Supplement of SOIL, 8, 309–317, 2022
https://doi.org/10.5194/soil-8-309-2022-supplement

Supplement of

Effects of environmental factors on the influence of tillage conversion on saturated soil hydraulic conductivity obtained with different methodologies: a global meta-analysis

Kaihua Liao et al.

Correspondence to: Qing Zhu (qzhu@niglas.ac.cn)

Table S1 Site characteristics from a global meta-analysis of 69 studies.

Reference	Country	Site	Vegetation type	MAT[a] (°C)	MAP[b] (mm)	Elevation (m asl)
Abu and Abubakar (2013)	Nigeria	The experimental field of the Institute for Agricultural Research, Ahmadu Bello University	Soybean		1011 ± 161	686
Afyuni and Wagger (2006)	USA	Lower Coastal Plain Research Station, North Carolina	Corn and Soybean			
Alletto and Coquet (2009)	France	An agricultural field in the large alluvial corridor of the Garonne River	Maize			
Anikwe and Ubochi (2007)	Nigeria	Faculty Research Farm of Faculty of Agriculture and Natural Resources Management, Enugu State University of Science and Technology	Sweet potato		1700~2010	450
Azooz et al. (1996)	Canada	Dawson Creek site and Rolla site	Barley and canola	0.9	504	
Baumhardt et al. (2012)	USA	The USDA-ARS Conservation and Production Research Laboratory, Bushland, TX	Wheat–sorghum–fallow rotation			
Blanco-Canqui et al. (2017)	USA	The University of Nebraska's Rogers Memorial Farm	Corn and soybean		693	368
Blanco-Canqui et al. (2004)	USA	Midwest Research Claypan Farm (McCredie), Kingdom City, MO	Corn and soybean			
Busari (2017)	Nigeria	The Federal University of Agriculture, Abeokuta	Maize	30~37	1058	
Cai et al. (2012)	China	An experimental field in the Dingxi County	Wheat and pea	6.4	390.9	2000
Cameira et al. (2003)	Portugal	An Experimental Farm located in the Sorraia River Watershed	Maize			
Cui et al. (2013)	China	A field experiment in Ningxiang County of Hunan Province	Rice	16.8	1360	80

Curtis and Claassen (2009)	USA	Three research sites in northern California	Grass	2.6~6.3	937~1669	583~1601
De Almeida et al. (2018)	Brazil	The study was carried out during the wet season in the municipality of Aquidauana, MS, Brazil	Soybeans	24~26	1300~1600	191
Du et al. (2011)	China	Luancheng Agro-Ecosystem Experimental Station of Chinese Academy of Sciences	Wheat and maize	12.5	536	50.1
Fasinmirin (2011)	Brazil	An experimental site of the Department of Soils, Federal University of Santa Maria		22		
Gao and Zhang (2010)	China	Dry farming experimental station of Gansu Agricultural University	Maize	6.4	390.9	2000
Gómez et al. (1999)	Spain	An experimental olive orchard in Santaella	Olive		606	
Gupta et al. (1997)	Canada	The study was conducted at Kinore Experimental Farm of Agriculture Canada located within the Great Lake region of Ontario (Canada)				
Haruna et al. (2018)	USA	Lincoln University’s Freeman Center	Corn			166
Hati et al. (2015)	India	The research farm of Indian Institute of Soil Science, Bhopal	Soybean and wheat		1130	485
He et al. (2009)	China	A long-term tillage experiment located in the village of Chenghuang	Winter wheat	10.7	555	456
Iqbal et al. (2005)	Pakistan	The Research Area of Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad	Wheat			
Jakab et al. (2017)	Hungary	Measurements were carried out at the Szentgyörgyvár soil erosion experimental site	Maize	11.0	628	
Jarecki and Lal (2005)	USA	Ohio Agricultural Research and Development Center Western and North Western Branch Research Farm	Corn and soybean	9.9~10.8	845~1043	

