

**Table S1.** Effects of different management practices on soil properties in apple orchard

| Year | T <sup>1</sup> | NO <sub>3</sub> <sup>-</sup> -N (mg kg <sup>-1</sup> ) <sup>2</sup> |                | NH <sub>4</sub> <sup>+</sup> -N (mg kg <sup>-1</sup> ) <sup>3</sup> |                | WFPS (%) <sup>4</sup> |                 |
|------|----------------|---|----------------|---|----------------|-----------------------|-----------------|
|      |                | PM  | NM             | PM  | NM             | PM                    | NM              |
| 2018 | CK             | 9.05 ± 2.15 c   | 8.65 ± 2.66 c  | 7.64 ± 1.44 c   | 8.15 ± 2.23 c  | 17.38 ± 0.95 c        | 16.44 ± 2.77 b  |
|      | M              | 18.35 ± 4.25 b  | 13.39 ± 2.88 b | 13.23 ± 3.98 b  | 8.97 ± 2.50 c  | 22.38 ± 2.04 b        | 19.54 ± 3.84 a  |
|      | NPK            | 20.21 ± 5.36 ab   | 17.74 ± 3.39 a | 15.31 ± 3.16 a  | 10.37 ± 2.22 b | 22.59 ± 2.35 b        | 19.82 ± 3.26 a  |
|      | MNPK           | 22.45 ± 5.77 a  | 17.17 ± 4.16 a | 15.26 ± 2.94 a  | 11.05 ± 2.19 a | 26.04 ± 3.44 a        | 20.38 ± 2.47 a  |
| 2019 | CK             | 9.42 ± 2.33 c   | 8.93 ± 2.89 c  | 8.31 ± 1.25 c   | 6.69 ± 2.16 d  | 17.93 ± 0.25 c        | 17.28 ± 2.38 c  |
|      | M              | 20.65 ± 4.60 b  | 14.65 ± 3.42 b | 16.17 ± 3.13 b  | 8.81 ± 1.42 c  | 24.78 ± 2.15 ab       | 19.42 ± 3.33 b  |
|      | NPK            | 24.21 ± 5.43 a  | 18.87 ± 3.91 a | 17.59 ± 2.71 a  | 11.64 ± 2.09 b | 23.25 ± 2.61 b        | 20.98 ± 2.32 ab |
|      | MNPK           | 26.45 ± 4.88 a  | 20.23 ± 4.54 a | 18.15 ± 5.68 a  | 12.12 ± 2.14 a | 27.51 ± 2.94 a        | 22.33 ± 3.21 a  |
| 2020 | CK             | 10.13 ± 1.48 d  | 9.36 ± 2.32 d  | 9.22 ± 1.33 d   | 8.40 ± 2.21 d  | 20.45 ± 1.51 c        | 19.05 ± 0.98 c  |
|      | M              | 21.65 ± 3.45 c  | 18.02 ± 2.94 c | 18.42 ± 4.50 c  | 10.05 ± 2.18 c | 27.86 ± 3.18 b        | 24.35 ± 2.77 ab |
|      | NPK            | 24.45 ± 4.36 b  | 20.70 ± 4.59 b | 21.04 ± 5.26 b  | 13.21 ± 2.40 b | 26.21 ± 3.34 b        | 22.69 ± 3.39 b  |
|      | MNPK           | 27.73 ± 5.32 a  | 23.13 ± 1.63 a | 22.42 ± 4.09 a  | 15.33 ± 3.45 a | 31.49 ± 3.25 a        | 26.23 ± 3.97 a  |
| AV   | CK             | 9.53 ± 0.55 d   | 8.98 ± 0.36 c  | 8.39 ± 0.74 c   | 7.75 ± 0.93 d  | 18.59 ± 3.78 c        | 17.59 ± 2.41 c  |
|      | M              | 20.23 ± 1.68 c  | 15.35 ± 2.40 b | 15.94 ± 2.46 b  | 9.28 ± 0.68 c  | 25.01 ± 3.34 b        | 21.10 ± 3.35 b  |
|      | NPK            | 22.96 ± 2.38 b  | 19.10 ± 1.49 a | 17.98 ± 2.55 a  | 11.73 ± 1.44 b | 24.02 ± 1.08 b        | 21.17 ± 3.04 b  |
|      | MNPK           | 25.54 ± 2.75 a  | 20.18 ± 2.98 a | 18.61 ± 3.07 a  | 12.83 ± 2.23 a | 28.35 ± 2.28 a        | 22.98 ± 3.21 a  |

<sup>1</sup> T: Treatment, PM: plastic mulching, NM: no mulching, CK: control, M: organic fertilizer, NPK: inorganic fertilizer, MNPK: organic combined with inorganic fertilizer, AV: average. <sup>2</sup> apple production. <sup>3</sup> NO<sub>3</sub><sup>-</sup>-N: nitrate nitrogen. <sup>4</sup> NH<sub>4</sub><sup>+</sup>-N: ammonium nitrogen. <sup>5</sup> WFPS: N<sub>2</sub>O emission factor, The data in the table are the mean ± standard deviation, n = 3; different letters in the same column indicate significant differences among treatments (*p* < 0.05).