

## Research on design works of correction of torrential basin in Poiana Mărului

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**Abstract** This work is necessary correction torrents to avoid floods, soil wash and soil erosion. In rainfall areas the soil is prone to erosion and landslides, in which case the correction works are good torrents and necessary. This work can help change the course of water and thus avoiding flooding of land settlements. One of the great advantages of this work is to prevent bringing silt (gravel, boulders, wood).

### Key words

design works, basin, torrential processes, slope coefficient

Given the natural and socio-economic conditions that have triggered torrential processes developed technical solutions basin slopes can be set differently in relation to land use, nature and structure of vegetation, nature and intensity of degradation phenomena. Technical solution planning consists of a series of works Biotechnical and hydro are taken to improve the torrential river basin hydrology. The works envisaged measures and basin slope will follow: increased effectiveness of hydrological and erosion in the basin stands achievement and mentions the contents of carpet herbaceous meadows able to prevent the onset of erosion or limit the speed of development of this process.

### Material and Methods

Bright Valley basin fittings will be offered a complex of the measures of silvotechnics and engineering, first with importance and effect on the second category. To be the desired effect silvotechnics measures must ADPT complex environmental factors and complex factors torrent. The main factors are torrent: the high rainfall station in the Vale have the highest rate in the country (1400mm); steep basin indicating a high propensity to torrential; inclusion of rock layers in fancies chlorite schist's and amphibolites siroccos-less resistant to erosion; light textured soils which are also subject to erosion; vegetation which USH3 (to pasture) and USH1 with poor forest also predispose to erosion.

Plant health concern for the forest is compulsory and the cup surfaces will apply more frequent inspections and a network of pheromone panels for *Lymantria monacha denser*.

For USH3 will notify competent bodies need this area to grassland afforestation, forest is one that provides the greatest benefits: evapo-transpiration is active; regulate the speed of melting snow; protects and increases water infiltration and accumulation in soil

litter; reduces soil erosion and thus reduce sediment load of flood waters.

To improve the quality of pastoral land are recommended: works by loosening and aeration of the soil (harrowing and possibly ripping) to improve internal drainage. The amendments apply lime at doses of 12 ... 15 t / ha CaO, to alleviate and improve soil structure and increase the potential use of chemical fertilizers, overseeding with a mixture of *Phleum pratense* (10 kg / ha), *Festuca pratensis* (16 kg / ha), white clover ( 2 kg / ha) grasslands near lakes, in its land with soil mixed with normal profile of *Festuca pratensis* (20 kg / ha), *Festuca rubra* (10 kg / ha), *Phleum pratense* (6 kg / ha ) and ghizdei (2 kg / ha) meadow land with soils with modified profile (disturbed following arrangements); fertilization with chemical fertilizers spread over a period of 4 years, the average achievable in these conditions is not less than 20t / ha of green mass. Avoid grazing and maintenance execution time or moist soil.

These will be addressed in the following sequence:

a) the longitudinal profile of the main riverbed in its lower area, location of work (about 200 m, including the river bed running through the cone of dejection);

b) the average transverse profile in that area by taking, for simplicity, a slope coefficient  $m = \text{ctg } O = 1$ , A (based on profile width is equal to the average width of the bed, above recommended);

c) in the table field longitudinal profile, is studied variation retention capacity of a single dam, depending on height. Is calculated with the following formula:

$W_{at} = [Y_m^2 / 6 (\text{take-IAT})] \times (3 \times b + 2 \times m \times Y_m)$ , where:

$Y_m$  - height of the work;

$b$  - width of the riverbed, forming the average attestation;

$m$  - average slope coefficient of the banks;

and - average slope in the riverbed thalweg of attestation;

training commenced - slope design for Bright Valley basin were obtained the following values:  $i_a = 8\%$ , here  $= 3\%$ ,  $b = 8$   $W_{a_{ter}} = 1372, 08$ ,  $m = 1$ .

Destruction frequency (almost annual) road platforms, erosion, and crossings, by clogging their opening is generated on one side of route location near the thalweg and on the other hand the dynamic processes characteristic of pools morphohydrographic very high potential evolution towards forms of degradation.

The emergence and development of alluvial sources such as sliding slopes, with implications degradation beds by their extremely high rate of network power, but also by causing clogged drain sections upstream slope adjustment, raising water levels caused medium large share of the road or across the platform. Moreover, the continuous movement of mass slippery due basic level, roads is permanently destroyed platforms. In these cases, the existing stands were directly affected, being practically dismantled or deconstructed.

Accumulation of large alluvial deposits, characterized by a pronounced mobility and development slides sliding slopes by erosion leading adjacent beds led also clogging riverbeds implications effluent flooding of settlements and loss of productivity of agricultural areas - very important for local population.

