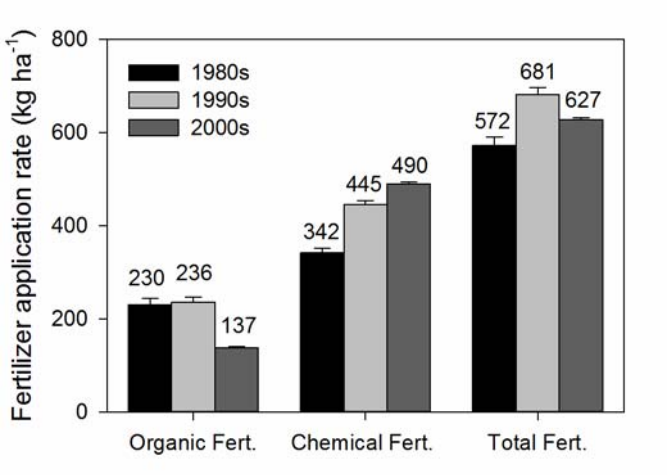
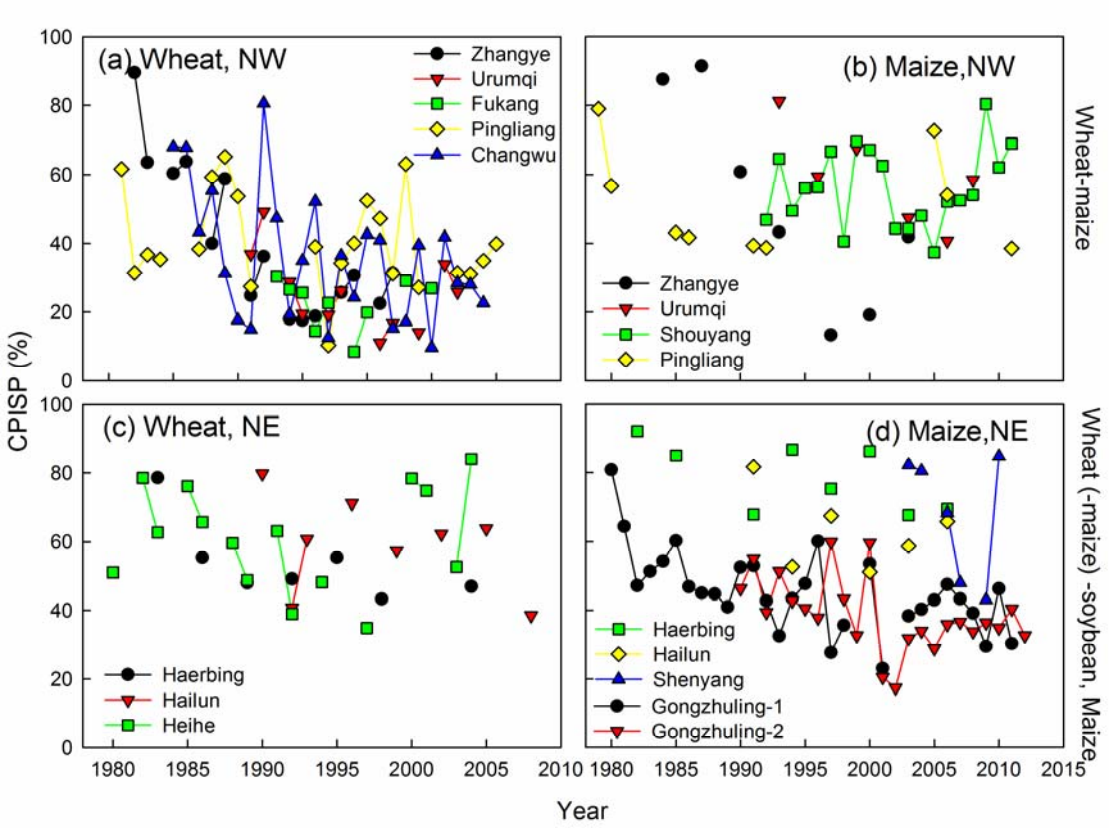
Appendix A General information of national soil quality monitoring network