Jemai et al. (2012)	Tunisia	Hamrounia region, near the municipality of Mateur	Wheat	18.2	560	153
Johnson-Maynard et al. (2007)	USA	The University of Idaho's Kambitsch Research Farm	Pea, wheat and barley		695	
Kahlon et al. (2013)	USA	The Waterman Farm of the Ohio State University	Wheat	11	1016	
Kahlon and Chawla (2017)	India	The Research Farm of the Department of Soil Science, Punjab Agricultural University	Wheat and maize			247
Kennedy and Schillinger (2006)	USA	A 2-yr field experiment was conducted on three paired farms located between the towns of LaCrosse and Colfax in Whitman County, WA	Wheat			
Khorami et al. (2018)	Iran	The experiment was conducted at the Zarghan Field Station, Agriculture and Natural Resources Research and Education Center of Fars Province	Wheat and maize			1604
Kreiselmeier et al. (2020)	Germany	An experimental field with a Haplic Luvisol in Eastern Germany	Wheat and sugar beet			275
Langhans et al. (2011)	Belgium	The experimental field is located in the Belgian part of the Western and Central European Loess Belt, near Huldenberg	Maize		800	
Liu et al. (2018)	China	Fengqiu County, Henan Province	Wheat and poplar trees	13.9	615	65~73
Lozano et al. (2016)	Argentina	An experimental field in the Pampas region	Wheat and soybean		1000	
Luo et al. (2005)	China	An experimental field in the Dingxi County	Wheat and pea	6.4	390.9	2000
Maulé and Reed (1993)	Canada	The project was carried out on five different fields located 13 km to the south of the town of Indian Head, SK	Wheat	2.0	175	
McGarry et al. (2000)	Australia	The site is located at the Biloela Research Station, Qld	Crop and pasture			173

Moebius-Clune et al. (2008)	USA	A long-term controlled experiment located at Chazy	Maize			
Moebius et al. (2007)	USA	Cornell University research farms in Willsboro, Chazy and Aurora in New York	Maize			
Merwin et al. (1994)	USA	The experiment was established in a former apple orchard at Ithaca, N.Y.	Orchard			
Ndiaye et al. (2005)	Senegal	The experiment was conducted on a sandy loam on the Thysse-Kaymor catchment located in the Senegalese groundnut belt (central part of Senegal)	Groundnut and millet		660	
Nyamadzawo et al. (2007)	Zimbabwe	The experiment site was conducted at the Domboshawa Training Centre and is 30 km north of Harare	Maize		750	1400
Obalum and Obi (2010)	Nigeria	Three experimental plots at Nsukka	Sorghum and soybean		1600	
Osunbitan et al. (2005)	Nigeria	Teaching and Research Farm of the Obafemi Awolowo University			1350	
Pan et al. (2016)	China	Changwu State Key Loess Plateau Agro-Ecological Experimental Station of the Chinese Academy of Sciences	Maize	9.1	578.5	
Park et al. (1992)	Australia	Two experimental sites were established in central western New South Wales, at Cowra and Grenfell	Wheat/pasture rotation and clover/grass pasture			
Park and Smucker (2005)	USA	Wooster and Hoytville research sites of the Ohio Agricultural Research and Development Center	Corn			
Parvin et al. (2014)	Sweden	An experimental site managed by the Swedish University of Agricultural Sciences, Uppsala	Barley			

Potter et al. (1995)	USA	Studies were conducted on a Houston Black clay soil which had been under continuous management for four years using the wide bed system	wheat-com-grain sorghum			
Ramos et al. (2019)	Spain	The experimental field was located in Agramunt, NE	Maize	13.9	392	330
Sartori et al. (2022)	Italy	The experiment took place at the Lucio Toniolo Experimental Farm, located in Legnaro, PD	Wheat		850	6
Sasal et al. (2006)	Argentina	The Pergamino Experimental Station of the Instituto Nacional de Tecnologı´a Agropecuaria	Soybean		1000	
Schlüter et al. (2020)	Germany	The long-term field in Lüttewitz	Wheat and sugar beet	8.1	643	275
Sharma et al. (2005)	India	A field experiment at Hayathnagar Research Farm	Sorghum and castor	25.7	746	515
Sharma et al. (2009)	India	A field experiment at Hayathnagar Research Farm	Sorghum and mung bean		750	515
Singh et al. (1996)	Canada	The Ellerslie Research Station	Barley		455	694
Smith et al. (2007)	USA	Two adjacent fields near Waterloo, IN	Corn/soybean rotation			
So et al. (2009)	Australia	A field experiment was conducted at a site in Grafton, NSW, which has previously been under pasture for at least 5 years	Soybean and cereal of oats			
Soracco et al. (2010)	Argentina	An experiment site near the town of San Antonio de Areco	Soybean		1100	
Starr and Glotfelty (1990)	USA	The field experiment was conducted at the University of Maryland, Forage Research Farm, Clarksville, MD	Corn			
Steenhuis et al. (1990)	USA	This study was conducted at Cornell University's Experimental Research Farm in the town of Willsboro,	Corn			

