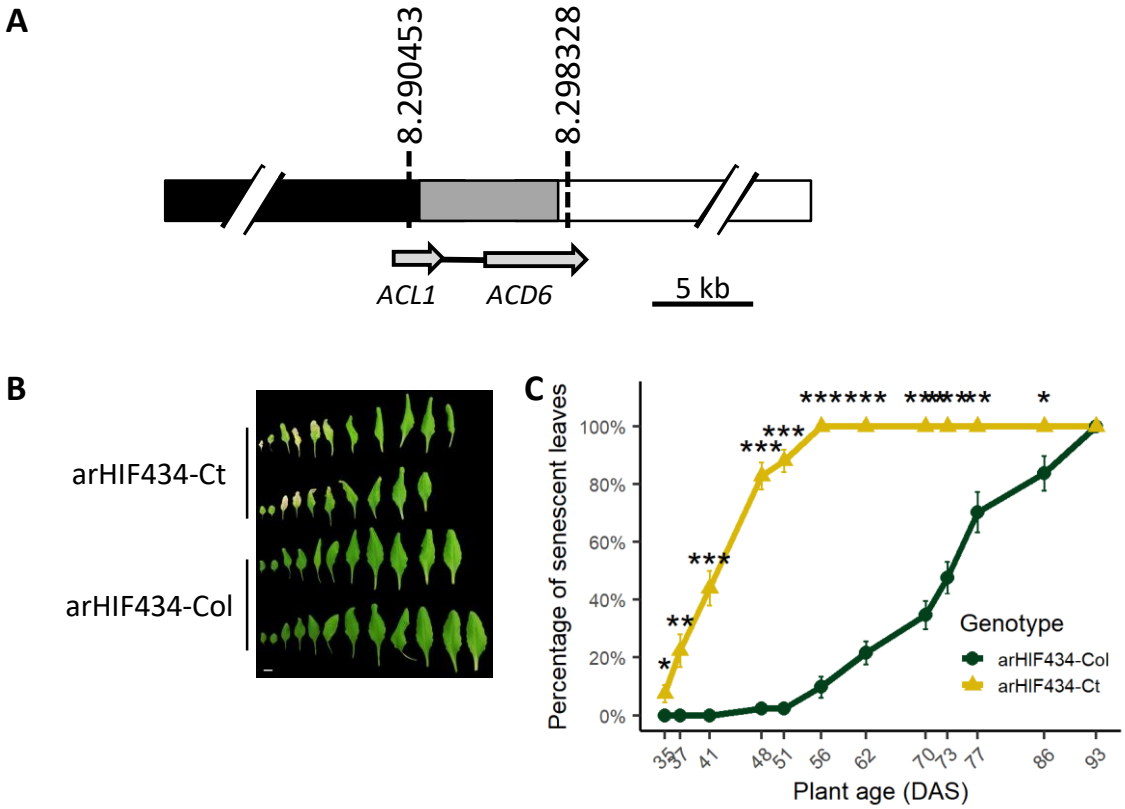
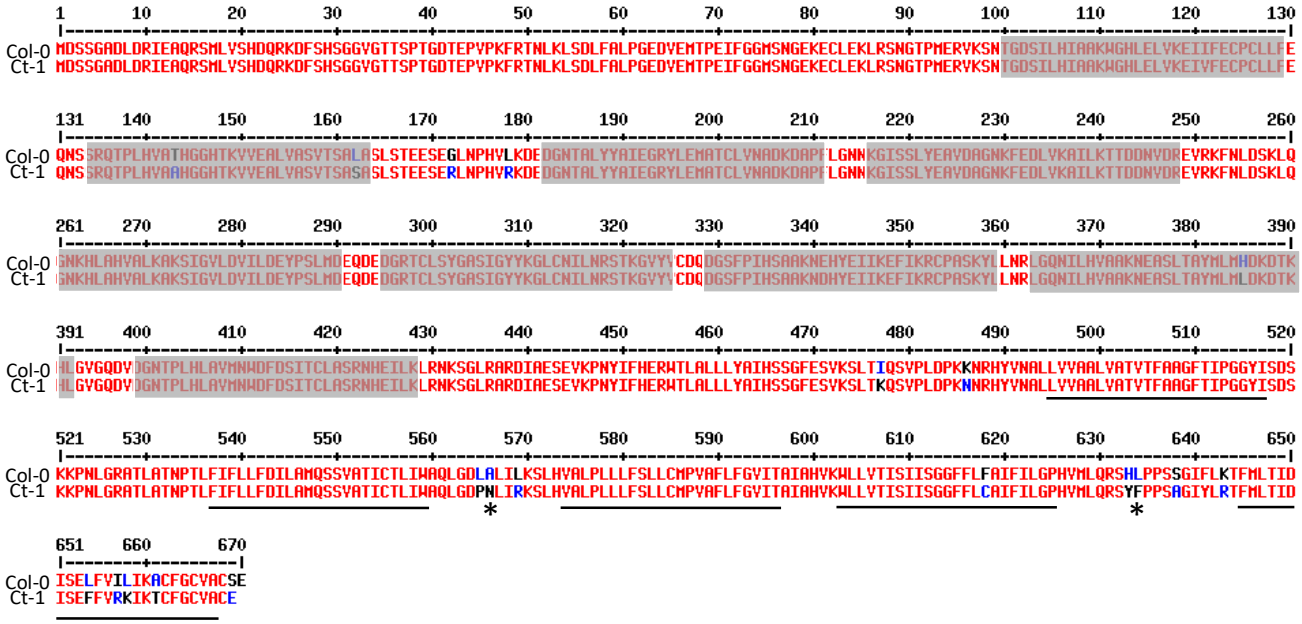
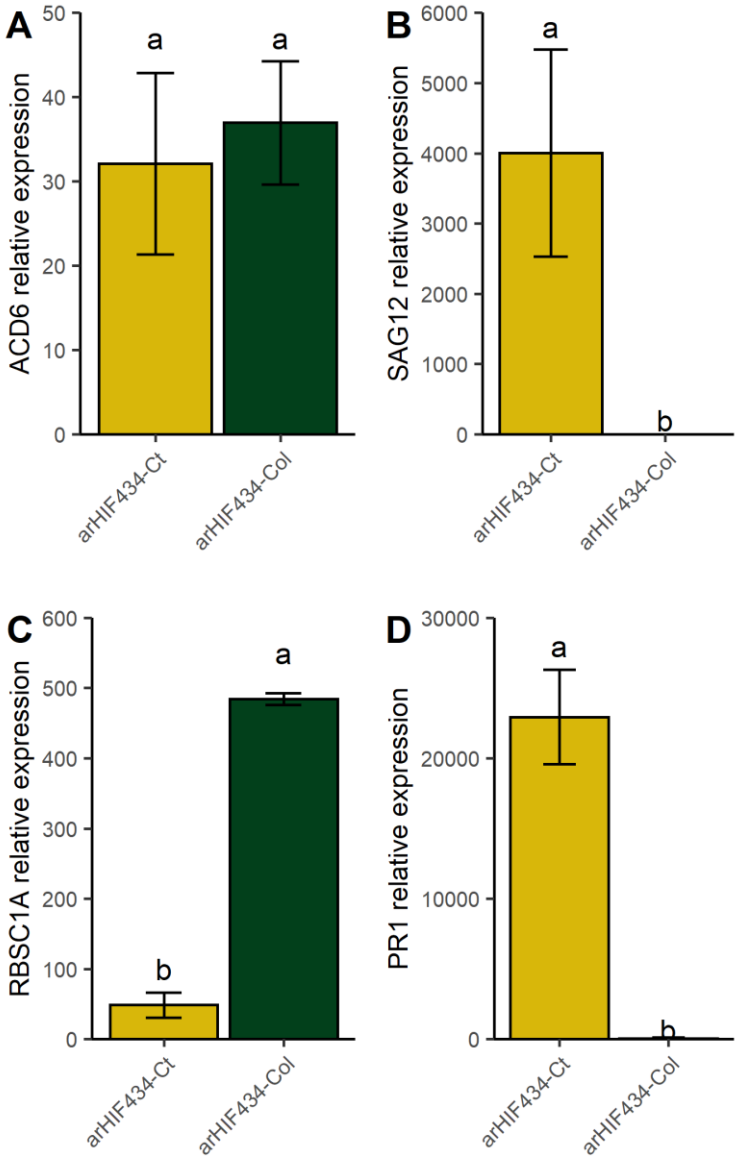


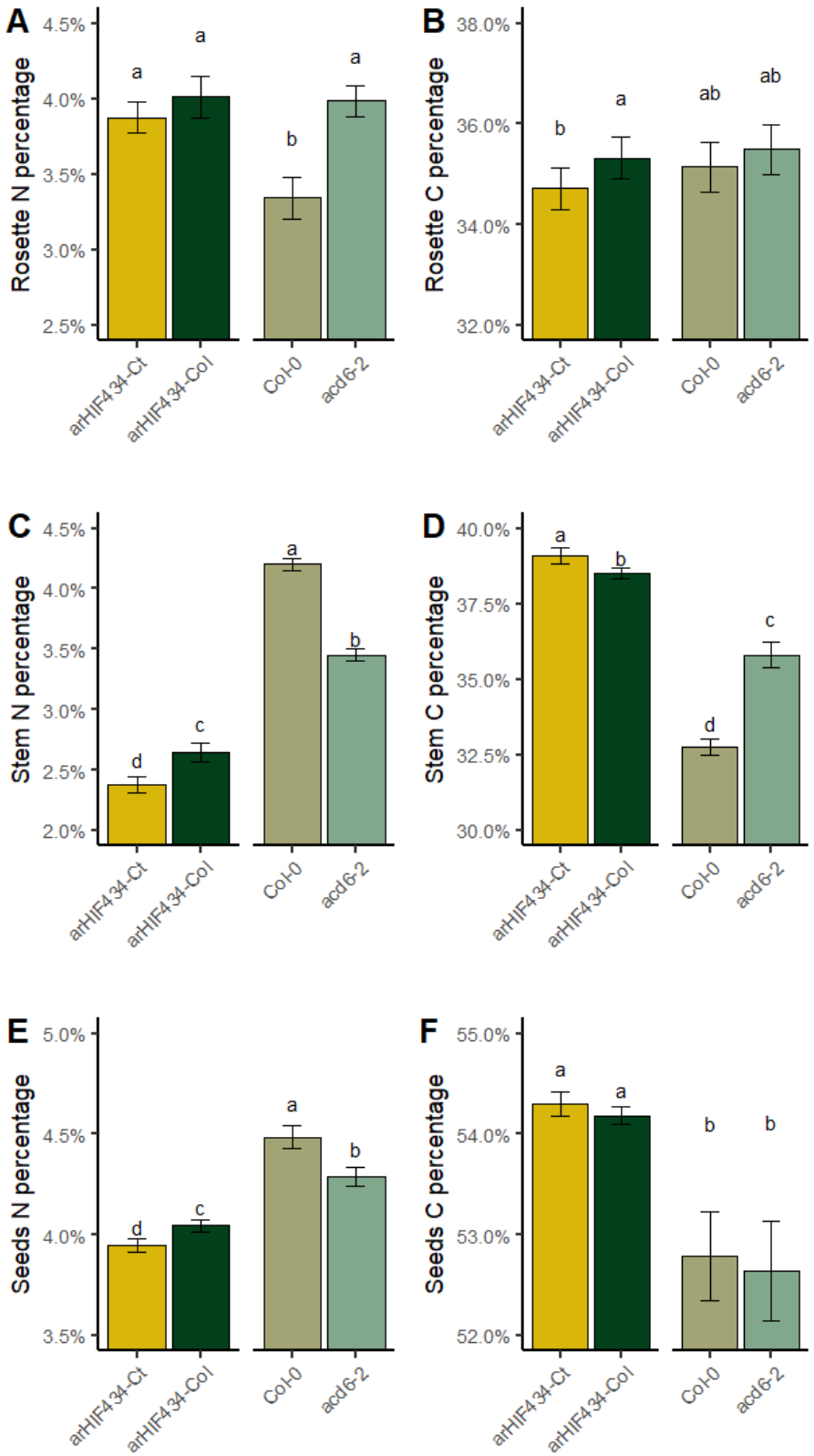
Supplementary FIGURE 1. *arHIF434-Ct* displays an earlier leaf senescence than *arHIF434-Col*. **(A)** *arHIF434* is represented with horizontal bars (black for *Col-0* allele, white for *Ct-1* allele, grey for heterozygous). Dashed vertical bars represent markers delimiting the candidate interval on chromosome 4. Numbers correspond to marker position (Mb). Position of *ACL1* and *ACD6* genes are shown above the arHIF. **(B)** Rosette leaves of 5-week-old plants. Upper rows: *arHIF434-Ct*, lower rows: *arHIF434-Col*. Scale bar corresponds to 1 cm. **(C)** Percentage of senescent leaves in *arHIF434-Ct* (yellow triangle line) and *arHIF434-Col* (dark green circle line) during the reproductive phase. Flowering transition occurred in average at 23.7 DAS for *arHIF434-Col* and 23.9 DAS for *arHIF434-Ct*.



