Supplementary Material

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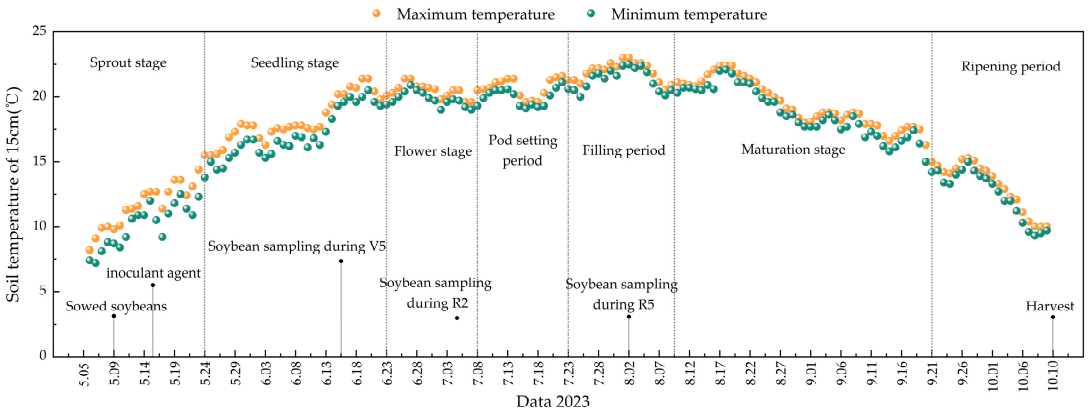

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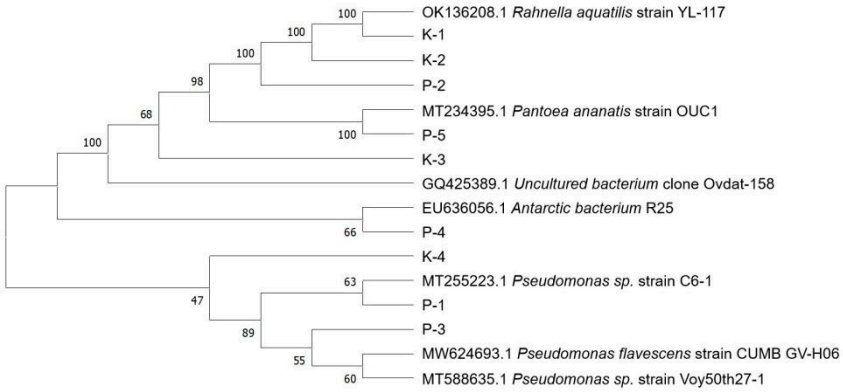

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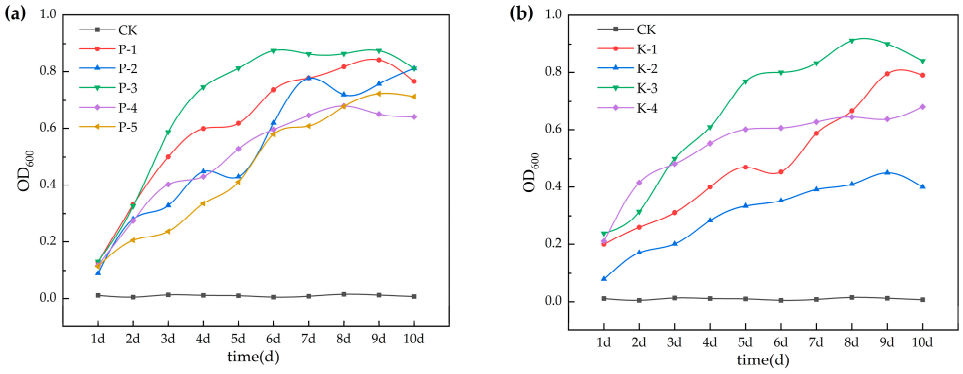

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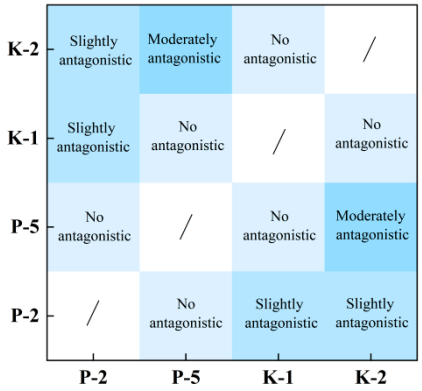

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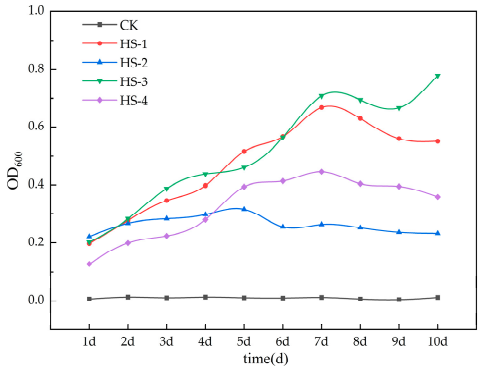

