3.5 Dry shoot weight and dry root weight (mg)

The results on dry shoot weight and dry root weight are presented in Table 6. Dry shoot weight and root weight were very highly significant for different priming treatments. Significantly, the highest dry shoot weight was found in KNO_3 1% (240.00 mg), while the lowest dry shoot weight was found in KNO_3 3% (194.67 mg) which was not significantly different from control (197.34 mg), Vermiwash 10% (204.00 mg) and Vermiwash 20% (209.67 mg).

Significantly the highest dry root weight (46.00 mg) was found in GA_3 200 ppm, while the lowest dry root weight was found in KNO_3 3% (27.34 mg) which was not significantly different from GA_3 100 ppm (30.00 mg), Vermiwash 10% (31.34 mg), control (32.00 mg) Vermiwash 20% (32.67 mg) and KNO_3 1% (32.67 mg).

Table 6 Effect of seed priming on dry shoot weight and dry root weight per seedling of cucumber (*Cucumis sativus* cv. Bhaktapur Local) in Syangja, Nepal, 2024

Treatments	Dry shoot weight (mg)	Dry root weight (mg)
Control	197.34^{d}	32.00^{cd}
Hot water (45 °C for 5 minutes)	218.34^{bc}	38.00^{b}
GA_3 100 ppm	220.34^{bc}	30.00^{d}
GA_3 200 ppm	223.67^{b}	46.00^{a}
KNO_3 1%	240.00^{a}	32.67^{cd}
KNO_3 3%	194.67^{d}	27.34^{d}
Cow urine 5%	218.67^{bc}	36.00^{bc}
Cow urine 10%	222.00^{bc}	39.34^{b}
Vermiwash 10%	204.00^{cd}	31.34^{cd}
Vermiwash 20%	209.67^{d}	32.67^{cd}
CV (%)	4.4	8.37
$LSD_{0.05}$	16.20	4.92
Grand mean	214.86	34.53
SEm (±)	5.49	1.67
F-test	***	***

Note: Mean within the column followed by the same letter/s are not significantly different at 5% level of significance by DMRT. * Significant at 5% (p<0.05), ** Significant at 1% (p<0.01), *** Significant at 0.1% (p<0.001), NS= non-significant at 5% (p>0.05), SEm= Standard Error of mean, LSD= Least significant difference, CV= Coefficient of variance

4 Discussion

Germination behavior and seedling growth of cucumber were significantly influenced by seed priming. Among the treatments, hot water (45 °C) priming showed superior performance in germination percentage and seed vigour indices, while KNO_3 1% outperformed in speed of germination. GA_3 200 ppm showed comparatively better dry matter accumulation. In contrast, control showed inferior performance across all parameters.

Hot water treatment enhances imbibition and stimulates several germination related-process, including the synthesis of GA_3, RNA, protein synthesis and DNA replication. This in turn may have weakened the endosperm, thereby promoting increased germination rate (Black and Bewley, 2000). KNO_3 Priming improved emergence and its time significantly in both carrot seed and *Clonostachys rosea* cv. IK726 (Bennett et al., 2009). Similar results were reported by Tania et al. (2019) in bitter gourd. Faster germination in seed priming with KNO_3 1%, than non-priming is likely due to its stimulation of metabolic processes during imbibition, which prepare seed for root emergence (Sowmya et al., 2013). This reduces mean germination time (Sowmya et al., 2022) and days to 50% germination. Similar finding was reported by Shim et al. (2009), where seed priming improves days to 50% germination than non- primed seed. According to Singh et al. (2019), seed soaked at (50-52) °C exhibited the highest seedling vigour index-I indicating that this temperature range significantly enhance seedling vigour. KNO_3 1% also recorded to show similar result (Sowmya et al., 2013). GA_3 200 ppm recorded higher SVI-I which was in accordance with Badu et al. (2022).