		New York				
Stone and Schlegel (2010)	USA	An experimental field near Tribune, Kansas	Wheat and sorghum	11.2	425	1108
Tan et al. (2002)	Canada	Two 2-ha field sites	Soybean			
TerAvest et al. (2015)	Malawi	This study was carried out in the Central region of Malawi	Cassava, soybean, and maize	21.0~26.6	834~1450	1146
Villarreal et al. (2017)	Argentina	The experiment was carried out near the town of Chascomús	Soybean		1000	
Wu et al. (2014)	China	Dry farming experimental station of Gansu Agricultural University	Wheat and pea	6.4	390.9	2000
Xin et al. (2005)	China	An experimental site in Dingxi County	Lucerne and Lucerne-spring wheat rotation	6.4	390.9	2000
Xu and Mermoud (2001)	China	An experimental site in the Xiongxian area	Summer maize		540	

[a] Mean annual temperature; [b] Mean annual precipitation.

Table S2 Experimental conditions from a global meta-analysis of 69 studies.

Reference	N[a]	Measurement technique[b]	Measurements: IR[c]	Measurements: K_{sat}[d]	OMC[e] (%)	Time interval from tillage conversion to measurement (yr)	General descriptions
Abu and Abubakar (2013)	6	Constant head		√		2 (2010~2011)	Cores were collected at three depths (0–5, 5–15, and 15–30 cm).
Afyuni and Wagger (2006)	18	Constant head		√	0.91~1.40		Cores were collected at three depths (0–15, 15–30, and 30–45 cm).
Alletto and Coquet (2009)	9	Tension disc (8)	√	√	1.38~2.24	6 (2000~2005)	Infiltrations were done at −1.5, −1.0, −0.6, −0.3 and −0.1 kPa matric potentials.
Anikwe and Ubochi (2007)	3	Not provided		√	2.67	2 (2005~2006)	
Azooz et al. (1996)	8	Guelph		√	1.72~4.31	16 (1978~1993)	The K_{sat} to a depth of 300 mm in 75-mm depth increments was determined.
Baumhardt et al. (2012)	4	Rainfall simulator	√			3	We applied reverse-osmosis water in lieu of rainwater because of its dispersive characteristics at a rate of 78 mm h^{-1} with a rotating-disk rain simulator that produced impact energy of 22 J mm^{-1} m^{-2} or 80% of natural rain.
Blanco-Canqui et al. (2017)	2	Constant head		√		35 (1980~2014)	Two intact soil cores (7.5 cm diam. And 7.5 cm long) per plot were collected using a hammer-driven core sampler for depths of: 0–7.5, 7.5–15,15–22.5, and 22.5–30 cm.
Blanco-Canqui et al. (2004)	4	Either constant or falling head		√	1.45~1.63	14 (1982~1995)	Cores were collected vertically from 0 to 100 and 100 to 200 mm from trafficked and nontrafficked

							interrow positions.
Busari (2017)	2	Constant head		√	2.09	3 (2008~2010)	Undisturbed soil samples using cylindrical cores (5 cm in diameter and 5 cm in height) were taken in duplicate from the soil surface.
Cai et al. (2012)	6	Tension disc		√		7 (2001~2007)	
Cameira et al. (2003)	1	Tension disc (20)	√	√	0.47~1.26	6 (1998~2003)	An infiltration sequence was performed corresponding to water tensions of 0, 3, 6 and 15 cm.
Cui et al. (2013)	6	Constant head		√	3.49	7 (2005~2011)	Three replicated cores were randomly collected with a stainless steel cylinder (4 cm long and 6.18 cm in diameter) at the 0- to 5-, 5- to 10-, 10- to 20-, 20- to 40-, 40- to 60-, and 60- to 80-cm depths.
Curtis and Claassen (2009)	4	Rainfall simulator		√	0.03~7.00	2 (2003~2004)	
De Almeida et al. (2018)	1	Rainfall simulator	√		2.55~7.28	0.5 (November 2013~May 2014)	We use a portable rainfall simulator calibrated with a constant rain intensity of 60 ± 1.715 mm h^{-1}, mean drop diameter of 2.0 mm and pressure of 32 kPa.
Du et al. (2011)	3	Constant head		√		7 (2001~2007)	Cores were collected at three depths (0–5, 5–10, and 10–20 cm).
Fasinmirin (2011)	4	Falling head		√		16	Soil samples were collected at depths 0–10, 10–20, 20–30, 30–40 and 40–50 cm.
Gao and Zhang (2010)	2	Tension disc		√	0.36~0.59	5 (2005~2009)	
Gómez et al. (1999)	2	Rainfall simulator	√	√	1.00~2.50	16 (1982~1997)	The K_{sat} was calculated at four water tensions; -15, -10, -5 and 0 cm of H_2O.
Gupta et al. (1997)	1	Rainfall simulator		√	0.00~3.40	2 (1992~1993)	The rainfall was applied by the portable rainfall

