

## **Contribution to the issue of plants protection from the damage by game - practical experience with the application of environmental practices in the conditions of Botanical Garden of Pavol Jozef Šafárik University**

**ROBERT GREGOREK<sup>1</sup> & MARTINA PLUCHTOVÁ<sup>2</sup>**

<sup>1</sup>Botanical Garden of P. J. Šafárik University in Košice; robert.gregorek@upjs.sk

<sup>2</sup>Technical University of Košice, Letná 9, 042 00, Košice

---

Gregorek R. & Pluchtová M. (2015): Contribution to the issue of plants protection from the damage by game - practical experience with the application of environmental practices in the conditions of Botanical Garden of Pavol Jozef Šafárik University. – Thaiszia – J. Bot. 25 (Suppl. 1): 155-162. – ISSN 1210-0420.

Abstract: Botanical gardens and arboretums pay much attention to growing of variety of plants of which the significant amount represent the trees. The measures for protection of grown trees are then economically justified. Vast areas of collections are usually home to lots of animals. These include free ruminants as well as animals bred in order to provide ecological maintenance in form of grazing. Much experience has been obtained with grazing the forest parks and meadows in the area of our botanical garden. The experience and knowledge has resulted into an ecological as well as economical form of protection of trees from being grazed by free as well as bred animals.

Keywords: grazing, trees protection, biting of trees, ecological maintenance of the park forests

---

### **Introduction**

Botanical gardens and arboretums generally grow a wide assortment of plants including trees which are of significant importance, too. It takes a long time from the point of obtaining the trees until they are used in planting on a permanent place thus any actions to prevent damage are important and economically justified.

Quite vast areas of collection gardens usually serve as the rear for variety of animals. The variety sometimes includes wild ruminants which are well known for their ability to damage trees, mainly the young ones. Does and deer, mainly in winter under bad weather conditions, are able to damage evergreen trees (sempervirent) and conifers during a single night. The result of such damage in form of significant loss can be expected in plantings as well as reduction in the valuable assortment of the trees (Fig.1, 2).

The possibility of grazing of wild seedlings, bushes and grassy vegetation in the territory of a botanical garden or an arboretum is quite a complex issue. There are many reasons to pastures management revival in the country and the advocacy of such an approach is an independent topic. In the conditions of Botanical Garden of Pavol Jozef Šafarik Univeristy in Košice a suitable model of controlled grazing of woods and parks has been searched for many years.

The question of wild doe and deer or ruminants damage risks reduction has a common solution.

The observation of usual behaviour of goats and sheep has brought us to the knowledge of which practical application could be a solution to nibbling of trees by the wild animals.

#### **Traditional procedures for prevention of damage to trees by game:**

- Quality, well maintained and functional fencing – allover protection of the area.
- Electrical fencing – protective lines.
- Individual protection of trees with the use of coating materials.
- Repellent pastes, coatings.
- Simple measures inspired by nature.



**Fig. 1.** Damage to *Thuja occidentalis Smaragd* by roe deer. The damage appeared at the end of the winter and its consequences are visible after more than a year since then.



**Fig. 2.** Actual damage to a scion of *Cercidiphyllum japonicum Pendulum*.

Most commercial preparations applied for animals repulsion are based on various unattractive odorous substances (human sweat concentrate, waste oil products).

The substances themselves exclude the possibility of their application in the areas visited by people. Some pastes applied to tree trunks contain abrasive components.

## Protection of woody plants in the Botanical Garden of Pavol Jozef Šafárik University

Our breeding activities (goats and sheep) have proven the fact that livestock refuse to eat the food that smells after stabling. The ruminants do not like the hay which was long term stored in the immediate vicinity of a barn. This finding seems to be very inspiring.

The smell of stabling applied on plants in a particular form makes the plants unattractive for the animals.

That is why we have gradually applied various mixtures containing milk of lime on the young trees and bushes (Fig. 3, 4). The addition of an abrasive – fines and or soil has improved the effect. The most significant improvement has been achieved after the addition of small amount of goat droppings. At the end of the year, before the frosts come, when the needles of conifers are perfectly matured, a small amount of dispersion (e.g. DUVILAX) can be added into the mixture to improve its endurance (Fig. 5).



**Fig. 3.** Preparation of the mixture used for eco friendly protection of trees from being bitten by game. From the left : 1. lime milk, 2. goat droppings with sand and soil, 3. final mixture with the addition of flour (resp. dispersion).



**Fig. 4.** The application of mixture onto the trunk of a young tree with the smooth bark (*Broussonetia papyrifera* (L.) L'Hér. ex Vent. ) with the use of latex and textile glove.

Where the colour highlight of young plants is needed and meaningful, a colour version of dispersion paint was added to the mixture (e. g. BALAKRYL, SLOVAKRYL, LATEX). This application seems to be very effective in the zones with free movement of people as the small trees are usually mechanically damaged or trodden in winter due to a high layer of snow. An eye-catching colour of the spray can reduce the risk damage to trees during mowing, too.

The application of the mixture to high trunk trees with smooth bark can be done with the use of a mason's brush – coating, spraying or stippling.

For branched and bushy trees the most universal procedure can be applied with the use of hand plastering trowel (Fig. 6).

The composition of the mixture applied successfully to protect the trees from the ruminants in the conditions of the UPJŠ Botanical Garden between 2011 and 2015:

- milk of lime (approx.40%)
- abrasive material – soft sand or soil (approx.30%)
- adding of a few goat droppings (approx.25%)
- dispersion as needed to improve stability (e.g. DUVILAX) – a very good ecological solution is the use of flour
- colour variety of a dispersion paint (BALAKRYL, SLOVAKRYL, LATEX) in order to mark the young plants, also visible during mowing and protecting the trees from being cut down or being tread by people in the areas of their free movement



**Fig. 5. Protection of a growth cone of the conifers.**



**Fig. 6. Application of the protective mixture with a hand trowel.**

The other successful method applied for trees protection is the use of waste wool of sheep (Fig. 6, 7). It could be conveniently used to protect terminal buds of conifers. Longer threads of sheep wool can hold reliably after being reeled at the end of the sprig. Sheep wool is a natural material with very slow decomposition. Unlike synthetic materials used for this purpose, the sheep wool is soaked with lanoline and typical smell of ruminants which makes the repulsion of the animals very effective and successful.



**Fig. 7.** *Fraxinus ornus* L. treated with the pieces of sheep wool and subsequent layer of the protective mixture – the most convenient solution.

It is enough to apply a bunch of sheep wool on the trunk of young high trunk trees, grafted in the height of over 1.8 metres or with a treetop in such a height. The bunch should be fixed to the trunk with the use of grafting tape in the height of 1.3 to 1.6 metres. The ruminants, after such an application of sheep wool, ignore the higher placed branches which they would otherwise bend to the ground and damage.

## **Conclusion**

Our procedures are valuable due to their being:

- Ecological/eco friendly
- Economical
- Do-it yourself, easily renewable
- Quite durable and long term effective – a few months at least
- Free from restrictions on commercial animals repellents (ARMACOL 500, INVIFENS, HUKINOL, KORNITOL, ...) – more effective means on sale cannot be used in the zones with people occurrence!

Received: November 25<sup>th</sup> 2015  
Revised: December 14<sup>th</sup> 2015  
Accepted: December 15<sup>th</sup> 2015