Table 1 Suppl. Primers used in this study**.**

Names	Primer sequences	Purpose
AtNHX1-F	5'-GGGTCTAGAATGTTGGATTCTCTAGTGTCGAAACTGC-3'	cloning of AtNHX1 cDNA
AtNHX1-R	5'-GGGACTAGTTCAAGCCTTACTAAGATCAGGAGGGTT-3'	cloning of AtNHX1 cDNA
AtNHX3-F	5'-GGGTCTAGAATGAGTATCGGATTAACAGAGTTTGTGAC-3'	cloning of AtNHX1 cDNA
AtNHX3-R	5'-GGGACTAGTCTAGCATTCTGGTTGGTTTTCTCGAC-3'	cloning of AtNHX1 cDNA
AtNHX1-RTF	5'-GGATGAACGAATCCATCACCGCC-3'	RT PCR
AtNHX1-RTR	5'-GCATCATAAGGGCAACCTCTCGGTC-3'	RT PCR
AtNHX3-RTF	5'-CCGCCATTTTAGTAGGAGCAGCATCAG-3'	RT PCR
AtNHX3-RTR	5'-CCATGATGGCGAGTTCGCGTG-3'	RT PCR
EF1β-F	5-'GACAAGAAGGCAGCGGAGGAGAG-3'	RT PCR
EF1β-R	5'-CAATGAGGGAATCCACTGACACAAG-3'	RT PCR

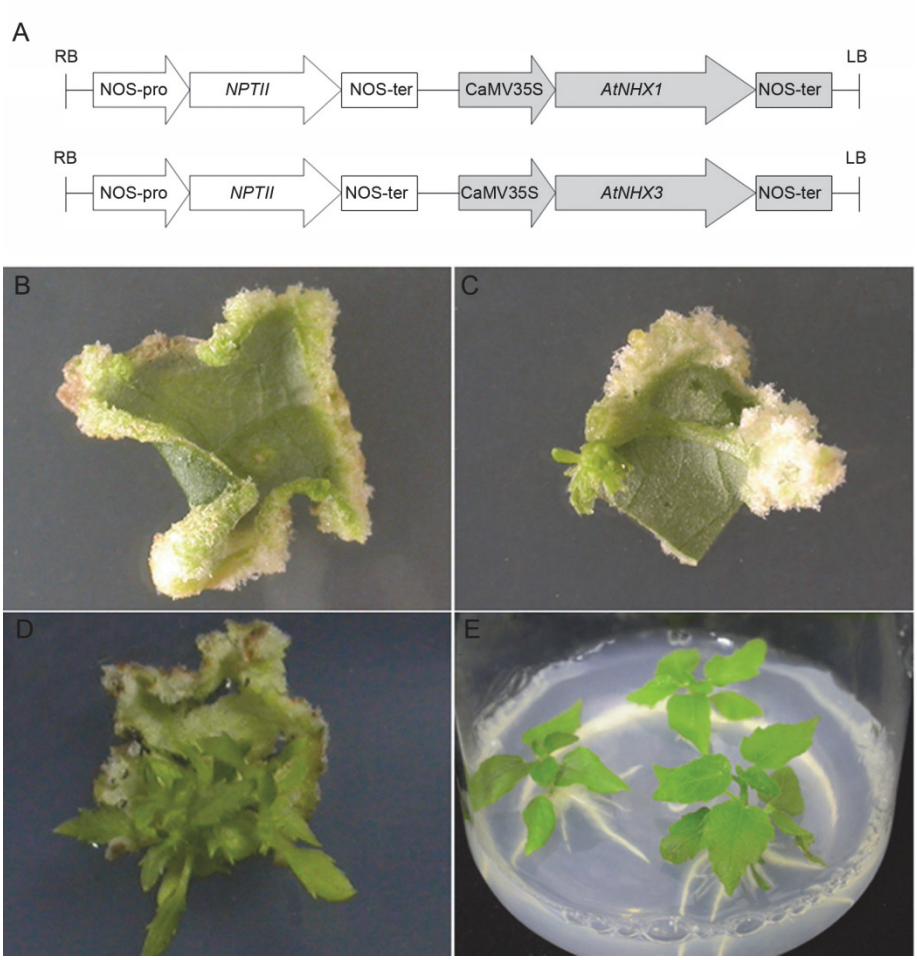

Fig. 1 Suppl. Generation of transgenic poplar plants. *A* - Schematic diagram of the pAtNHX1, pAtNHX3 constructs used for poplar transformation. The expression of *AtNHX1* and *AtNHX3* was driven by the cauliflower mosaic virus 35S (CaMV35S) promoter. *B, C*, *D* - Regeneration of shoots from leaf explants. *E* - Rooting of regenerated shoots. NOS-pro - NOS promoter; NPTII - neomycin phosphotransferase II gene; NOS-ter - NOS terminator.