							simulator. The infiltration data was analyzed for the saturated hydraulic conductivity determinations.
Haruna et al. (2018)	6	Constant head		√	1.65~1.68	5 (2010~2014)	Cores were collected at four depths of 10-cm increments from the soil surface to a depth of 40 cm.
Hati et al. (2015)	4	Falling head		√	0.86~1.79	8 (2000~2007)	Undisturbed core samples of 5 cm height and 5 cm diameter were collected from the 0 to 15 cm soil layer at 7.5 cm intervals.
He et al. (2009)	2	Constant head		√		17 (1991~2007)	Soil samples were collected at depths 0–5, 5–10, 10–20 and 20–30 cm.
Iqbal et al. (2005)	2	Guelph		√			
Jakab et al. (2017)	3	Rainfall simulator	√			15	Rainfall simulation was carried out three times in 2016.
Jarecki and Lal (2005)	2	Constant head		√	0.67~10.67	17 (1987~2003)	Soil cores from the 0 to 5-cm layer were used to determine K_{sat}.
Jemai et al. (2012)	10	Constant head		√	1.55~3.10	8 (2000~2007)	Soil samples were collected at depths 0–10, 10–20, 20–30, 30–40 and 40–50 cm.
Johnson-Maynard et al. (2007)	2	Constant head		√	3.07	4 (2000~2003)	cores were sampled in 10-cm increments to a depth of 50 cm.
Kahlon et al. (2013)	2	Constant head	√	√	1.64~2.59	22 (1989~2010)	Soil cores were collected at depths 0–10 and 10–20 cm.
Kahlon and Chawla (2017)	4	Constant head		√		2 (2014~2015)	Soil cores were collected at depths 0–7.5 and 7.5–15 cm.
Kennedy and Schillinger (2006)	9	Single ring (76)	√		1.28~2.88	20	A 76-cm-diameter single-ring infiltrometer was pushed into the soil to a depth of 5 cm.
Khorami et al. (2018)	1	Double ring (50~70)	√		1.48~1.98	3 (2014~2016)	The double-ring infiltrometer test procedure involved inserting two rings into the 5-cm depth of the

							soil.
Kreiselmeier et al. (2020)	2	Hood		√	1.95~3.19	26 (1992~2017)	The aim was to set between three to four h in descending order from close to saturation down to the bubbling pressure (BP) of the soil. The BP marks the h-limit until which hood measurements can be done.
Langhans et al. (2011)	1	Rainfall simulator	√		1.09~1.38		Prior to each experiment, 45 mm h^{-1} of rainfall from 3.25 m height from a nozzle-type simulator was applied to the plot until steady state runoff occurred.
Liu et al. (2018)	1	Constant head		√	11.35~15.83	6 (2006~2011)	Soil cores were collected at depth 0–10 cm.
Lozano et al. (2016)	1	Tension disc (12.5)	√	√	4.00~5.60	> 5	Infiltration runs were performed at three values of soil water pressure head, h (namely, -0.06, -0.03, and 0.0 m).
Luo et al. (2005)	4	Tension disc		√		4 (2001~2004)	
Maulé and Reed (1993)	3	Rainfall simulator		√		13	The rainfall occurred over a 1.6 m x 2.3 m area on the ground, but infiltration was determined from a 1.5 m^2 area directly under the simulator.
McGarry et al. (2000)	1	Rainfall simulator		√		8	Water infiltration parameters were measured with an oscillating nozzle rainfall simulator.
Moebius-Clune et al. (2008)	1	Constant head		√		32 (1973~2004)	Soil cores were collected at depth 5–66 mm.
Moebius et al. (2007)	2	Constant head		√		13 (1992~2004)	Soil cores were collected at depth 5–66 mm.
Merwin et al. (1994)	3	Single ring (70)		√	5.30	8	A 70-cm-diameter single-ring infiltrometer was pushed into the soil to a depth of 8 cm.
Ndiaye et al. (2005)	6	Rainfall simulator		√	< 0.5		The rainfall simulator was a 4 m high tower

