Supplementary Materials:

Supplementary Table S1; Ka/Ks analysis of MIP genes in pepper plant

CA genes	AT genes	Ks	Ka	Ka/Ks
CATIP1-12	ATTIP1-1	1.71	0.15	0.09
CATIP1-10	ATTIP1-3	1.29	0.13	0.10
CATIP2-3	ATTIP2-1	1.65	0.12	0.07
CATIP2-4	ATTIP2-3	1.55	0.15	0.10
CATIP2-4	ATTIP2-2	1.73	0.12	0.07
CATIP2-4	ATTIP2-1	1.78	0.15	0.08
CAPIP1-2	ATPIP1-4	1.75	0.13	0.08
CAPIP1-2	ATPIP1-2	1.45	0.15	0.11
CAPIP1-2	ATPIP1-3	1.61	0.08	0.05
CAPIP1-2	ATPIP1-5	1.26	0.10	0.08
CAPIP1-2	ATPIP1-1	1.47	0.12	0.08
CAPIP1-8	ATPIP1-4	1.43	0.14	0.10
CAPIP1-8	ATPIP1-2	1.50	0.15	0.10
CAPIP1-8	ATPIP1-5	1.63	0.10	0.06
CAPIP1-8	ATPIP1-3	2.27	0.09	0.04
CAPIP1-8	ATPIP1-1	1.72	0.11	0.07
CAPIP1-1	ATPIP1-4	3.57	0.13	0.04
CAPIP1-1	ATPIP1-2	1.60	0.16	0.10
CAPIP1-1	ATPIP1-5	3.03	0.11	0.03
CAPIP1-1	ATPIP1-3	1.79	0.10	0.06
CAPIP1-1	ATPIP1-1	1.45	0.12	0.08
CAPIP1-5	ATPIP1-4	1.52	0.13	0.08
CAPIP1-5	ATPIP1-5	2.85	0.09	0.03
CAPIP1-5	ATPIP1-2	1.70	0.14	0.09
CAPIP1-5	ATPIP1-3	1.87	0.11	0.06
CAPIP1-5	ATPIP1-1	1.86	0.11	0.06
CAPIP1-4	ATPIP1-4	2.71	0.15	0.06
CAPIP1-4	ATPIP1-5	1.54	0.11	0.07
CAPIP1-4	ATPIP1-2	1.74	0.18	0.11
CAPIP1-4	ATPIP1-3	1.12	0.10	0.09
CAPIP1-4	ATPIP1-1	1.94	0.12	0.06
CAPIP2-5	ATPIP2-7	1.29	0.10	0.08
CAPIP2-5	ATPIP2-8	1.03	0.12	0.12
CAPIP2-2	ATPIP2-7	2.38	0.09	0.04
CAPIP2-2	ATPIP2-8	2.13	0.10	0.05
CAPIP2-1	ATPIP2-2	2.30	0.17	0.08
CAPIP2-1	ATPIP2-4	2.28	0.16	0.07
CAPIP2-1	ATPIP2-6	3.15	0.20	0.06
CAPIP2-1	ATPIP2-3	2.62	0.20	0.08
CAPIP2-1	ATPIP2-8	2.63	0.20	0.07
CAPIP2-1	ATPIP2-5	2.08	0.20	0.10
CAPIP2-1	ATPIP2-7	2.13	0.19	0.09
CAPIP2-1	ATPIP2-1	1.45	0.19	0.13
CAPIP2-6	ATPIP2-2	4.04	0.13	0.03
CAPIP2-6	ATPIP2-3	4.05	0.13	0.03
CAPIP2-6	ATPIP2-4	1.77	0.15	0.09
CAPIP2-6	ATPIP2-1	2.07	0.14	0.07
CAPIP2-4	ATPIP2-2	1.74	0.14	0.08
CAPIP2-4	ATPIP2-4	2.80	0.13	0.05
CAPIP2-4	ATPIP2-1	2.38	0.13	0.05
CAPIP2-4	ATPIP2-8	2.42	0.17	0.07
CAPIP2-3	ATPIP2-2	2.59	0.14	0.05
CAPIP2-3	ATPIP2-4	1.91	0.13	0.07
CAPIP2-3	ATPIP2-5	2.11	0.14	0.07
CAPIP2-3	ATPIP2-1	2.18	0.12	0.06
CAPIP2-3	ATPIP2-8	1.82	0.17	0.10

CANIP5-1	ATNIP5-1	2.51	0.13	0.05

Note: Ka (Non-synonymous)/Ks (Synonymous) analysis were performed by"One Step MCScanx" and "Simple Ka/Ks Calculator"function.