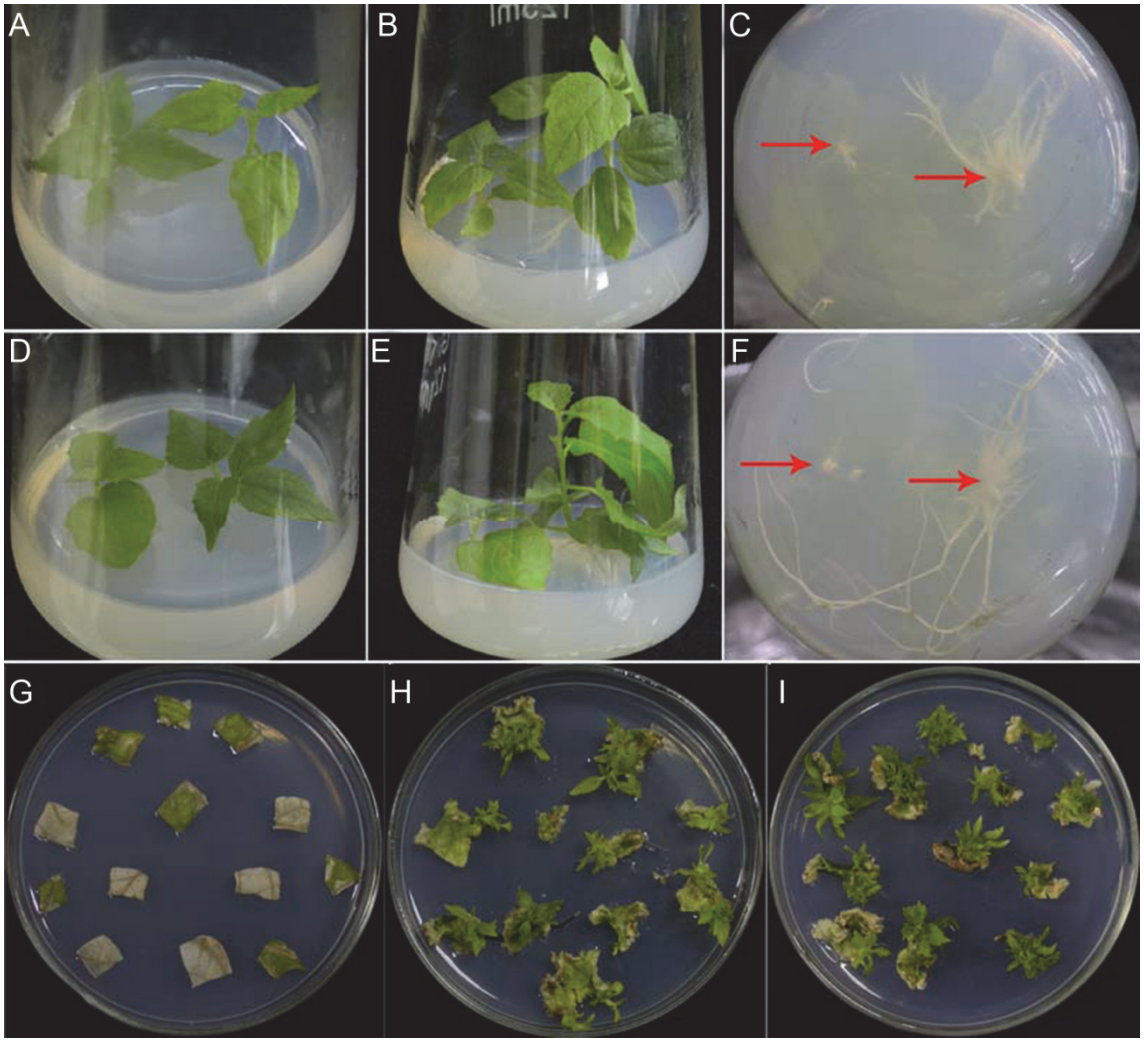

Fig. 2 Suppl. Selection of kanamycin resistant shoots. Wild type (*A* to *F left*) and selected kanamycin resistant (*A* to *F right*) poplar shoots were cultured in the same bottle on MS medium supplemented with 50 mg dm^{-3} kanamycin for 0 (*A*, *D*) and 31 (*B*, *C*, *E*, *F*) days. *G* to *I* - Leaf explants excised from wild type (*G*) and transgenic *AtNHX1* (*H*) and *AtNHX3* (*I*) poplar plants were cultured on MS medium supplemented with 50 mg dm^{-3} kanamycin for 25 d to induce adventitious buds.

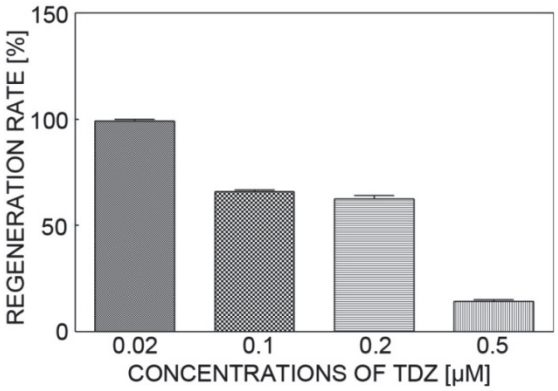

Fig. 3 Suppl. Effects of different thidiazuron (TDZ) concentrations on adventitious bud induction. Means ± SEs, $n = 3$.

