**Supplementary Table 1** Analysis of interactions between water salinity and purple nonsulfur bacteria on pHwater.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | | Water salinity (A) (‰) | | | | Mean |
| 0 | 2 | 3 | 4 |
| PNSB (B) (1.812 x 105 CFU g-1 dry soil) | NAPNSB | 3.74±0.07d | 3.75±0.04d | 3.73±0.11d | 3.81±0.02bcd | 3.75±0.06B |
| EPS18 | 3.81±0.04bcd | 3.81±0.08bcd | 4.04±0.12ab | 4.05±0.12ab | 3.92±0.09A |
| EPS37 | 3.77±0.05cd | 4.14±0.57a | 4.05±0.15ab | 3.86±0.05bcd | 3.95±0.21A |
| EPS54 | 3.70±0.07d | 3.75±0.06d | 4.02±0.17abc | 3.90±0.05a-d | 3.83±0.09AB |
| MTPNSB | 3.87±0.08bcd | 3.91±0.01a-d | 3.85±0.07bcd | 3.90±0.10a-d | 3.88±0.06A |
| Mean | | 3.77±0.06B | 3.87±0.15AB | 3.93±0.12A | 3.90±0.07A |  |
| F (A) | | | | | | \* |
| F (B) | | | | | | \* |
| F (A x B) | | | | | | \* |
| CV (%) | | | | | | 3.88 |

*Note: NAPNSB: No application of purple non-sulfur bacteria*, *EPS18: application of EPS18 strain; EPS37: application of EPS37 strain; EPS54: application of EPS54 strain; MTPNSB: application of the mixture of strains EPS18, EPS37 and* *EPS54. The identical lowercase letters indicate insignificant differences between numbers in the same pool, while the identical uppercase letters indicate insignificant differences between numbers in the same column or row (P < 0.05).*

**Supplementary Table 2** Analysis of interactions between water salinity and purple nonsulfur bacteria on pHKCl.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | | Water salinity (A) (‰) | | | | Mean |
| 0 | 2 | 3 | 4 |
| PNSB (B) (1.812 x 105 CFU g-1 dry soil) | NAPNSB | 3.34±0.05ab | 3.32±0.03abc | 3.35±0.08ab | 3.34±0.08ab | 3.33±0.06 |
| EPS18 | 3.29±0.07bc | 3.30±0.13bc | 3.34±0.12ab | 3.38±0.12ab | 3.30±0.11 |
| EPS37 | 3.20±0.02cd | 3.45±0.17a | 3.32±0.02abc | 3.25±0.04bcd | 3.30±0.06 |
| EPS54 | 3.24±0.03bcd | 3.15±0.09d | 3.36±0.06ab | 3.36±0.04ab | 3.27±0.06 |
| MTPNSB | 3.30±0.01bc | 3.28±0.07bc | 3.27±0.04bcd | 3.29±0.08bc | 3.28±0.05 |
| Mean | | 3.27±0.04 | 3.29±0.10 | 3.32±0.06 | 3.32±0.07 |  |
| F (A) | | | | | | ns |
| F (B) | | | | | | ns |
| F (A x B) | | | | | | \* |
| CV (%) | | | | | | 2.46 |

*Note: NAPNSB: No application of purple non-sulfur bacteria*, *EPS18: application of EPS18 strain; EPS37: application of EPS37 strain; EPS54: application of EPS54 strain; MTPNSB: application of the mixture of strains EPS18, EPS37 and* *EPS54. The identical lowercase letters indicate insignificant differences between numbers in the same pool, while the identical uppercase letters indicate insignificant differences between numbers in the same column or row (P < 0.05).*

