Black locust (*Robinia pseudoacacia L.*)- an invasive alien species or potentially species plantation of agroforestry in Pannonian ecoregion

Gálya, B.[1*] - Bozsik, É.[1] - Riczu, P.[1]-Tamás, J.[1]- Blaskó, L.[1] - Herdon, M.[1] –Keserű, Zs.[2]- Csiha, I.[2]- Rásó, J.[2]- Burriel, Ch.[3,2] Heilmeier, H.[4]

*** Correspondence author: bernadett.galya@agr.unideb.hu**

[1]University of Debrecen, Hungary

[2]National Agricultural Research and Innovation Centre Forest Research Institute, Hungary

[3] AGROSUP, Dijon, France

[4] TU-Bergakademie Freiberg, Germany

Summary

Nowadays the European Comission propose to regulate invasive alien species in the framework of Biodiversity 2020. Black locust (*Robinia pseudoacacia L.*) was entered to Europe more than 300 years ago. Currently 24 % of forest area in Hungary is covered by black locust. There are several ecological contradiction about it, because ecologists emphasizes disadvantages of this species, however it offers many advantages. Due to evolved debate about the black locust, one of potential solution can be plantation of this species into agroforestry system because it can offer a win-win option for agricultural, forestry sector and ecologists. In this study we elaborated a Spatial Decision Support System (SDSS) to plantation of black locust in Hungary to mitigate ecological conflicts. The results showed that within specified conditions, black locust can be potentially species in agroforestry plantation.

Material and methods

In this study, we considered the suitable areas for black locust forestation using with different soil-, weather-, conservation (included NATURA2000), topograpy and land-use databases in Hungary. First of all, based on literature (Führer 2003; Keresztesi 1988; Rédei 2011) we created the cathegorisation system (Figure 1) which is included the optimal and liminting parameters to plantation of black locust. Due to the annual temperature is 11 ° C in Hungary, the whole area of it can be optimal for this species. Based on this categorisation system, the Spatial Decision Support System (SDSS) (Figure 2) was made in ArcGIS 10.2. In SDSS, different databases were used such as AGROTOPO (soil texture), Digital Terrain Model of Hungary (relief), CORINE Land Cover (land use categories), ArcHungary (conservation areas, canal, surface water, builings), DTA50 (rail lines, roads), and Natura2000 database (Natura 2000 areas).

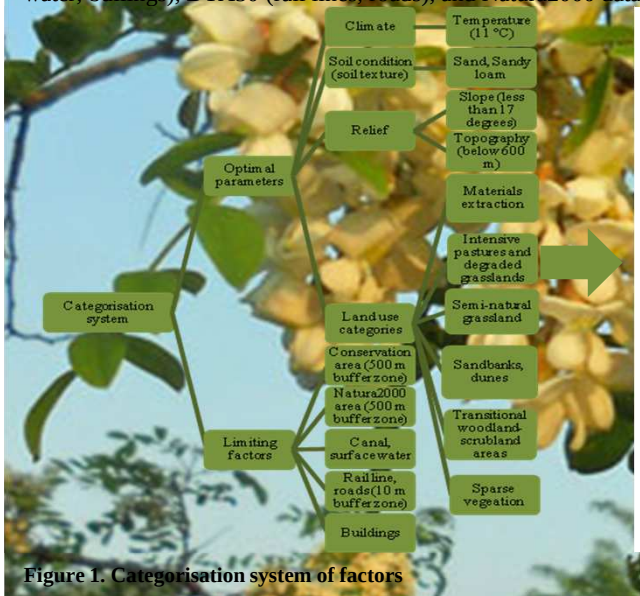

Figure 1. Categorisation system of factors

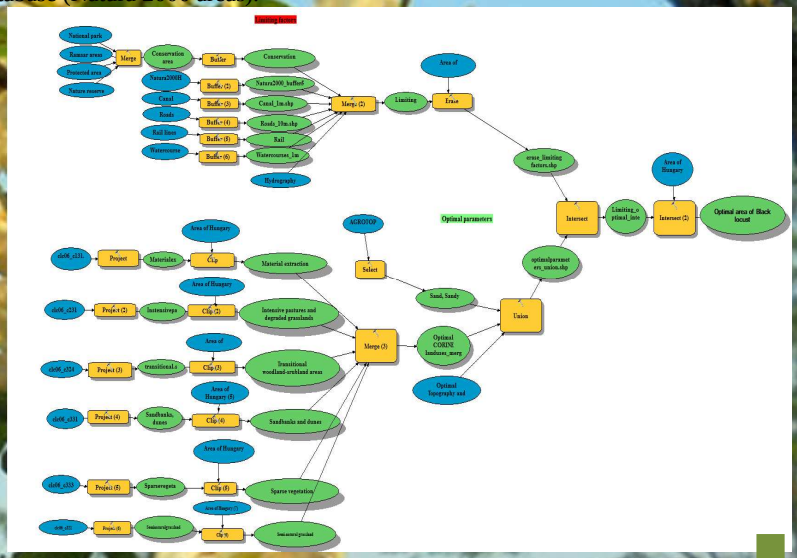

Figure 2. Spatial Decision Support System (SDSS) in ArcGIS 10.2

Results and conclusion

The meaning of Biodiversity 2020, black locust is an invasive aliean species in Hungary. However invasive spread of black locust is occurred optional growing sites. Knowing the ecological requirements of these species we can be limited the invasive spread of it. Considering this parameters, black locust can be potential species inter alia in agroforestry systems. The results of our Spatial Decision Support System was created the potentional areas to plantation of black locust in Hungary (Figure 3).

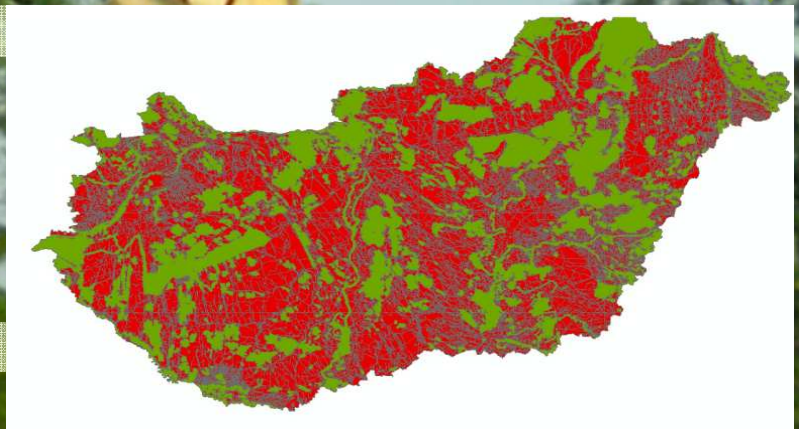

Figure 3. Potential areas (green) to plantation of black locust

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