Supplementary Table S2; Primer sequences of MIP genes used for qRT-PCR in pepper. Primer Quest Tool was used to design primers for MIP gene family (http://www.idtdna.com/PrimerQuest/Home/Index?Display=AdvancedParams).

Name	**Sequence**	**Name**	**Sequence**
CAPIP1-8F	ACCACCAGCACCTTTGTT	CANIP1-2F	GCTGGAGGAGCTAATGGAAATA
CAPIP1-8R	CACCACCAAGTCTCTGATAAGG	CANIP1-2R	GCAAGTGGCAAAGGCAATAG
CAPIP2-7F	ACAGAGCAGCAATAGCAGAG	CATIP2-3F	AATTCGTCACCGGAGGATTG
CAPIP2-7R	GTGGCAGAGAAGACAACATAGA	CATIP2-3R	ACTGCAGGCCCAAATGAA
CATIP1-14F	CATTTGTGGGTGGACACATTAC	CANIP6-1F	CTCTAGTGGACTCGCTGTAATG
CATIP1-14R	GGAGTTCCTCATCGGTGTTT	CANIP6-1R	GCGTGATTGTTGCTGTCTTC
CATIP1-13F	AGAGGCTAGACATCCTGATACC	CATIP3-1F	GCTGGTGAAGGTTCTGTTCT
CATIP1-13R	GCTACTGCTGTGAGAGAGAATG	CATIP3-1R	CAATGGCAAGAGGTGCAATG
CATIP4-1F	TGCCATGGCTGCCAATAA	CATIP5-1F	CAACACTCTGTCACTCCCAAT
CATIP4-1R	GCAGCAACAGAAGCCAATAAC	CATIP5-1R	GAAGGGTCCAATCCAGTACAC
CATIP1-12F	GCGGTTGGTGCTAACATTTC	CASIP1-1F	TATTGGGTGGTGCTGGTTTC
CATIP1-12R	CGGTTCATGGGTTTGGTTAATG	CASIP1-1R	GTCAAGACACCCTCTGCAATAG
CAPIP2-6F	CACCTCCAGCACCACTTATT	CANIP4-3F	GGAGGTCATAGGGACGTATTTC
CAPIP2-6R	TAGCTCCACCACCGTACTTA	CANIP4-3R	CCAGCTAGGGTTCCAACTATT
CAPIP2-5F	ATCCTCCTCCAGCTCTCTTT	CANIP1-1F	GTGAACGCAGACAAAGGAATG
CAPIP2-5R	CTAGCAGGGTTGATACCAGTTC	CANIP1-1R	AGACCAGCAAGTTCTCCAATAG
CAPIP2-4F	GTATCGTTGGTTCGGGCTATTA	CANIP2-1F	ACCGTTGGGCATGTTTCT
CAPIP2-4R	GCTCCAGCCCTCAAGATAAA	CANIP2-1R	GCCCAGCAAGGATAGAGTTAAT
CAPIP2-3F	CCCTTGATTGACCCTGAAGAA	CATIP1-7F	CTGATTGCAGCCACGATAAAC
CAPIP2-3R	CACCACCACCATACCTGAAATA	CATIP1-7R	GAGTTGGTCCCACAGATGATAA
CAPIP2-2F	GCAGTGACATTTGGGTTGTTC	CANIP4-2F	CACGTATCGGGTGGTCATTT
CAPIP2-2R	GGGTTGATACCAGTTCCAGTAAT	CANIP4-2R	CAAGTTGTCCTACCGCTCTATC
CAPIP1-7F	GGCTGCTGCTAACGGAAATA	CANIP5-1F	GTTCAAGTGCCAGCCTATGT
CAPIP1-7R	GCCAGAAGCCCAACAATAGA	CANIP5-1R	GACTGTAGCTCCAACTGCTATG
CAPIP1-6F	GGCCTTGGTGCTGAGATTAT	CAPIP1-2F	CACCAGCAGCACCTTTATTTG
CAPIP1-6R	ACGCATGTTCTCCGTTGTAG	CAPIP1-2R	CACCGCCAAGTCTCTGATATG
CAPIP1-5F	GGCAACCATTAGGGACTTCA	CATIP1-6F	GAAATCTGAGAGAGGCTACCAAG
CAPIP1-5R	CTGAGATACCAGCAGTGCAATA	CATIP1-6R	AGTAATGTGTCCACCCACAAG
CATIP1-11F	CACCTTTGGCGCCTTTATTG	CATIP1-5F	TTCCCTGCTGAAGGTTGTG
CATIP1-11R	CAGTGGACCCAGTGGTTATT	CATIP1-5R	CCGCAACAGATCCCAGTAAT
CATIP1-10F	GAAGGGTGACTTGGGAATCAT	CANIP3-1F	GTGGGAGGTTCTATATTGGCTAC
CATIP1-10R	AGCTGCTCATGAGTGTTCTG	CANIP3-1R	CTCCTGCAACAGCTCCTATAAT
CATIP1-9F	CTGGCATGGCCTTCAGTAA	CATIP1-4F	ACTGCTCTCTTCCTCCTCAA
CATIP1-9R	AGCACACAAGCCACAATAGA	CATIP1-4R	CGAATGGACCGAACCAGTAAA
CATIP1-8F	GCTGTTACTTTCGGTGCTTTC	CATIP1-3F	AGAGGCTACCCATCCTGATAC
CATIP1-8R	ATCTCCTCCACTTGGGATTTG	CATIP1-3R	TGAGCGTTTCGAGAGCTAATG
CANIP2-2F	CCGCTATTACCGCTACTTCTAC	CATIP1-2F	ACTGCTCTCTTCCTCCTCAA
CANIP2-2R	GAGTGGATCCTACGACTTGAAC	CATIP1-2R	CGAATGGACCGAACCAGTAAA
CATIP3-2F	AAGGTATGCGTTTGGGAGAG	CATIP2-2F	CACCATTGGATTGGCTGTTG

