

APPENDIX

Table of 16S rDNA sequences obtained from the five strain

BAs 7 1369 bp	ATGCAAGTCGAGCGGACAGAAGGGAGCTTGCTCCCGGATGTTAG CGGCGGACGGGTGAGTAACACGTGGGTAACCTGCCTGTAAGACT GGGATAACTCCGGGAAACCGGAGCTAATACCGGATAGTTCCTTG AACCGCATGGTTCAAGGATGAAAGACGGTTTCGGCTGTCACTTA CAGATGGACCCGCGGCGCATTAGCTAGTTGGTGAGGTAACGGCT CACCAAGGCGACGATGCGTAGCCGACCTGAGAGGGTGATCGGCC ACACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCA GTAGGGAATCTTCCGCAATGGACGAAAGTCTGACGGAGCAACGC CGCGTGAGTGATGAAGGTTTTTCGGATCGTAAAGCTCTGTTGTTAG GGAAGAACAAGTGCAAGAGTAAGTCTGCTTGCACCTTGACGGTACC TAACCAGAAAGCCACGGCTAACTACGTGCCAGCAGCCGCGGTAA TACGTAGGTGGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGGG CTCGCAGGCGGTTTCTTAAGTCTGATGTGAAAGCCCCCGGCTCAA CCGGGGAGGGTCATTGGAAACTGGGAAACTTGAGTGCAGAAGA GGAGAGTGGAATTCCACGTGTAGCGGTGAAATGCGTAGAGATGT GGAGGAACACCAGTGCGGAAGGCGACTCTCTGGTCTGTAAACTG ACGCTGAGGAGCGAAAGCGTGGGGGAGCGAACAGGATTAGATA CCCTGGTAGTCCACGCCGTAAACGATGAGTGCTAAGTGTTAGGG GGTTTCCGCCCCCTTAGTGCTGCAGCTAACGCATTAAGCACTCCGC CTGGGGAGTACGGTCGCAAGACTGAAACTCAAAGGAATTGACGG GGGCCCCGACAAGCGGTGGAGCATGTGGTTTAATTTCGAAGCAAC GCGAAGAACCCTTACCAGGTCTTGACATCCTCTGACAACCCTAGA GATAGGGCTTTCCTTCGGGGACAGAGTGACAGGTGGTGCATGG TTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTAAAGTCCCGCAAC GAGCGCAACCCTTGATCTTAGTTGCCAGCATTCAAGTTGGGCACTC TAAGGTGACTGCCGGTGACAAACCGGAGGAAGGTGGGGATGAC GTCAAATCATCATGCCCTTATGACCTGGGCTACACACGTGCTAC AATGGACAGAACAAAGGGCTGCGAGACCGCAAGGTTTAGCCAAT CCCACAAATCTGTTCTCAGTTCGGATCGCAGTCTGCAACTCGACT GCGTGAAGCTGGAATCGCTAGTAATCGCGGATCAGCATGCCGCG GTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACACCACG AGAGTTTGCAACACCCGAAGTCGGTGAGGTAAC
BAs 8 1395bp	GCAAGTCGAGCGGACAGAAGGGAGCTTGCTCCCGGATGTTAGCG GCGGACGGGTGAGTAACACGTGGGTAACCTGCCTGTAAGACTGG GATAACTCCGGGAAACCGGAGCTAATACCGGATAGTTCCTTGAA CCGCATGGTTCAAGGATGAAAGACGGTTTCGGCTGTCACTTACA GATGGACCCGCGGCGCATTAGCTAGTTGGTGAGGTAACGGCTCA CCAAGGCGACGATGCGTAGCCGACCTGAGAGGATGAATTCGGTC CACCCTGGGAACTGAGACACGGCCCAGACTCCTACGGGAGGCA GGCAGTAAGGGAATCTTCCGCAAATGGACGAAAGTCTGACGGAG

