

1 **Supporting information**

2 **Historical nitrogen fertilizers use in China from 1952 to 2018**

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13 **Fig. S1** Supplementary information showing the datasets used for reconstruction and

14 spatialization of nitrogen fertilizers use in China.

15 **Fig. S2** Supplementary information showing nitrogen fertilizers use rate in major crop types

16 from 1952 to 2018 using data of nearby provinces for gap-filling.

17 **Fig. S3** Supplementary information showing nitrogen fertilizers use rate in major crop types

18 from 1952 to 2018 using data of national averages for gap-filling.

19 **Fig. S4** Supplementary information showing total nitrogen fertilizers input for each major crop

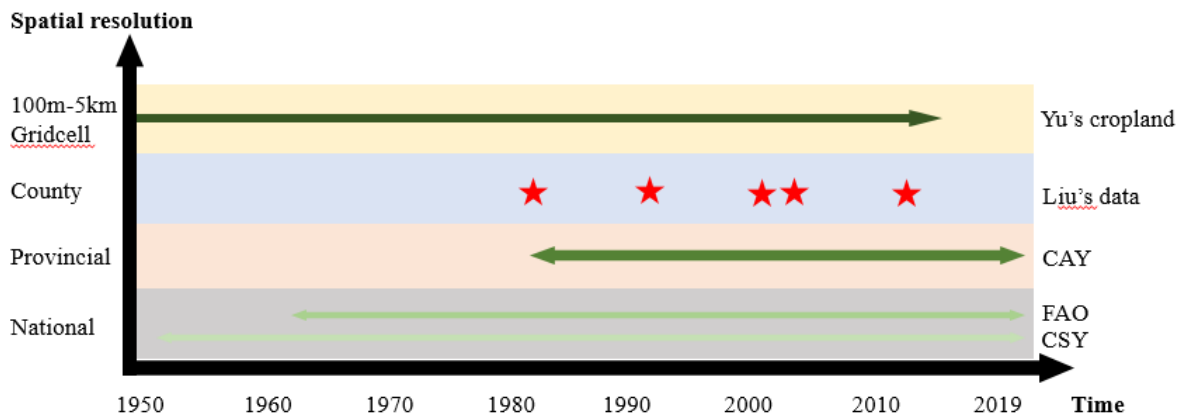
20 types from 1952 to 2018 using data of nearby provinces for gap-filling.

21 **Fig. S5** Supplementary information showing total nitrogen fertilizers input for each major crop

22 types from 1952 to 2018 using data of national averages for gap-filling.

