POTENTIAL USE OF THE LOCAL *SALIX* SPP. FOUND NEXT TO THE DITCHES FOR THE DEVELOPMENT OF VEGETATED BUFFER ZONE (VBZ) IN THE HEMI-BOREAL CLIMATE.

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INTRODUCTION

Willows (*Salix* spp.) are widely found in vegetation next to the ditches and they have a high accumulation rate for macro and micronutrients, therefore, they are suitable species for phytoremediation. The use of willow for agricultural riparian buffer zones does not only gain ecological benefit but also increases the economic value of this area since willow is short rotation trees and can produce large amounts of biomass in a short time.

METHODS

This study aimed to assess the morphological parameters of the various willow species collected next the ditches in order to develop methodology for their suitability for the establishment of VBZ for local purposes. For total 11 different Salix genus species and hybrids was collected from 38 locations.

Willows were planted in field from cuttings in spring of 2011 and was harvested in 2022 before vegetation season. Fresh and dry mass was measured, as well as shoot height, shrub width and total accumulated biomass.

Study area willow plantation

***Salix* species**

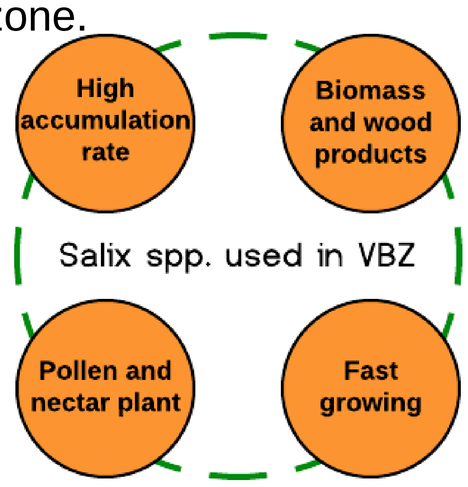
- *S. aurita* L.
- *S. cinerea* L.
- *S. viminalis* L.
- *S. triandra* L.
- *S. myrsinifolia* Salisb.
- *S. purpurea* L.
- *S. pomeranica* Willd.
- *S. fragilis* L.

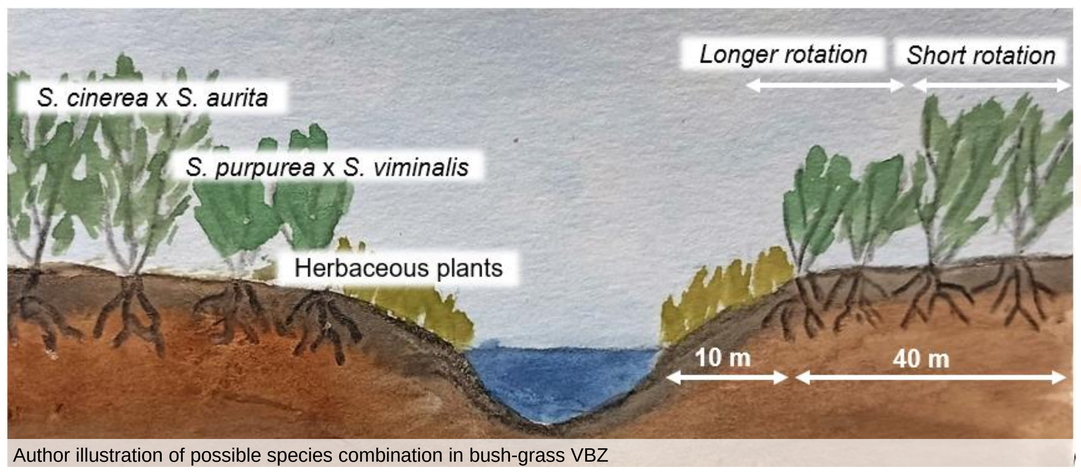
***Salix* hybrids**

- *S. aurita* L. x *S. myrsinifolia Salisb*.
- *S. cinerea* L. x *S. myrsinifolia Salisb.*
- *S. cinerea* L. x *S. aurita L.*
- *S. purpurea* L. x *S. viminalis L.*