CAACGCCGCGTGAGTGATGAAAGGTTTTTCGGAATCGTAAAGCTC
TGTTGTTAGGGAAGAACAAGTGCAAAGAGTAAACTGCTTGCACC
TTGACGGTACCTAACCCAGAAAGCCACGGCTAAACTACGTGCCA
GCAGCCGCGGTAATACGTAGGTGGCAAGCGTTGTCCGGAATTAT
TGGGCGTAAAGGGCTCGCAGGCGGTTTCTTAAGTCTGATGTGAA
AGCCCCCGGCTCAACCGGGGAGGGTCATTGGAAACTGGGAAACT
TGAGTGCAGAAGAGGAGAGTGGAATTCCACGTGTAGCGGTGAAA
TGCGTAGAGATGTGGAGGAACACCAGTGGCGAAGGCGACTCTCT
GGTCTGTAAGTACGCTGAGGAGCGAAAGCGTGGGGAGCGAAC
AGGATTAGATAACCCTGGTAGTCCACGCCGTAAACGATGAGTGCT
AAGTGTTAGGGGGTTTCCGCCCTTAGTGCTGCAGCTAACGCATT
AAGCACTCCGCCTGGGGAGTACGGTCGCAAGACTGAAACTCAAA
GGAATTGACGGGGGCCCCGCACAAGCGGTGGAGCATGTGGTTTAA
TTCGAAGCAACGCGAAAAACCTTACCAGGTCTTGACATCCTCTG
ACAACCCTAGAGATAGGGCTTTCCCTTTCCGGGACAGAGTTGAC
AGGTGGTGCATGATTGTCGTGAGCTCGTTGTCGTGAAGATGTTGG
GTTAAGTCCCGCAACGAGCGCAACCCTTTGATTCTTAGTTGGCCA
GCATTTACAGTTGGGCACTTCTAAGGGTGAAC TTGCCGGGTGAAC
AAACCGGAGGAAGGTGGGGATGACGTCAAATCATCATGCCCTT
ATGACCTGGGCTACACACGTGCTACAATGGACAGAACAAAGGGC
TGCGAGACCGCAAGGTTTAGCCAATCCCACAAATCTGTTCTCAGT
TCGGATCGCAGTCTGCAACTCGACTGCGTGAAGCTGGAATCGCT
AGTAATCGCGGATCAGCATGCCGCGGTGAATACGTTCCCGGGCC
TTGTACACACCGCCCGTCACACCACGAGAGTTTGCAACACCCGA
AGTCGGTGAGGTAACCTCTA

BA 8
1395bp

GAACGGAAGGCCCTTCGGGGTACTCGAGTGGCGAACGGGTGAGT
AACACGTGGGTGATCTGCCCTGCACTTTGGGATAAGCCTGGGAA
ACTGGGTCTAATAACCGAATATGATCATCGGCTTCATGGTCGGTGG
TGGAAGCTTTTGCGGTGTGGGATGGGCCCCGCGGCCTATCAGCT
AGTAGGGTGGGGGTAATGGCCTACCAAGGCGACGACAGGTAGCC
GACCTGAGAGGGTGACCCGCACCACACTGGAAGTGAAGTACGGC
CCAGACTCCTACGGGAGGCAGGCAGTGGGGAATATTGCACAATG
GGCGCCAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACGGCC
TTCCGGGTGTAAACCTCTTTCAGCACAGACGAAGCGCAAGTGA
CGGTATGTGCAGAAGAAGGACCCGGCCAACTACGTGCCAGCAGC
CGCGGTAATACGTAGGGTCCGAGCGTTGTCCGGAATTACTGGGC
GTAAAGAGCTCGTAGGTGTTTGTGCGGTTGTTTCGTGAAAACCTCA
CAGCTTAACTGTGGGCGTGCGGGCGATACGGGCAGACTAGAGTA
CTGCAGGGGAGACTGGAATTCCTGGTGTAGCGGTGGAATGCGCA
GATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCTGGGCAG
TAACTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATT
AGATACCCTGGTAGTCCACGCCGTAAACGGTGGGTACTACGTGT
GGGTTTCCTTCCTTGGGATCCGTGCCGTAACTAACGCATTAAGTA
CCCCGCCTGGGGAGTACAGCCGCAAAGGCTAAAACCTCAAACGAA
TTGACGGGGGCCCCGCACAAGCAGCGGAGCATGTGGATTAAATTC