**Supplementary Table 3** Analysis of interactions between water salinity and purple nonsulfur bacteria on Na content in soil.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | | Water salinity (A) (‰) | | | | Mean |
| 0 | 2 | 3 | 4 |
| PNSB (B) (1.812 x 105 CFU g-1 dry soil) | NAPNSB | 1.020±0.067b | 1.158±0.024a | 1.250±0.062a | 1.150±0.083a | 1.144±0.059A |
| EPS18 | 0.948±0.053bcd | 0.720±0.088gh | 0.815±0.133d-g | 0.868±0.010c-f | 0.837±0.071AB |
| EPS37 | 0.753±0.101fgh | 0.843±0.051d-g | 0.985±0.087bc | 0.923±0.099b-e | 0.875±0.084B |
| EPS54 | 0.810±0.090efg | 0.885±0.110c-f | 0.908±0.125b-e | 0.985±0.075bc | 0.896±0.100B |
| MTPNSB | 0.643±0.010h | 0.800±0.051efg | 0.885±0.096c-f | 0.858±0.085c-f | 0.796±0.060C |
| Mean | | 0.835±0.064B | 0.881±0.065B | 0.968±0.101A | 0.956±0.070A |  |
| F (A) | | | | | | \* |
| F (B) | | | | | | \* |
| F (A x B) | | | | | | \* |
| CV (%) | | | | | | 9.16 |

*Note: NAPNSB: No application of purple non-sulfur bacteria*, *EPS18: application of EPS18 strain; EPS37: application of EPS37 strain; EPS54: application of EPS54 strain; MTPNSB: application of the mixture of strains EPS18, EPS37 and* *EPS54. The identical lowercase letters indicate insignificant differences between numbers in the same pool, while the identical uppercase letters indicate insignificant differences between numbers in the same column or row (P < 0.05).*

**Supplementary Table 4** Analysis of interactions between water salinity and purple nonsulfur bacteria on dry biomass of stem and leaves.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | | Water salinity (A) (‰) | | | | Mean |
| 0 | 2 | 3 | 4 |
| PNSB (B) (1.812 x 105 CFU g-1 dry soil) | NAPNSB | 23.4±1.04fgh | 23.4±1.13fgh | 23.3±2.36f-i | 19.9±2.04j | 22.5±1.64C |
| EPS18 | 26.4±0.48cde | 23.4±0.73fgh | 20.8±0.24ij | 20.9±2.04hij | 22.8±0.88C |
| EPS37 | 24.0±0.57efg | 24.4±1.43efg | 23.3±1.02f-i | 24.4±1.43efg | 24.0±1.12B |
| EPS54 | 29.1±1.73b | 25.4±1.73def | 22.0±2.48g-j | 22.0±0.90g-j | 24.6±1.71B |
| MTPNSB | 31.9±1.89a | 28.7±1.99bc | 27.2±2.41bcd | 24.2±1.10efg | 28.0±1.85A |
| Mean | | 27.0±1.14A | 25.0±1.40B | 23.3±1.71C | 22.2±1.50D |  |
| F (A) | | | | | | \* |
| F (B) | | | | | | \* |
| F (A x B) | | | | | | \* |
| CV (%) | | | | | | 6.54 |

*Note: NAPNSB: No application of purple non-sulfur bacteria*, *EPS18: application of EPS18 strain; EPS37: application of EPS37 strain; EPS54: application of EPS54 strain; MTPNSB: application of the mixture of strains EPS18, EPS37 and* *EPS54. The identical lowercase letters indicate insignificant differences between numbers in the same pool, while the identical uppercase letters indicate insignificant differences between numbers in the same column or row (P < 0.05).*

**Supplementary Table 5** Analysis of interactions between water salinity and purple nonsulfur bacteria on dry biomass of grain.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | | Water salinity (A) (‰) | | | | Mean |
| 0 | 2 | 3 | 4 |
| PNSB (B) (1.812 x 105 CFU g-1 dry soil) | NAPNSB | 14.3±0.36gh | 11.9±0.17i | 11.4±0.92ij | 10.5±0.34j | 12.0±0.45C |
| EPS18 | 16.6±0.59de | 15.6±0.77ef | 14.4±1.09fgh | 14.7±0.53fgh | 15.3±0.74B |
| EPS37 | 18.2±0.65ab | 16.5±0.34de | 14.6±0.33fgh | 13.6±0.85h | 15.7±0.54B |
| EPS54 | 17.8±1.22bc | 16.5±0.41de | 16.3±1.36de | 14.9±1.28fg | 16.3±1.07A |
| MTPNSB | 19.1±0.77a | 17.0±0.47cd | 15.5±0.61efg | 14.4±0.49fgh | 16.5±0.59A |
| Mean | | 17.2±0.72A | 15.5±0.43B | 14.4±0.86C | 13.6±0.70D |  |
| F (A) | | | | | | \* |
| F (B) | | | | | | \* |
| F (A x B) | | | | | | \* |
| CV (%) | | | | | | 2.36 |