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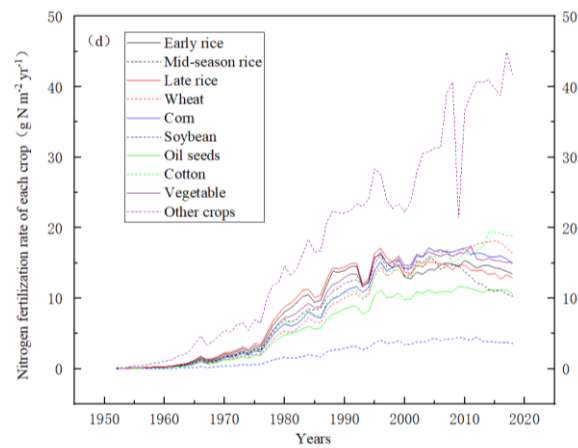
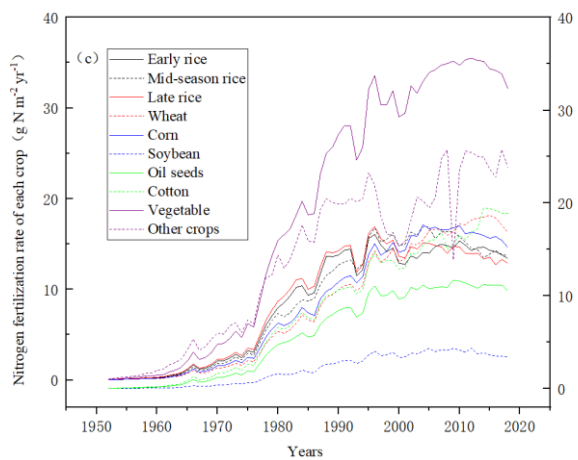
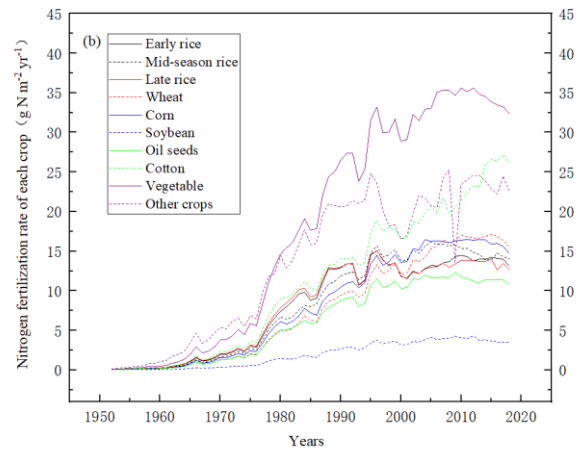
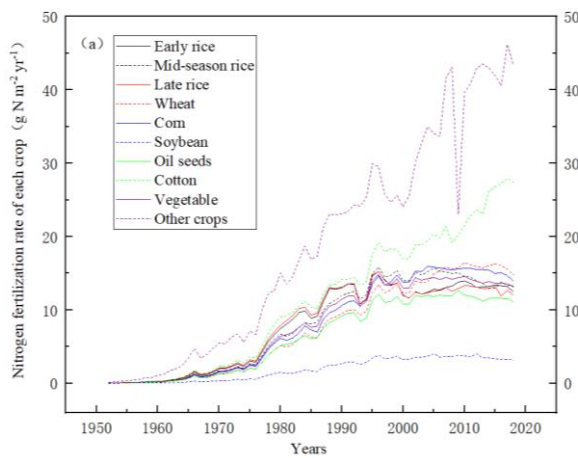
24 **Fig. S1** Supplementary information showing the datasets used for reconstruction and
25 spatialization of nitrogen fertilizers use in China. (Yu's cropland: the cropland data reconstructed
26 in Yu et al., (2021); Liu' data: crop rotation maps from Liu et al., (2018); CAY: Chinese
27 Agricultural Yearbook; FAO: FAO statistical database obtained from <http://faostat.fao.org>; CSY:
28 Chinese Statistical Yearbook).