BA 11
1051bp

	GACTGCAACGCCAACAACTTACCTGGGTTTTGACATGCACTAG GACGCTGCTCCAGAGATACTCAATTCCCGTTGCGCCCTAGTGTGC AGGGTGGTGCCTGGCCCGCCCGTCAATCCTCGTGTCCCGAAGA TGTTGGGTAAAGTCCCGCAACGAGCGCAACCCTTGT
BAs 19 1391bp	GTCGAGCGGACAGAAGGGAGCTTGCTCCCGGATGTTAGCGGCGG ACGGGTGAGTAACACGTGGGTAACCTGCCTGTAAGACTGGGATA ACTCCGGGAAACCGGAGCTAATACCGGATAGTTCCTTGAACCGC ATGGTTCAAGGATGAAAGACGGTTTTCGGCTGTCACTTACAGATG GACCCGCGGCGCATTAGCTAGTTGGTGAGGTAACGGCTCACCAA GGCGACGATGCGTAGCCGACCTGAGAGGGTGATCGGCCACACTG GGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTAGG GAATCTTCCGCAATGGACGAAAGTCTGACGGAGCAACGCCGCAT GATGTAAGGAAGGTTTTTCGGATCGTAAAAGATTACGTGTTGTTA GGAAAGAACAAGGTGCAAGAGTAAATTGCTTGCCACCTTGACCG TAAGCTAAACAGCAAAGCCACGGCTAACTACATGCCAGGCAGAC GCAGGTAATACGTAGGTGGCAAGAGTTGTACGAGAATAATAGG TCGTAAAGGGGCTCGCAGGCGGTTTTCTAAAGTCTGATGATGAAA GCCCCCGGCTCAACCCGGGGAGGGTCATTTGGAAACTGGGAAA ACTAGAGTGCAGAAGAGGAAGAGTGGAATTCCACGTGTAGCGGT GAAATGCGTAGAGATGTGAAGGAACACCATGTGGCAAAGGCGA CTCTCTGGTCTGAACTGACGCTTGAGGAGCCAAAGCGTGGGGA GCGAACAGGATTAGATACCGTGGTAGTCCACGCCGTAAACGATG AGTGCTAAGTGTTAGGGGGTTCCCGCCCCCTTAGTGCTGCAGATAA CGCATTAAGCACTCCGCCTGGGGAGTACGGTCGCAAGACTGAAA CTCAAAGGAATTGACGGGGGGCCCGCACAAGCGGTGGAGCATGTG GTTTAATTCTGAAGCAACGCGAAGAACCCTTACCAGGTCTTGACAT CCTCTGACAACCCTAGAGATAGGGCTTTCCCTTCGGGGACAGAG TGACAGGTGGTGCATGGTTGTCGTCAGCTCGTGTGCTGAGATGTT GGGTTAAGTCCCGCAACGAGCGCAACCCTTGATCTTAGTTGCCA GCATTCAAGTTGGGCACTCTAAGGTGACTGCCGGTGACAAACCGG AGGAAGGTGGGGATGACGTCAAATCATCATGCCCTTATGACCT GGGCTACACACGTGCTACAATGGACAGAACAAAGGGCTGCGAG ACCGCAAGGTTTAGCCAATCCCAACAAATCTGTCTCAGTTCGGAT CGCAGTTTGCAACTCGACTGCGTGAAGCTGGAATCGCTAGTAAT CGCGGATCAGCATGCCGCGGTGAATACGTTCCCGGGCCTTGATAC ACACCGCCCTTCACACCACGAGAGTTTGCAACA
BAs 29 1391bp	TCGAGCGGACAGAAGGGAGCTTGCTCCCGGATGTTAGCGGCGGA CGGGTGTAGTAACACGTGGGTAACCTGCCTGTAAGACTGGGATA ACTCCGGGAAACCGGAGCTAATACCGGATAGTTCCTTGAACCGC ATGGTTCAAGGATGAAAGACGGTTTTCGGCTGTCACTTACAGATG GACCCGCGGCGCATTAGCTAGTTGGTGAGGTAACGGCTCACCAA GGCGACGATGCGTAGCCGACCTGAGAGGGTGATCGGCCACACTG GGACTGAGACACGGCCCATACTCCTACGGGAGGCAGCAGTAGGG AATCTTCCGCAATGGACGATAGTCTGACGGAGCAACGCCGCGTG

