

Ecological strategies of decorative invasive tree and shrub plant species in the city's green infrastructure

Indicator	<i>Robinia pseudoacacia</i>	<i>Acer saccharinum</i>	<i>Caragana arborescens</i>	<i>Cotinus coggygria</i>	<i>Gleditsia triacanthos</i>	<i>Fraxinus pennsylvanica</i>	<i>Juglans mandshurica</i>	<i>Physocarpus opulifolius</i>	<i>Ptelea trifoliata</i>	<i>Quercus rubra</i>	<i>Rhus typhina</i>	<i>Acer negundo</i>	<i>Amorpha fruticosa</i>	<i>Prunus virginiana</i>	<i>Prunus serotina</i>	<i>Robinia viscosa</i>	<i>Ulmus pumila</i>	
#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Degree of annual maturation of shoots	high																	
2. Frost resistance; winter hardiness zone	frost resistant (WH 1–6); 5a (from -28,8 °C to -26,1 °C)																	
3. Habitus preservation	high																	
4. Ability to form shoots	high																	
5. Regularity of growth	constant																	
6. Ability to generative development	high	satisfactor	high	satisfactor	high	satisfactor	high	satisfactor	high	satisfactor	high	satisfactor	high	high	high	high	high	satisfactor
7. Reproduction method (seeds)	splendidly	satisfactor	high	satisfactor	badly	badly	badly	good	satisfactor	high	satisfactor	high	splendidly	satisfactor	good	good	badly	satisfactor
8. Reproduction method (root shoots)	splendidly	badly	satisfactor	badly	badly	badly	badly	satisfactor	badly	badly	good	badly	splendidly	badly	badly	splendidly	splendidly	
9. Pickiness to soil conditions	low	satisfactory (prefers well-drained soils)										low	satisfactory (prefers well-drained soils)		low			
10. Drought resistance	drought-tolerant																	
11. Wind resistance	splendidly	satisfactor	splendidly	splendidly	splendidly	satisfactor	satisfactor	splendidly	splendidly	splendidly	good	good	splendidly	satisfactor	satisfactor	satisfactor	splendidly	
12. Resistance to soil compaction	good					low	good					low	good					
13. Native range	Southeastern North America	Eastern North America	Siberia and parts of China	S. Central Europe to Central & S. Europe	Central North America	Eastern North America from Florida and Texas north to Nova Scotia and Quebec and South Dakota, south to Florida, Arkansas and Kansas	North America	Eastern North America	North America, from southern Canada through Guatemala	North America	Eastern North America	North America, from southern Canada through Guatemala	North America	Eastern North America	North America	Central Asia		
14. Compatibility of the introduction environment (IE) with the natural habitat	good	satisfactor		good												satisfactor		
15. Resistance to pests of the IE	high																	
16. Phenotypic plasticity in the IE	splendidly	satisfactor										good						
17. Growth intensity in the IE	high	satisfactor										high						
18. Edificatory capacity in the IE	high	badly										satisfactor						
19. Ability to naturalize	high	satisfactor										good						
ECOLOGICAL STRATEGIES CATEGORIES	C	stress tolerators (S-strategists)										ruderal plants (R-strategists)						

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The EU Green Infrastructure Strategy aims to help stop the biodiversity loss and enable ecosystems to deliver their services to people. Natural and semi-natural areas of the Chernihiv city (Ukraine) represents the green infrastructure of an average-sized Eastern European city in the Continental biogeographical region. 93 decorative species and forms of tree and shrub plants are used for the city landscaping, 18 of them are invasive. So, there is an need to develop sustainable approaches to control the alien plants spread. For this purpose the invasive plant species ecological strategies were investigated.

According to the classification of J.P. Grime (1988, 2006), the decorative cultivated plants of invasive species belong to three categories:

Competitors (C-strategist)

Tolerators (S-strategists)



Ruderal plants (R-strategists)



Our research confirmed the results of the previous studies that significant tolerance to the environmental gradients (temperature, soil moisture and salinity, light availability, resistance to pests), high reproductive ability, growth rate and native latitudinal range determine the ecological strategy of invasive plants.