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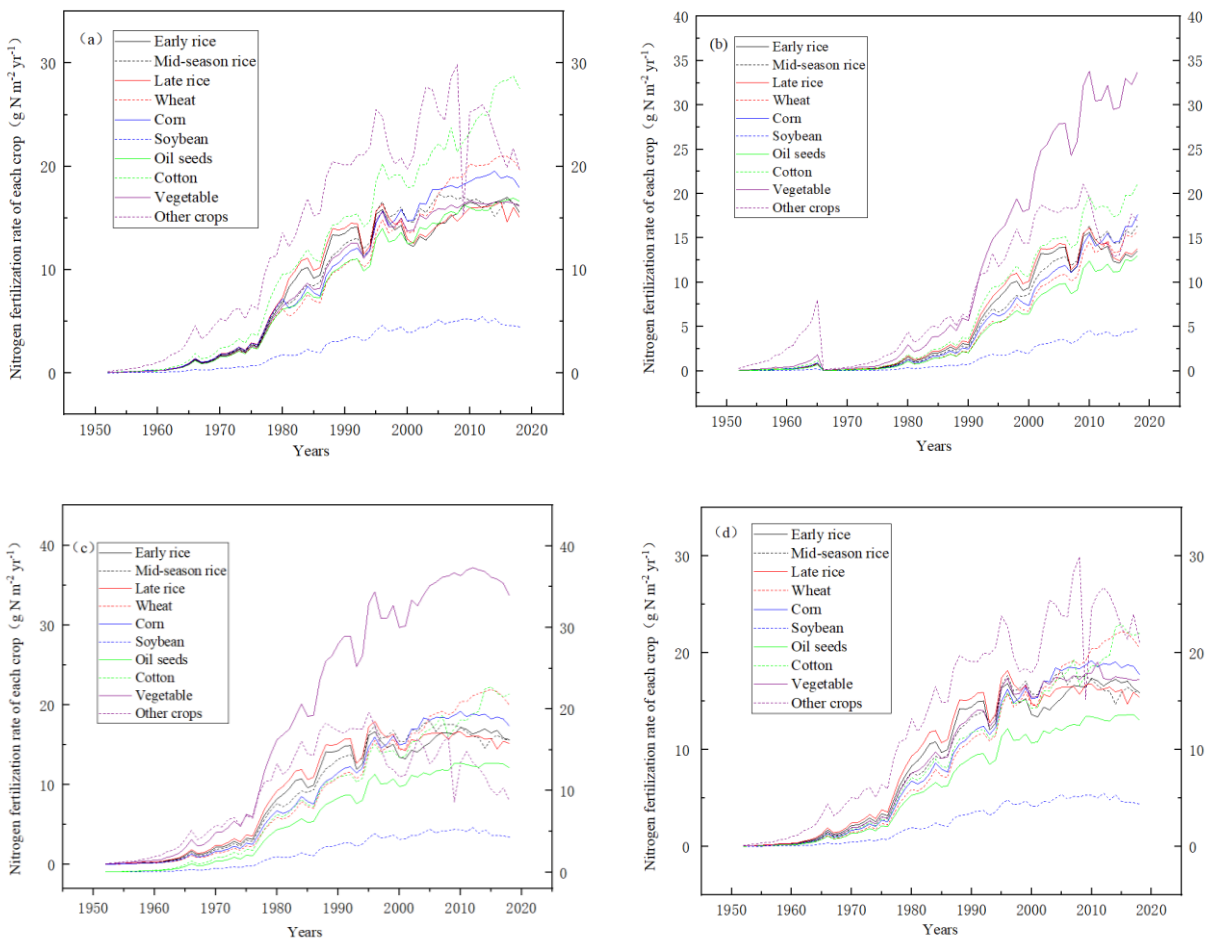
31 **Fig. S2** Supplementary information showing nitrogen fertilizers use rates in major crop types in
 32 China from 1952 to 2018 using data of nearby provinces for gap-filling. (panel a: N fertilizer rate
 33 of vegetable is the average of all other crops (except ‘Other crops’), and compound fertilizers
 34 contains 16% of N; panel b: N fertilizers use rates of vegetable is the average of all other crops
 35 (except ‘Other crops’), and compound fertilizer contains 33% of N; panel c: N fertilizer rate of
 36 vegetable is 3.3 times of the average rate of all other crops (except ‘Other crops’), and compound
 37 fertilizer contains 16% of N; panel b: N fertilizer rate of vegetable is 3.3 times of the average rate
 38 of all other crops (except ‘Other crops’), and compound fertilizer contains 33% of N; Unit: g N
 39 $\text{m}^{-2} \text{yr}^{-1}$)



