**Supplementary section**

Table S1 Location information and chemical properties of four farming soils

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sample site | Geographic ordinate | Soil type | δ13C  (‰PDB) | SOC (g/kg) | Total N ( g/kg ) | pH |
| Harbin, Heilongjiang Province | 126°39′E, 45°37′N | Phaeozem | -21.59 | 15.88 | 1.33 | 5.87 |
| Puyang, Henan Province | 115°52′E, 35°30′N | Fluvisol | -13.52 | 17.99 | 1.27 | 7.62 |
| Tumd Right Banner, Inner Mongolia Autonomous Region | 110º14′E, 40º14′N | Kastanozem | -14.99 | 17.00 | 1.60 | 7.34 |
| Wenshan Zhuang and Miao Autonomous Prefecture, Yunnan Province | 105°23′E, 23°44′N | Acrisol | -19.17 | 16.51 | 1.11 | 5.76 |



Temperature (oC)

Fig.S1 Temperature dynamics in OTC over the growth season. aT represents ambient temperature, eT means that the temperature is 2℃ higer than ambient temperature.