Supplementary Table 1: ANOVA-Results of the linear mixed model. ns = not significant, \* = p-value <0.05, \*\* = p-value<0.005, \*\*\* = p-value <0.0005. B = biostimulants, F = fertilizer, S = soil, T = time after fertilization. X means that the term was not included in the model of this response variable.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | CAL-P | Microbial Biomass P | Acid Phosphatase Activity | Alkaline Phosphatase Activity |
| B | \*\* | ns | ns | ns |
| F | \*\*\* | ns | \* | \* |
| S | \*\*\* | X | \*\*\* | \*\*\* |
| T | \*\*\* | ns | X | X |
| BxF | ns | ns | ns | ns |
| BxS | ns | X | ns | ns |
| BxT | ns | ns | X | X |
| FxS | \*\*\* | X | ns | ns |
| FxT | \*\*\* | ns | X | X |
| BxFxS | \* | X | ns | ns |
| BxFxT | ns | ns | X | X |
| BxSxT | ns | X | X | X |
| FxSxT | \*\*\* | X | X | X |
| BxFxSxT | ns | X | X | X |

Supplementary Table 2: ANOVA-Results of the linear mixed model. ns = not significant, \* = p-value <0.05, \*\* = p-value<0.005, \*\*\* = p-value <0.0005. B = biostimulants, F = fertilizer, T = time after fertilization. X means that the term was not included in the model of this response variable.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Plant traits measured several times during the growing period  | Plant traits measured once at harvest | CAL-P | Microbial Biomass P | Acid Phosphatase Activity | Alkaline Phosphatase Activity | pH |
| B | ns | ns | ns | \*\* | ns | ns | \* |
| F | \*\*\* | \*\*\* | \*\*\* | \*\*\* | ns | ns | \*\*\* |
| T | \*\*\* | X | \*\*\* | X | X | X | X |
| BxF | ns | ns | ns | \*\* | ns | ns | ns |
| BxT | ns | X | ns | X | X | X | X |
| FxT | \*\*\* | X | \*\*\* | X | X | X | X |
| BxFxT | ns | X | ns | X | X | X | X |



Supplementary Fig 1: Microbial Biomass P in dry soil in dependence on biostimulants and fertilization (n=180). Medians are displayed by bars with their confidence limits (α=0.05). C = Control, SSA = treated sewage sludge ash, STR = struvite containing P fertilizer, AE1+2 = plant extract, HA = humic acid, M1+2 = microbial consortia, C=control.

Supplementary Table 3: pH value in dependence on biostimulants, soil and fertilizer. AE1+2 = plant extract, HA = humic acid, M1+2 = microbial consortia. C = Control, SSA = treated sewage sludge ash, STR = struvite containing P fertilizer.

|  |  |  |  |
| --- | --- | --- | --- |
| Biostimulant | Soil | Fertilizer | pH |
| AE1 |  |  | 5.3 |
| AE2 |  |  | 5.3 |
| HA |  |  | 5.3 |
| M1 |  |  | 5.3 |
| M2 |  |  | 5.3 |
| C |  |  | 5.3 |
|  | Class B | C | 5.6 |
|  | Class B | SSA | 5.7 |
|  | Class B | STR | 5.7 |
|  | Class A | C | 4.8 |
|  | Class A | SSA | 4.9 |
|  | Class A | STR | 4.9 |

Supplementary Table 4: pH value in dependence on biostimulants, soil and fertilizer. AE1 = plant extract, HA = humic acid, M2 = microbial consortia. C = Control, SSA = treated sewage sludge ash, STR = struvite containing P fertilizer.

|  |  |  |
| --- | --- | --- |
| Biostimulant | Fertilizer | pH |
| AE1 |  | 5.0 |
| HA |  | 5.0 |
| M2 |  | 5.0 |
| C |  | 5.0 |
|  | C | 4.9 |
|  | SSA | 5.1 |
|  | STR | 5.0 |