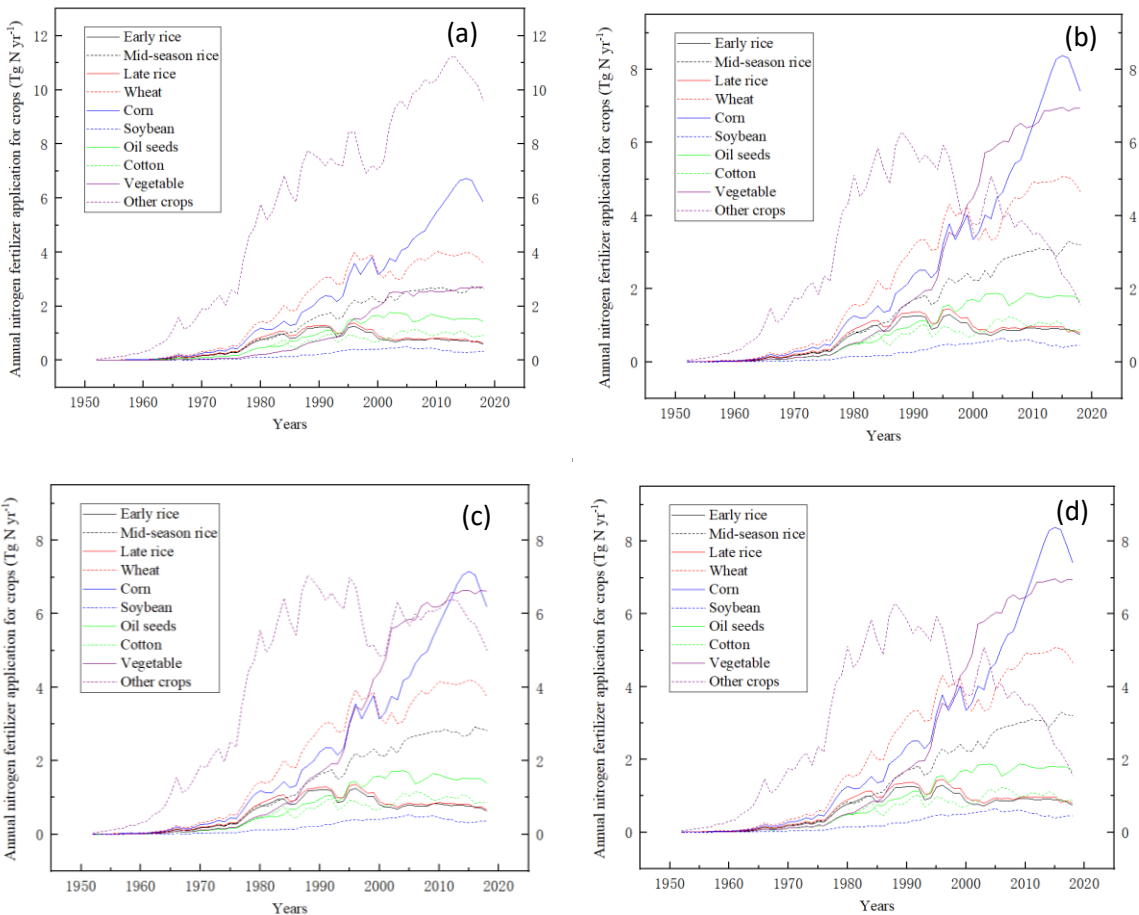
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42 **Fig. S3** Supplementary information showing nitrogen fertilizers use rates in major crop types in
 43 China from 1952 to 2018 using data of national averages for gap-filling. (panel a: N fertilizers
 44 use rate of vegetable is the average of all other crops (except ‘Other crops’), and compound
 45 fertilizer contains 16% of N; panel b: N fertilizer rate of vegetable is the average of all other
 46 crops (except ‘Other crops’), and compound fertilizer contains 33% of N; panel c: N fertilizers
 47 use rates of vegetable is 3.3 times of the average rate of all other crops (except ‘Other crops’),
 48 and compound fertilizer contains 16% of N; panel b: N fertilizers use rate of vegetable is 3.3
 49 times of the average rate of all other crops (except ‘Other crops’), and compound fertilizer
 50 contains 33% of N; Unit: $\text{g N m}^{-2} \text{yr}^{-1}$)



53 **Fig. S4** Supplementary information showing total nitrogen fertilizers input for each major crop
 54 types from 1952 to 2018 using data of nearby provinces for gap-filling. (panel a: N fertilizers use
 55 rates of vegetable is the average of all other crops (except ‘Other crops’), and compound
 56 fertilizer contains 16% of N; panel b: N fertilizer rate of vegetable is the average of all other
 57 crops (except ‘Other crops’), and compound fertilizer contains 33% of N; panel c: N fertilizer
 58 rate of vegetable is 3.3 times of the average rate of all other crops (except ‘Other crops’), and
 59 compound fertilizer contains 16% of N; panel b: N fertilizers use rates of vegetable is 3.3 times
 60 of the average rate of all other crops (except ‘Other crops’), and compound fertilizer contains
 61 33% of N; Unit: Tg N yr⁻¹)



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65 **Fig. S5** Supplementary information showing total nitrogen fertilizers input for each major crop
 66 types from 1952 to 2018 using data of national averages for gap-filling. (panel a: N fertilizer rate
 67 of vegetable is the average of all other crops (except ‘Other crops’), and compound fertilizer
 68 contains 16% of N; panel b: N fertilizers use rates of vegetable is the average of all other crops
 69 (except ‘Other crops’), and compound fertilizer contains 33% of N; panel c: N fertilizer use rates
 70 of vegetable is 3.3 times of the average rate of all other crops (except ‘Other crops’), and
 71 compound fertilizer contains 16% of N; panel b: N fertilizers use rates of vegetable is 3.3 times
 72 of the average rate of all other crops (except ‘Other crops’), and compound fertilizer contains
 73 33% of N; Unit: Tg N yr⁻¹)

