



Supplementary Materials

Table S1. Sequencing data of *A. dahurica* roots in different shading treatment.

Sample	Clean reads	Clean base	GC Content	Q30(%)
CK-1	43958162	6349617042	43.34	93.72
CK-2	43881308	6334760866	44.03	93.87
CK-3	59613146	8579749179	42.31	94.2
L1-1	42026396	8579749179	43.44	93.72
L1-2	43277064	6251278155	43.42	93.9
L1-3	42981158	6242766797	43.4	93.78
L2-1	48032450	7049899910	43.4	93.81
L2-2	51661628	7598466542	43.67	93.85
L2-3	51300598	7443134197	44.4	93.88
L3-1	42632148	6216459055	44.08	93.57
L3-2	49058844	7138566211	43.63	93.99
L3-3	48815108	7139405562	43.74	93.82

Table S2. Assessment of the results of root *de novo* assembly of *A. dahurica* in different shading treatment.

Type	Unigene
Total number	294362
Total base	242418069
Largest length (bp)	12050
Smallest length (bp)	201
Average length (bp)	823.54
N50 length (bp)	1331
E90N50 length (bp)	1955
Fragment mapped	87.912
GC percent (%)	42.79

Table S3. Summary statistics of the annotations for *A. dahurica* root unigenes from six public databases.

Database	Number of unigenes	Percent (%)
GO	83018	41.02%
KEGG	70589	34.88%
eggNOG	100463	49.64%
NR	101839	50.32%
Swiss-Prot	89172	44.06%
Pfam	95434	47.16%
Total annotated	127670	63.09%

Table S7. Basic physical and chemical properties of the tested soil.

Soil type	SOM (g·kg ⁻¹)	TN (mg·kg ⁻¹)	TP (g·kg ⁻¹)	TP (g·kg ⁻¹)
Content	12.25	1.15	0.13	10.28

Table S8. Gene and primers used for the qRT-PCR validation.

Genes	Former primer (5'-3')	Back primer (5'-3')
actin	GATTCGTTGCCCTGAGGTTCTG	ACCACCACTGAGCAC-TATGTTTCC
TRINITY_DN67351_c0_g1	TTTTATGTCCGCATTATCAGG	CGGGTTTCTG-TACAAAATCAGAC
TRINITY_DN21272_c0_g1	TATTAAAGGCATCAACTTCGAC	CTTCAAGAATATGGCGTCTC
TRINITY_DN10627_c0_g3	GAAATTATTGGTCCGCTACCTG	ATAATCCGAATACAAAATT-GCT
TRINITY_DN114088_c0_g2	AAGTAAACAGTGAACACGCAAA	TCTGCACCAACTAGTACACC
TRINITY_DN4536_c0_g3	TTACATGATCGCCTGACGCCAA	CTTAGCCTTCCAGCAAATGGGT
TRINITY_DN78698_c0_g2	GATTCGTTGCCCTGAGGTTCTG	ACCACCACTGAGCAC-TATGTTTCC
TRINITY_DN38381_c1_g1	TAATCCGACAGCATTCTTGGAC	AAATTTGAAACTATCGGAGCAC
TRINITY_DN32963_c0_g1	CGCCTTCCTAGCTTTTCGG	AGCTGTAATGGTTAAGCCCAA
TRINITY_DN40230_c0_g2	ATTGCACCACCTGTGTTCGATG	ATCATTTGCGTCCAAGTAAGCC