AIMS FOR FUTURE

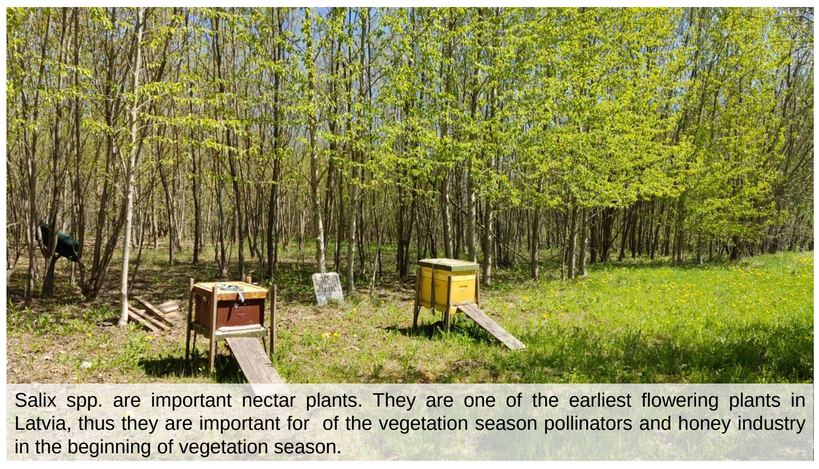
The use of indigenous Salix spp. for the establishment of VBZ next to the agricultural systems provides multiple benefits to the ecosystem, as it increases the food recourses for various organism groups, as well as different rotation duration gives the possibility of obtaining biomass removing only part of the buffer zone.





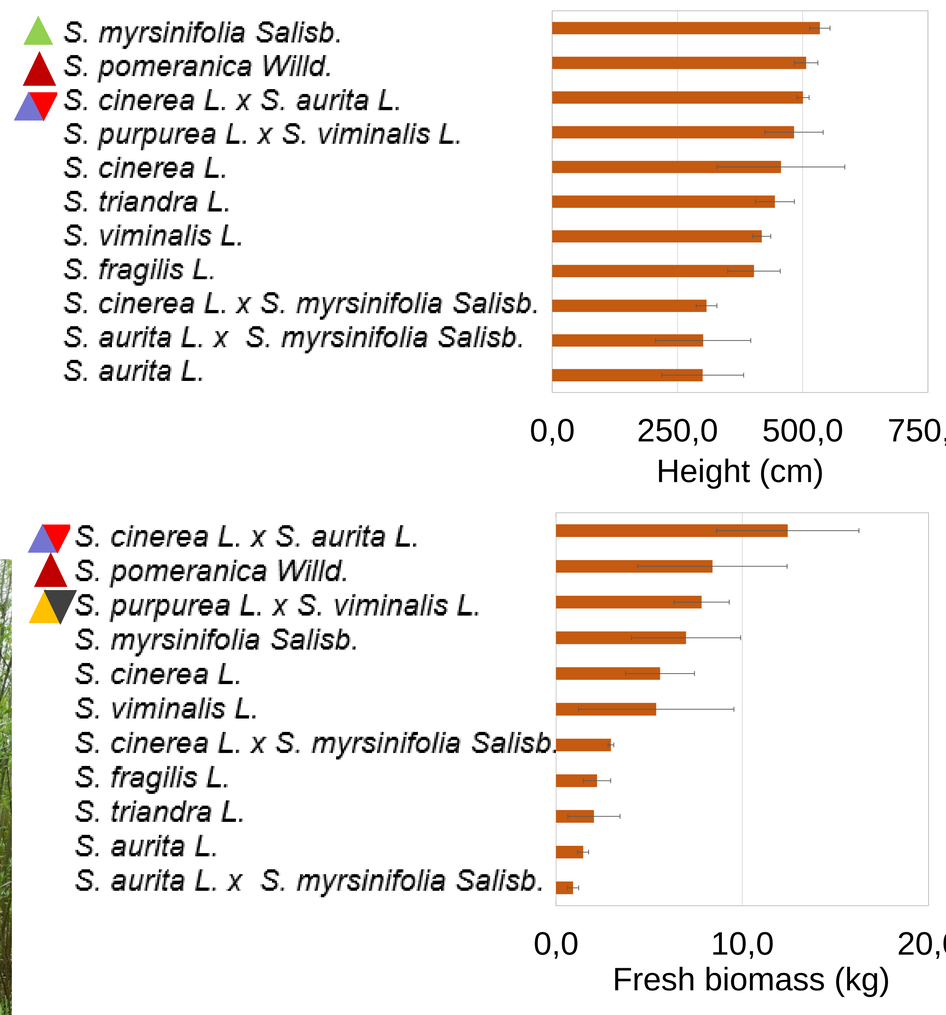
Author illustration of possible species combination in bush-grass VBZ