							equipped with a Laechler nozzle (# 461.008.30) mounted at 3.86 m above the soil surface.
Nyamadzawo et al. (2007)	5	Rainfall simulator	√		~1.72	2 (2001~2002)	Rainfall simulations were done at the centre of the plots at a rainfall intensity of 35 mm h^{-1} on 1 m^2 experimental plots surrounded by a 50 cm buffer zone.
Obalum and Obi (2010)	3	Constant head		√	1.06~1.48	2 (2006~2007)	Soil cores were collected at depth 0–10 cm.
Osunbitan et al. (2005)	2	Constant head		√	0.30~1.60		Soil cores were collected at depth 0–5 cm.
Pan et al. (2016)	3	Constant head		√	1.34~1.59	13 (2002~2014)	Soil cores were collected at depth 0–10 cm.
Park et al. (1992)	4	Rainfall simulator		√		7 (1981~1987)	Rainfall simulation studies were conducted on each tillage treatment using a rotating disk simulator.
Park and Smucker (2005)	6	Constant head		√	3.29~7.07		Soil cores were collected at depth 0–5 cm.
Parvin et al. (2014)	3	Constant head		√	3.29~4.48	38 (1974~2011)	Soil samples were collected at depths 15–20, 25–30 and 35–40 cm.
Potter et al. (1995)	3	Rainfall simulator		√		8	A rainfall simulator was used to determine water infiltration characteristics of a Houston Black clay.
Ramos et al. (2019)	6	Rainfall simulator	√		0.57~4.31	3	The susceptibility to sealing of each soil and the steady infiltration rates were evaluated in the laboratory subjecting the soils to rainfall simulation applied at an intensity of 25 mm h^{-1}.
Sartori et al. (2022)	1	Double ring (an inner ring of 60 cm in diameter)		√	1.41	3	An inner ring of 60 cm in diameter was used to measure both the row and inter-row areas in the tillage radish plots.
Sasal et al. (2006)	1	Tension disc	√		2.30~4.40	20	Tension disc measurements were performed on the

Schlüter et al. (2020)	2	Hood (24.8) and tension disc (8)		√	2.09~2.21	27 (1992~2018)	surface at 0.10 m depth for 60 min to reach steady-state conditions. For hood, at least half a reservoir had to be infiltrated or 10 min had to pass to move to the next pressure head. Readings were done every 30 s and steady state was assumed after water level decline in the reservoir did not differ by more than 2 mm for three consecutive steps.
Sharma et al. (2005)	1	Constant head		√	0.64	7 (1995~2001)	Soil cores were collected at depth 0–15 cm.
Sharma et al. (2009)	1	Constant head		√	0.97~1.21	8 (1998~2005)	Soil cores were collected at depth 0–20 cm.
Singh et al. (1996)	4	Constant head		√	9.80	10 (1979~1988)	Soil samples were collected at depths 0–7.5 and 7.5–15 cm.
Smith et al. (2007)	1	Double ring (50~90)		√		1	A double-ring infiltrometer with two concentric metal rings were co-located with tensiometers placed at depths of 15, 30 and 60 cm in the soil profile located just outside the inner ring.
So et al. (2009)	1	Rainfall simulator		√	2.88	14	A rainfall simulator with an intensity of 80 mm h^{-1} was used to determine the infiltration characteristics of the bare soil using plots of 2 m x 1.5 m
Soracco et al. (2010)	6	Constant head		√		7	Soil samples were collected at depths 0–15 and 15–30 cm.
Starr and Glotfelty (1990)	4	Double ring (75~150)	√		2.40~3.00	13 (1974~1986)	Each microplot was instrumented with a double-ring infiltrometer that was pushed into the soil to a depth of about l0 cm.
Steenhuis et al. (1990)	1	Single ring (70)		√		3	A 70-cm-diameter single-ring infiltrometer was pushed into the soil to a depth of 5 cm.

Stone and Schlegel (2010)	2	Double ring (92~124)	√		1.90	12 (1989~2000)	Rings were positioned to avoid vehicle traffic paths, driven 13 cm deep, and filled twice with water. At sunup 2 d later, water was added to the infiltrometers, and ponding was maintained at a depth of ~3 to 10 cm.
Tan et al. (2002)	2	Constant head		√		5 (1995~1999)	Soil cores were collected at depth 0–30 cm.
TerAvest et al. (2015)	2	Rainfall simulator	√		0.29~2.79	3	Rainfall simulations were conducted 6–7 weeks after planting, between crop rows, when soils were at or near field capacity.
Villarreal et al. (2017)	1	Tension disc (12.5)	√	√		16 (2000~2015)	Infiltration runs were performed at three values of soil water pressure head, h (namely, -6, -3 and 0 cm, applied in this order and at the same place).
Wu et al. (2014)	6	Tension disc		√		12	
Xin et al. (2005)	4	Rainfall simulator		√		4 (2001~2004)	The swing sprinkler rainfall simulator produced by Queensland Department of primary industries is adopted. The sprinkler model of rainfall simulator (RFs) is Veeject 80100, with a total of 3 nozzles.
Xu and Mermoud (2001)	3	Guelph		√	0.34~1.10	1	Measurements were performed in holes of diameter 6 cm and of depths 15 or 35 cm.

