

## STIMULATION OF SEED GERMINATION IN WHITE FLOWERED LEADWORT (*PLUMBAGO ZEYLANICA* L.)

White flowered leadwort, (*Plumbago zeylanica* L.) is one of the medicinally important species of *Plumbago*. Vegetative propagation of this species limits the genetic variability. Seed propagation is one of the methods of inducing genetic variability of this species. Though this plant produces a large number of seeds, seed germination has not been recorded under natural conditions. Therefore, an attempt to enhance the percentage of germination of the seeds, was made at the College of Horticulture, Vellanikkara, Thrissur, Kerala, during 1997.

Seeds of *Plumbago zeylanica* were collected from Vellanikkara during February 1997. The seeds were tested for germination under laboratory conditions after imposing nine treatments. The seeds after treatments viz., soaking fresh seeds in water for 24 hours, fresh seeds or stored seeds (3 months) after cutting the micropylar end, fresh seeds after cutting chalazal end, scarification of fresh seeds using sand, fresh and stored seeds (3 months) without any treatment were kept for germination on moist filter paper in petridishes. The seeds of the remaining two treatments viz., cutting the fresh or stored seeds (3 months) at micropylar end were sown in soil: sand medium in small pots. Fifty seeds were tested under each treatment in three replications. The number of seeds germinated and number of days for germination were recorded. The percentage of germination was worked out.

The results are furnished in Table 1. It was observed that when the seeds were cut carefully at micropylar or chalazal ends and incu-

bated over moist filter paper, there was cent per cent germination. The seeds kept in soil: sand mixture in pots also recorded 100 per cent germination. The fresh seeds without any treatment failed to germinate. However, seeds stored for three months started to germinate in 10 days and recorded 40 per cent germination. The seeds with cut at micropylar end took only three days for germination. The seeds that were cut at chalazal end took 4.5 days to initiate germination. Scarification using sand also recorded cent per cent germination but with a delay in initiation of germination.

The results indicated that seeds of *P. zeylanica* were characterized by the presence of hard seed-coat, which were impermeable to water. Scarification of seeds helped to rupture the seed coat and seeds could imbibe water more efficiently. When the seeds were cut at micropyle end, imbibition took place at a faster rate and thereby germination was also faster. In this treatment, the seedling produced radicle first and the plants produced were normal, healthy and vigorous. In the case of seeds, which were cut at chalazal end, the imbibition was not fast and germination was delayed. It was also observed that the seedlings produced plumules first and plants produced were less vigorous and unhealthy. The lack of germination of *P. zeylanica* seed can also be due to the presence of germination inhibitors (Evenari, 1949). When the seeds were ruptured at either end, germination might have occurred due to the leaching of inhibitors from the seeds. The seeds of *P. zeylanica* are characterized by the presence of plumbagin, which is reported to be germination inhibitor. The plumbagin has been reported to reduce the germination per

Table 1. Germination of seeds of *Plumbago zeylanica* as influenced by different seed treatments

Seed treatment	Medium	Germination (%)	No. of days to initiate germination
Control (fresh seeds)	Moist filter paper	0	0
24 h soaking (fresh seeds)	Moist filter paper	0	0
Control (stored seeds)	Moist filter paper	40	10
Cut at micropylar end (fresh or stored seeds)	Moist filter paper	100	~ 3
Cut at chalazal end (fresh seeds)	Moist filter paper	100	4.5
Scarification using sand (fresh seeds)	Moist filter paper	60	9
Cut at micropylar end (fresh or stored seeds)	Soil: sand mixture	100	3

cent and seedling length of small seeded plant species (Dornbos and Spencer, 1990). Soaking in low concentration of 200  $\mu\text{M}$  of 5-hydroxy naphtho quinone has been reported to delay germination of seeds of Norway spruce (Segura *et al.*, 1992). In the present study, the seeds on storing for three months recorded 40 per cent germination. Storage of seeds for

three months might have helped to reduce the plumbagin content (inhibitor level) inside the seed and helped in germination of stored seeds.

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