Regions	Provinces	Soil type	Cropping
North	Beijing	Cinnamon soil, Fluvo-aquic soil	Wheat-maize
	Tianjin	Fluvo-aquic soil	Wheat-Maize, Rice-Cotton
	Hebei	Cinnamon soil, Fluvo-aquic soil, Castanozems	Wheat-Maize
	Inner Mongolia	Madow soil, Castano-cinnamon soils, Fluvo-aquic soil, Castanozems	Maize, Wheat, Potato
	Shanxi	Castano-cinnamon soils, Fluvo-aquic soil, Cinnamon soil	Maize, Wheat
	Henan	Sand ginger black soil, Paddy soil, Fluvo-aquic soil, yellow cinnamon soil, Castanozems	Wheat-Maize, Cotton, Rice
	Shandong	Sand ginger black soil, Fluvo-aquic soil, Castanozems, Brown soil; Skeletol soils	Wheat-Maize, Cotton
Northeast	Liaoning	Cinnamon soil, Brown soil, Meadow soil	Maize, Soybean, Rice
	Jilin	Black soil, Paddy soil, Chernozem soil, Albic soils	Maize, Rice
	Heilongjiang	Black soil, Meadow soil, Dark brown forest soil, Paddy soil, Albic soil, Chernozem soil	Maize, Soybean, Rice
East	Jiangsu	Paddy soil, Fluvo-aquic soil	Rice, Wheat
	Shanghai	Paddy soil	Rice, Vegetable
	Zhejiang	Paddy soil	Rice
	Jiangxi	Paddy soil, Red earths	Rice, Cotton, Wheat, Rape
	Anhui	Lime concretion black soil, Paddy soil, Fluvo-aquic soil	Wheat, Maize, Rape, Cotton
	Fujian	Paddy soil, Red earths	Rice, Sweet potato
South	Hubei	Paddy soil, Fluvo-aquic soil, Yellow brown	Rice, Cotton, Wheat, Rape
	Hunan	Paddy soil, Red earths	Rice, Cotton, Rape
	Guangdong	Paddy soil	Rice
	Guangxi	Paddy soil	Rice
	Hainan	Paddy soil	Rice
Southwest	Sichuan	Paddy soil, Purplish soil, Yellow earths	Rice, Maize, Rape, Wheat
	Chongqing	Paddy soil, Purplish soil	Rice, Bean, Maize
	Yunnan	Paddy soil, Red soil, Lateritic red soil	Rice, Maize, Wheat
	Guizhou	Paddy soil, Yellow earths, Calcareous soil	Rice, Maize
	Xizang	Cinnamon soil, Meadow soil, Chisley soil	Wheat, Barley
Northwest	Shanxi	Dark loessial soil, Cinnamon soil, Loessial soil	Wheat, Maize, Rape
	Gansu	Irrigated desert soils, Loessial soil, Dark loessial soil, Cierozems	Wheat, Maize, Potato
	Ningxia	Cumulated irrigated soil, Dark loessial soils	Rice,Wheat, Cotton
	Qinghai	Castanozems, Brown pedocals	Wheat, Potato

