

## 8-1 ORGANIC MATTER IN SOIL

In addition to raising soil fertility, organic matter plays a key role in soil structure (anti-erosive effect), water retention, carbon storage (fighting climate change) and the retention/degradation of certain pollutants (filter effect).

### KEY MESSAGE

Levels of total organic carbon (TOC) in soil follow a rising gradient from North-West to South-East Wallonia, reflecting climate, topography and land use trends<sup>1</sup>. Around 90% of all croplands show TOC levels below 1.5% (measured in the ploughed layer), while the majority of grasslands and forested areas have values 3 - 5 times higher. The areas with the highest deficits<sup>2</sup> are to be found in the main cropland areas, where the risks of erosion are highest. Furthermore, these soils have registered often very high TOC losses since 1960<sup>3</sup>, though the situation seems to have stabilised between 1994 and 2008, except in the loamy region where the decline is continuing<sup>4</sup>. Various measures can help improve the organic status of soils (the use of farm manure and other exogenous matter<sup>5</sup>, agri-environmental programmes, no-till farming, etc.). Returning crop residues to the soil is a key factor, though hardly compatible with their use as an energy source.

### Evaluation

Unfavourable situation and non-assessable trend

[1] → Map 10

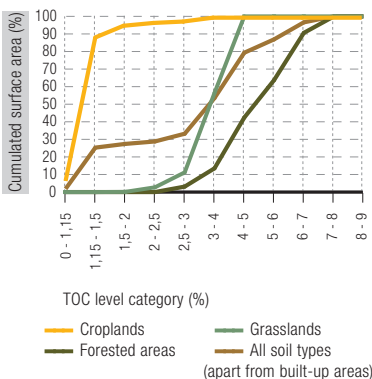
[2] Less than 2% of organic matter (i.e. 1.15% of TOC), threshold value below which aggregates become unstable, leading to soil degradation risks (Van Camp *et al.*, 2004). Such soils represent approximately 2% of croplands.

[3] Meersmans *et al.* (2011)

[4] Genot *et al.* (2012)

[5] Compost, certified sewage sludge, digestate, etc.

Fig. 8-1 Soil total organic carbon (TOC) in Wallonia (2003-2012)



EOW 2014 – Sources: SPW - DGO3 - DNF; ULg - GxABT; REQUASUD ASBL/DEMNA calculations

Tab. 8-1 Soil total organic carbon (TOC) in the cropland areas of the different agricultural regions of Wallonia

Agricultural regions	TOC (%) (2003-2008)		Trend between 1994 and 2008
	Average values	Standard deviation	
Hennuyerian Campine	1.1	0.35	~
Loamy	1.2	0.30	-6.5 %
Sandy-loamy	1.2	0.39	~
Condroz	1.4	0.38	~
Jurassic	1.7	0.72	-15.3 %
Fagnes (Fens)	1.8	0.62	~
Famenne	2.0	0.69	~
Herbagère (grassland)	2.2	0.85	-12.9 %
Ardennes	3.1	0.74	~
High Ardennes	3.7	0.92	~
<b>All regions</b>	<b>1.4</b>	<b>0.52</b>	<b>~</b>

~ : no statistically significant linear trend

EOW 2014 – Source: REQUASUD ASBL