

ECO-EFFICIENCY OF THE AGRICULTURAL SECTOR

The eco-efficiency of agricultural activities can be assessed by comparing the evolution of certain production indices (e.g. agricultural yields) with that of various parameters illustrating the pressures and environmental impacts generated by the sector (use of inputs, atmospheric emissions, etc.).

Agricultural production and inputs

The activity of the agricultural sector can be represented by the gross value added (GVA) of the primary sector, the plant production index¹, the utilised agricultural area (UAA)² and livestock³. Over the period 1995-2014, the GVA of the primary sector and the plant production index showed no clear trend, while the UAA and livestock⁴ decreased by 4.5% and 18.1% respectively. As regards inputs, nitrogen⁵ (mineral and organic) and phosphorus fertiliser use decreased by 16.8% and 64.5% over the same period. A comparison of the evolution in the use of fertilisers and plant protection products with the evolution of the production of arable crops shows a decoupling since 1995 (reduction in the quantities of fertilisers and plant protection products used per tonne harvested and per hectare cultivated).

Agricultural production and air pollutant emissions

Atmospheric emissions of the agricultural sector are linked to the types of activities (livestock, field crops, etc.), production methods (fertiliser use, soil tillage, effluent management, etc.), various biological processes (such as denitrification) and energy consumption (agricultural machinery, greenhouse heating). These emissions consist mainly of greenhouse gases (GHG) and acidifying pollutants (SO₂, NO_x and NH₃). Agricultural GHG emissions are mainly due to the volatilisation of ni-

trogen applied and contained in soil (N₂O) and the digestion of ruminants (CH₄).

Over the period 1995-2014, the agricultural sector recorded a decrease in emissions of air pollutants (-12.5% for GHGs and -12.4% for acidifying substances) leading to a decoupling with regard to the plant production index and the UAA. This eco-efficiency gain is related to the reduction in the total number of cattle (ruminants) as well as to better management of livestock effluents⁶, the optimisation of input management and the reduction of mineral fertiliser inputs⁵, more rational management of fertilisers⁶ and the promotion of more environmentally friendly practices. Most of these factors derive from regulatory or voluntary measures such as the Sustainable Management Programme for Nitrogen in Agriculture (*Programme de gestion durable de l'azote en agriculture - PGDA*)⁶, the cross-compliance of agricultural aids⁷, agri-environmental programmes⁸ and organic farming⁹.

[1] Total arable crop production | [2] → AGRI 1 | [3] → AGRI 3 |

[4] Between 1990 and 2014, significant reduction in the number of cattle (-23.2%) and in particular dairy cows (-43.8%) | [5] → AGRI 5 | [6] Walloon Government Decree 13/06/2014; → AGRI 9 | [7] → CONTROL 4 | [8] → AGRI 10 | [9] → AGRI 4

Fig. AGRI 7-1 Eco-efficiency of the agricultural sector