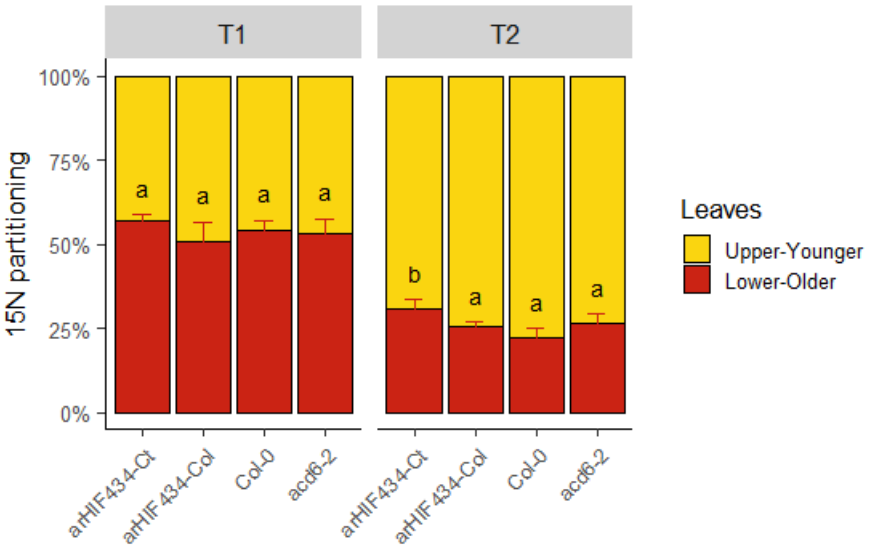
Supplementary FIGURE 2. Protein sequence alignment of ACD6 from *Col-0* and *Ct-1* accessions. Numbers indicate amino acid position from the first Methionine. Grey box correspond to ankyrin repeats and black lines to transmembrane domains as predicted using SMART website (http://smart.embl-heidelberg.de/). * Amino acids 566 and 634.



Supplementary FIGURE 3. Expression of *ACD6* in *arHIF434-Ct* and *arHIF434-Col*. Plants were grown under long days (8 h light/16 h dark) for 35 d after sowing and then harvested. Transcript levels of *ACD6* **(A)***; SAG12* **(B)** and *RBCS1A* **(C)** marker genes of leaf senescence, and *PR1* **(D)** involved in SA signaling process, were monitored using RT–qPCR and specific primers (Supplementary Table S1). Expression of *ACD6* was normalized using *PP2AA3* and *APC2*. Expression of *PR1*, *SAG12* and *RBCS1A* were normalized using *PP2AA3.*



Supplementary FIGURE 4. Effect of *ACD6* on N and C percentages in the different parts of the plants. N and C percentages in rosette **(A,B)**, stem **(C,D)**, and seeds **(E,F)**. N and C percentages for the four genotypes (*arHIF434-Ct*, *arHIF434-Col*, *Col-0* and *acd6-2*) are shown. Least-square means from 3 independent experiments ± s.e. are shown (n ≥ 18 for each genotype). Different letters indicate significant difference (Tukey's test, p-value ≤ 0.05).



Supplementary FIGURE 5. ACD6 does not affect N translocation (T1) and remobilization (T2) from old leaves to young leaves during the vegetative phase. The four genotypes (*arHIF434-Ct*, *arHIF434-Col*, *Col-0* and *acd6-2*) were grown on sand in short day conditions (8 hours). After 48h of labelling with $^{15}NO3$, lower (ranks 1 to 10) and upper (ranks >10) leaves were harvested and grouped. Proportion of total ^{15}N is measured in the two groups of leaves, just after the labelling period (T1) to estimate the N translocation, and 7 days after (T2) to estimate the N remobilization from old leaves to young leaves during vegetative phase.