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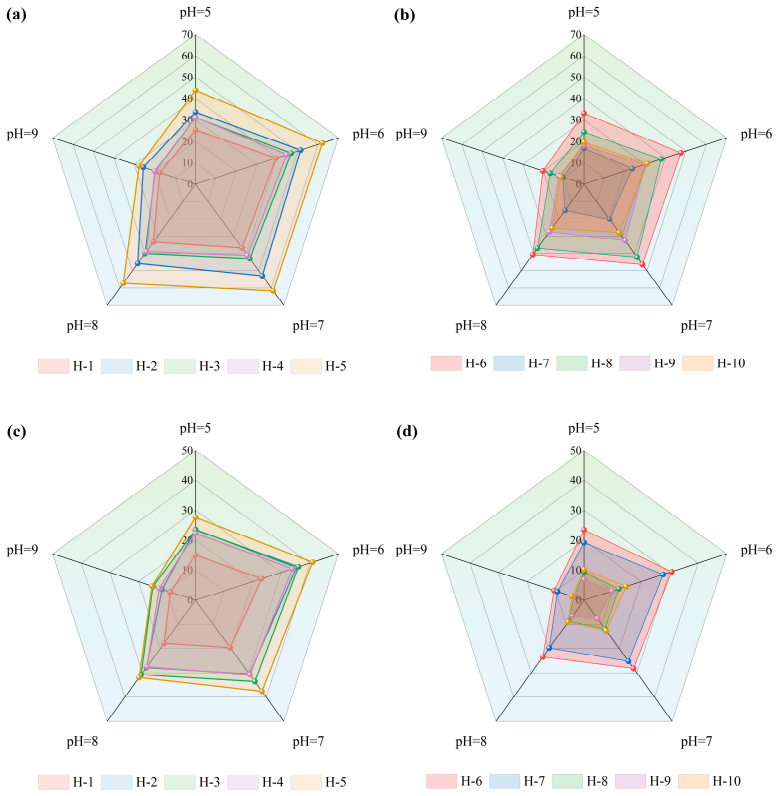

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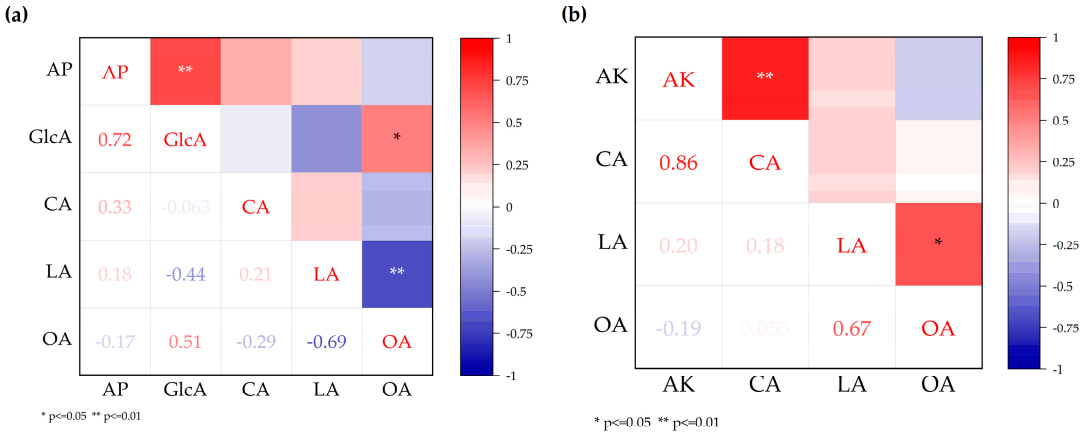

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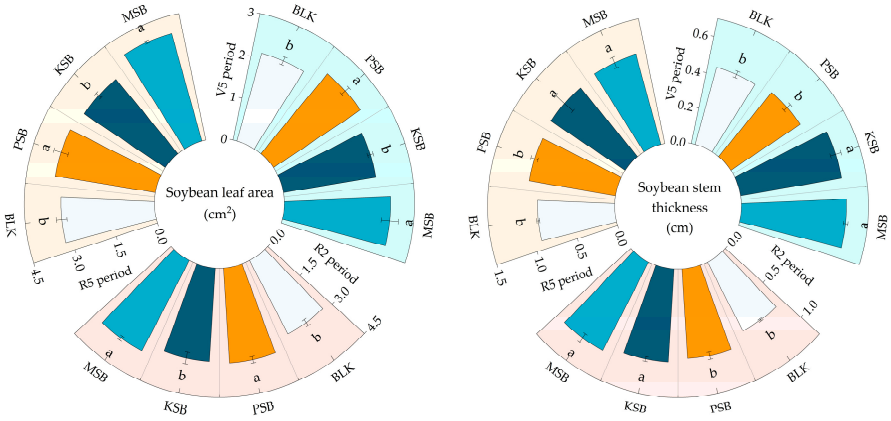