BAs 29
1391bp

AGTGATGAAGGTTTTTCGGATCGAAAAGCTCTGTTGTTAGGGAAG
AACAAAGTGCAAGAGTAACTGCTTGACCTTGACGGTACCTAACC
ATAAAGCCACGGTTAACTACGTGCCAACAGCCGCGGTAATACGT
ACGTGGCAAGCGTTAGTCCGGGAAATTATTGGGCGATATAAAGG
GCGACGCAAGGCGAGTATCTTAAGTCTGAATGTAGAGAGCCTCC
CCGTGCTCCACCCGGGGAGGGTCATTGTGAAACCTGGGAAACTT
GAGTGCAGAAGAGGATGAATGGAATTCCAACGTGTAGCGGTGAA
ATGCGTAGAGATGTGGAGGGAACAACAGTGGGGAAGGGCGATT
CTTTGGTCTGTAAGTACGTTGAGGAGCGAAAGCGTGGGGAGCG
AACAGGATTAGATACCATGGTAGTACACGCCGTAAACGATGAGT
GGTAAAGTGTTAGGGGGTTTTCCGACCCTTAGTGATGCAGCTAAC
GCATTAAGCACTCCGCCTGGGGAGTGCGGTAGCAAGACTGAAAC
TCAAAGGAATTGACAGGGGGCCCGCACAAGCGGTGGAACATGTGG
TTTAATTCGAAGCAACGCGAAGAACCTTACCAGGTCTTGACATCC
TCTGACAACCCTAGAGATAGGGCTTTCCCTTCGGGGACAGAGTG
ACAGGTGGTGCATGGTTGTCGTCAGCTCGTGTCTGAGATGTTGG
GTAAAGTCCCGCAACGAGCGCAACCCTTGATCTTAGTTGCCAGCA
TTCAGTTGGGCACTTTAAGGTGACTGCCGGTGACAAACCGGAGG
AAGGTGGGGATGACGTCAAATCATCATGCCCTTATGACCTGGG
CTACACACGTGCTACAATGGACAGAACAAGGGCTGCGAGACCG
CAAGGTTTAGCCAATCCCACAAATCTGTTCTCAGTTCGGATCGCA
GTCTGCAACTCGACTGCGTGAAGCTGGAATCGCTAGTAATCGCG
GATCAGCATGCCGCGGTGAATACGTTCCCGGGCCTTGACACAC
CGCCCGTCACACCACGAGAGTTTGCAACACCCGAAGTCGGTGAG
GT

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Table of nutrient properties of carrot grown in arsenic-contaminate soil (Pangda site) with beneficial arsenic-resistant bacteria.

Treatment	Total Nitrogen (mg/g of dry matter) ^{1/}		Phosphorus (mg/g of dry matter) ^{1/}		Potassium (mg/g of dry matter) ^{1/}		Calcium (mg/g of dry matter) ^{1/}		Magnesium (mg/g of dry matter) ^{1/}	
	root	leaves	root	leaves	root	leaves	root	leaves	root	leaves
Pangda control	12.60 ^d	18.70 ^e	1.80 ^c	3.10 ^a	6.25 ^c	10.23 ^c	0.90 ^a	8.83 ^b	1.10 ^{de}	1.95 ^c
Pangda control + Lime	10.90 ^e	16.28 ^g	1.08 ^e	2.38 ^{cd}	6.00 ^d	9.50 ^e	0.60 ^d	8.75 ^b	1.20 ^{cd}	2.50 ^b
Pangda + BAs 7	10.58 ^f	20.18 ^b	2.08 ^b	2.75 ^b	6.10 ^d	10.30 ^c	0.70 ^c	7.10 ^d	1.00 ^{ef}	2.48 ^b
Pangda + BAs7 + Lime	13.70 ^c	18.28 ^f	2.50 ^a	2.35 ^d	6.48 ^b	8.60 ^f	0.68 ^{cd}	9.40 ^a	1.33 ^b	2.65 ^a
Pangda + BAs11	9.50 ^g	19.78 ^c	1.00 ^e	2.30 ^d	6.30 ^c	10.50 ^b	0.72 ^{bc}	5.70 ^e	1.03 ^e	1.78 ^d
Pangda + BAs11 + Lime	18.23 ^a	19.40 ^d	2.50 ^a	1.64 ^e	6.70 ^a	9.40 ^e	0.80 ^b	5.30 ^f	1.30 ^{bc}	2.70 ^a
Pangda + BAs29	9.10 ^h	14.88 ^h	1.80 ^c	2.50 ^c	5.73 ^e	11.23 ^a	0.60 ^d	5.38 ^f	0.90 ^f	1.83 ^d
Pangda + BAs29 + Lime	14.95 ^b	25.50 ^a	1.55 ^d	2.88 ^b	6.60 ^a	9.80 ^d	0.90 ^a	7.38 ^c	1.48 ^a	2.70 ^a
F-test	**	**	**	**	**	**	**	**	**	**
C.V. (%)	0.81	0.54	5.17	3.50	1.24	0.81	8.61	1.24	6.13	2.81

^{1/} Mean with the same columns followed by different characters showed significant difference between treatment F-test at P<0.05

The symbol “***” is significantly different at the P<0.05

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