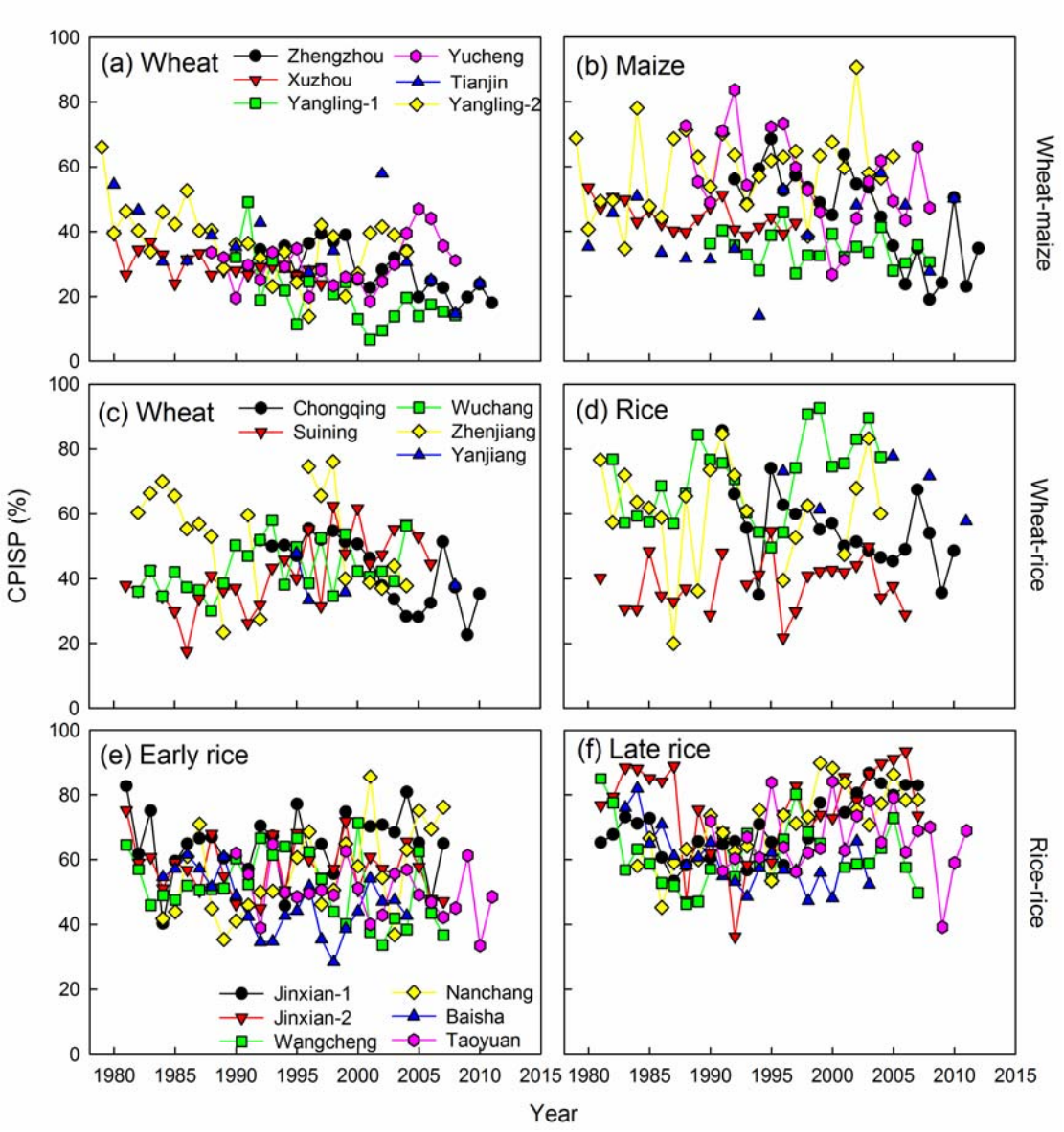
	Xinjiang	Cumulated irrigated soil, Fluvo-aquic soils	Cotton, Maize, Wheat, Vegetable



Appendix B Temporal changes in fertilization input in China



Appendix C CPISP for wheat and maize in northwest (a, b) and northeast (c, d) China (NW, Northwest; NE, Northeast)



Appendix D CPISP for wheat and maize in north (a, b) and south (c-f) China

Appendix E Previous reports of CPISP3 values in other countries

Year	Country	Crop	CPISP3 value	Reference
1996-1997	Argentina	Maize	69% (65%-73%)	Barbieri *et al.* (2008)
1997-1998	USA	Maize	80% (73%-88%)	Shapiro and Wortmann (2006)
2007-2009	USA	Maize	66% (63%-68%)	Liu and Wiatrak (2012)
1993-1995	Italy	Wheat	89% (89%-90%)	Guarda *et al.* (2004)
2008-2009	Iran	Wheat	82% (73%-98%)	Aynehband *et al.* (2010)

Notes: While no direct CPISP3 measurements have been reported by researchers working outside China in recent years, some measurements relating to unfertilized treatments have been published in various articles. The CPISP3 values presented in this table were calculated as the ratios of the crop yields for the fertilized and unfertilized treatments reported in the cited studies.

Aynehband, A., Moezi, A., Sabet, M., 2010. Agronomic assessment of grain yield and nitrogen loss and gain of old and modern wheat cultivars under warm climate. African Journal of Agricultural Research. 5, 222-229.

Barbieri, P.A., Echeverría, H.E., Saínz Rozas, H.R., Andrade, F.H., 2008. Nitrogen use efficiency in maize as affected by nitrogen availability and row spacing. Agronomy Journal. 100, 1094-1100.

Guarda, G., Padovan, S., Delogu, G., 2004. Grain yield, nitrogen-use efficiency and baking quality of old and modern Italian bread-wheat cultivars grown at different nitrogen levels. European Journal of Agronomy. 21, 181-192.

Liu, K., Wiatrak, P., 2012. Corn production response to tillage and nitrogen

application in dry-land environment. Soil and Tillage Research. 124, 138-143.

Shapiro, C.A., Wortmann, C.S., 2006. Corn response to nitrogen rate, row spacing, and plant density in eastern Nebraska. Agronomy Journal. 98, 529-535.