WATER EROSION OF SOILS

SOILS 3

Rainfall and runoff from agricultural lands can erode soils and carry their constituents into water courses. There are various consequences to these phenomena: soil losses, crop damage, risk of muddy flows and flooding, degradation of surface water quality, and sedimentation in rivers.

Unsustainable erosion on more than one third of agricultural land

Soil losses due to diffuse water erosion[1] were estimated[2] at 2.5 t/ha for 2015, on average at the Walloon territory level (all types of surface area, excluding artificialised soils). These estimated average losses vary from year to year depending on the erosivity of rainfall (particularly heavy in 2002 for example) and changes in land cover. Over the period 1971-2015 (excluding 2002), they remained below 5 t/(ha.year) (approximately 0.4 mm of soil per year), a threshold above which some authors[3] consider erosion to be unsustainable, i.e. incompatible with the long-term maintenance of soil functions. Behind this interannual variability is a trend[4] marked by a doubling of soil losses between 1971 and 1999, the maintenance of high losses in the early 2000s and the apparent start of a decline in 2004, which will need to be confirmed in the coming years. As regards agricultural land, which is more sensitive to erosion than permanent cover soils, losses in 2015 exceeded 5 t/ha on 35% of their total area, and 10 t/ha on 9% of their total area. The observed trend[4] seems to indicate an improvement, since the shares of agricultural area with soil losses above 5 t/(ha.year) and 10 t/(ha.year) declined by 21% and 45% respectively over the period 2006-2015. However, on the ground, no improvement is confirmed at this stage.

Stronger erosion in regions with field crops

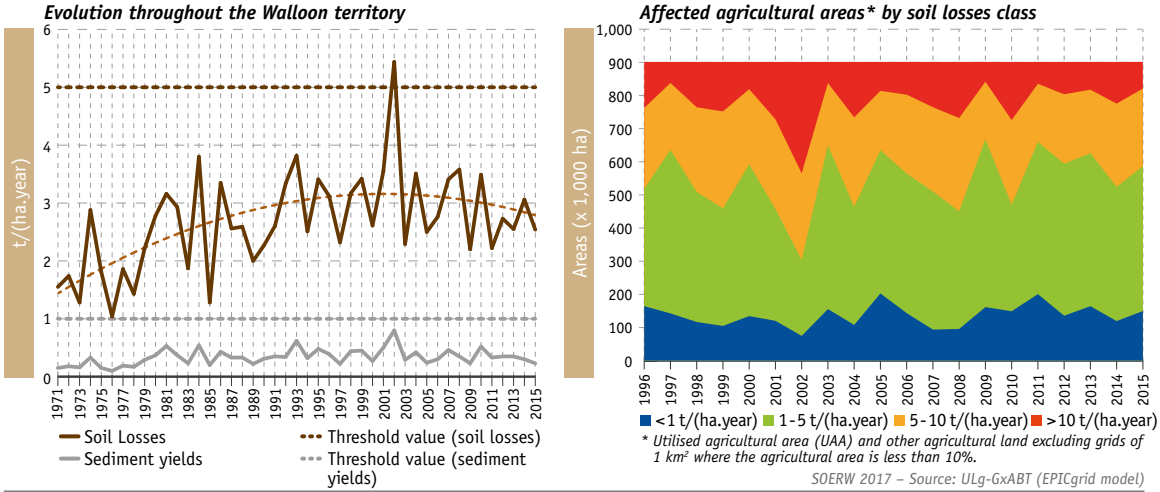
Soil losses are higher in regions with field crops (Loamy Region, Sandy-Loamy Region and Condroz)[5] due to the presence of row crops (potatoes, beets, maize) with low coverage in spring, the season when rainfall is generally more erosive. As regards the impacts on plant production capacities (the volume of soil available for rooting), the soils of the Condroz are more at risk due to their shallower depth and higher stony load[6].

Continuing the fight against erosion

In addition to the obligations linked to the cross-compliance of agricultural aids, the Walloon Agriculture Code (*Code wallon de l'agriculture*) provides for the granting of subsidies to local authorities and a dozen or so measures to control soil erosion (cover crops, limited tillage, management of rotations, sufficient organic matter content, anti-erosive measures such as grass strips, etc.)[7]. These measures are also found in the River Basin Management Plans (RBMPs)[8] and Flood Risk Management Plans (FRMPs)[9]. A team of experts and consultants has also been in place since 2011, with a particular mission to make recommendations on anti-erosion practices[10].

[1] Linear and massive erosion not included | [2] Application of the Universal Soil Loss Equation (USLE) *via* the EPICgrid model (ULg-GxABT - BIOSE Unit, 2016) | [3] Panagos *et al.* (2015) e.g. | [4] According to a regression curve that is questionable given the high annual variability | [5] → Map 39 | [6] Maugnard *et al.*, 2013 | [7] Decree of 27/03/2014, Title XI, chap. II | [8] → WATER 21 | [9] → TRANSV 1 | [10] GISER (http://www.giser.be)

Fig. SOILS 3-1 Soil losses by diffuse water erosion and sediment yields in Wallonia



** Utilised agricultural area (UAA) and other agricultural land excluding grids of 1 km² where the agricultural area is less than 10%.*

SOERW 2017 – Source: ULg-GxABT (EPICgrid model)