

Questions NuReDrain Webinar 14 February 2023

How do you deal with the lower removal efficiency in winter time?

Answer: The tool is not differentiating between summer or winter. You need to fill in an average yearly removal efficiency (but e.g. drainage water only flows in the winter and hence the removal efficiency has been calculated for that period of time).

Do you consider a differentiation between initial installation costs and recurring costs (filter material, maintenance)? If not, would this be reasonable/practical at all?

Answer: No. The calculations are based on literature estimates and results of the NuRedrain project and are given in €/kg Reduction. A literature review revealed that there is a large range of expected costs. Therefore, actual costs need to be calculated for each specific application. To differentiate between investment costs and recurrent operational costs one could complete 2 different files with the CAPEX costs in the one file and OPEX costs in the other file.

When you calculate the costs per reduction, it is per year right, so divide by life expectancy?

Answer: The costs per reduction are given in €/kg reduction as input in the cost-evaluation tool. To obtain annual costs, this value has to be multiplied by the amount of the trapped solute in kg/y. A division by life expectancy does not make sense.

If you take the expert setting and look at the costs, is the cost going up for example wetland? because I presume the cost will be higher if every plot individually takes measures.

Answer: This is true. The costs are a function of many factors. One factor is the number of implemented measures. Therefore, it is recommended to first focus on hot spot areas with high solute concentrations.

Is the tool freely available? Is there a license model?

Answer: Yes, this tool is totally free but comes without any guarantee. The use of this tool is highly appreciated. In case of arising questions, please email to: andreas.bauwe@uni-rostock.de

How do you cope with crop rotation? Depending on the crop the N residue differs. So where do you place the filters?

Answer: The N residue may differ. But a number of studies indicate that crop rotation has only a minor or even no effect on the magnitude of solutes in the receiving waters. Our working group could not detect any significant relationships between land management and nutrient losses. Therefore, filters should be installed, where they have the highest impact (hot spots). For more information about relationships between land management and nutrient losses, read here: <https://doi.org/10.1088/1748-9326/aba580>

To operate the analysis appropriately, you will need the catchment area for each planned filter system position, right? Do you expect to have to generate them from digital terrain models usually?

Answer: This is true. The catchment area is needed to obtain relevant data, e.g. costs/ha. Catchment areas can be derived by a Digital Elevation Model (DEM), if the catchment is large enough, the elevation data are present in a spatially high resolution (e.g., 5 x 5 m) and/or the catchment is hilly. The second option is to derive the catchment area by available drainage maps. The third option is to roughly estimate the catchment area based on flow data. Boundary conditions are that annual discharge cannot be higher than annual precipitation and it is at a long-term average probably not lower than 80 mm/y (and on average 100 mm/y).