

## LOGGING DAMAGE RESEARCH IN BEECH STAND FROM APUSENI NATURE PARK

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### Abstract

*The study area is found in UP. II Aleu, u.a. 17B (203 Fântâna Rece) from Sudrigiu Forest District – Bihor Forestry Directorate. The aim of this paper was to establish some criteria for diminish the damage level of seedlings in logged stands. The main damage that occurred in the sample plots was bark squeezed of the seedlings.*

**Key words:** logging damage, beech stand, residual seedlings

### INTRODUCTION

Apuseni Nature Park is situated in the western part of Romania, in central-north - west part of Apuseni Mountains.

Wounding can cause stem deformity and decay and significantly effect final crop volume and value. Stem decays are the major cause of low-quality wood. The amount of decay development is related to the size of wound, the location on the tree, the tree's vigor and the tree species (Solgi, A., et al, 2007).

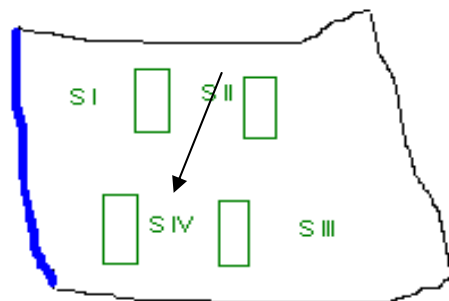
The main objectives of this study are to quantify the extent of damage incurred following ground based skidding in sample plot from Apuseni Nature Park.

### MATERIAL AND METHOD

The study was carried out in the western part Apuseni Nature Park between 46°26' – 46°45' lat N și 22°32' – 23°5' long E., in UP. II Aleu, u.a. 17B (203 Fântâna Rece) from Sudrigiu Forest District – Bihor Forestry Directorate.

The study area have 1,2 ha and comprised four sample plots (fig.1). In each sample plot was measured each seedling and noted the damage.

The sample plot have 5 meter in long and one meter in wide, orientated on contour line and with 50 meter in length between them (Buga, 1972). In all study plots was recorded tree species, height, uprooting (partial/total), bark damaged, bark squeezed, wood visible damaged, broken stem and broken branches (Number of branches/number of broken branches) (Limbeck-Lilienau, B.,2003).



Legend:

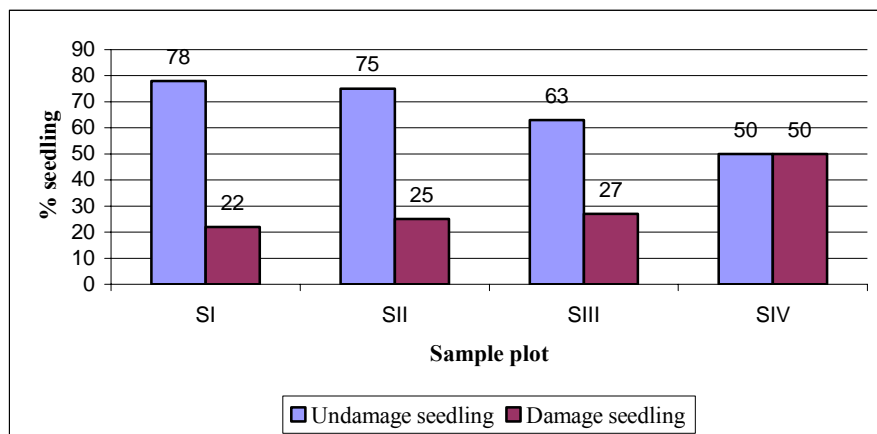
→ direction of skidding  
S – sample plot

*Fig. 1 Distribution of sample plots in 203 Fantana Rece*

## RESULTS AND DISCUSSION

In study plot 203 Fântâna Rece was made a uniform shelterwood system (final cutting), and the seedling damage percentage increase from uphill to downhill as it is shown in diagram 1, were in sample plot S IV the percentage of damage seedlings is 50% .

