

# Short rotation coppice as riparian buffer strips

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The Water Framework Directive established in 2000 commits European Union member states to achieve good qualitative and quantitative status of all waterbodies by 2015 – latest by 2027. To reach this ambitious goal new measures have to be developed to provide sufficient environmental protection. Erosion and surface runoff from agricultural sites are still a source of nutrient input, especially phosphate, to watercourses. Even applying excellent erosion control management on arable land cannot fully prevent the input of soil particles and dissolved nutrients from arable land into waterbodies during intensive rainfalls, snowmelt and times between two crops.

Short rotation coppices (SRC) along watercourses can act as final barrier to protect from erosion induced nutrient contamination. Permanent plant cover slows down the runoff, thereby increases sedimentation and infiltration rate compared to bare arable land. Additionally SRC may enhance soil texture and therefore infiltration because of extensive management without soil compaction, increase of litter input and deep rooting of trees. Only twice in the life time of more than 30 years, during the establishment and after the clearing of the SCR, the strip may not act as buffer.

From a water protection point of view SRC-strips require adapted planting strategies which differ from those of conventional SRCs. Those strips should have a width of minimum 12 - 18 m. The management impact on the site has to be as low as possible to provide soil improvement. Recommended are a reduced tree number (3.000 trees/ha), a rotation period of at least 10 years, and manual harvest.

Additional environmental advantages of SCR buffer strips are the improvement of habitat structure especially in the poorly structured, intensively managed agricultural landscape in the Eastern part of Germany. Furthermore those strips contribute to a sustainable production of energy wood and reduction of greenhouse gases.

The project “Short rotation coppice along a watercourse” investigates the anticipated environmental advantages of SRC-strips. The study site, installed in 2011, is situated in Northeast Thuringia. The study compares three management options: cropland, grassland, and SRC (willow). Intensive soil measurements carried out from 2012 until present show initial trends that SRC are a more effective nutrient buffer than cropland and may even outperform grassland.

To realize the establishment of SCR buffer strips along watercourses in the future a higher acceptance by farmers is required. This can only be achieved by public relations work and granting of subsidies to compensate the low income of adequate SCR buffer strips and to value their ecological function.