

# The changes in cropland pattern enhanced carbon storage in Northwest China

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## Supporting Table

**Table S1 Land-use categories**

Reclassification	LCCS categories
1.Farmland	Rainfed Cropland
	Irrigated Cropland
	Mosaic cropland (>50%) / natural vegetation (tree, shrub, herbaceous cover)
	(<50%)
	Mosaic cropland (<50%) / natural vegetation (tree, shrub, herbaceous cover)
	(>50%)
2.Forest	Tree cover, broadleaved, evergreen, closed to open (>15%)
	Tree cover, broadleaved, deciduous, closed to open (>15%)
	Tree cover, needleleaved, evergreen, closed to open (>15%)
	Tree cover, needleleaved, deciduous, closed to open (>15%)
	Tree cover, mixed leaf type (broadleaved and needleleaved)
	Mosaic tree and shrub (>50%) / herbaceous cover (<50%)
	Tree cover, flooded, fresh or brakish water

	Tree cover, flooded, saline water
	Shrubland
3.Grassland	Mosaic herbaceous cover (>50%) / tree and shrub (<50%)
	Grassland
4.Water	Water
	Permanent snow and ice
	Shrub or herbaceous cover, flooded, fresh or brakish water
5.Built-up land	Urban areas
6.Other land	Bare areas
	Sparse vegetation
	Lichens and mosses

**Table S2 Annual cropland area in five northwestern provinces(Unit: ha)**

Annual area	Gansu	Qinghai	Ningxia	Shanxi	Xinjiang	Total area
2000	3482487	589890	807000	3393440	3128260	11401077
2001	3486380	589860	813000	3358980	3175790	11424010
2002	3488247	589860	1271000	3325010	3228760	11902877
2003	3488907	605240	1275000	3328650	3310720	12008517
2004	3486167	611560	1280000	3238280	3383940	11999947
2005	3433200	669160	1293000	3113960	3416520	11925840
2006	3418847	652500	1299000	2965830	3439320	11775497
2007	3408620	604700	1212000	2854810	3364660	11444790
2008	3398867	555210	1119000	2795820	3313990	11182887
2009	3403893	542050	1105000	2795520	3362320	11208783
2010	3421047	542246	1114000	2788450	3457940	11323683
2011	3441353	542151	1116000	2783300	3640430	11523234
2012	3448993	542202	1117000	2840730	3787280	11736205

2013	3468353	542719	1128000	2848370	4124560	12112002
2014	3485187	588000	1136000	2860040	5123100	13192327
2015	3493807	587900	1135000	2860530	5121500	13198737
2016	3503007	588324	1133000	2860980	5135400	13220711
2017	3530913	588528	1286000	2864290	5148100	13417831
2018	3537933	588212	1284000	2870980	5160200	13441325
2019	3546800	585708	1289000	2865990	5169500	13456998
2020	3553344	588419	1293000	2904110	5188900	13527773

**Table S3 SOC density of different soil types (arranged alphabetically)**

Soil type	SOC density(t C ha <sup>-1</sup> )	Soil type	SOC density(t C ha <sup>-1</sup> )
Alkali soil	5.33	Grey cinnamonic soil	13.38
Black grass felt soil	18.05	Grey forest soil	29.38
Black soil	15.42	Irrigated alluvial soil	7.21
Bog soils	49.49	Irrigated desert soil	9.52
Brown coniferous forest soil	24.74	Limestone soil	13.05
Brown cool calcic soil	6.42	Meadow soil	14.43
Brown desert soil	1.15	Mountain meadow soils	26.91
Brown soil	12.81	Paddy soil	11.14
Chemozem	16.12	Peaty soil	146.76
Chestnut-like calcic soil	11.06	Purple soil	5.54
Cinnamon soil	8.25	Recent deposited soil	4.67
Cold calcic soil	6.08	Red clay soil	5.3
Cold frozen soil	2.64	Rocky soil	1.62
Cool calcic soil	6.2	Shajiang black soil	7.07
Cool desert soil	1.21	Sierozem	5.28
Dark brown soil	18.76	Skeleton soil	5.15
Dark calcic soil	8.61	Solonchak soil	6.36

Desert solonchak soil	5.49	Takvr soil	3.21
Forest/shrub meadow soil	6.63	Tidal soil	6.54
Frigid solonchak soil	4.15	Wind sand soil	1.91
Grass felt soil	14.79	Yellow brown soil	13.12
Gray brown desert soil	1.53	Yellow cinnamon soil	6.7
Gray desert soil	3.6	Yellow soft soil	3.98

## Supporting Figure

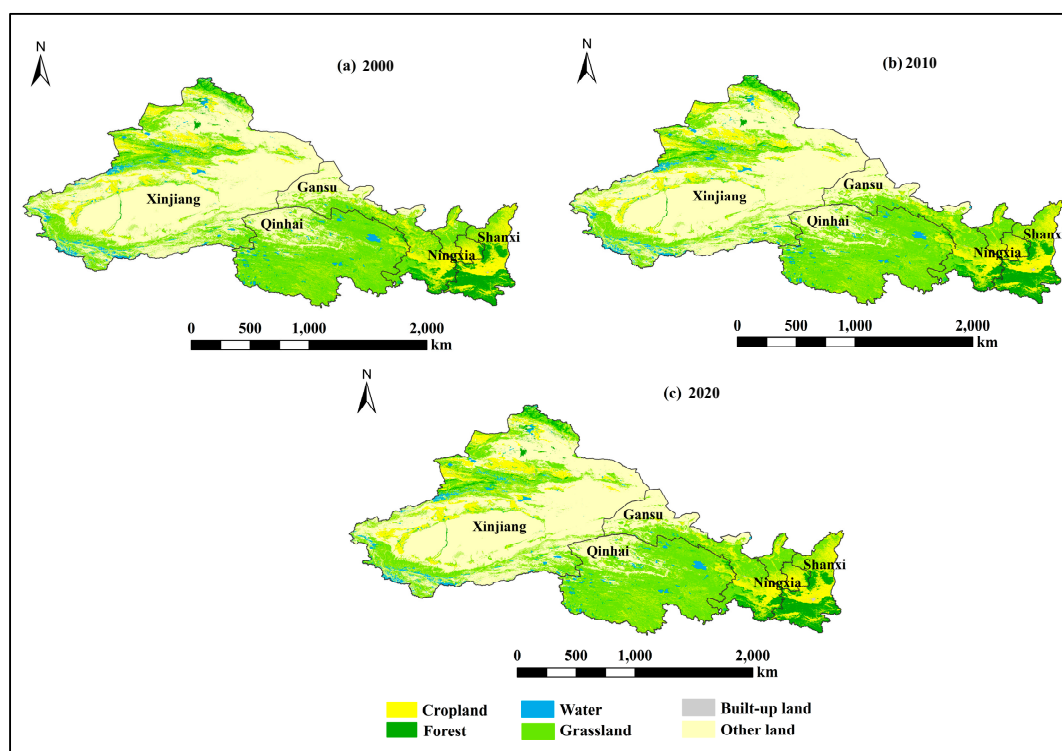


Fig.S1. Land cover maps: (a) 2000, (b) 2010, (c) 2020