

Influence of different pre-sowing seed treatments on the germination and growth performance of *Sida cordifolia* Linn.

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INTRODUCTION & AIM

Sida cordifolia Linn. is commonly known as Bala. It is an erect, branched, annual or rarely perennial woody, undershrub with stellately pubescent aerial parts, up to 1m high, growing as a weed on roadsides and waste places in tropical and sub-tropical regions throughout India. In India, the root of *S. cordifolia* is popularly recognized by the name “Bala” and used widely as an ingredient for preparing various formulations of Ayurvedic medicine. The bioactive compound present are Stigmasterol, vasicine, vasicinone, Ephedrine, Pseudoephedrine, Vasicinol etc. The annual demand is 1000–2000 MT (NMPB, 2022). Various pre-sowing treatments like acid/hot water treatments, cold stratification and mechanical disruption are commonly used to enhance germination in a short period of time. Hot water treatment improves germination of dormant hard-coated seeds by increasing their permeability to water and oxygen (Msanga and Maghembe 1986; Hermansen et al. 1999; Aydin and Uzun 2001)

The main aim of the present study is to determine the optimum pre treatment methods for the germination and other associate parameters.

METHOD

Collection of seed and study site: The experiment was conducted in the nursery of Non Wood Forest Products lying between 23°6'6.22"N latitude 79°59'28.67"E longitude (fig.1. Ripe fruits of *S. cordifolia* were collected during their harvesting period from healthy and vigorous plants growing in natural populations at Anuppur, Madhya Pradesh.

Experimental details: The experiment consists of 14 treatments [T₁ – Control (Distilled Water), T₂ - Cold water, T₃ – Hot water, T₄ - 20% Sulphuric acid T₅ - Concentrated Sulphuric acid, T₆ - Mechanical Scarification, T₇ - Mechanical Scarification + Gibberllic acid 100ppm, T₈ - Mechanical Scarification + Gibberllic acid 500ppm, T₉– 0.2 % Potassium nitrate, T₁₀-2 % Thiourea, T₁₁-30 % Hydrogen peroxide T₁₂ - Cow milk, T₁₃ - Cow urine, T₁₄ - Kinetin 500ppm]. The experiment was laid out in a complete randomized design (CRD) with three replications of each treatment.

RESULTS & DISCUSSION

Treatments	Germination %	Root length (cm)	Shoot length (cm)	Vigour index	Fresh weight (gm)	Dry weight (gm)
T1(Control)	12.00	4.20	11.63	141.25	3.767	0.180
T2(Cold water)	15.26	5.56	12.90	311.34	6.100	0.953
T3 (Hot water)	20.11	7.90	10.43	367.73	4.267	0.357
T4 (20% Sulphuric acid)	15.97	7.80	18.29	403.33	6.100	0.990
T5 (Concentrated Sulphuric acid)	79.71	8.97	19.80	2,302.28	6.467	1.127
T6 (Mechanical Scarification)	17.35	7.30	10.50	366.07	3.833	0.683
T7 (Mechanical Scarification + GA 100ppm)	12.65	5.40	8.36	176.09	5.367	0.970
T8 (Mechanical Scarification + GA 500ppm)	16.04	5.33	7.93	168.75	4.16	0.78
T9 (0.2 % Potassium nitrate)	16.63	6.13	9.56	300.48	5.56	0.67
T10 (2 % Thiourea)	14.58	5.10	7.16	196.41	5.20	0.71
T11 (30 % Hydrogen peroxide)	18.65	4.23	6.20	211.69	5.60	0.46
T12 (Cow milk)	14.11	5.90	6.33	146.99	4.80	0.81
T13 (Cow urine)	14.17	6.16	5.36	153.20	5.13	0.97
T14 (Kinetin 500ppm)	12.98	5.26	4.86	294.90	4.23	0.60
C.D	1.46	0.60	0.97	38.07	0.38	0.04
SE(m)	0.50	0.20	0.33	13.07	0.13	0.01
C.V	4.36	5.86	5.81	5.72	4.54	3.21

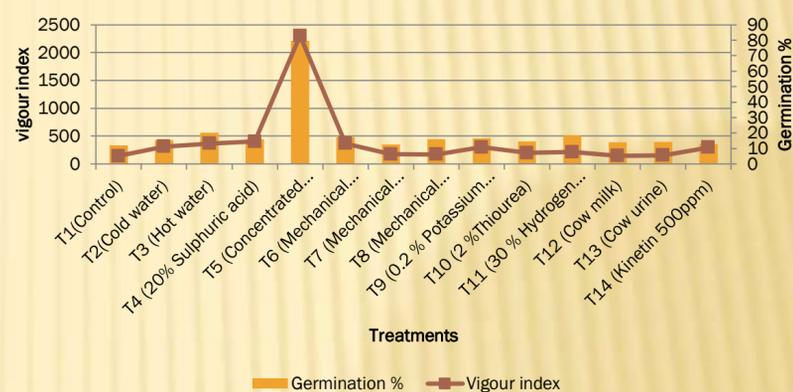


Fig 1. Effect of pre sowing treatments on germination % and vigour index

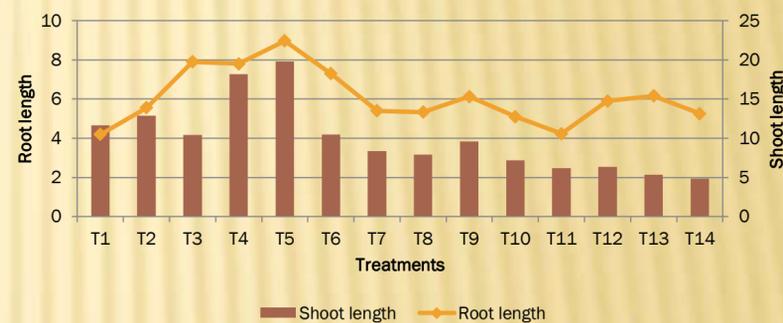


Fig 2. Effect of pre sowing treatments on root and shoot length



Fig 3. Pre sowing treatments in seed germination of *S. cordifolia* in nursery (A) Mature seeds, (B) Emerged seedling with growth in T₅ (Conc. Sulphuric acid)

CONCLUSION

The results showed that conc. sulphuric acid had a significant effect on seed germination and seedling growth of *S. cordifolia* in nursery. Therefore seed pre-treatment conc. H₂SO₄ is recommended to obtain better germination, growth and quality seedling of this species.

FUTURE WORK / REFERENCES

Aydin I, & Uzun F (2001) The effects of some applications on germination rate of *Gelemin Clover* seeds gathered from natural vegetation in Samsun. Pak J Biol Sci 4(2):181-183.

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