

3.6 Leaf length

Significant differences in leaf length were observed between the swamp cabbage cultivars at each day after transplantation (DAT) (Appendix VIII) (Table 8). Compared to V2 (LP-1) and V3 (Nice green swamp cabbage), the leaves of V1 (BARI swamp cabbage-1) were consistently longer. At 14 DAT, V1's leaves were the longest (19.48 mm), significantly longer than those of V2 (9.30 mm) and V3 (11.12 mm). This pattern persisted at 42 DAT, with V2 consistently having the shortest leaves and V1 maintaining its advantage (19.61 mm). V1's longer leaves demonstrate its genetic superiority in creating larger foliage, which promotes improved photosynthetic efficiency and increased yield potential.

Table 8 Leaf length of swamp cabbage cultivars at different days after transplanting (DAT)

Cultivar	Leaf length (mm)		
	14 DAT	28 DAT	42 DAT
V1	19.48 a	19.75 a	19.62 a
V2	9.30 b	12.79 b	11.05 b
V3	11.12 b	12.42 b	11.77 b
LSD (0.05)	1.38	1.51	1.29
CV (%)	5.15	5.06	4.46

Note: V1 = BARI swamp cabbage-1; V2 = La procesa swamp cabbage-1; V3 = Nice green swamp cabbage; NS = Non-significant. Means in the same column with different letter(s) are significant at the 0.05 level of probability

Its vigor and productivity may be supported by the longer leaves in V1, which could suggest a genetic advantage in environmental adaptation (Haque et al., 2021).

3.7 Length-to-breadth (L/W) ratio

The length-to-breadth (L/W) ratios of swamp cabbage cultivars showed considerable variation from 14 to 42 DAT, but not at 28 DAT (Appendix IX). In contrast to V2 (LP-1) and V3 (0.47), V1 (BARI swamp cabbage-1) consistently exhibited the highest L/W ratio at 14 DAT (Table 9). V1 kept its advantage (0.58) at 42 DAT, indicating that it could be able to more effectively absorb light and use resources, which would result in improved growth and production.

Table 9 Length-to-breadth ratio of swamp cabbage cultivars at different days after transplanting (DAT)

Cultivar	L/W Ratio		
	14 DAT	28 DAT	42 DAT
V1	0.58 a	0.57 NS	0.58 a
V2	0.39 b	0.50	0.44 b
V3	0.47 b	0.51	0.49 b
LSD (0.05)	0.8	0.10	0.06
CV (%)	8.40	9.50	6.41

Note: V1 = BARI swamp cabbage-1; V2 = La procesa swamp cabbage-1; V3 = Nice green swamp cabbage; NS = Non-significant. Means in the same column with different letter(s) are significant at the 0.05 level of probability

V1's genetic aptitude for effective resource utilization is highlighted by its increased length-to-breadth ratio (Rahman et al., 2020).

3.8 Root length

V2 showed intermediate roots, starting at 2.97 cm at 7 DAT and growth to 16.03 cm by 56 DAT. This shows its strong genetic advantage in the development of a robust root system. The V1 variety showed the longest roots, starting at 3.77 cm at 7 DAT and reached 20.80 cm times 56 DAT (Table 10). In the varieties, significant differences in the root length were observed, with V1 consistently exceeding the others in all growth phases. The table shows the progression of the root length of different swamps on different days after the transplant (DAT) and their corresponding regular length in different DAT. In contrast, V3 had the shortest roots in all stages, from 3.27 cm at 7 DAT to 14.77 cm to 56 DAT, which indicates a relatively limited capacity for the root extension.