

Supplementary Materials: Temporal and spatial variations of health costs caused by chemical fertilizer utilization in China from 1990 to 2012

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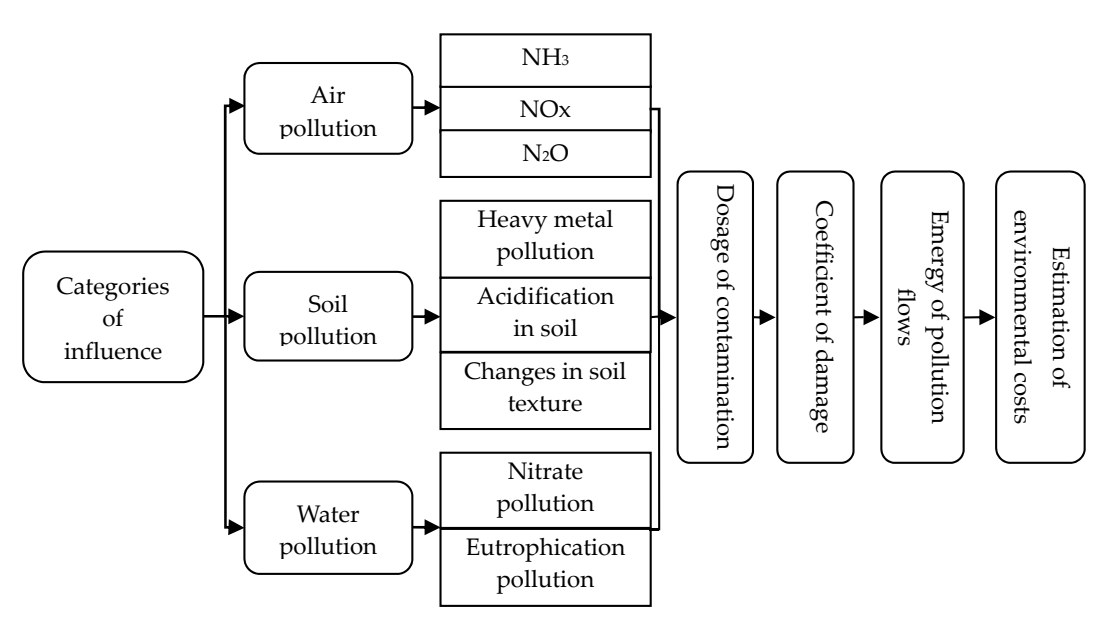


Figure S1. Scheme of the estimation of health costs of fertilizer utilization.

Table S1. Fertilizer intensity in China during the period of 1990-2012.

Year	Fertilizer consumption (10 ⁴ t)			Fertilizer intensity (sown area, kg hm ⁻²)			Fertilizer intensity (cultivated area, kg hm ⁻²)		
	Total	N	P ₂ O ₅	Total	N	P ₂ O ₅	Total	N	P ₂ O ₅
1990	2590.3	1638.4	462.4	174.6	110.4	31.2	201.3	127.4	35.9
1991	2805.1	1726.1	499.6	187.5	115.4	33.4	218.2	134.3	38.9
1992	2930.2	1756.1	515.7	196.6	117.9	34.6	227.9	136.6	40.1
1993	3151.9	1835.1	575.1	213.3	124.2	38.9	244.6	142.4	44.6
1994	3317.9	1882	600.7	223.8	127	40.5	256.8	145.7	46.5
1995	3593.7	2021.9	632.4	239.8	134.9	42.2	277.2	156.0	48.8
1996	3827.9	2145.3	658.4	251.2	140.8	43.2	294.4	165.0	50.6
1997	3980.7	2171.7	689.1	258.5	141	44.8	306.4	167.1	53.0
1998	4083.7	2233.3	682.5	262.3	143.4	43.8	314.9	172.2	52.6
1999	4124.3	2180.9	697.8	263.7	139.5	44.6	319.2	168.8	54.0
2000	4146.4	2161.5	690.5	265.3	138.3	44.2	323.3	168.6	53.8
2001	4253.8	2164.1	705.7	273.2	139	45.3	309.5	157.5	51.3
2002	4339.4	2157.3	712.2	280.6	139.5	46.1	344.6	171.3	56.6
2003	4411.6	2149.9	713.9	289.4	141.1	46.8	357.5	174.2	57.9
2004	4636.6	2221.9	736	302	144.7	47.9	378.7	181.5	60.1
2005	4766.2	2229.3	743.8	306.5	143.4	47.8	390.4	182.6	60.9
2006	4927.7	2262.5	769.5	323.9	148.7	50.6	404.7	185.8	63.2
2007	5107.8	2297.2	773	332.8	149.7	50.4	419.6	188.7	63.5
2008	5239	2302.9	780.1	335.3	147.4	49.9	430.4	189.2	64.1
2009	5404.4	2329.9	797.7	340.7	146.9	50.3	444.0	191.4	65.5
2010	5561.7	2353.7	805.6	346.1	146.5	50.1	456.9	193.4	66.2
2011	5704.2	2381.4	819.2	351.5	146.7	50.5	468.7	195.7	67.3
2012	5838.8	2399.9	828.6	357.3	146.9	50.7	479.7	197.2	68.1

Data sources: [1,2]

Table S2. Emergy indicators for China.

Year	Total emergy (10 ²⁴ sej a ⁻¹)	Emergy for per capita, C_m (10 ¹⁵ sej a ⁻¹)	Emergy/money ratio, C_g (10 ¹¹ sej Yuan ⁻¹)
1990	7.38	6.46	39.70
1991	7.71	6.66	35.58
1992	7.90	6.74	29.65
1993	8.54	7.21	24.71
1994	9.61	8.02	20.59
1995	9.87	8.15	17.16
1996	9.56	7.81	14.30
1997	9.93	8.04	13.58
1998	9.92	7.95	12.89
1999	9.85	7.83	12.23
2000	11.37	8.97	11.60
2001	11.91	9.33	11.02
2002	12.44	9.69	10.45
2003	13.37	10.34	9.90
2004	14.97	11.52	9.39
2005	16.32	12.48	8.89
2006	20.01	15.23	9.27
2007	20.09	15.20	7.54
2008	20.38	15.35	6.45
2009	20.86	15.63	6.13
2010	21.63	16.13	5.41
2011	22.07	16.38	4.71
2012	22.72	16.78	4.40

Data sources: adjusted according to relevant researches [3,4] and material flow data [1,2,5].

Table S3. Regression between health cost per sown area (PC), fertilizer application per sown area (PF) and Gross Domestic Product per capita (PG).

		PF	PG
PC	Pearson	0.773**	0.843**
	Sig.(2-tailed)	0.000	0.000
	N	180	180

**. Regression is significant at the 0.01 level (2-tailed).

Table S4. Regression between health cost (HC), fertilizer application amount (FA) and crop sown area (CA).

		FA	CA
HC	Pearson	0.833**	0.588**
	Sig.(2-tailed)	0.000	0.000
	N	180	180

**. Regression is significant at the 0.01 level (2-tailed).

References in Supplementary Materials

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