Research Journal of Agricultural Science, Vol. 41 (2), 2009

ECOLOGICAL RECONSTRUCTION OF FOREST LAND IN THE AREA SICHEVIȚA, CARAŞ-SEVERIN COUNTY

RECONSTRUCȚIA ECOLOGICĂ A UNOR TERENURI FORESTIERE DIN ZONA SICHEVIȚA, JUDEȚUL CARAŞ-SEVERIN

C. COVACI, Gh. ROGOBETE, M. LAZAROVICI, D. COVACI

Universitatea "Politehnica" Timişoara, Facultatea de Hidrotehnică
Str. George Enescu 1/A, Timişoara E-mail: upthidro@yahoo.com

Abstract: *Forest- management activities include use of heavy machines in forest harvests, removal of vegetation, burring and scarification. These management manipulations can alter soil properties and susceptibilities to erosion. The paper refers to the forest reconstruction in the area Gavrini from the village Sicheviţa, on a great inclined slope, with a substratum composed of sandstone or limestone and covered with a strong and excessive erosion of Skeleti-dystric Cambisols. The improvement perimeter occupies 20 ha, but the area proposed for forestation has only 6.3 ha. The natural forest vegetation consists of Quercus frainetto, Corylus avellana and Crataegus monogyna. The forest site has ability for Pinus nigra, Carpinus orientalis, Eleagnus angustifolia and Hippophae rhamnoides. It has been proposed some reclamation works, revetment of the banks and the river bed with mattress and wincher work, planting of young plant in the hearths with 60/80 cm and pits of 30/30/30 cm. The numbers of the young plant necessary for the first year was 31.500 pieces.*

Rezumat: *Activităţile de management forestier includ folosirea unor maşini grele la tăierile de arbori, îndepărtarea vegetaţiei, mobilizarea solului şi scarificarea. Aceste activităţi alterează proprietăţile solului şi susceptibilitatea la eroziune. Lucrarea se referă la reconstrucţia forestieră a unui areal- Gavrini din localitatea Sicheviţa, din sudul Banatului, pe un versant puternic înclinat cu gresii şi calcare în bază şi Cambisol distric-scheletic excesiv erodat. Perimetrul de ameliorare ocupă 20 ha, dar suprafaţa propusă pentru împădurire este de 6,3 ha. Vegetaţia forestieră din zonă este alcătuită din Quercus frainetto, Corzlus avellana şi Crataegus monogyna. Terenul este favorabil pentru Pinus migra, Carpinus orientalis, Eleagnus angustifolia şi Hippophae rhamnoides. Au fost propuse o serie de măsuri de ameliorare, consolidare a malurilor şi a teraselor cu cleionaje şi gărduleţe de nuiele împletite, plantare de puieţi în şanţuri de 60/80 cm şi gropi de 30/30/30 cm. Necesarul de puieţi pentru primul an a fost de 31.500 bucăţi.*

Key words: *slope, forest site, forestation, young plant, mattress*
Cuvinte cheie: *versant, tip de pădure, împădurire, puieţi, cleionaj*

INTRODUCTION

The development of human society and implicit of the agriculture which is the main purveyor of food leads to a permanently extension of the agricultural land and especially land in crop on the forest land with slope and this caused very strong erosion processes and released landslide on great areas. It is estimated for world level that 2 billion hectares with fertile soils suffered degradation and turned into waste land. The clearing, abuse cutting down of the woods and an excessive use of the pasture has caused a loss of the whole soil profile. The ecological forest reconstruction, through forestation of the degraded land, unfit for agricultural land use, and for the waste land requires enormous financial efforts. The necessity is imperative because in Romania the forestation percentage is only 26% from the total area and is close to the minimum necessary for a country 25%. Degraded and waste lands which can be afforested in order to reclamation will become improvement perimeters. The total surface for this perimeters in Caraş-Severin and Timiş county are 907,34 ha. The main objects for land improvement are:

- the improvement of the climate conditions by diminishing the great fluctuation of temperature, precipitation, wind and soil conditions;
- the reconstruction of the ecologically equilibrium;
- the reclamation of the local and general landscape;
- to obtain wooden mass.

MATERIAL AND METHODS

The studies territory is situated in the southern part of the Almaj Mountains on a slope with sheet and gully erosion and 35º, the substratum is composed of sandstone and limestone. The temperature has an annual average of 10ºC, the climate is continental with Mediterranean influence. The improvement perimeter includes a gully. The vegetation partial installed is composed of *Quercus frainetto, Quercus cerris, Quercus sessiliflora, Fagus silvatica, Cerasus avium, Acer campestre* and from shrubs- *Corylus avellana* and *Crataegus monogyna*. The average of the annual precipitation is 650 mm. The winds are very strong. Perimeter Gavrini is located on the right slope of the brook Gavrini, which is an affluent of river Camenița which flows into River Dunărea (pic.1).