*Note: NAPNSB: No application of purple non-sulfur bacteria*, *EPS18: application of EPS18 strain; EPS37: application of EPS37 strain; EPS54: application of EPS54 strain; MTPNSB: application of the mixture of strains EPS18, EPS37 and* *EPS54. The identical lowercase letters indicate insignificant differences between numbers in the same pool, while the identical uppercase letters indicate insignificant differences between numbers in the same column or row (P < 0.05).*

**Supplementary Table 6** Analysis of interactions between water salinity and purple nonsulfur bacteria on total K uptake.

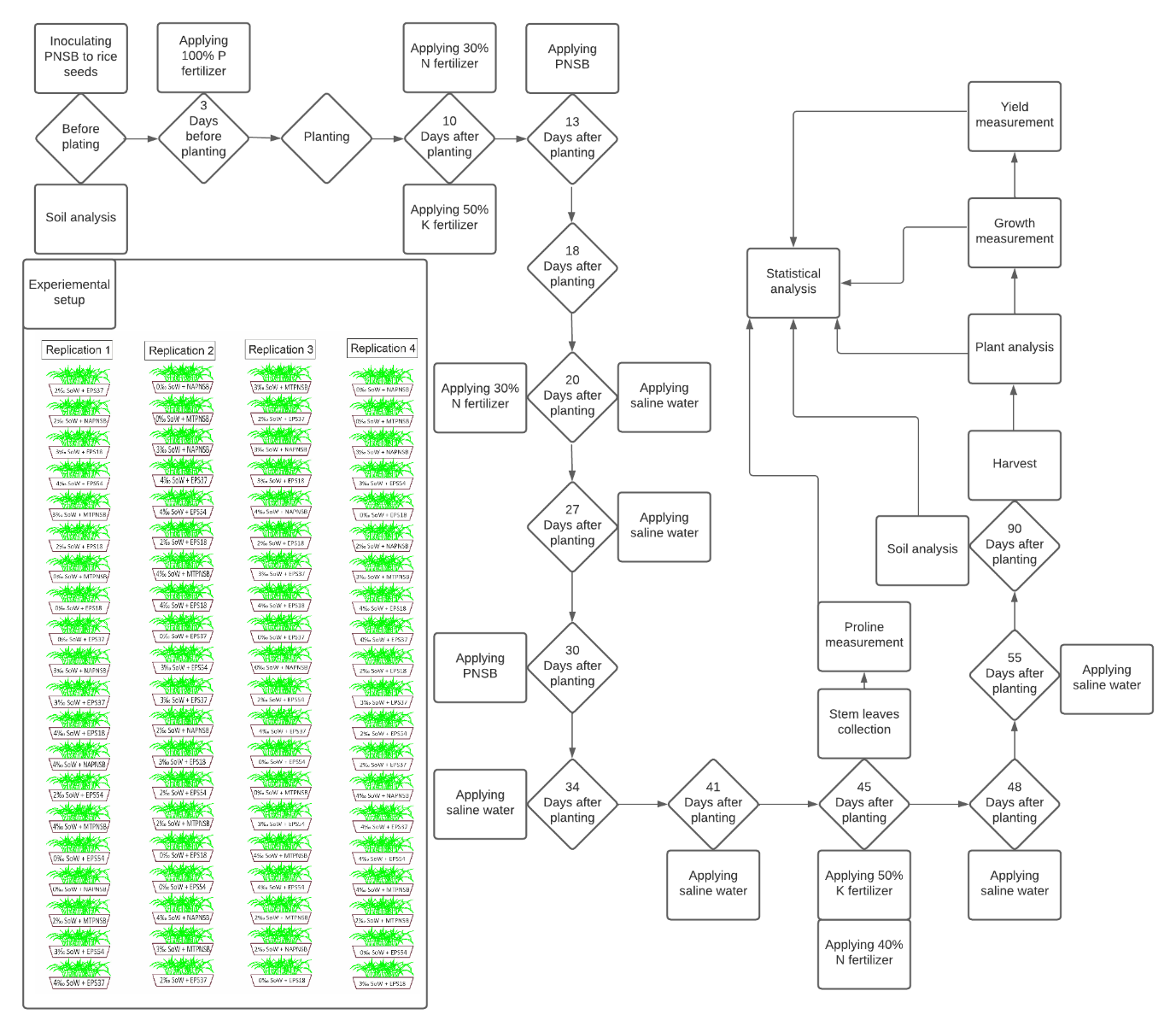
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | | Water salinity (A) (‰) | | | | Mean |
| 0 | 2 | 3 | 4 |
| PNSB (B) (1.812 x 105 CFU g-1 dry soil) | NAPNSB | 322.2±18.1i | 345.5±37.6hi | 316.8±73.4i | 303.9±31.5i | 322.1±40.1D |
| EPS18 | 543.0±17.4c | 458.5±29.1def | 444.6±9.2d-g | 382.0±44.3gh | 457.0±25.0BC |
| EPS37 | 406.3±30.5fg | 468.1±53.5def | 423.1±21.4d-g | 479.9±36.3d | 444.3±35.4C |
| EPS54 | 625.5±53.5b | 471.1±58.9de | 409.3±24.2efg | 416.5±34.7d-g | 480.6±42.8B |
| MTPNSB | 693.0±56.0a | 552.2±10.2c | 562.4±45.7c | 390.0±22.4gh | 549.4±33.6A |
| Mean | | 518.0±35.1A | 459.1±37.8B | 459.1±37.8B | 394.5±33.8D |  |
| F (A) | | | | | | \* |
| F (B) | | | | | | \* |
| F (A x B) | | | | | | \* |
| CV (%) | | | | | | 8.54 |