[a] Number of paired observation for K_{sat}; [b] The numbers in parentheses indicate the diameter (cm) of the device. For double ring method, the diameters of inner and outer rings are provided; [c] Infiltration rate; [d] Saturated hydraulic conductivity; [e] Organic matter content. If the literature only provided the organic carbon content, the organic matter content was estimated using the 1.724 conversion factor.

Reference list for meta-analysis

Abu, S.T., Abubakar, I.U., 2013. Evaluating the effects of tillage techniques on soil hydro-physical properties in Guinea Savanna of Nigeria. Soil & Tillage Research 126, 159-168.

Afyuni, M., Wagger, M.G., 2006. Soil physical properties and bromide movement in relation to tillage system. Communications in Soil Science and Plant Analysis 37, 541-556.

Alletto, L., Coquet, Y., 2009. Temporal and spatial variability of soil bulk density and near-saturated hydraulic conductivity under two contrasted tillage management systems. Geoderma 152, 85-94.

Anikwe, M.A.N., Ubochi, J.N., 2007. Short-term changes in soil properties under tillage systems and their effect on sweet potato (Ipomea batatas L.) growth and yield in an Ultisol in south-eastern Nigeria. Australian Journal of Soil Research 45, 351-358.

Azooz, R.H., et al., 1996. Pore size distribution and hydraulic conductivity affected by tillage in Northwestern Canada. Soil Science Society of America Journal 60, 1197-1201.

Baumhardt, R.L., et al., 2012. Residue and long-term tillage and crop rotation effects on simulated rain infiltration and sediment transport. Soil Sci. Soc. Am. J. 76, 1370–1378.

Blanco-Canqui, H., et al., 2017. Long-term tillage impact on soil hydraulic properties. Soil & Tillage Research 170, 38-42.

Blanco-Canqui, H., et al., 2004. Tillage and Crop Influences on Physical Properties for an Epiaqualf. Soil Science Society of America Journal 68, 567-576.

Busari, M.A., 2017. Soil physical properties in relation to maize (Zea mays) yield after tillage and application of organic and inorganic fertilisers in Abeokuta, southwestern Nigeria. Soil Research 55, 704-714.

Cai, L., et al., 2012. Effect of different tillage methods on soil water retention and infiltration capability of rainfed field. Journal of Desert Research 32, 1362-1367. (in Chinese)

Cameira, M.R., et al., 2003. Soil macropore dynamics affected by tillage and irrigation for a silty loam alluvial soil in southern Portugal. Soil & Tillage Research 70, 131-140.

Cui, S., et al., 2013. Tillage effects on nitrogen leaching and nitrous oxide emission from double-cropped paddy fields. Agronomy Journal 106, 15-23.

Curtis, M.J., Claassen, V.P., 2009. Regenerating topsoil functionality in four drastically disturbed soil types by compost incorporation. Restoration Ecology 17, 24-32.

De Almeida, W.S., et al., 2018. Effect of soil tillage and vegetal cover on soil water infiltration. Soil & Tillage Research 175, 130-138.

Du, Z., et al., 2011. Effect of conservation tillage on soil quality in the piedmont plain of Mount Taihang. Chinese Journal of Eco-Agriculture 19, 1134-1142. (in Chinese)

Fasinmirin, J.T., 2011. Saturated Hydraulic Conductivity ($K_{\theta s}$) of a Sub-Tropical Ultisol under different Tillage Systems. Soil and Tillage Research Conference, Nigeria, At Nigeria, Volume: 1.

Gao, J., Zhang, C., 2010. The effects of different conservation tillage on soil physical structures of dry farmland in the Loess Plateau. Agricultural Research in Arid Areas 28, 192-196. (in Chinese)

Gómez, J.A., 1999. Effects of tillage method on soil physical properties, infiltration and yield in an olive orchard. Soil & Tillage Research 52, 167-175.

Gupta, R.K., et al., 1997. Surface water quality impacts of tillage practices under liquid swine manure application. Journal of the American Water Resources Association 33, 681-687.

Haruna, S.I., et al., 2018. Soil Hydraulic Properties: Influence of Tillage and Cover Crops. Pedosphere 28, 430-442.