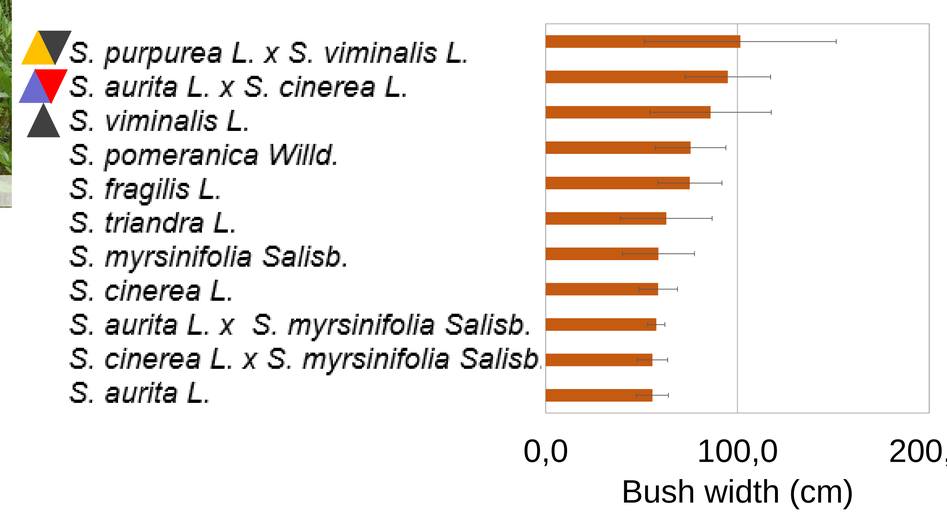
Study area willow plantation

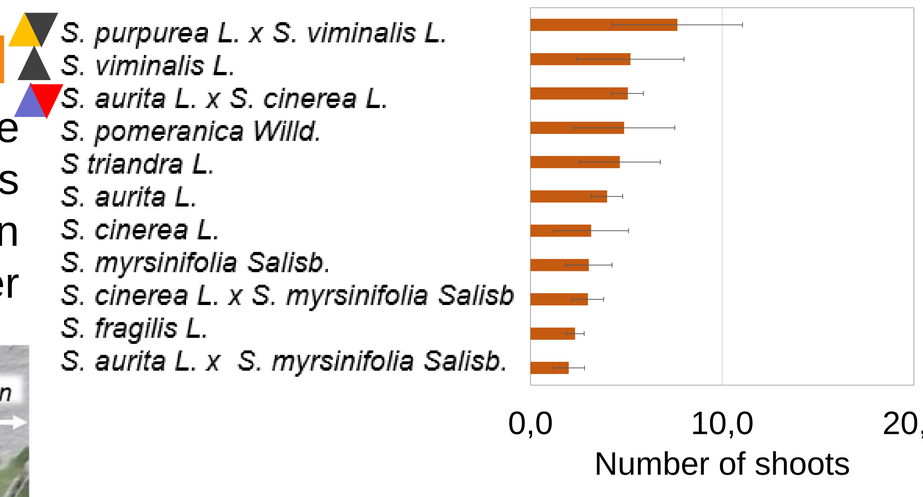


Salix spp. are important nectar plants. They are one of the earliest flowering plants in Latvia, thus they are important for of the vegetation season pollinators and honey industry in the beginning of vegetation season.

RESULTS







CONCLUSION

S. Viminalis x S. purpurea and *S. cinereal x S. aurita* hybrids had one of the highest values in three from four observed parameters - height of the shoot, the width of the shrub, and the accumulated biomass. These would be the most potential willows for a VBZ, because all of theses three morphological parameters are significant, to established buffer zone which helps to eliminate soil contamination and erosion, but also increases economical and biological value of the area.

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