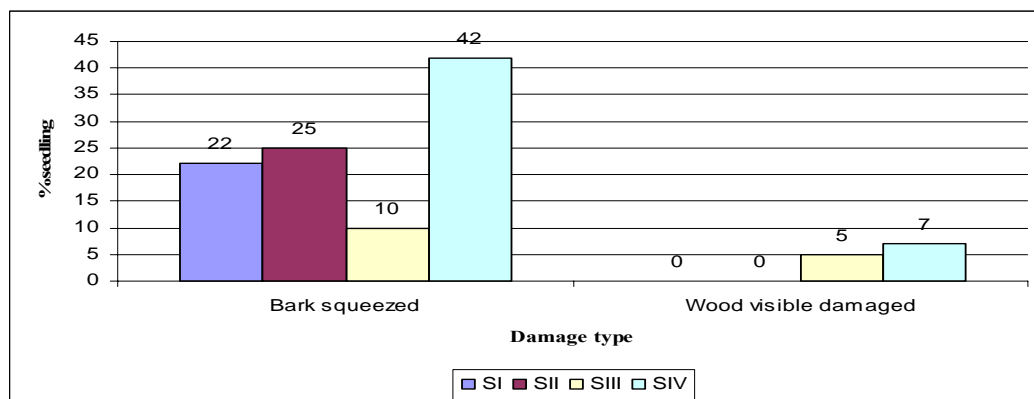
*Diagram 1*



Damage variation in report with sample plot

Comparing the two main damage (bark squeezed, wood visible damaged) it is observed that the percentage of the bark squeezed seedlings in all sample plot is higher than wood visible damaged seedlings as shown in diagram 2.

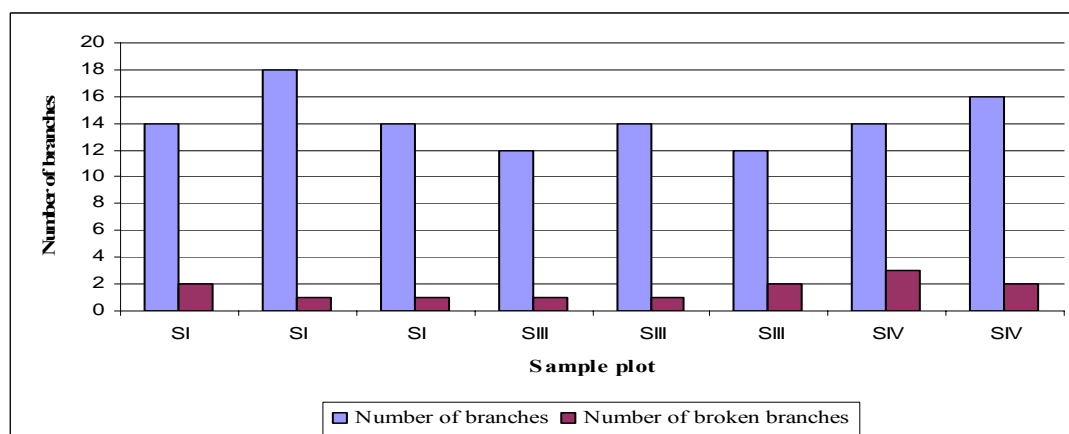
Diagram 2



Damage variation in report with damage type

If we compare the number of broken branch in report with the total number of branches we observe that the pick of the damage is in S IV (diagram 3). Sample plot SII does't have broken branches, that's why it does't appear on the diagram.

Diagram 3



Broken branches variation in report with total number of branches and sample plot

## CONCLUSIONS

The highest damages that took place in the sample plot S IV are the bark squeezed followed by the wood visible damaged, because of the natural regeneration density and the skidding roads from S I and S II traverse though sampling plot S III and IV.

In extracting timber from a stand logging operation should be carried out with extra precaution. Residual tree damage may cause a decline in bole quality and subsequent loss of tree value. The wounds provide a source of entry for insects and diseases.

For reduction of the damaged seedlings is recommended:

- logging in the winter season when the snow coverage protect the seedlings;
- the skidding road must overlap the natural regenerations;
- using an adequate technologies.

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