Hati, K.M., et al., 2015. Effects of Tillage, Residue and Fertilizer Nitrogen on Crop Yields, and Soil Physical Properties Under Soybean–Wheat Rotation in Vertisols of Central India. Agricultural Research, DOI: 10.1007/s40003-014-0141-7.

He, J., et al., 2009. Soil physical properties and infiltration after long-term no-tillage and ploughing on the Chinese Loess Plateau. New Zealand Journal of Crop and Horticultural Science 37, 157-166.

Iqbal, M., et al., 2005. Residual Effect of Tillage and Farm Manure on Some Soil Physical Properties and Growth of Wheat (Triticum aestivum L.). International Journal of Agriculture & Biology 7, 54-57.

Jakab, G., et al., 2017. Infiltration and soil loss changes during the growing season under ploughing and conservation tillage. Sustainability 9, 1726.

Jarecki, M.K., Lal, R., 2005. Soil organic carbon sequestration rates in two long-term no-till experiments in Ohio. Soil Science 170, 280-291.

Jemai, I., et al., 2012. On-farm assessment of tillage impact on the vertical distribution of soil organic carbon and structural soil properties in a semiarid region in Tunisia. Journal of Environmental Management 113, 488-494.

Johnson-Maynard, J.L., et al., 2007. Earthworm dynamics and soil physical properties in the first three years of no-till management. Soil & Tillage Research 94, 338-345.

Kahlon, M.S., et al., 2013. Twenty two years of tillage and mulching impacts on soil physical characteristics and carbon sequestration in Central Ohio. Soil & Tillage Research 126, 151-158.

Kahlon, M.S., Chawla, K., 2017. Effect of tillage practices on least limiting water range in Northwest India. International Agrophysics 31, 183-194.

Kennedy, A.C., Schillinger, W.F., 2006. Soil quality and water intake in traditional-till vs. no-till paired farms in Washington's Palouse region. Soil Sci. Soc. Am. J. 70, 940-949.

Khorami, S.S., et al., 2018. Changes in soil properties and productivity under different tillage practices and wheat genotypes: A short-term study in Iran. Sustainability 10, 3273.

Kreiselmeier, J., et al., 2020. Temporal variations of the hydraulic conductivity characteristic under conventional and conservation tillage. Geoderma 362, 114127.

Langhans, C., et al., 2011. Experimental rainfall–runoff data: Reconsidering the concept of infiltration capacity. Journal of Hydrology 399, 255-262.

Liu, Z., et al., 2018. Land use dependent variation of soil water infiltration characteristics and their scale-specific controls. Soil & Tillage Research 178, 139-149.

Lozano, L.A., et al., 2016. Soil Physical Quality and Soybean Yield as Affected by Chiseling and Subsoiling of a No-Till Soil. Revista Brasileira De Ciencia Do Solo v40, e0150160.

Luo, Z., et al., 2005. Effects of conservation tillage on bulk density and water infiltration of surface soil in semi-arid area of west Loess Plateau. Agricultural Research in the Arid Areas, 23, 7-11. (in Chinese)

Maulé and Reed, 1993. Infiltration under no-till and conventional tillage systems in Saskatchewan. Canadian Agricultural Engineering 35, 165-173.

McGarry, D., et al., 2000. Contrasting soil physical properties after zero and traditional tillage of an alluvial soil in the semi-arid subtropics. Soil and Tillage Research 53, 105-115.

Moebius-Clune, B.N., et al., 2008. Long-Term Effects of Harvesting Maize Stover and Tillage on Soil Quality. Soil Science Society of America Journal 72, 960-969.

Moebius, B.N., et al., 2007. Evaluation of laboratory-measured soil properties as indicators of soil physical quality. Soil Science 172, 895-912.

Mervin, I.A., et al., 1994. Orchard groundcover management impacts on soil physical properties. J. Amer. Soc. Hort. Sci. 119, 216-222.

Ndiaye et al., 2005. Effect of rainfall and tillage direction on the evolution of surface crusts, soil hydraulic properties and runoff generation for a sandy loam soil. Journal of Hydrology 307, 294-311.

Nyamadzawo, G., et al., 2007. Improved legume tree fallows and tillage effects on structural stability and infiltration rates of a kaolinitic sandy soil from central Zimbabwe. Soil & Tillage

Research 96, 182-194.

Obalum, S.E., Obi, M.E., 2010. Physical properties of a sandy loam Ultisol as affected by tillage-mulch management practices and cropping systems. Soil & Tillage Research 108, 30-36.

Osunbitan, J.A., et al., 2005. Tillage effects on bulk density, hydraulic conductivity and strength of a loamy sand soil in southwestern Nigeria. Soil & Tillage Research 82, 57-64.