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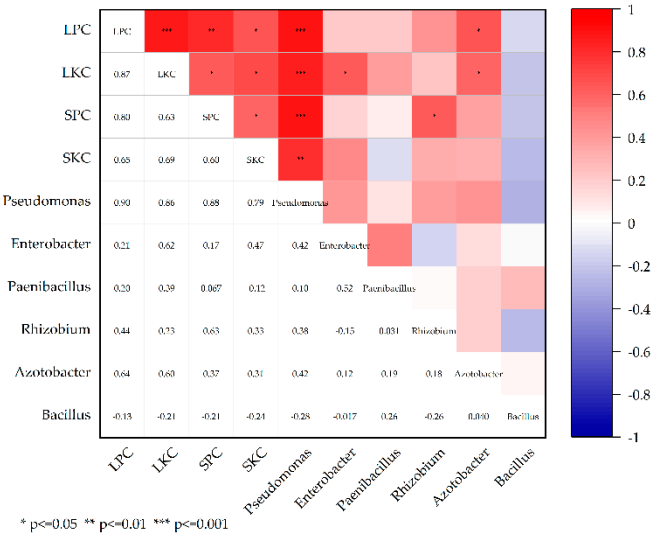

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Table S1. The initial nutrient content of the soil used in the experiment.

AP[1] (mg/kg)	AK[2] (mg/kg)	NH_4^+-N[3] (mg/kg)	NO_3^--N[4] (mg/kg)	TOC[5] (g/kg)	TP[6] (mg/kg)	TK[7] (g/kg)
16.28	180.07	9.75	3.48	19.96	288.30	2.69

[1]AP: Active phosphorus; [2]AK: Active potassium; [3]NH_4^+-N: Ammonium nitrogen; [4]NO_3^--N: Nitrate nitrogen; [5]TOC: Total organic carbon; [6]TP: Total phosphorus; [7]TK: Total potassium.

Table S2. Standard layer judgment matrix for capability indicators

Capacity indicators	AP/AK	LTR	PSI/KSI	OD value	Eigenvector	Weighting (%)
AP/AK	1	1.6	2.667	4	1.78	44.44
LTR	0.625	1	1.667	2.5	1.11	27.78
PSI/KSI	0.375	0.6	1	1.5	0.67	16.67
OD value	0.25	0.4	0.667	1	0.44	11.11

Table S3. Comprehensive ability score of phosphorus-solubilizing bacteria

Bacterial strain	AP	LTR	PSI	OD value	Composite score value
P-1	12.387	39.098	2.302	0.765	47.26
P-2	59.518	100.000	1.730	0.811	95.86
P-3	7.773	17.893	1.427	0.811	32.22
P-4	6.956	20.281	1.246	0.641	28.63
P-5	34.939	68.773	1.800	0.713	68.00

Table S4. Comprehensive ability score of potassium-solubilizing bacteria

Bacterial strain	AP	LTR	PSI	OD value	composite score value
K-1	23.018	100.001	1.510	0.790	96.73
K-2	11.558	44.015	1.789	0.400	56.50
K-3	8.600	40.748	1.485	0.841	52.87
K-4	5.483	27.872	1.451	0.681	40.84

Table S5. Soybean yield and its component. Different letters indicate significant differences in soybean yield and related indexes with changes in different treatments (P<0.05).

Processing number	Number of pods per soybean (pieces)	Number of grains per soybean (pieces)	100-grain weight (g)	Yield (g/pot)
BLK	34.67±1.53c	86.67±3.21c	16.23±0.28c	61.06±3.29c
PSB	37.67±1.53ab	97.67±3.51b	17.23±0.58ab	69.55±3.68b
KSB	37.00±1.00bc	96.67±2.52b	17.09±0.49b	65.69±2.18b
MSB	40.00±1.73a	105.33±3.51a	17.99±0.30a	74.46±3.75a

Table S6. Soil phosphorus and potassium nutrient content during R7 in soybean. Different letters indicate significant differences in soil phosphorus and potassium nutrient conten with changes in different treatments (P<0.05).

Processing number	AP (mg/kg)	AK (mg/kg)	TP (mg/kg)	TK (g/kg)
BLK	19.44±0.85c	154.86±12.52b	268.51±4.86c	2.66±0.02b
PSB	27.43±0.93a	164.72±9.17ab	280.41±2.17ab	2.67±0.03ab
KSB	24.01±1.85b	168.73±10.48ab	276.30±3.38b	2.67±0.02ab
MSB	28.02±1.41a	185.10±11.44a	286.76±4.94a	2.70±0.01a

Table S7. Diameter of phosphorus-solubilizing bacteria colonies (mm)

P-1	P-2	P-3	P-4	P-5
3.62±0.40d*	6.48±0.99ab	4.77±0.71cd	5.45±0.88bc	7.15±0.95a

*P-1~P-5 are the five phosphorus-solubilizing bacteria in this study. Different letters indicate significant differences in colony diameter with changes in phosphorus-solubilizing bacteria (P<0.05).