*Note: NAPNSB: No application of purple non-sulfur bacteria*, *EPS18: application of EPS18 strain; EPS37: application of EPS37 strain; EPS54: application of EPS54 strain; MTPNSB: application of the mixture of strains EPS18, EPS37 and* *EPS54. The identical lowercase letters indicate insignificant differences between numbers in the same pool, while the identical uppercase letters indicate insignificant differences between numbers in the same column or row (P < 0.05).*

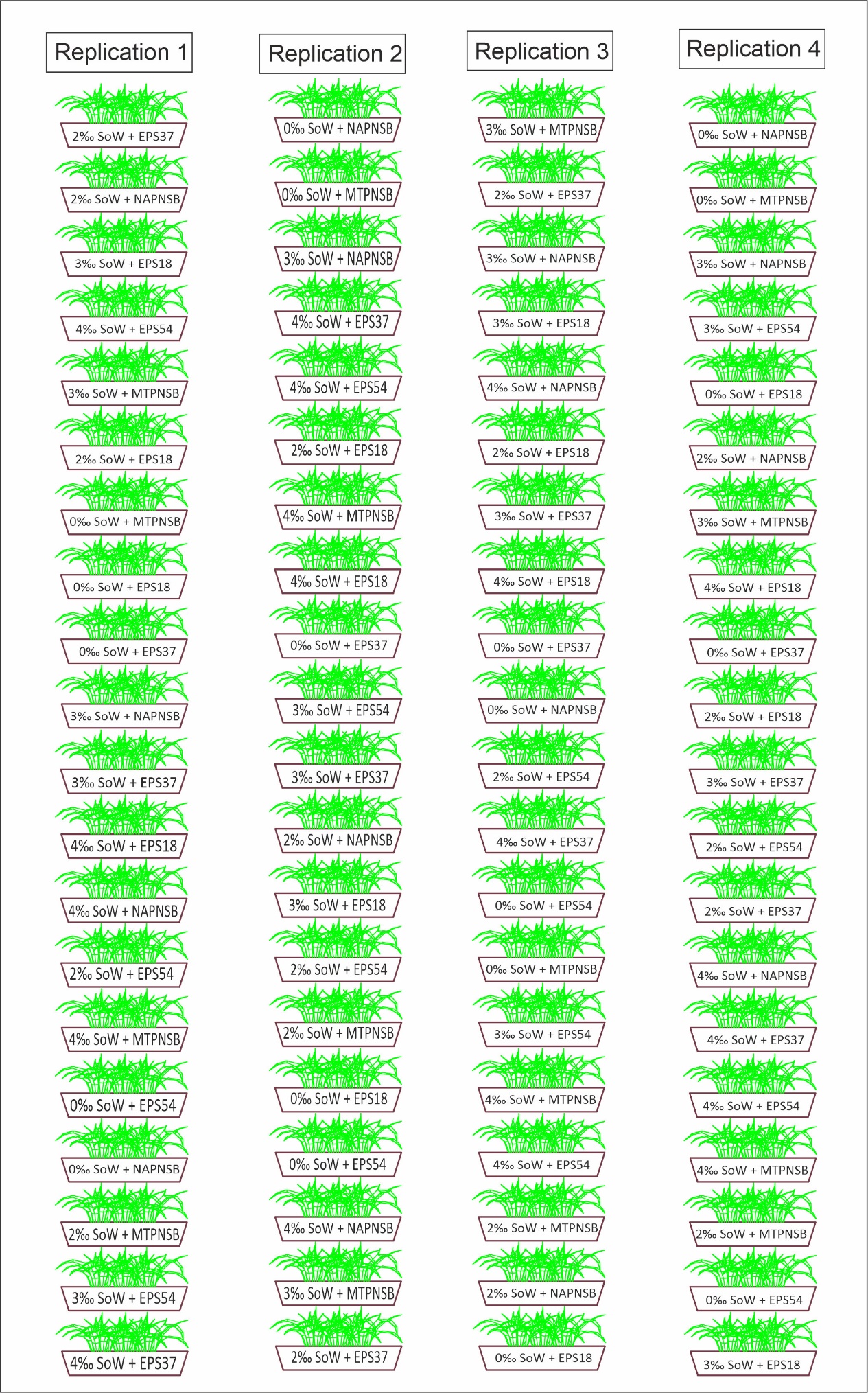
**Supplementary Table 7** Analysis of interactions between water salinity and purple nonsulfur bacteria on total Na uptake.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factors | | Water salinity (A) (‰) | | | | Mean |
| 0 | 2 | 3 | 4 |
| PNSB (B) (1.812 x 105 CFU g-1 dry soil) | NAPNSB | 131.5±8.7c-f | 155.5±22.5ab | 159.3±16.4a | 142.5±19.9a-d | 147.2±16.9A |
| EPS18 | 107.1±9.1fg | 99.9±15.7g | 112.2±6.8efg | 124.7±16.5c-f | 111.0±12.0C |