Pan, Y., et al., 2016. Effects of long-term tillage and mulching methods on properties of surface soil and maize yield in tableland region of the Loess Plateau. Journal of Plant Nutrition and Fertilizer 22, 1558-1567. (in Chinese)

Park, I., et al., 1992. Runoff, soil loss and soil physical property changes of light textured surface soils from long-term tillage treatments. Australian Journal of Soil Research 30, 789-806.

Park, E.J., Smucker, A.J.M., 2005. Saturated Hydraulic Conductivity and Porosity within Macroaggregates Modified by Tillage. Soil Science Society of America Journal 69, 38-45.

Parvin, N., et al., 2014. Effect of mouldboard ploughing and shallow tillage on sub-soil physical properties and crop performance. Soil Science and Plant Nutrition 60, 38-44.

Potter, K.N., et al., 1995. Tillage and residue effects on infiltration and sediment losses on Vertisols. Transactions of the ASAE 38, 1413-1419.

Ramos, M.C., et al., 2019. Soil sealing and soil water content under no‐tillage and conventional tillage in irrigated corn: Effects on grain yield. Hydrological Processes 33, 2095–2109.

Sartori, F., et al., 2022. A multivariate approach to evaluate reduced tillage systems and cover crop sustainability. Land 11, 55.

Sasal, M.C., et al., 2006. Soil porosity characteristics and water movement under zero tillage in silty soils in Argentinian Pampas. Soil & Tillage Research 87, 9-18.

Schlüter, S., et al., 2020. Long-term effects of conventional tillage and no-tillage on saturated and near-saturated hydraulic conductivity – Can their prediction be improved by pore metrics obtained with X-ray CT? Geoderma 361, 114082.

Sharma, K.L., et al., 2005. Long-term soil management effects on crop yields and soil quality in a dryland Alfisol. Soil & Tillage Research 83, 246-259.

Sharma, K.L., et al., 2009. Influence of Tillage and Nutrient Sources on Yield Sustainability and Soil Quality under Sorghum-Mung Bean System in Rainfed Semi-arid Tropics. Communications in Soil Science and Plant Analysis 40, 2579-2602.

Singh, B., et al., 1996. Soil hydraulic properties of an Orthic Black Chernozem under long-term tillage and residue management. Canadian Journal of Soil Science 76, 63-71.

Smith, D.R., et al., 2007. How does the first year tilling a long-term no-tillage field impact soluble nutrient losses in runoff? Soil & Tillage Research 95, 11-18.

So, H.B., et al., 2009. The impact of 14 years of conventional and no-till cultivation on the physical properties and crop yields of a loam soil at Grafton NSW, Australia. Soil and Tillage Research 104, 180-184.

Soracco, C.G., et al., 2010. Anisotropy of Saturated Hydraulic Conductivity in a soil under conservation and no-till treatments. Soil & Tillage Research 109, 18-22.

Starr, J.L., et al., 1990. Atrazine and bromide movement through a silt loam Soil. Journal of Environmental Quality 19, 552-558.

Steenhuis, T.S., et al., 1990. Preferential movement of pesticides and tracers in agricultural soils. Journal of Irrigation and Drainage Engineering 116, 50-66.

Stone, L.R., Schlegel, A.J., 2010. Tillage and Crop Rotation Phase Effects on Soil Physical Properties in the West-Central Great Plains. Agronomy Journal 102, 483-491.

Tan, C.S., et al., 2002. Effect of long-term conventional tillage and no-tillage systems on soil and water quality at the field scale. Water Science & Technology 46, DOI: 10.2166/wst.2002.0678.

TerAvest, D., et al., 2015. Crop production and soil water management in conservation agriculture, no-till, and conventional tillage systems in Malawi. Agriculture, Ecosystems and Environment 212, 285-296.

Villarreal, R., et al., 2017. Temporal variation of soil sorptivity under conventional and no-till systems determined by a simple laboratory method. Soil & Tillage Research 168, 92-98.

Wu, J., et al., 2014. Effects of conservation tillage on soil physical properties of rained field of the Loess Plateau in Central of Gansu. Journal of Soil and Water Conservation 28, 112-117. (in Chinese)

Xin, P., et al., 2005. Effects of different tillage methods on saturated hydraulic conductivity and compactiveness of the surface soil. Journal of Gansu Agricultural University 40, 203-207.

Xu, D., Mermoud, A., 2001. Topsoil properties as affected by tillage practices in North China. Soil & Tillage Research 60, 11-19.