



Short Note

Seed Treatment Effects on Germination, Growth, Yield Attributes and Yield of *Mucuna pruriens*

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An experiment was conducted in completely randomized block design replicated thrice with seed treatments consisted of control, cold water soaking, hot water soaking, acid treatment, scarification, cow dung pelleting, *panchakavya* soaking to ascertain their effects on the field performance of *Mucuna pruriens*. The highest percentage of germination (93) was recorded in scarification treatment. The growth, yield attributes and yield (208.2 g) were superior in scarification treatment followed by acid treatment (202.3 g). The lowest growth, yield attributes and yield were registered in control.

Key words: *Mucuna*, seed treatment, scarification, *panchakavya*

Mucuna pruriens Bak., belonging to leguminosae family is one of the popular medicinal plants of India that widely spread over most of the subcontinent. It is a constituent of more than 200 indigenous drug formulations. All parts of *Mucuna pruriens* possess valuable medicinal properties to cure diseases like Parkinson because of its seed contain L-DOPA. There is a heavy demand of *Mucuna* in Indian as well as international drug markets. *Mucuna* plants have hard seed coat with poor germination percentage (Anonymous, 2001). Hence, present experiment was carried out with objective to study the effect of different seed treatment on germination, growth and yield.

Material and Methods

This experiment was conducted in the Eastern block, Central Farm, Tamil Nadu Agricultural University, Coimbatore. The experiment was conducted in a completely randomized block design replicated thrice. Treatment details T₁: Control, T₂: Cold water soaking for 24 hours, T₃: Hot water soaking at 80°C for 5 minutes. T₄: Acid treatment (commercial H₂SO₄) for 3 minutes, T₅: Scarification (seeds were rubbed against the hard surface for 5 minutes), T₆: Cow dung pelleting, and T₇: *Panchakavya* soaking (3% concentration for 6 hours)

Seeds were sown in the quarter size pots that had drainage holes. The pots were filled by the soil mixture containing tank silt, red soil and well decomposed and powdered FYM in 3:1:1 ratio.

The present form of *panchakavya* stock solution is essentially a product containing 2.5 kg of cow dung, 1.5 l of cow urine, 1 l of cow milk, 1 l of cow curd, 500 g of cows ghee and 1.5 l of sugar cane juice was also used to accelerate the fermentation. This content

was stored in earthen pot kept in an open and shade place and stirred both in the morning and evening. In seven days, the *panchakavya* will be ready.

Results and Discussion

The scarification treatment registered 93 per cent of germination which was significantly higher and it was followed by acid treatment in *Mucuna pruriens* (Table 1). In this treatment hard seed coat was scarified which facilitates imbibitions of water which helps to put forth the plumule and radicle in easy manner which ultimately increased the germination percentage. The least germination per centage was recorded under control treatment.

Growth characters

The highest shoot length of *Mucuna pruriens* was recorded at 10, 40 DAS and also at maturity in the scarification treatment, which was superior to other treatments (Table 1). The number of leaves, number of branches at 10, 40 DAS and maturity were also significantly higher in the scarification treatment. The

least number of leaves, number of branches were recorded in the control treatment. Significantly higher dry matter production of *Mucuna pruriens* at 10, 40 DAS and maturity were recorded under the scarification treatment and it was followed by acid treatment. The lowest dry matter production was recorded in control at all the phases.

Yield attributes

Number of pods per plant, pod weight per plant, number of seeds per pod registered significantly higher under the scarification treatment (Table 2) and they were followed by acid treatment. The least yield attributes like number of pods per plant, pod weight per plant, number of seeds per pod were registered in the control.

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Table 1. Effect of seed treatments on germination percentage and growth of *Mucuna pruriens*

Treatment	Germination %	Shoot length(cm)			No.of Leaves/ Plant		No.of Branches/ Plant		Dry Matter Production (g/plant)		
		10DAS	40DAS	Maturity	40DAS	Maturity	40DAS	Maturity	10DAS	40DAS	Maturity
Control	53	2.8	74.6	417.3	22.9	125.6	8.0	12.40	0.85	3.73	7.8
Cold water	58	3.4	79.8	422.6	23.7	128.2	8.6	13.24	0.98	4.14	8.9
Hot water	79	4.4	94.0	434.4	26.5	138.5	10.3	16.42	1.25	5.12	11.8
Acid-H ₂ SO ₄ -3 Minutes	83	4.6	97.5	436.0	27.2	140.1	10.6	17.02	1.31	5.24	12.4
Scarification	93	5.0	104.1	442.5	28.4	146.8	11.7	18.14	1.44	5.66	13.6
Pelleting	63	3.8	85.2	428.4	24.6	132.4	9.0	14.31	1.06	4.52	9.9
Seeds Soaking in Panchakavya	67	4.0	88.8	430.1	25.2	134.3	9.4	15.06	1.12	4.73	10.6
SEd	2.4	0.1	1.9	2.1	0.3	0.9	0.2	0.37	0.06	1.79	0.9
CD (P=0.05)	5.0	0.3	4.1	4.5	0.8	2.1	0.5	0.80	0.12	3.80	1.9

Yield

Significantly higher yield per plant was recorded under the scarification treatment (208.2 g/plant) which was followed by acid treatment (202.3 g/plant)

(Table 3). Low seed yield per plant was recorded under the control plot (180.6 g/plant). The results of the present study indicated that scarification of seeds increased the germination of seeds to 93

Table 2. Effect of seed treatments on yield attributes and seed yield of *Mucuna pruriens*

Treatment	No.of pods/plant	Pod weight/	No. of seeds / pod (g/plant)	Seed yield (g/plant)
Control	35.9	384.6	5.4	180.6
Cold water treatment	37.6	396.2	5.5	185.8
Hot water treatment	42.5	427.3	5.6	198.9
Acid treatment	43.8	434.3	5.6	202.3
Scarification	45.6	446.9	5.7	208.2
Pelleting	39.5	407.4	5.5	191.0
Seed soaking in panchakavya	40.8	415.1	5.5	193.4
SEd	0.6	3.8	0.0	1.6
CD (P=0.05)	1.4	8.3	NS	3.5

per cent from 53 per cent (in control). The scarification treatment increased the germination potential due to softening of outer layer of hard seed coat and there by improves the water uptake, which directly improves the seedling growth and yield attributes. The combined effect of all the above, influenced the yield of the plant. (Yogeesh and Shivananda,2003). Because of *Mucuna pruriens* used both for the medicinal plant as well as green

leaf vegetable purpose, this is the safest and cost effective method.

References

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