Table S8. ANOVA (Diameter of phosphorus-solubilizing bacteria colonies)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	23.292	4	5.823	8.767	P=0.003
Within	6.642	10	0.664		
Total	29.934	14			

Table S9. Duncan's post hoc test (Diameter of phosphorus-solubilizing bacteria colonies)

	N	Alpha=0.05			
		1	2	3	4
P1	3	3.616			
P3	3	4.7683	4.7683		
P4	3		5.4483	5.4483	
P2	3			6.4763	6.4763
P5	3				7.1503
Significance		0.114	0.331	0.153	0.335

Table S10. Diameter of potassium-solubilizing bacteria colonies (mm)

K-1	K-2	K-3	K-4
7.40±0.99a*	5.92±1.19a	8.62±1.49a	6.28±1.65a

*K-1~K-4 are the four potassium-solubilizing bacteria in this study. Different letters indicate significant differences in colony diameter with changes in potassium-solubilizing bacteria (P<0.05).

Table S11. ANOVA (Diameter of potassium-solubilizing bacteria colonies)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	16.669	3	5.556	3.587	P=0.066
Within	12.393	8	1.549		
Total	29.062	11			

Table S12. Duncan's post hoc test (Diameter of potassium-solubilizing bacteria colonies)

	N	Alpha=0.05	
		1	2
K2	3	5.924	
K4	3	6.2843	
K1	3	7.399	7.399
K3	3		8.9507
Significance		0.201	0.165

Table S13. Dissolved phosphorus diameter (mm)

P-1	P-2	P-3	P-4	P-5
8.44±2.51bc*	11.16±1.25ab	6.84±1.381c	6.79±1.18c	12.82±1.14a

*P-1~P-5 are the five phosphorus-solubilizing bacteria in this study. Different letters indicate significant differences in dissolved phosphorus diameter with changes in phosphorus-solubilizing bacteria (P<0.05).

Table S14. ANOVA (Dissolved phosphorus diameter)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	86.62	4	21.655	8.68	P=0.003
Within	24.948	10	2.495		
Total	111.567	14			

Table S15. Duncan's post hoc test (Dissolved phosphorus diameter)

	N	Alpha=0.05		
		1	2	3
P4	3	6.7937		
P3	3	6.8383		
P1	3	8.4373	8.4373	
P2	3		11.155	11.155
P5	3			12.8197
Significance		0.252	0.061	0.226

Table S16. Dissolved potassium diameter (mm)

K-1	K-2	K-3	K-4
11.10±0.63a	10.45±1.10a	12.85±2.63a	9.12±2.64a

*K-1~K-4 are the four potassium-solubilizing bacteria in this study. Different letters indicate significant differences in dissolved potassium diameter with changes in potassium-solubilizing bacteria (P<0.05).

Table S17. ANOVA (Dissolved potassium diameter)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	28.536	3	9.512	3.124	P=0.088
Within	24.358	8	3.045		
Total	52.893	11			

Table S18. Duncan's post hoc test (Dissolved potassium diameter)

	N	Alpha=0.05	
		1	2
K4	3	9.1217	
K2	3	10.4497	10.4497
K1	3	11.0953	11.0953
K3	3		13.3817
Significance		0.221	0.084

Table S19. The amount of phosphorus solubilizing quantity (AP content of supernatant, mg/L)

P-1	P-2	P-3	P-4	P-5
12.39±0.55c*	59.52±1.24a	7.77±0.38d	6.96±0.57d	34.94±0.7b

*P-1~P-5 are the five phosphorus-solubilizing bacteria in this study. Different letters indicate significant differences in phosphorus solubilizing quantity with changes in phosphorus-solubilizing bacteria (P<0.05).

Table S20. ANOVA (The amount of phosphorus solubilizing quantity)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	6208.119	4	1552.03	2785.721	P＜0.001
Within	5.571	10	0.557		
Total	6213.69	14			

Table S21. Duncan's post hoc test (The amount of phosphorus solubilizing quantity)

	N	Alpha=0.05			
		1	2	3	4
P-4	3	6.9563			
P-3	3	7.7733			
P-1	3		12.3863		
P-5	3			34.9383	
P-2	3				59.5183
Significance		0.21	1	1	1

Table S22. The amount of potassium solubilizing quantity (AK content of supernatant, mg/L)

K-1	K-2	K-3	K-4
23.02±2.92a*	11.56±1.56b	8.6±1.32bc	5.48±1.62c

*K-1~K-4 are the four potassium-solubilizing bacteria in this study. Different letters indicate significant differences in potassium solubilizing quantity with changes in potassium-solubilizing bacteria (P<0.05).

