



## Dormancy Breaking of Selected Weed Species in Sri Lanka

D.U.V. Gunathilaka <sup>a</sup>, W.D.S.K. Aberathna <sup>a</sup>, P.H.S. Shalika <sup>a</sup>, K.A.S. Kodikara <sup>a\*</sup>,  
P. Ranasinghe <sup>b</sup>, D.P.D. Ranawaka <sup>a</sup> and L.P. Jayatissa <sup>a</sup>

<sup>a</sup> Department of Botany, University of Ruhuna, Wellamadama, Matara, Sri Lanka.

<sup>b</sup> Industrial Technology Institute, Colombo, Sri Lanka.

\*Corresponding author: [sunandaruh@gmail.com](mailto:sunandaruh@gmail.com)

### ABSTRACT

Seed dormancy is a phenomenon that prevents an undamaged viable seed from germinating under favourable conditions. Various techniques have been applied to break dormancy in many weed-seeds based studies. The present study aimed to seek the most appropriate dormancy breaking method for six selected common weed species namely *Cardamine hirsute* (walaba), *Tridax procumbens* (Kurunegala desi), *Ageratum conyzoides* (Hulanthala), *Amaranthus viridis* (Kura), *Echinicholoa glabrescens* (Bajari) and *Sida acuta* (Nanu) found in Sri Lanka. Germination test was performed in triplicates where thirty seeds were used for each replicate. Four dormancy breaking treatments such as hot water treatment (80°C, 5-minutes), cool scarification (4°C, 24-hours), mechanical scarification (sharp cutting on a seed coat) and acid scarification (treated with H<sub>2</sub>SO<sub>4</sub>; pH-4 and pH-5 as two separate treatments) were used for separate seed lots and level of germination was assessed daily for two weeks. Weed seeds treated with water at room temperature, was used as control. As percentage data were used, non-parametric Friedman test was performed. According to the results, *T. procumbens*, *A. viridis* and *S. acuta* showed 53%, 10% and 23% natural germination, respectively. However, natural seed germination was not observed in rest of the species. Germination of *T. procumbens*, *S. acuta* and *E. glabrescens* significantly increased ( $p < 0.05$ ) by 14%, 20% and 52%, respectively, under mechanical scarification compared to the control treatment. Whereas, no significant increment in the percentage germination was observed for hot water treatment and cool scarification. Moreover, significantly higher ( $p < 0.05$ ) germination percentages (16% and 14%) were observed for *A. viridis* under respective acid scarification treatments at pH-4 and pH-5. The current study revealed mechanical scarification as the most effective method in breaking dormancy of *T. procumbens*, *E. glabrescens* and *S. acuta* while acid scarification for *A. viridis*. Further studies, employing methods/treatments which are not investigated during the present study are recommended to assess the dormancy breaking ability of *C. hirsute* and *A. conyzoides*.

**Keywords:** Acid scarification, Dormancy breaking, Mechanical scarification, Weed seed