

Cost-benefit analysis of biologically contained GM poplar (*Populus sp.*) production in Sweden

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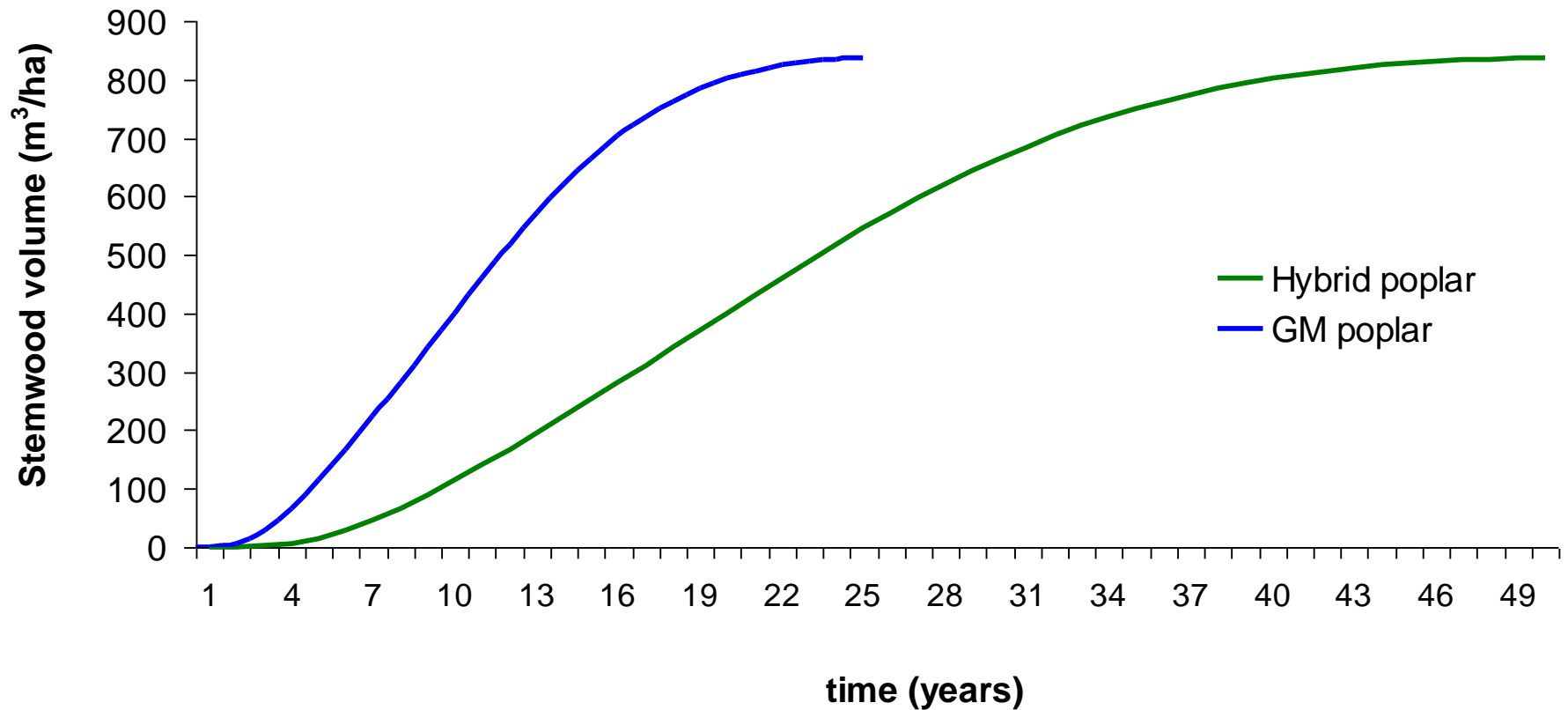


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- **Global demand increase for industrial wood, bioenergy, environmental services and biodiversity conservation**
 - **High-yield forest plantation vs. natural forest utilization**
 - **Poplar – a model tree in the forest genetics**
 - **Sweden – important world pulp and paper supplier and bioenergy consumer**
 - **Biosafety issues and public attitude**
 - **Biological containment technology**