The designer for the project was S.C. "Pădurea" S.R.L. Moldova Nouă. The structure of the field presents in this way:

- destination for forestation- 200 ha
  from which are now afforested- 9,5 ha
  must be afforest- 6,3 ha
  with forest vegetation already installed 4,2 ha.

RESULTS AND DISCUSSIONS

In order to identify the soil characteristics from the studied perimeter were carried out two soil profiles and the analytical dates are presented in table 1. The prevailing type of soil in the perimeter was established as Skeleti- dystric Cambisols, but the soil cover suffered strong erosion when the land use was change from the forest into agricultural land with deforestation so that the area proposed for forestation od 6.3 ha is in present covered with the soil type Erodosol litic (profil no.1) and Erodosol litic subscheletic (profil no. 2).

Table 1

Table title Analytical data- Erodosol litic

Horizon	Depth cm	Texture, %				pH_{H2O}	V %	Humus %	T ml
		2-0,2	0,2-0,02	0,02-0,002	<0,002				
Bv	10-20	53,0	24,1	12,4	10,5	4,42	30,43	1,00	10,2
BvR	20-30	48,3	29,2	12,7	9,8	4,47	35,99	0,39	8,6

Table 2

Analytical data- Erodosol litic

Horizon	Depth cm	Texture, %					pH_{H2O}	V %	Humus %	T ml
		>2mm	2-0,2	0,2-0,02	0,02-0,002	<0,002				
Bv	10-20	71,4	17,4	32,6	32,6	17,3	52,3	53,1	1,1	11,8
BvR	20-30	16,7	16,6	31,7	34,3	17,4	5,16	53,2	0,7	11,0

The both of soils types presents a coarse texture, loamy sand and sand loam without textural difference on the soil profile, low content of humus, acid pH and depletion of bases oligotrophic. For a good root strike it is imperative to use Humic soil from other place.

CONCLUSIONS

Text It was proposed and achieved three types of works:

a. works for territory arrangement
b. works for revetment of the banks and the slopes
c. works for forestation

a. For this types of works were limited three plots with six landmark

b. The consolidation was achieved with twenty simple mattresses. One mattress has 9 m in length. For revetment of the banks and slopes were used fences of wickerwork with double key, with 1000 m/ha in length.

c. Forestation were effectuated manually in the pits of 30/30/30 cm, in a plot prepared in hearts where doesn't terraces supported by fence of wickerwork.

The plantation scheme was 2x1 m, obtained 5000 young plant/ha density.

The sizes of the hearths are 60x80 cm. For a good grow of the young plant in the moment of planting at each pit it was added 1 dcm^3 Humic soil (pic. 2 and 3). In order to achieve a massive state we estimated that will be necessary 5 years. The estimation for damages are of 20% in the first year, 10% in the second year and 5% in the third year and that it is necessary to make completion.

As maintenance works were foreseen: revisions (in the year I, II and III), mobilization in the hearths (three in the year I and II, two in the year III, and one in the years IV and V) an overwhelming- three times (table 3, 4, 5).

Table 3

Technical Solution

Composition	Scheme m	Completions %	Revisions no.	Mobilizations no.	An overwhelming
25 Pin. n.; 25 Crp. o. 50 El. an.; Hip. rh.	2,0x1,0	20+10+5	1x1x1	3+3+2+1+1	0+0+1+1+1

Table 4

Young plants necessary

Composition	Area Ha	No. young plants/ha	No. young plants in the year (thousand pieces)				
			I	II	III	IV	Total
25 Pin. n.; 25 Crp. o.50 El. an.; Hip. rh.	6,3	5000	31,5	6,3	3,1	1,6	42,5