CATIP3-2R	GGACCACCTACAAGGACATTAG	CATIP2-2R	TCTGCTGCAGTGGCATAAA
CATIP2-4F	GGGTCATTGAAGGCCTACTT	CAPIP1-1F	ACTTGGTGGTGGTGCTAATG
CATIP2-4R	TTTCCACCTACAGCCAATCC	CAPIP1-1R	GCTGCATCGGTGTTGTAGAT
CAPIP2-1F	TCATGGCTCCTGGACATAAC	CATIP1-1F	CTCCACGAAGCGGGTTTATT
CAPIP2-1R	GGAGGATGAACTGATGGTAGAC	CATIP1-1R	CATGGTGTTTCTCCACCTCTAAG
CAPIP1-4F	GGATGTGAGATTGGGTGCTAAC	CANIP4-1F	GCCTTTGCACTTCACCTAATG
CAPIP1-4R	CCATGCGGGTTCCTTGTTATAG	CANIP4-1R	CAGTGGCAACACCAGAAATG
CAPIP1-3F	CTGGGCATTCCTGACTTCTT	CATIP2-1F	GTTGCTTGCTACCTCCTCAA
CAPIP1-3R	GAAACACCTAGCCGGATTCA	CATIP2-1R	AGTGGTCCAACCCAGTAAATC
Actin-F	AGGGATGGGTCAAAAGGATGC		
Actin-R	GAGACAACACCGCCTGAATAGC		

Supplementary Figure S1. Pepper growth stage used for experiment. As(III) 0.5 and 1 mM were applied with control (without As(III)). Data was recorded for leaf Chlorophyll content and Nitrogen content using SPAD 502 (Minolta Camera, Co., Osaka, Japan) after 48 hrs of treatment. Root length was measured with ruler. Samples were collected liquid nitrogen for RNA extraction to assess root and leaf response to different concentrations of As(III) using qRT-PCR. Scale bar is 50 mm for each.

