

## Evaluation of Seed Dormancy, its Associated Seed Morphological Characteristics, and Seed Vigor of Improved Rice Varieties in Sri Lanka

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Improved rice varieties may have different durations of seed dormancy and level of seed vigor, but no proper information is available to make use of them for farmers. This research was conducted at the Rice Research and Development Institute, Bathalagoda during 2020/2021 *Maha* season to identify the dormancy period, seed characteristics associated with dormancy and vigor of improved rice varieties in Sri Lanka. The experiment design was a completely randomized design with three replicates. Varieties were categorized by maturity period and seeds of 56 varieties were obtained from one week after harvesting. The dormancy period of each variety was considered from one week after harvest until it reached 85% germination as determined by weekly germination tests. Seed vigor was determined by % germination using cold test. Thousand-grain weight, maturity age, seed shape and pericarp color were recorded. Significant variations were observed for the dormancy period and seed vigor among varieties. Ld 355, At 401, Bw 363, Bg 94-1, At 362, Bw 452, Bg 250, Bg 400-1, Bg 454, At 308, Bg 292-6b, Bg 455, Bg 450, and Bg 310 overcame the dormancy at t third week. Bg 359, Bg 357, At 353, Bg 358, At 453, Bg 364, Bg 379-2, Bg 90-2, BG 11-11, Bw 372, Bg 305, At 309 and At 451 lost dormancy in fourth week. Bg 352 showed the longest dormancy breaking period (eight weeks) followed by Bg 252, Bg 403, and Ld 371 (seven weeks). Bw 400 had no dormancy period. Bg 407-H, Bw 351, Ld 356, Ld 365, Ld 408, Bw 301 and At 405 had a shorter dormancy period (two weeks). Bg 454 showed the highest vigor (93.3%), while At 402 (90.7%), At 309 (90.7%), Bg 11-11 (90.7%) and Bg 371 (86.7%) also had comparatively high vigor. Bg 379-2 showed the lowest seed vigor (8.0%) followed by At 401 (15.3%), At 405 (11.3%), Bw 351 (8.7%) and Ld 356 (10.7%). The relationships between dormancy period and thousand-grain weight, maturity days, pericarp color and grain shape were not significant ( $p \geq 0.05$ ). The results of this study will help farmers to determine the sowing time after harvesting and to select suitable varieties under stress conditions.

**Keywords:** Breaking dormancy; Germination; Improved rice varieties; Seed characters; Vigor