| EPS37 | 113.2±8.6efg | 120.9±11.9d-g | 122.1±9.2d-g | 156.0±8.8ab | 128.1±9.6B |
| EPS54 | 130.2±15.4c-f | 148.4±17.4abc | 130.9±16.0c-f | 133.2±7.8b-e | 135.7±14.2B |
| MTPNSB | 130.2±23.0c-f | 120.7±20.6d-g | 125.3±7.1c-f | 127.9±10.0c-f | 126.0±15.2B |
| Mean | | 122.4±13.0B | 129.1±17.6AB | 130.0±11.1AB | 136.8±12.6A |  |
| F (A) | | | | | | \* |
| F (B) | | | | | | \* |
| F (A x B) | | | | | | \* |
| CV (%) | | | | | | 11.4 |

*Note: NAPNSB: No application of purple non-sulfur bacteria*, *EPS18: application of EPS18 strain; EPS37: application of EPS37 strain; EPS54: application of EPS54 strain; MTPNSB: application of the mixture of strains EPS18, EPS37 and* *EPS54. The identical lowercase letters indicate insignificant differences between numbers in the same pool, while the identical uppercase letters indicate insignificant differences between numbers in the same column or row (P < 0.05).*



**Supplementary Figure 1** Research procedure.

****

**Supplementary Figure 2** Diagram of experimental design.