APPLICABILITY OF THE NORMA GRANADA METHOD TO EVALUATE ADULT TREES - A CASE STUDY

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The applicability of the Norma Granada method, as a tool to evaluate trees, was tested with a study case in Évora. A broad spectrum of trees found within the urban perimeter of the city was evaluated using the method.
This method has been introduced throughout Spain and is slowly making its appearance in rules and regulations of the major Portuguese municipalities. So far there has not been any evidence that the direct applicability has been researched.
Trees are considered to be of particular importance to the visual quality, amenity and wildlife (insects and birds) of urban space. They are able to emphasize the positive influence on climate and air in the surroundings. They reduce the amplitude of air temperature and air pollution. At the same time they are responsible for the seasonal changes (flowering, leaf colouring) that are very important for the personal wellbeing of the citizens, both physical and psychological. The fierce competition for the urban spaces and the vandalism raise conflicts with arboreal heritage, which leads to a severe pruning or tree felling. For this reason, the evaluation of urban trees is a constant concern by professionals. Until now it involves personal points of view and most often strategic reasons.

NORMA GRANADA

The reason one strives to put a price tag on a tree is to increase the awareness of the enormous value that a living, breathing tree represents. Politicians are decisive when it comes to public spaces, aided by the information provided by the planners. If a tree has been evaluated, its value will be represented in hard money and will have an understandable meaning to everyone. For the long term management and protection of this valuable asset, it is important to survey the existing trees. Due to the nature of the parameters taken during appraisal it is also a useful instrument in the census of the existing tree heritage. This will enable the development of a more detailed strategy for their future management.
Another important reason for evaluating trees is for the purpose of compensation; either because of damage inflicted to a tree or to substitute it with an, undoubtedly, smaller specimen. In this last case the compensation must cover costs of planting and initial maintenance and the loss of value.
The Norma Granada method was first published in 1999 and revised in 2007 by the Spanish Association of Parks and Public Gardens. The evaluation method is based on the quantification of parameters which express the intrinsic and extrinsic value of a tree. Its basic value is determined according to the size, growth rate and the longevity of the species and the wholesale cost of a nursery-grown tree.

DESCRIPTION OF THE METHOD

The value of mature trees is calculated using the following formulas:

$$V_f = (V_b \cdot Els) \cdot (1 + Ele) \qquad V_b = \omega \cdot \mu \cdot (0.0059x^2 + 0.0601x - 0.324)$$

V_b = Base value **Els = Intrinsic factor** **ω = Market price index[i]**
V_f = Final value **Ele = Extrinsic factor** **μ = Edaphic index[ii]** **x = Perimeter at 1 meter from the soil**

[i] Obtained from lists on the website of the Spanish Association of Public Parks and Gardens (AEPJP), where they are maintained up to date
[ii] Corrects the base value depending on the growth requirements of the species and its soil condition

The intrinsic and extrinsic factor are appraised using a series of forms dealing with tree condition, aesthetic and functional parameters, parameters relating to rarity, representativeness and location.

The value thus obtained relates the average market price (ω) with the edaphic characterization of the soil where the tree grows (μ), the size reached by the tree (x) and factors related to tree condition (Els) and position in the landscape (Ele).

RESULTS

ID:	4_3
Evaluation date:	31/05/2010
Location:	Praça do Sertório
Botanical name:	*Ginkgo biloba* L.
Common name:	Maidenhair tree
Perimeter at 1m:	42 cm
Edaphic index (μ):	1.15
Intrinsic factor (Els):	1.00
Extrinsic factor (Ele):	0.30
Market price index (ω):	50.28
Final Value:	947.71 €

ID:	12_3
Evaluation date:	18/06/2010
Location:	Lg da Misericórdia
Botanical name:	*Jacaranda mimosifolia* D. Don
Common name:	Jacaranda
Perimeter at 1m:	183 cm
Edaphic index (μ):	1.15
Intrinsic factor (Els):	0.85
Extrinsic factor (Ele):	0.30
Market price index (ω):	31.85
Final Value:	8,428.96 €

ID:	16_5
Evaluation date:	05/07/2010
Location:	Lg dos Penedos
Botanical name:	*Platanus hybrida* Brot.
Common name:	London plane
Perimeter at 1m:	292 cm
Edaphic index (μ):	1.15
Intrinsic factor (Els):	0.95
Extrinsic factor (Ele):	0.30
Market price index (ω):	12.72
Final Value:	9,399.21 €

ID:	16_2
Evaluation date:	05/07/2010
Location:	Pr Joaquim Antonio Aguiar
Botanical name:	*Schinus molle* L.
Common name:	Peruvian peppertree
Perimeter at 1m:	199 cm
Edaphic index (μ):	1.15
Intrinsic factor (Els):	0.90
Extrinsic factor (Ele):	0.30
Market price index (ω):	69.74
Final Value:	23,016.06 €

ID:	16_3
Evaluation date:	04/06/2010
Location:	Lg Marquês de Marialva
Botanical name:	*Platanus hybrida* Brot.
Common name:	London plane
Perimeter at 1m:	277 cm
Edaphic index (μ):	1.15
Intrinsic factor (Els):	1.00
Extrinsic factor (Ele):	0.50
Market price index (ω):	12.72
Final Value:	10,291.34 €

23/05/2010
Avenida Infante Dom Henrique

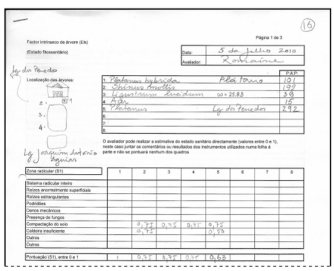
ID:	2_4	15_3
Botanical name:	***Sophora japonica* L.**	
Common name:	**Japanese pagodatree**	
Perimeter at 1m:	**71 cm**	
Edaphic index (μ):	**1.15**	**0.95**
Intrinsic factor (Els):	**0.75**	**1.00**
Extrinsic factor (Ele):	**0.30**	
Market price index (ω):	**20.17**	
Final Value:	**761.81 €**	**839.09 €**

15/07/2010
Praça Joaquim António Aguiar

04/07/2010 Pr Joaquim António Aguiar

ID:	14_4	14_5
Botanical name:	***Melia azedarach* L.**	
Common name:	**Bead tree**	
Perimeter at 1m:	**64 cm**	**41 cm**
Edaphic index (μ):	**1.15**	
Intrinsic factor (Els):	**0.90**	
Extrinsic factor (Ele):	**0.30**	
Market price index (ω):	**20.98**	
Final Value:	**781.62 €**	**340.38 €**

EXAMPLE OF A FORM



CONCLUSIONS

One of the difficulties encountered was the validation of the results. How are we to know if the value reached by a certain appraiser is a valid and fair result? To start with, the tree appraisers of the municipality of Lisbon where asked to look at the results and compare them with similar trees evaluated by them within their scope of experience. To have a sound basis of comparison we are now carrying out a survey of which Portuguese municipalities are using the method, what data is being used as a reference for the nursery grown tree value and the figures of the evaluated worth of the most commonly found trees. Climate similarities and the geographic proximity also show in the relation between nursery prices practised in both countries. Although the tables with the nursery prices index are based on the Spanish reality, its data is also valid for the Portuguese evaluations.
As for the applicability, the appraisal charts have been adapted during the course of the study.
The main conclusion of this study is that the Norma Granada is a valid method for tree evaluation in Portugal.

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