling growth of *Pennisetum americanum*(L.)K. Schum. Variety MLBH 308

Extract	Bajara	Growth	Extract concentration				CD at	P - Value
Leaf	MLBH	Ad rt(cm)	5.55a ± 0.67	5.56a ± 0.72 (0.18)	7.21ac ± 0.81(29.91)	6.71ad ± 0.90 (20.91)	1.46	0.29
		PI(cm)	0.96a ± 0.08	1.00ab ± 0.10 (4.17)	1.16ac ± 0.12 (20.83)	1.11ad ± 0.12 (15.63)	0.13	0.55
	308	TSg	6.52 ± 0.74	6.56 ± 0.81 (02.24)	8.37ac ± 0.91 (33.92)	7.82ad ± 0.99 (25.12)	1.62	0.30
		Ger %	96.67	86.67 (-10.34)	93.33 (-03.46)	93.33 (-03.46)		
Leaf	MLBH	Ad rt(cm)	7.69a ± 1.08	8.40 a ± 1.24 (9.23)	4.19b ± 1.04 (-45.51)	1.77c ± 0.65 (-76.98)	1.92	1.77E-05
		PI(cm)	4.85a ± 0.56	4.80a ± 0.73 (-1.03)	2.45b ± 0.60(-49.48)	1.29c ± 0.45 (-73.40)	1.11	2.33E-05
	308	TSg(cm)	12.55a ± 1.61	13.20a ± 1.93(5.18)	6.64b ± 1.63 (-49.48)	3.06c ± 1.08 (-75.62)	2.98	1.39E-05
		Ger %	93.33	83.33 (-10.71)	70.00 (-25.00)	66.67 (-28.57)		

% Inhibition or stimulation: (C-T / C) X100 (Where C: control, T: treatment).