

Table S1. Effects of planting pattern and phosphorus application on topsoil mechanical aggregate.

| Treatment | >2 | | 2–1 | | 1–0.5 | | 0.5–0.25 | | <0.25 | |
|-------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> |
| P level | 63.6 | *** | 0.9 | ns | 18.2 | *** | 46.8 | *** | 21.0 | *** |
| Planting pattern | 43.0 | *** | 80.4 | *** | 8.1 | *** | 76.6 | *** | 187.2 | *** |
| P level × Planting pattern | 69.9 | *** | 14.2 | *** | 7.4 | *** | 110.2 | *** | 71.7 | *** |

F: equality of variances; *P*: significant test. *Significant at $P<0.05$. **Significant at $P<0.01$. ***Significant at $P<0.001$. ns: not significant. Data are presented as mean ± standard error.

Table S2. Effects of planting pattern and phosphorus application on topsoil water-stable aggregate.

| Treatment | >2 | | 2–1 | | 1–0.5 | | 0.5–0.25 | | 0.25–0.053 | | <0.053 | |
|----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|------------|----------|----------|----------|
| | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> |
| P level | 33.0 | *** | 97.8 | *** | 4.4 | * | 9.2 | ** | 10.1 | ** | 191.1 | *** |
| Planting pattern | 19.5 | *** | 90.4 | *** | 99.9 | *** | 4.8 | ** | 24.4 | *** | 54.9 | *** |
| P level × Planting pattern | 1.6 | ns | 0.3 | ns | 4.8 | ** | 0.2 | ns | 6.0 | ** | 3.0 | ns |

F: equality of variances; *P*: significant test. *Significant at $P<0.05$. **Significant at $P<0.01$. ***Significant at $P<0.001$. ns: not significant. Data are presented as mean \pm standard error.

Table S3. Effects of planting pattern and phosphorus application on topsoil organic carbon concentration in aggregates.

| Treatment | >2 | | 2–1 | | 1–0.5 | | 0.5–0.25 | | <0.25 | |
|----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> |
| P level | 193.5 | *** | 35.8 | *** | 29.3 | *** | 9.6 | *** | 47.0 | *** |
| Planting pattern | 100.3 | *** | 96.1 | *** | 42.3 | *** | 3.6 | *** | 8.9 | *** |
| P level × Planting pattern | 11.7 | *** | 28.2 | *** | 36.9 | *** | 8.8 | *** | 11.4 | *** |

F: equality of variances; *P*: significant test. *Significant at $P<0.05$. **Significant at $P<0.01$. ***Significant at $P<0.001$. ns: not significant. Data are presented as mean ± standard error.

Table S4. Effects of planting pattern and phosphorus application on topsoil organic carbon contribution rate in aggregates.

| Treatment | >2 | | 2–1 | | 1–0.5 | | 0.5–0.25 | | <0.25 | |
|----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> | <i>F</i> | <i>P</i> |
| P level | 5.6 | * | 15.1 | *** | 0.5 | ns | 2.3 | ns | 4.1 | ns |
| Planting pattern | 50.6 | *** | 7.7 | *** | 20.2 | *** | 70.4 | *** | 161.3 | *** |
| P level × Planting pattern | 39.8 | *** | 2.0 | ns | 11.4 | *** | 62.3 | *** | 39.7 | *** |

F: equality of variances; *P*: significant test. *Significant at $P<0.05$. **Significant at $P<0.01$. ***Significant at $P<0.001$. ns: not significant. Data are presented as mean ± standard error.