Table S23. ANOVA (The amount of potassium solubilizing quantity)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	526.558	3	175.519	45.845	P＜0.001
Within	30.628	8	3.829		
Total	557.186	11			

Table S24. Duncan's post hoc test (The amount of potassium solubilizing quantity)

	N	Alpha=0.05		
		1	2	3
K-4	3	5.483		
K-3	3	8.6003	8.6003	
K-2	3		11.558	
K-1	3			23.0183
Significance		0.087	0.101	1

Table S25. Ability of phosphate-Solubilizing bacteria to secrete gluconic acid (mg/L)

P-1	P-2	P-3	P-4	P-5
404.79±26.9c*	4642.89±213.54a	1983.27±118.96b	442.45±34.19c	313.17±27.84c

*P-1~P-5 are the five phosphorus-solubilizing bacteria in this study. Different letters indicate significant differences in gluconic acid content with changes in phosphorus-solubilizing bacteria (P<0.05)

Table S26. ANOVA (Ability of phosphate-Solubilizing bacteria to secrete gluconic acid)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	41463992.5	4	10365998.1	830.337	P＜0.001
Within	124840.85	10	12484.085		
Total	41588833.3	14			

Table S27. Duncan's post hoc test (Ability of phosphate-Solubilizing bacteria to secrete gluconic acid)

	N	Alpha=0.05		
		1	2	3
P-5	3	313.1743		
P-1	3	404.7943		
P-4	3	442.4493		
P-3	3		1983.2683	
P-2	3			4642.891
Significance		0.206	1	1

Table S28. Ability of phosphate-Solubilizing bacteria to secrete citric acid (mg/L)

P-1	P-2	P-3	P-4	P-5
946.93±76.27a*	812.41±47.62b	685.49±42.87c	634.53±79.01c	856.09±53.3ab

*P-1~P-5 are the five phosphorus-solubilizing bacteria in this study. Different letters indicate significant differences in citric acid content with changes in phosphorus-solubilizing bacteria (P<0.05)

Table S29. ANOVA (Ability of phosphate-Solubilizing bacteria to secrete citric acid)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	193644.66	4	48411.165	12.735	P＜0.001
Within	38012.821	10	3801.282		
Total	231657.48	14			

Table S30. Duncan's post hoc test (Ability of phosphate-Solubilizing bacteria to secrete citric acid

	N	Alpha=0.05		
		1	2	3
P-4	3	634.5303		
P-3	3	685.4893		
P-2	3		812.4117	
P-5	3		856.0897	856.0897
P-1	3			946.9303
Significance		0.335	0.406	0.101

Table S31. Ability of phosphate-Solubilizing bacteria to secrete lactic acid (mg/L)

P-1	P-2	P-3	P-4	P-5
72.02±2.09cd*	61.16±3.28d	82.41±4.03bc	92.94±3.32b	345.87±13.62a

*P-1~P-5 are the five phosphorus-solubilizing bacteria in this study. Different letters indicate significant differences in lactic acid content with changes in phosphorus-solubilizing bacteria (P<0.05)

Table S32. ANOVA (Ability of phosphate-Solubilizing bacteria to secrete lactic acid)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	175003.71	4	43750.93	959.729	P＜0.001
Within	455.868	10	45.587		
Total	175459.58	14			

Table S33. Duncan's post hoc test (Ability of phosphate-Solubilizing bacteria to secrete lactic acid

	N	Alpha=0.05			
		1	2	3	4
P-2	3	61.16			
P-1	3	72.0237	72.0237		
P-3	3		82.4117	82.4117	
P-4	3			92.9417	
P-5	3				345.871
Significance		0.077	0.089	0.085	1

Table S34. Ability of phosphate-Solubilizing bacteria to secrete oxalic acid (mg/L)

P-1	P-2	P-3	P-4	P-5
46.01±0.4c	55.21±2.48b*	80.31±3.28a	35.3±2.15b	18.72±1.55e

*P-1~P-5 are the five phosphorus-solubilizing bacteria in this study. Different letters indicate significant differences in oxalic acid content with changes in phosphorus-solubilizing bacteria (P<0.05)

Table S35. ANOVA (Ability of phosphate-Solubilizing bacteria to secrete oxalic acid)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	6342.755	4	1585.689	329.107	P＜0.001
Within	48.182	10	4.818		
Total	6390.937	14			

Table S36. Duncan's post hoc test (Ability of phosphate-Solubilizing bacteria to secrete oxalic acid)

	N	Alpha=0.05				
		1	2	3	4	5
P-5	3	18.7243				
P-4	3		35.3023			
P-1	3			46.0083		
P-2	3				55.2127	
P-3	3					80.3097
Significance		1	1	1	1	1

Table S37. Ability of potassium-Solubilizing bacteria to secrete citric acid (mg/L)

K-1	K-2	K-3	K-4
723.69±55.25a*	581.74±24.7b	395.19±45.68c	429.78±35.1c

*K-1~K-4 are the four potassium-solubilizing bacteria in this study. Different letters indicate significant differences in citric acid content with changes in potassium-solubilizing bacteria (P<0.05)

Table S38. ANOVA (Ability of potassium-Solubilizing bacteria to secrete citric acid)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	205149.54	3	68383.18	39.182	P＜0.001
Within	13962.188	8	1745.273		
Total	219111.72	11			

Table S39. Duncan's post hoc test (Ability of potassium-Solubilizing bacteria to secrete citric acid)

	N	Alpha=0.05		
		1	2	3
K-4	3	395.1887		
K-3	3	429.7763		
K-2	3		581.74	
K-1	3			723.686
Significance		0.34	1	1

Table S40. Ability of potassium-Solubilizing bacteria to secrete lactic acid (mg/L)