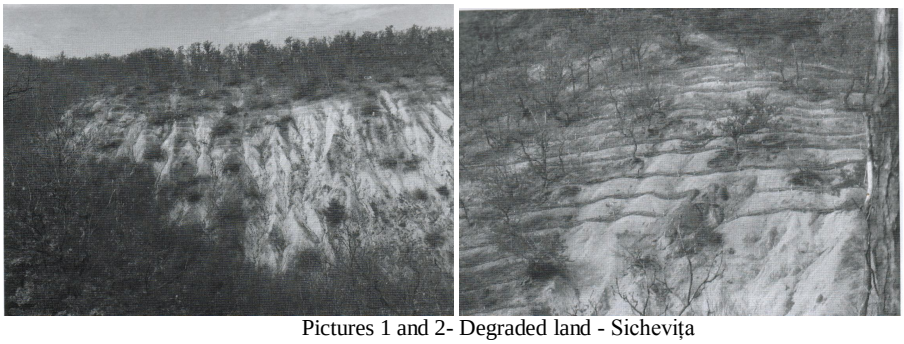
Table 5

Reviewing the young plants necessary

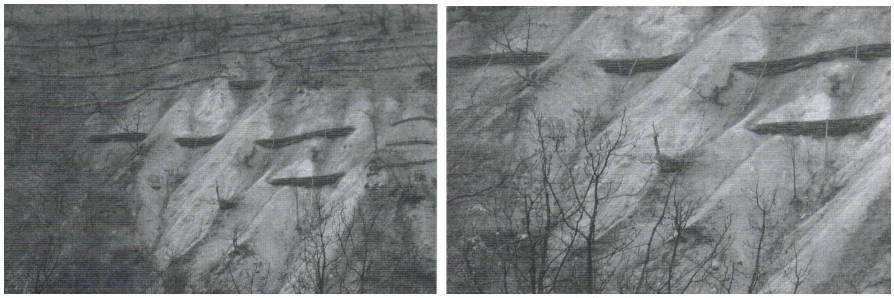
No.	Species	No. of young plant necessary in the year (thousand pieces)				
		I	II	III	IV	Total
1	*Pinus nigra*	7,875	1,575	0,775	0,400	10,625
2	*Carpinus orientalis*	7,875	1,575	0,775	0,400	10,625
3	*Elaeagnus angustif. Hippophae rh.*	15,750	3,150	1,550	0,800	21,250
Total		31,500	6,300	3,100	1,600	42,500

The project includes devices for forestation, revision, mattresses, terraces, landmarks, casting, planting.

Picture 1. Map of the improvement perimeter Sichevița, 1: 10000



Pictures 1 and 2- Degraded land - Sichevița



Pictures 3 and 4 – Improved land- Sichevița

BIBLIOGRAFY

1. BROWN L. R., 1988, "Probleme globale ale omenirii", Ed. Tehnică, Bucureşti
2. CHIRITA C. D., 1974, "Ecopedologia", Ed. Cereş, Bucureşti
3. CIORTUZ L., 1981, „Ameliorații silvice", Ed. Didactică şi Pedagogică, Bucureşti
4. CIORTUZ L., 1985, „Contribuții la cunoaşterea şi caracterizarea stațională a terenurilordegradate antropic", Universitatea „Transilvania", Braşov
5. DAMIAN I., 1978, „Împăduriri", Ed. Didactică şi Pedagogică, Bucureşti
6. DUMITRAŞCU T., 1994, „Cercetări privind ameliorarea şi valorificarea prin culturi forestiere a terenurilor degradate din bazinul hidrografic Bistra Mărului", Teza de doctorat, Universitatea „Transilvania", Braşov
7. DONIȚA N., IVĂNESCU D., LUPE MILESCU I., STĂNESCU V., VLAD I., 1981, „PădurileRomâniei", Ed. Academiei R.S.R., Bucureşti
8. FLORESCU I. I., NICOLESCU N. V., 1998, „Silvicultura", vol. II, Ediția Universității „Transilvania", Braşov
9. FRATILĂ E. C., 1999, „Structura şi regenerarea naturală a arboretelor din ecosistemele de făgete de mare altitudine din Banata", Teză de doctorat
10. IANOŞ GH., ROGOBETE GH., 1989, „Eroziunea solurilor în județul Caraş-Severin şi măsurile de ameliorare", Publicat SNRSS, nr. 26 ASAS, Bucureşti, pg. 77-89
11. FAO, „Studii asupra pădurilor şi produselor forestiere", nr. 15
12. GIURGIU V., 1978, „Conservarea pădurilor", Ed. Cereş, Bucureşti
13. NEGULESCU V. E., STĂNESCU V., FLORESCU I., TĂRZIU D., 1973, „Silvicultura, fundamente teoretice şi aplicative", Ed. Cereş, Bucureşti
14. ROGOBETE GH., CONSTANTINESCU L., NEMEŞ I., 1999, „Manual de pedologie practică", Ed. Mirton,

Timişoara
15. ROGOBETE GH., CONSTANTINESCU L., „Agrotehnica terenurilor şi silvicultura terenurilor ameliorate”, Partea a II-a, Institutul Politehnic Timişoara
16. TĂRZIU D., 2002, „Ecologia generală şi forestieră”, Arad Vasile Goldiş University Press
17. TRACI C., COSTINE E., 1996, „Terenurile degradate şi valorificarea lor pe cale forestieră”, Ed. Agrosilvică, Bucureşti