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Changes in soil organic carbon (SOC) in long-term experiments concerning organic vs. inorganic fertilization

Reference	Location	Crop/rotation	No. years	Treatment	Rate per y ($t\ ha^{-1}\ y^{-1}$)	SOC to 30 cm ($t\ ha^{-1}$)[1]	Difference (%) from inorganic only
Körschens & Müller (1996); Smith & Powlson (1996)	Bad Lauchstädt, Germany	Sugar beet/spring barley/potatoes/winter wheat	90	30 $t\ ha^{-1}\ 2y^{-1}$	15	87.1	21.5
Körschens & Müller (1996); Smith & Powlson (1996)	Bad Lauchstädt, Germany	Sugar beet/spring barley/potatoes/winter wheat	90	20 $t\ ha^{-1}\ 2y^{-1}$	10	80.2	11.9
Körschens & Müller (1996); Smith & Powlson (1996)	Bad Lauchstädt, Germany	Sugar beet/spring barley/potatoes/winter wheat	90	Inorganic only	0	71.7	
Klír (1996); Smith & Powlson (1996)	Praha-Ruzyne, Czech Republic	Sugar beet/spring wheat (since 1966)	38	21 $t\ ha^{-1}\ 2y^{-1}$	10.5	62.6	12.2
Klír (1996); Smith & Powlson (1996)	Praha-Ruzyne, Czech Republic	Sugar beet/spring wheat (since 1966)	38	Inorganic only	0	55.8	
Jenkinson (1990)	Broadbalk, UK	Continuous wheat	144	35 $t\ ha^{-1}\ y^{-1}$	35	99.1	100
Jenkinson (1990)	Broadbalk, UK	Continuous wheat	144	Inorganic only	0	49.6	
Christensen (1996)	Askov, Denmark	Winter cereals/root crops/spring cereals/ clover+grass	100	13.5 $t\ ha^{-1}\ y^{-1}$	13.5	57.2	9.6
Christensen (1996)	Askov, Denmark	Winter cereals/root crops/spring cereals/ clover+grass	100	9 $t\ ha^{-1}\ y^{-1}$	9	52.2	0
Christensen (1996)	Askov, Denmark	Winter cereals/root crops/spring cereals/ clover+grass	100	Inorganic only	0	52.2	
Jenkinson & Johnston (1977)	Hoosfield, UK	Continuous barley	123	35 $t\ ha^{-1}\ y^{-1}$	35	113.2	244.5
Jenkinson & Johnston (1977)	Hoosfield, UK	Continuous barley	123	Inorganic only	0	32.9	
Johnston (1975)	Woburn Market Garden, UK	Various vegetable crops	30	50 $t\ ha^{-1}\ y^{-1}$	50	72.5	72.2
Johnston (1975)	Woburn Market Garden, UK	Various vegetable crops	30	25 $t\ ha^{-1}\ y^{-1}$	25	56.9	35.2
Johnston (1975)	Woburn Market Garden, UK	Various vegetable crops	30	Inorganic only	0	42.1	
Houot & Chaussod (1995)	Dehérain, France	Wheat / sugar beet	112	10 $t\ ha^{-1}\ y^{-1}$	10	48.7	20
Houot & Chaussod (1995)	Dehérain, France	Wheat / sugar beet	112	Inorganic only	0	40.6	
Witter *et al.* (1993)	Ultana, Sweden	Arable only	31	9.54 $t\ ha^{-1}\ 2y^{-1}$	4.78	74.9	41.2
Witter *et al.* (1993)	Ultana, Sweden	Arable only	31	Inorganic only	0	53	
Mattingly *et al*. (1975)	Woburn Stackyard, UK (1877-1926)	Continuous wheat & barley [2]	49	17.6 $t\ ha^{-1}\ y^{-1}$	17.6	72	36.36
Mattingly *et al*. (1975)	Woburn Stackyard, UK (1877-1926)	Continuous wheat & barley [2]	49	Inorganic only	0	52.8	
Mercik (1993)	Skierniewice, Poland	Continuous potatoes	70	30 $t\ ha^{-1}\ y^{-1}$	30	36.9	33
Mercik (1993)	Skierniewice, Poland	Continuous potatoes	70	Inorganic only [3]	0	27.7	
Mercik (1993)	Skierniewice, Poland	Continuous rye	70	30 $t\ ha^{-1}\ y^{-1}$	30	46.9	37.6
Mercik (1993)	Skierniewice, Poland	Continuous rye	70	Inorganic only [3]	0	34.1	
Schnieder (1976)	Thyrow Nutrient Deficiency, Germany	4 maize/barley/ potatoes/barley	25	30 $t\ ha^{-1}\ 2y^{-1}$	15	28.8	19.2
Schnieder (1976)	Thyrow Nutrient Deficiency, Germany	4 maize/barley/ potatoes/barley	25	Inorganic only	0	24.2	
Garz & Hagedorn (1990)	Halle, Germany	Continuous rye to 1961; arable rotation since	75	12 $t\ ha^{-1}\ y^{-1}$	12	65.5	33.3
Garz & Hagedorn (1990)	Halle, Germany	Continuous rye to 1961; arable rotation since	75	Inorganic only	0	49.1	
Bosch & Amberger (1983)	Weihenstephan, Germany	3 course arable rotation	47	30 $t\ ha^{-1}\ 3y^{-1}$	10	38.1	9.8
Bosch & Amberger (1983)	Weihenstephan, Germany	3 course arable rotation	47	Inorganic only	0	34.8	

[1] Converted to $t\ ha^{-1}$ to 30 cm from SOC at given depth or from SOC content (%) using soil bulk densities given in reference or in GCTE SOMNET database. (Smith et al. 1996). Where unavailable, bulk density of 1.3 g/cm^3 assumed.

[2] Mean of both continuous crops.

[3] Farmyard manure and NPK both added as calcium.