K-1	K-2	K-3	K-4
15.28±0.56d*	109.6±3.43a	87.2±3.51b	61.12±2.27c

*K-1~K-4 are the four potassium-solubilizing bacteria in this study. Different letters indicate significant differences in lactic acid content with changes in potassium-solubilizing bacteria (P<0.05)

Table S41. ANOVA (Ability of potassium-Solubilizing bacteria to secrete lactic acid)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	14777.268	3	4925.756	666.796	P＜0.001
Within	59.098	8	7.387		
Total	14836.366	11			

Table S42. Duncan's post hoc test (Ability of potassium-Solubilizing bacteria to secrete lactic acid)

	N	Alpha=0.05			
		1	2	3	4
K-4	3	15.278			
K-1	3		61.12		
K-3	3			87.2043	
K-2	3				109.5977
Significance		1	1	1	1

Table S43. Ability of potassium-Solubilizing bacteria to secrete oxalic acid (mg/L)

K-1	K-2	K-3	K-4
7.12±0.23c*	18.94±0.87a	9.12±0.51b	8.57±0.5b

*K-1~K-4 are the four potassium-solubilizing bacteria in this study. Different letters indicate significant differences in oxalic acid content with changes in potassium-solubilizing bacteria (P<0.05)

Table S44. ANOVA (Ability of potassium-Solubilizing bacteria to secrete oxalic acid)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	262.842	3	87.614	265.616	P＜0.001
Within	2.639	8	0.33		
Total	265.481	11			

Table S45. Duncan's post hoc test (Ability of potassium-Solubilizing bacteria to secrete oxalic acid)

	N	Alpha=0.05		
		1	2	3
K1	3	7.1157		
K4	3		8.5653	
K3	3		9.1157	
K2	3			18.9413
Significance		1	0.274	1

Table S46. Phosphorus solubilizing quantity of mixed bacteria (AP content of supernatant, mg/L)

H-1	H-2	H-3	H-4	H-5	H-6	H-7	H-8	H-9	H-10
36.85±1.20de*	52.94±3.95b	43.00±3.60c	41.16±1.76cd	61.58±4.05a	46.44±3.96c	20.30±2.45g	42.18±1.18c	32.67±3.45ef	27.98±1.47f

*H-1~H-10 are the ten mixed bacteria of this study. Different letters indicate significant differences in phosphorus solubilizing quantity with changes in mixed bacteria (P<0.05).

Table S47. ANOVA (Phosphorus solubilizing quantity of mixed bacterial)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	3850.012	9	427.779	49.34	P＜0.001
Within	173.399	20	8.67		
Total	4023.411	29			

Table S48. Duncan's post hoc test (Phosphorus solubilizing quantity of mixed bacterial)

	N	Alpha=0.05						
		1	2	3	4	5	6	7
H-7	3	20.301						
H-10	3		27.9767					
H-9	3		32.6737	32.6737				
H-1	3			36.8523	36.8523			
H-4	3				41.165	41.165		
H-8	3					42.1837		
H-3	3					43.0023		
H-6	3					46.4447		
H-2	3						52.9437	
H-5	3							61.5767
Significance		1	0.065	0.098	0.088	0.056	1	1

Table S49. Potassium solubilizing quantity of mixed bacteria (AK content of supernatant, mg/L)

H-1	H-2	H-3	H-4	H-5	H-6	H-7	H-8	H-9	H-10
19.59±0.59f	30.48±1.21c	33.6±1.19b	30.75±1.38c	37.59±2.41a	28.14±1.69d	25.17±1.10e	11.81±0.69g	7.72±0.22h	12.53±0.58g

Table S50. ANOVA (Potassium solubilizing quantity of mixed bacterial)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	2839.938	9	315.549	198.509	P＜0.001
Within	31.792	20	1.59		
Total	2871.73	29			

Table S51. Duncan's post hoc test (Potassium solubilizing quantity of mixed bacterial)

	N	Alpha=0.05							
		1	2	3	4	5	6	7	8
H-9	3	7.7197							
H-8	3		11.813						
H-10	3		12.5323						
H-1	3			19.5933					
H-7	3				25.1727				
H-6	3					28.136			
H-2	3						30.482		
H-4	3						30.7523		
H-3	3							33.5967	
H-5	3								37.5883
Significance		1	0.493	1	1	1	0.796	1	1

Table S52. Soybean stem thicknessk (mm)

Processing number	V5 period	R2 period	R5 period
BKL	0.44±0.02b*	0.76±0.01c	0.91±0.02b
PSB	0.46±0.02b	0.88±0.04b	1.03±0.04ab
KSB	0.56±0.03a	0.91±0.02b	1.05±0.13ab
MSB	0.58±0.01a	0.97±0.05a	1.09±0.06a

*Different letters indicate significant differences in soybean stem thicknessk with changes in different treatments (P<0.05).