Hybrid vs. GM poplar

25% decreased lignin content + 100% higher growth rate

Growth function comparison: hybrid vs. GM poplar





- Faustmann model – optimal rotation age

- Environmental costs and benefits

1. Transgene escape:

vertical gene flow (**biological containment**)

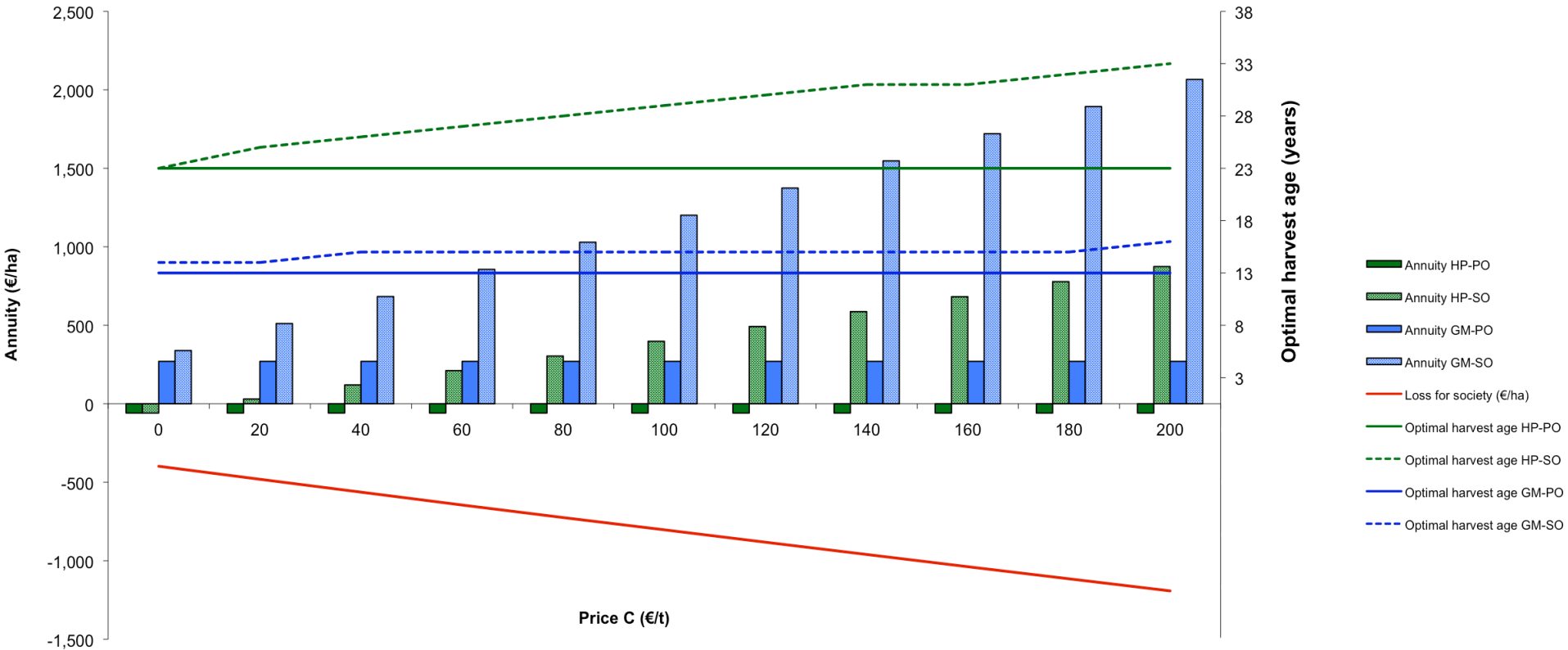
- Environmental costs: **herbicides leaching into ecosystem**
horizontal gene flow

vegetative reproduction (**buffer zone, herbicides**)

- Environmental benefits: **reduction of pulp industry inputs,**
carbon sequestration

2. Impact on non-target organisms

3. Stability and predictability of the traits



Sweden / EU25

0.5 Mha / 8.8 Mha of arable land available in 2020

Annual loss for society

€211 million / €3.5 billion

€631 million / €10.5 billion

Thank you for your attention!