Comparison of Water Quality at Whinton Hill, Cumbria, 2011 and 2012

MOPS MITIGATIONOPTIONS FORPHOSPHORUS&SEDIMENT

Research

Phosphorus (P) and nitrogen (N) concentrations were monitored fortnightly at five locations through the Whinton Hill catchment (Figure 1) in 2011 (April-October) and 2012 (February-November), in order to determine the water quality effect of i) septic tank improvements at Castlesteads farm (Figure 2), and ii) the creation of three field wetlands to trap diffuse pollution (Figure 3).

Site Plan

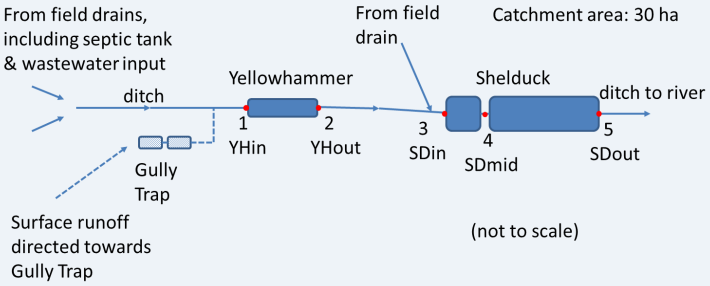

Figure 1. Flow pathways and sampling points at Whinton Hill.

Results

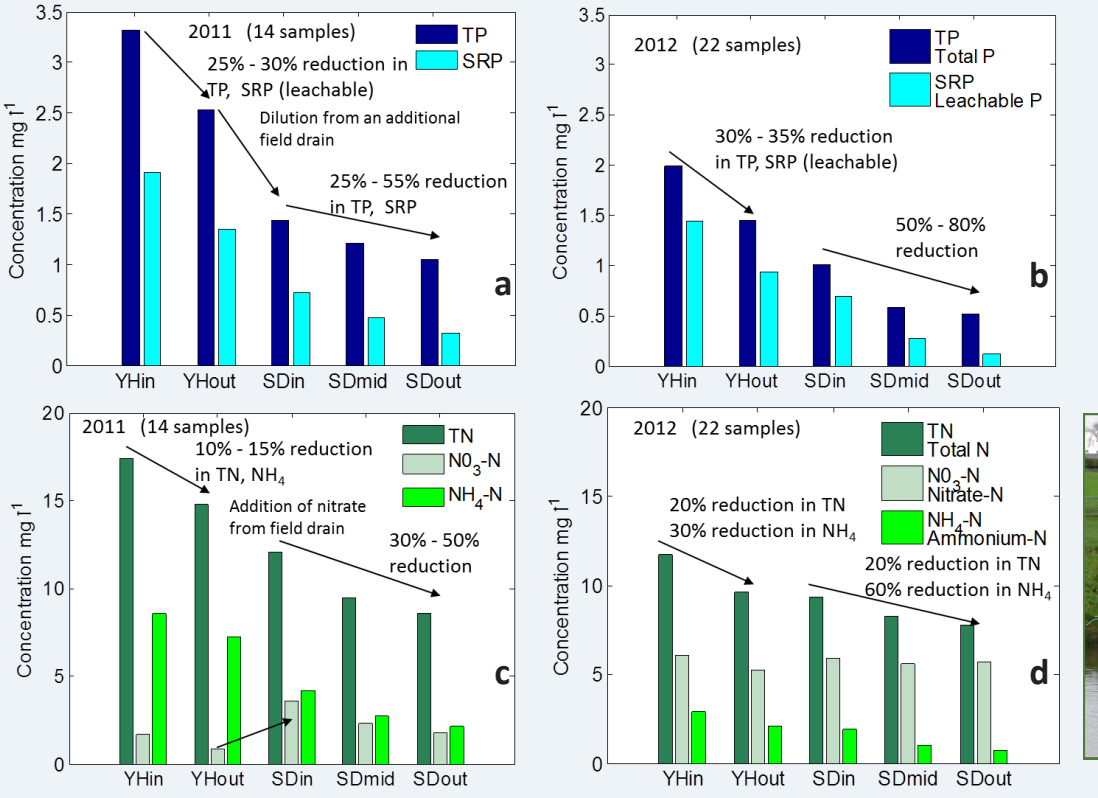

Figure 2. (Left) Comparison of average concentrations of total phosphorus (TP), soluble reactive phosphorus (SRP), total nitrogen (TN), nitrate-N (NO_3-N) and ammonium-N (NH_4-N) in water samples collected at Whinton Hill in 2011 and 2012.

Figure 3. The Shelduck field wetland at Whinton Hill.

Key Messages

- The new septic tank system is effective in reducing concentrations of some forms of phosphorus (P) and nitrogen (N). At Yellowhammer field wetland inlet:
  - Total P (TP) was reduced by 40% in 2012 compared to 2011 (Figures 2a and 2b)
  - Ammonium-N (NH_4-N) by 65% in 2012 compared to 2011 (Figures 2c and 2d)
  - Nitrate concentrations were higher in 2012 than 2011.
- Field wetlands reduced P and N concentrations through the Whinton Hill site in both 2011 and 2012 (Figure 2).

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Further Information

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