Table S53. ANOVA (Soybean stem thickness at V5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.045	3	0.015	30.606	P＜0.001
Within	0.004	8	0		
Total	0.049	11			

Table S54. Duncan's post hoc test (Soybean stem thickness at V5 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.4417	
PSB	3	0.4587	
KSB	3		0.5637
MSB	3		0.579
Significance		0.374	0.42

Table S55. ANOVA (Soybean stem thickness at R2 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.076	3	0.025	22.09	P＜0.001
Within	0.009	8	0.001		
Total	0.085	11			

Table S56. Duncan's post hoc test (Soybean stem thickness at R2 period)

	N	Alpha=0.05		
		1	2	3
BKL	3	0.7557		
PSB	3		0.8753	
KSB	3		0.9103	
MSB	3			0.9743
Significance		1	0.241	1

Table S57. ANOVA (Soybean stem thickness at R5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.057	3	0.019	3.137	P=0.087
Within	0.049	8	0.006		
Total	0.106	11			

Table S58. Duncan's post hoc test (Soybean stem thickness at R5 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.91	
PSB	3	1.0333	1.0333
KSB	3	1.055	1.055
MSB	3		1.0947
Significance		0.06	0.382

Table S59. Soybean leaf area (mm^2)

Processing number	V5 period	R2 period	R5 period
BKL	2.12±0.1b*	2.86±0.13c	3.23±0.18b
PSB	2.41±0.11a	3.31±0.11ab	3.51±0.26b
KSB	2.16±0.07b	3.26±0.19b	3.37±0.12b
MSB	2.45±0.2a	3.54±0.09a	3.89±0.05a

*Different letters indicate significant differences in Soybean leaf area with changes in different treatments (P<0.05).

Table S60. ANOVA (Soybean leaf area at V5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.249	3	0.083	5.062	P=0.03
Within	0.131	8	0.016		
Total	0.381	11			

Table S61. Duncan's post hoc test (Soybean leaf area at V5 period)

	N	Alpha=0.05	
		1	2
BKL	3	2.1247	
KSB	3	2.1623	
PSB	3		2.4067
MSB	3		2.451
Significance		0.728	0.683

Table S62. ANOVA (Soybean leaf area at R2 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.723	3	0.241	13.263	P=0.002
Within	0.145	8	0.018		
Total	0.868	11			

Table S63. Duncan's post hoc test (Soybean leaf area at R2 period)

	N	Alpha=0.05		
		1	2	3
BKL	3	2.8627		
KSB	3		3.2597	
PSB	3		3.3127	3.3127
MSB	3			3.545
Significance		1	0.643	0.068

Table S64. ANOVA (Soybean leaf area at R5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.729	3	0.243	8.356	P=0.008
Within	0.233	8	0.029		
Total	0.962	11			

Table S65. Duncan's post hoc test (Soybean leaf area at R5 period)

	N	Alpha=0.05	
		1	2
BKL	3	3.2333	
KSB	3	3.3673	
PSB	3	3.509	
MSB	3		3.8927
Significance		0.094	1

Table S66. Phosphorus content of soybean stems (mg/kg)

Processing number	V5 period	R2 period	R5 period
BKL	0.28±0.02b*	0.27±0.01b	0.24±0.02b
KSB	0.39±0.02a	0.36±0.04a	0.3±0.03a
PSB	0.31±0.02b	0.3±0.02b	0.27±0.01ab
MSB	0.4±0.02a	0.38±0.01a	0.31±0.02a

*Different letters indicate significant differences in Phosphorus content of soybean stems with changes in different treatments (P<0.05).

Table S67. ANOVA (Phosphorus content of soybean stems at V5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.033	3	0.011	24.33	P＜0.001
Within	0.004	8	0		
Total	0.036	11			

Table S68. Duncan's post hoc test (Phosphorus content of soybean stems at V5 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.276	
KSB	3	0.3123	
PSB	3		0.3853
MSB	3		0.404
Significance		0.069	0.312

Table S69. ANOVA (Phosphorus content of soybean stems at R2 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.025	3	0.008	19.345	P＜0.001
Within	0.003	8	0		
Total	0.028	11			

Table S70. Duncan's post hoc test (Phosphorus content of soybean stems at R2 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.2667	
LSB	3	0.3023	
PSB	3		0.3627
MSB	3		0.3793
Significance		0.067	0.352

Table S71. ANOVA (Phosphorus content of soybean stems at R5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.009	3	0.003	6.187	P=0.018
Within	0.004	8	0.001		
Total	0.013	11			

Table S72. Duncan's post hoc test (Phosphorus content of soybean stems at R5 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.239	
KSB	3	0.268	0.268
PSB	3		0.3037
MSB	3		0.307
Significance		0.152	0.075

Table S73. Phosphorus content of soybean leaves (mg/kg)

Processing number	V5 period	R2 period	R5 period
BKL	0.34±0b*	0.29±0c	0.25±0.01c
KSB	0.42±0.02a	0.37±0.02b	0.31±0.02b
MSB	0.35±0.03b	0.37±0.02b	0.3±0b
PSB	0.42±0.03a	0.41±0.01a	0.35±0.01a

*Different letters indicate significant differences in Phosphorus content of soybean leaves with changes in different treatments (P<0.05).

