



What can we expect from Vegetated Buffer Strips as long-term measure to control TP emissions to surface waters?

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The use of Vegetated Buffer Strips (VBS) as a Best Management Practice to control Phosphorus transfer from field runoff to surface waters has grown considerably backed up by environmental protection programs. However, there are contradicting scientific data regarding the performance of VBS to control TP emissions to surface waters. In this meta-study, we analyze the data from relevant up to date experimental studies to 1) identify key design parameters of VBS and 2) assess the long-term performance under real field conditions. A multivariate analysis of a total of 103 data points from 20 selected experimental studies has been performed to assess %TP retention capacity. Preliminary results point out that a) as expected the spatial extent (VBS-width) determines the VBS performance with increasing retention potential of more than 90 % at 25 m width. However, b) the temporal scale has a significant oppositional influence on VBS function, dropping from 90% TP retention in single-events to 30% retention on multi-annual experiments. A possible explanation for this phenomenon seems to be buffer saturation. Moreover, c) the type of experiments significantly impacts buffer performance, with real fields performing poorly compared to experimental field plots. Hydraulic shortcuts and field-connectivity might be behind this difference. These aspects need to be further researched.