**Supplementary data**

2.1.2 Mean germination time

Mean germination time is a measure of the time it takes for the seed to germinate, focusing on the day at which most seeds have germinated [33]. Mean germination time decreased significantly ($p \leq 0.001$) for seedlings under 300 mM NaCl (Table S1). Application of $Ca^{2+}$ had no significant effect on the mean germination time of control seedlings (Table S1), but 35 mM $Ca^{2+}$ significantly ($p \leq 0.05$) decreased the mean germination time of seedlings under 300 mM NaCl by 0.65-fold (Table S1).

2.1.3 Germination index

The germination index is a parameter that combines the percentage and time of germination, thus the faster a seed lot has germinated, the higher the germination index [33]. A steady decrease in germination index was observed when seedlings were treated with NaCl only (Table S1). NaCl, in particular 300 mM, slowed germination significantly ($p \leq 0.001$), resulting in a germination index of 95.66 as compared to 136 of control seedlings. $Ca^{2+}$ had no significant effect on the germination index of control seedlings (Table S1). Treatment of 300 mM NaCl-stressed seedlings with 5 mM $Ca^{2+}$ significantly ($p \leq 0.01$) increased the germination index (108.25) whereas at 15 mM and 35 mM $Ca^{2+}$, the germination index was significantly ($p \leq 0.05$) decreased to 85.4 and 77.83 respectively (Table S1).

2.1.4 Total germination

Sodium chloride slightly affected total germination of sorghum seedlings as compared to control seedlings (without added NaCl). Application of 5 mM $Ca^{2+}$ significantly ($p \leq 0.05$) improved the total germination of seedlings under 300 mM NaCl by ~7% whereas 15 and 35 mM $Ca^{2+}$ showed inhibitory effects (Table S1).

**Table S1.** Effect of $Ca^{2+}$ on the germination attributes of sorghum seedlings in the absence (0 mM) and presence of NaCl (200 and 300 mM). Data represented are mean ± S.D.

| $Ca^{2+}$ (mM) | NaCl (mM) | Mean germination time | Germination index | Total germination |
|---|---|---|---|---|
| 0 | 0 | 12.59 ± 0.74 | 136.15 ± 7.70 | 98.25 ± 3.50 |
| | 200 | 11.28 ± 1.29 | 120.58 ± 2.23 | 94.25 ± 4.92 |
| | 300 | 7.92 ± 1.02 | 95.66 ± 3.93 | 91.50 ± 1.73 |
| 5 | 0 | 12.96 ± 0.00 | 140.00 ± 0.00 | 100.00 ± 0.00 |
| | 200 | 11.49 ± 1.84 | 125.33 ± 5.42 | 95.00 ± 5.77 |
| | 300 | 9.41 ± 1.36 | 108.25 ± 4.64** | 98.25 ± 1.73 |
| 15 | 0 | 12.96 ± 0.00 | 140.00 ± 0.00 | 100.00 ± 0.00 |
| | 200 | 11.22 ± 1.50 | 124.41 ± 2.38 | 98.25 ± 3.50 |
| | 300 | 6.92 ± 0.76 | 85.4 ± 4.80* | 83.50 ± 4.04 |
| 35 | 0 | 12.96 ± 0.00 | 140.00 ± 0.00 | 100.00 ± 0.00 |
| | 200 | 9.59 ± 2.29 | 109.17 ± 5.98** | 93.25 ± 4.72 |
| | 300 | 5.19 ± 1.62 | 77.83 ± 4.26*** | 84.00 ± 4.24 |

(* ,** and ***) indicate significant differences at $p \leq 0.05$, $p \leq 0.01$ and $p \leq 0.001$ respectively.

**Table S2:** Effect of NaCl and $Ca^{2+}$ on the fresh and dry weights of sorghum seedlings in the absence (0 mM) and presence of (200 and 300 mM) NaCl. Data represented are mean ± S.D.

| $CaCl_2$ (mM) | NaCl (mM) | Fresh weight | Dry weight |
|---|---|---|---|
| 0 | 0 | 0.57 ± 0.07 | 0.14 ± 0.09 |
| | 200 | 0.33 ±0.07*** | 0.11 ± 0.06 |
| | 300 | 0.29 ±0.07*** | 0.14 ± 0.08 |
| 5 | 0 | 0.52 ± 0.17 | 0.15 ± 0.02 |
| | 200 | 0.33 ± 0.08 | 0.11 ± 0.06 |
| | 300 | 0.27 ± 0.09 | 0.11 ± 0.07 |
| 15 | 0 | 0.62 ± 0.13 | 0.14 ± 0.03 |
| | 200 | 0.31 ± 0.06 | 0.10 ± 0.08 |
| | 300 | 0.27 ± 0.06 | 0.12 ± 0.07 |
| 35 | 0 | 0.57 ± 0.07 | 0.16 ± 0.01 |
| | 200 | 0.33 ± 0.09 | 0.11 ± 0.07 |
| | 300 | 0.26 ± 0.07 | 0.12 ± 0.06 |

(***) indicate significant differences at $p \leq 0.001$ respectively.

