Table 10 Root length of swamp cabbage at different days after transplanting (DAT)

Cultivar	Root length (cm)								Dry wt%
	7 DAT	14 DAT	21 DAT	28 DAT	35 DAT	42 DAT	49 DAT	56 DAT	56 DAT
V1	3.77 a	5.97 a	11.37 a	13.00 a	15.10 a	17.00 a	19.13 a	20.80 a	8.59NS
V2	2.97 b	4.87 b	7.37 b	10.00 b	14.17 a	15.20 b	15.70 b	16.03 b	8.36
V3	3.27 ab	5.63 ab	8.63 b	9.57 b	10.73 b	11.87 c	13.70 c	14.77 b	8.92
LSD (0.05)	0.50	0.90	1.75	0.75	1.08	0.89	0.95	1.06	1.59
CV (%)	7.55	8.22	9.62	3.46	4.05	2.95	2.95	3.07	9.22

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

The root length plays a crucial role in determining plant power, nutrient absorption and overall productivity. V1 shows its suitability for maximizing growth and for determining under different soil and environmental conditions, which emphasized the importance of strong root systems for increasing agricultural productivity and resilience. These results match Haque et al. (2021) V1 consistently exceeded other varieties in the root length and emphasized its ability to access distant nutrient resources, which supports its growth under challenging conditions. The moderate root development of V2 indicates the adaptability of less demanding environments, while the shorter roots of V3 can restrict the efficiency of nutrient and water absorption, especially in resource-related environments.

3.9 Dry weight percentage of root

This indicates that despite the variations of the accumulation of dry matter, was relatively consistent. Despite the slight deviations, the percentage of dry weight in the tested varieties was relatively even. The percentage of dry weight at 56 DAT was between 8.36% (V2) and 8.92% (V3), observed without significant differences between the varieties (as NS). The consistency between varieties (known as NS) indicates similar physiological mechanisms that influence the accumulation of the dry matter.

3.10 Yield contributing characteristics

Variety V1 recorded the highest fresh weight (235.03 g), followed by V3 (219.53 g) and V2 (170.27 g). These differences are statistically significant, as stated by the LSD value of 13.13. In the types of swamps, significant differences in the fresh plant weight were observed after 56 days after the transplant (DAT) (Table 11). The superior performance of V1 could be attributed to its genetic features and adaptability to the experimental conditions.

Table 11 Yield, yield-contributing parameters, and dry matter percentage of swamp cabbage cultivars at 56 d after transplanting

Cultivar	Fresh wt./plant (g)	Yield/ha (ton)	Dry wt. %
	56 DAT	56 DAT	56 DAT
V1	235.03 a	34.83 a	12.33NS
V2	170.27 c	25.54 b	11.93
V3	219.53 b	32.93 a	11.54
LSD (0.05)	13.13	1.93	1.69
CV (%)	3.16	3.10	7.12

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

The LSD value of 1.93 confirms the statistical significance of these differences. V1 and V3 provided the highest yields (34.83 or 32.93 tons/ha), exaggerated V2 (25.54 tons/ha). The yield per hectare also showed a significant differences between the swamps. V1 and V3 showed the highest yields and were in voting with their superior fresh weight per plant. These results reflect the trends that are observed in fresh plant weight. The variation of the yield per hectare (25.54-34.83 tons/ha) reflects the genetic potential and adaptability of the swamp cabbage types