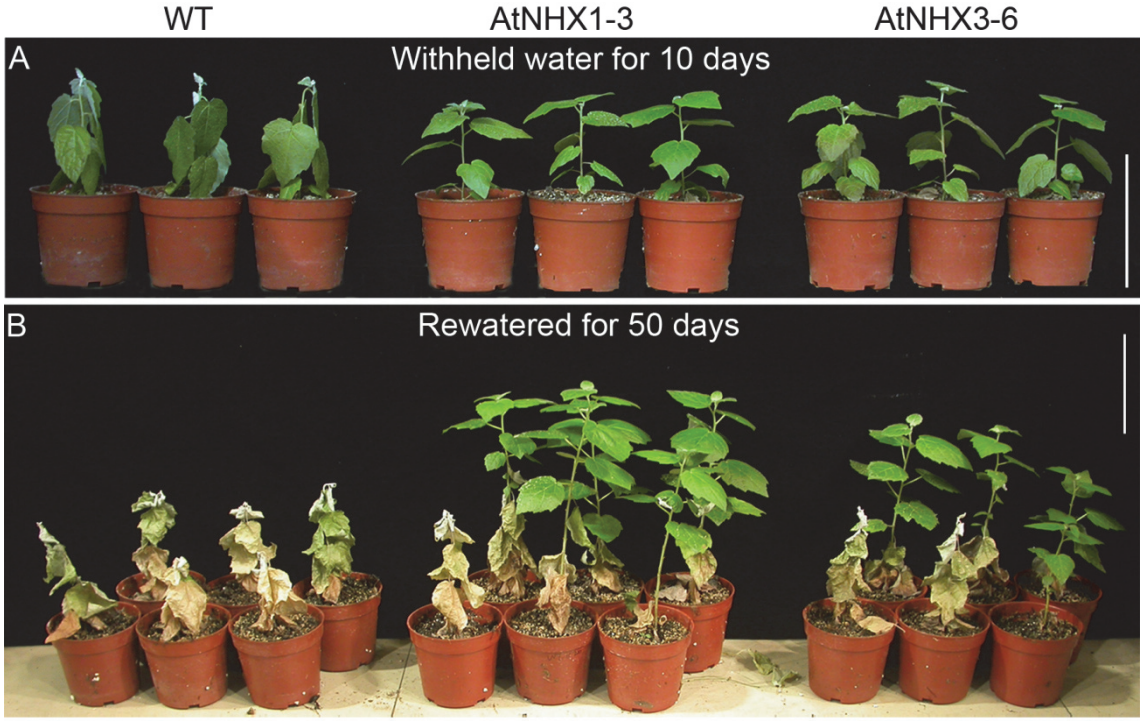

Fig. 4 Suppl. Drought tolerance analyses of wild type (WT), and transgenic plants expressing *AtNHX1* or *AtNHX3*. *A* - Plants grown in greenhouse were withheld from water for 10 d. *B* - Wild type and transgenic plants 50 d after re-watering at the end of drought treatment. *Bar* = 10 cm.

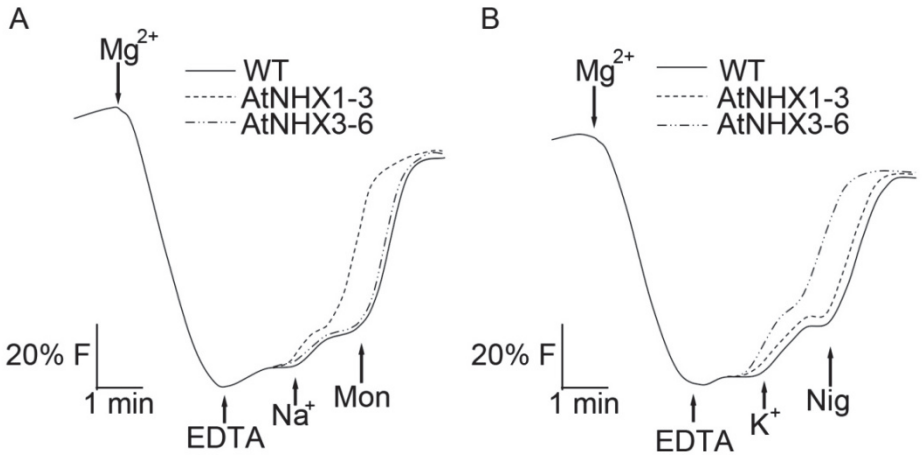

Fig. 5 Suppl. Na^+ or K^+-dependent H^+ exchange. *A* - Na^+-dependent H^+ exchange. The addition of monensin (mon), an artificial Na^+/H^+ antiport, abolished the pH gradient, and the fluorescence was fully recovered. *B* - K^+-dependent H^+ exchange. The addition of nigericin (nig), an artificial K^+/H^+ antiport, and the fluorescence was fully recovered. Figures *A* and *B* show a typical recording of the fluorescence quenching and recovery of quinacine (about 100 μg protein was used in the each assay).