**Table S3.** Overall ion content measured by the SEM-Energy dispersive X-ray (EDX) spectroscopy in sorghum seedlings.

| Element | 0 mM NaCl Wt% | 0 mM NaCl Wt sigma | 0 mM NaCl At % | 5 mM $Ca^{2+}$ Wt% | 5 mM $Ca^{2+}$ Wt Sigma | 5 mM $Ca^{2+}$ At% | 300 mM NaCl Wt% | 300 mM NaCl Wt Sigma | 300 mM NaCl At% | 300 mM NaCl +5 mM $Ca^{2+}$ Wt% | 300 mM NaCl +5 mM $Ca^{2+}$ Wt Sigma | 300 mM NaCl +5 mM $Ca^{2+}$ At% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | 65,66 | 0.58 | 72.58 | 58,43 | 0.57 | 65.54 | 70,24 | 0.5 | 78.52 | 51.69 | 1.13 | 61.59 |
| O | 31.78 | 0.57 | 26.37 | 40.32 | 0.57 | 33.96 | 21.03 | 0.45 | 17.65 | 32.6 | 0.8 | 29.16 |
| Na | 0.18 | 0.06 | 0.11 | - | - | - | 2.43 | 0.08 | 1.42 | 2.89 | 0.11 | 1.8 |
| Mg | 0.21 | 0.05 | 0.12 | 0.11 | 0.04 | 0.06 | 0.11 | 0.03 | 0.06 | 0.15 | 0.04 | 0.09 |
| P | 0.76 | 0.06 | 0.33 | 0.37 | 0.05 | 0.16 | 0.32 | 0.03 | 0.05 | 0.22 | 0.05 | 0.1 |
| S | 0.24 | 0.04 | 0.1 | 0.17 | 0.04 | 0.07 | Si (0.1) | Si (0.03) | Si (0.05) | Si (0.75) | Si (0.05) | Si (0.35) |
| Cl | 0.14 | 0.04 | 0.05 | 0.12 | 0.04 | 0.05 | 5 | 0.1 | 1.89 | 5.84 | 0.15 | 2.36 |
| K | 1.02 | 0.07 | 0.35 | 0.37 | 0.05 | 0.13 | 0.76 | 0.05 | 0.26 | 1.86 | 0.07 | 0.68 |
| Ca | - | - | - | 0.1 | 0.04 | 0.03 | - | - | - | 0.3 | 0.04 | 0.11 |
| **Total** | **100** | | **100** | **100** | | **100** | **100** | | **100** | **100** | | **100** |

Weight % = Wt%, Weight Sigma= Wt Sigma and Atomic % = At%.

**Table S4.** Accession numbers and primer sequence of genes used for gene expression

| Target gene | Forward primer | Reverse primer | Accession number |
|---|---|---|---|
| ***SbAPX2*** | 5′-AGTCGTGGCAGTTGAGGTAA-3′ | 5′-ATCCTTGTGGCATCTTCCCA-3′ | XM_002463406.2 |
| ***SbCAT3*** | 5′-GGTTCGCCGTCAAGTTCTAC-3′ | 5′-AAGAAGGTGTGGAGGCTCTC-3′ | XM_021460018.1 |
| ***SbSOS1*** | 5′-ACACGGGAGAGAGAGAGAGT-3′ | 5′-TCCAGCTCCAAGTTTGCCTA-3′ | XM_002443629.2 |
| ***Vacuolar SbNHX2*** | 5′-ACTACTGGCGCAAGTTCGAT-3′ | 5′-TGTCGGCAACACAAAAACAT-3′ | XM_002461123.2 |

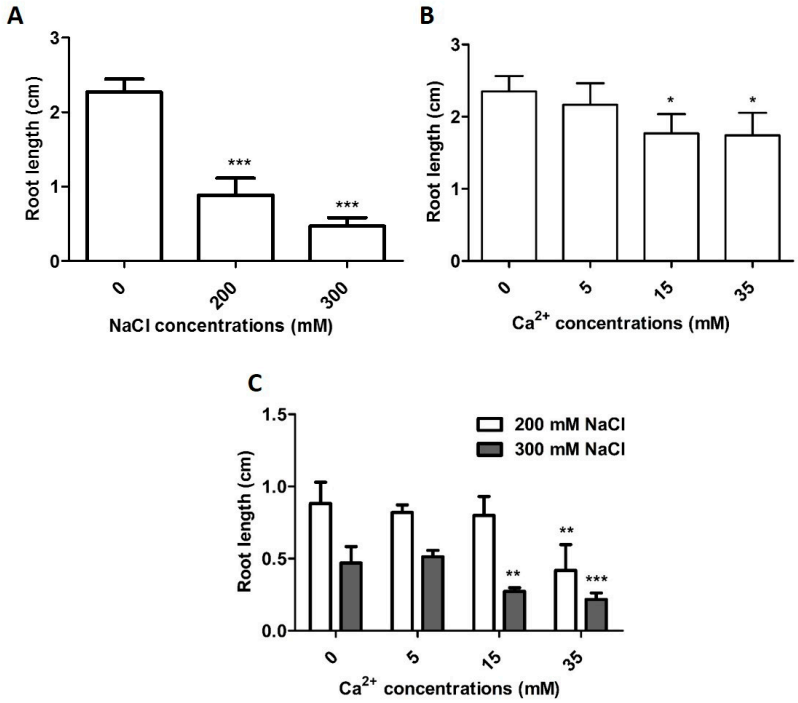



**Figure S1:** Effect of salt and $Ca^{2+}$ on root and shoot length of sorghum seedlings measured at day 3. (A) Root and shoot length of sorghum seedlings in the presence of different NaCl only. (B-C) Seedlings under different NaCl and $Ca^{2+}$ (5, 15 and 35 mM) concentrations, (B) 0 mM NaCl, (C) 200 mM NaCl and 300 mM NaCl. Error bars represent the S.D calculated from three biological replicates. Statistical significance between control and treated plants were determined using two-way ANOVA conducted on GraphPad Prism 8.4.2, shown as ** = $p \leq 0.01$, and * = $p \leq 0.05$ according to the Bonferroni's multiple comparison test.