Table S74. ANOVA (Phosphorus content of soybean leaves at V5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.015	3	0.005	10.557	p=0.004
Within	0.004	8	0		
Total	0.019	11			

Table S75. Duncan's post hoc test (Phosphorus content of soybean leaves at V5 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.3427	
KSB	3	0.3537	
MSB	3		0.4153
PSB	3		0.4223
Significance		0.556	0.706

Table S76. ANOVA (Phosphorus content of soybean leaves at R2 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.024	3	0.008	32.111	$P<0.001$
Within	0.002	8	0		
Total	0.026	11			

Table S77. Duncan's post hoc test (Phosphorus content of soybean leaves at R2 period)

	N	Alpha=0.05		
		1	2	3
BKL	3	0.2873		
KSB	3		0.3683	
PSB	3		0.3723	
MSB	3			0.4093
Significance		1	0.763	1

Table S78. ANOVA (Phosphorus content of soybean leaves at R5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.015	3	0.005	34.033	$P<0.001$
Within	0.001	8	0		
Total	0.016	11			

Table S79. Duncan's post hoc test (Phosphorus content of soybean leaves at R5 period)

	N	Alpha=0.05		
		1	2	3
BKL	3	0.249		
KSB	3		0.3033	
PSB	3		0.3113	
MSB	3			0.3487
Significance		1	0.445	1

Table S80. Potassium content of soybean stems (mg/kg)

Processing number	V5 period	R2 period	R5 period
BKL	1.57±0.06b*	0.99±0.06b	0.89±0.06b
PSB	1.68±0.07ab	1.12±0.09ab	0.93±0.03ab
KSB	1.76±0.12a	1.2±0.04a	1.02±0.03a
MSB	1.81±0.09a	1.29±0.16a	1.02±0.08a

*Different letters indicate significant differences in Potassium content of soybean stems with changes in different treatments (P<0.05).

Table S81. ANOVA (Potassium content of soybean stems at V5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.098	3	0.033	4.392	P=0.042
Within	0.059	8	0.007		
Total	0.157	11			

Table S82. Duncan's post hoc test (Potassium content of soybean stems at V5 period)

	N	Alpha=0.05	
		1	2
BKL	3	1.571	
PSB	3	1.6803	1.6803
KSB	3		1.7647
MSB	3		1.807
Significance		0.158	0.122

Table S83. ANOVA (Potassium content of soybean stems at R2 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.139	3	0.046	4.609	0.037
Within	0.08	8	0.01		
Total	0.219	11			

Table S84. Duncan's post hoc test (Potassium content of soybean stems at R2 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.995	
PSB	3	1.121	1.121
KSB	3		1.1987
MSB	3		1.288
Significance		0.162	0.086

Table S85. ANOVA (Potassium content of soybean stems at R5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.038	3	0.013	4.018	P=0.051
Within	0.025	8	0.003		
Total	0.063	11			

Table S86. Duncan's post hoc test (Potassium content of soybean stems at R5 period)

	N	Alpha=0.05	
		1	2
BKL	3	0.8903	
PSB	3	0.9303	0.9303
MSB	3		1.0157
KSB	3		1.0227
Significance		0.408	0.089

Table S87. Potassium content of soybean leaves (mg/kg)

Processing number	V5 period	R2 period	R5 period
BKL	1.46±0.07c	0.97±0.03c	0.87±0.04b
PSB	1.57±0.07bc	1.13±0.06b	0.92±0.06ab
KSB	1.68±0.09ab	1.23±0.04b	0.95±0.07ab
MSB	1.83±0.14a	1.23±0.01a	1±0.05a

*Different letters indicate significant differences in Potassium content of soybean leaves with changes in different treatments (P<0.05).

Table S88. ANOVA (Potassium content of soybean leaves at V5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.225	3	0.075	7.727	P=0.01
Within	0.078	8	0.01		
Total	0.303	11			

Table S89. Duncan's post hoc test (Potassium content of soybean leaves at V5 period)

	N	Alpha=0.05		
		1	2	3
BKL	3	1.4637		
PSB	3	1.568	1.568	
KSB	3		1.683	1.683
MSB	3			1.8323
Significance		0.231	0.191	0.101

Table S90. ANOVA (Potassium content of soybean leaves at R2 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.134	3	0.045	27.65	P＜0.001
Within	0.013	8	0.002		
Total	0.147	11			

Table S91. Duncan's post hoc test (Potassium content of soybean leaves at R2 period)

	N	Alpha=0.05		
		1	2	3
BKL	3	0.973		
PSB	3		1.1293	
KSB	3			1.2307
MSB	3			1.2317
Significance		1	1	0.976

Table S92. ANOVA (Potassium content of soybean leaves at R5 period)

	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Between	0.026	3	0.009	2.679	P=0.118
Within	0.026	8	0.003		
Total	0.052	11			

Table S93. Duncan's post hoc test (Potassium content of soybean leaves at R5 period

	N	Alpha=0.05	
		1	2
BKL	3	0.8713	
PSB	3	0.9233	0.9233
KSB	3	0.954	0.954
MSB	3		0.9993
Significance		0.126	0.155