Buffers for Biomass – a review and synthesis of options and practicalities in Denmark

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The recent ´green growth´ initiative by the Danish government among other things contains legislation and incentives to further the expansion of biomass production for heat and power generation. It allows for planting of energy crops directly up to lakeshores and stream banks which otherwise cannot be used for agricultural production. This represents an opportunity for larger scale implementation of vegetated buffer structures to meet both bioenergy production and ecosystem service goals. More than 90 articles and other publications covering hydrology, P&N dynamics, forestry, farm management and related topics were reviewed, compiling options for combining biomass production, water management and reduction of nutrient losses by using vegetated buffer strips in temperate northern agriculture.

The most versatile and also most promising way of including productive buffers in the farming landscape identified is a three-zone structure consisting of a grass filter strip right up to the field, a middle zone of short rotation coppice/forestry and largely undisturbed, permanent woody vegetation along the stream bank. This agroforestry system can be designed for production of energy grass and woodchips, firewood or even timber but also for silage, grazing, enhancement of hunting opportunities or purely for conservation or aesthetic purposes.

Practical details are discussed in relation to buffer design in various landscape settings, species choice, planting and establishment, weed control, harvesting, nutrient cycling, how to deal with drainage and options for fitting the system into the single farm payment and other possible schemes. Product options, marketability and farmer views and preferences are explored. It is concluded that riparian buffer strips can function as truly multifunctional structures and could be a conservation tool appealing to both an environmentalist and a productivist mindset.