

## Possible beneficial effects of biomass for bioenergy crops – a mini review and some new hypotheses

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Debate about biomass for heat and/or power generation often revolves around the potential for greenhouse gas (GHG) emission mitigation versus the detrimental effects of growing the crops on biodiversity and landscape aesthetics. This mini review aims to highlight some of the possible beneficial effects of growing bioenergy crops, including other options than the most talked about miscanthus or salix/populus. To keep the text short, it explicitly does not deal with the issue of GHG emission mitigation by substituting non-renewable energy sources with a renewable source and omits all negative impacts that biomass crops may have, highlighting only possible benefits. This strong bias allows for more detailed examination of less common aspects and options concerning biomass production.

The review deals with six different topics:

- biodiversity; with a focus on the effects of resources made directly available by biomass crops and by accompanying changes in landscape structure and rotation times
- water and nutrient management; in the context of biomass production in shelterbelts or riparian buffer strips for non-point source pollution mitigation and flood peak mitigation
- phytoremediation; including brownfield recultivation and landfill leachate treatment
- farm diversification and agroforestry; introducing options for multi-use forestry in combination with other biomass crops and use of coppice woodlands in livestock keeping
- farm animal welfare; farmer experiences and ongoing research
- public amenity; examining the potential role of biomass crops for swine odor mitigation and other more unusual applications

It is concluded that, dependent on regulation and the production systems, large scale biomass for bioenergy production can have considerable positive effects in many areas and offers options for innovative farm management and nature conservation as well as interesting nonstandard applications. Bioenergy crops on organic farms look especially promising for biodiversity conservation.

### References

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