Beside the direct effects mentioned products, increased slope and channel processes in the torrential river, there is an indirect effect several implications for the local economy as well as administration forestry economy among which the most important are: disruption annual and / or seasonal forest roads generating traffic loss recoverable timber (delays / postponements in regeneration cuts or execution of care); in the same context, lowering the rate of accumulation of financial resources in the local economy, the exploitation and wood processing has a significant percentage.

## Results

From this point of view must follow these rules: each year, grazing will follow a certain sequence established at the beginning (plots are numbered) and to be respected in all levels of grazing, grazing after a parcel will consumable waste mow vegetation to remove unevenness of edible decline in pasture and grass, grazing will begin when the plants grew 12 ... 15 cm and continuing until the grass reaches maturity phase, after which it will mow for hay or silage green mass, should be avoided during rainy grazing when the soil is too wet, to avoid degradation of pasture will apply every year regularly, fertilization and maintenance work to the project.

In agropedology and climate conditions of the pelvis grazing study will be organized into four operating cycles of 3 5 ... 40 days (total 140 ... 160 days) in low areas up to an altitude of 1200 m and 30...35 days (total 120...140 days) in areas exceeding 1200 m altitude. Practice during grazing are generally in the range 10 May to 15 September. But it can start earlier or later depending on the weather.

The proposed improvement measures, it is considered that mass production green meadows studied basin will increase significantly per unit area. Thus, estimates revealed that currently total area weighted average yield is 8545 kg green mass per hectare and it will grow in the future almost twice (16284 kg / ha).

Since the conditions or grassland basin exploiting hard, meaning that demand a lot of work to mowing and transport hay meadows is preferable to be used wherever possible organized form of pasture, leaving only purpose of hay meadows which can be easily exploited, with access roads. shipment of animals and the number of animals that can graze the entire surface is determined by the green mass production made, counting of this is that only a percentage of 85 ... 90% is actually consumed production

In addition to technical and economic effects mentioned above, watershed planning work is remarkable and significant rainfall ecological valences as follows: this work contributes to a significant extent, restore the environment, especially in across those "segments" who were the most powerful "altered" by torrential processes in the basin, during execution, maintenance and repair work is absorbed part of the labor force locally, particularly in rural areas: in most cases, torrent arrangement works contribute to the protection objectives, goods which are or may be intercepted by the floods, particularly catastrophic nature, stands installed on degraded land in the basin can meet different needs (tree, acacia, berries ) by gradual reduction of the difference between rainfall and erosion admissible, we refer to works created favorable conditions for a higher recovery of land in the future, both from the economic and in terms of tourism and recreational activities.

Dynamic development processes rains in the basin, and the nature and extent of flood endangered objectives, justifying the need and opportunity for intervention with hydraulic works in the basin rainfall across the network. These works will compensate the effect of measures and design work on the slopes of the basin. Hydromechanics network planning solution basins will be designed in a series of multiple transverse hydraulic works (dams), connected to the first dam downstream reach through a duct.

These works that will be in Valley catchments devices will have the following functions:  
-Regulation and strengthening white;  
-Mitigation of floods and silt carried by flood retention.

Creating favorable conditions for forest vegetation installed on alterations of works and sources of alluvial land on the shore. Dam design will be made in relation to data and items shown below:

1. Planning period-It is recognized that during this period there will be a downpour which equals the probability of exceeding the theoretical probability corresponding special operating conditions work (if light Valley basin and  $p\% = 0.5\%$ ). This period of development is taken from tables based on average annual volume from transport. If Bright Valley basin planning period is 10 years age is reduced to 6 years (depending on annual sediment transport)
2. Volume of sediment capable of forming attestation;
3. Slope silt settlement likely in attestation.

This design is called the slope or gradient calculation, the slope of which is allowed in the design phase, which refers to the average slope of the surface after which the works have silt upstream cross.

The slope is taken on a purely empirical, depending on granulometry silt carried by flood. In this basin alluvium transported falls into the category of boulders and coarse gravel with a diameter greater than 7 cm, slope design is adopting as 4%.

Probable slope silt settlement in attestation, called gradient slope design and computing the slope is allowed to give design phase, concerning the average slope of the surface after which the works have silt upstream cross.

Recommended design norm: for fine silt-0, 5%, for medium or coarse sand 1% for small gravels (<1 cm) -2% for coarse gravels and boulders (1-7 cm) - 3% for boulders (7-20cm) - 4%. In this basin alluvium transported fall within coarse gravel and boulders with a diameter between 1 and 7 cm, slope design is adopting as 3%.

## Conclusions

In consequence, the hydrological study (USH) has led to ecosystem able to counteract susceptibility to erosion. In USH1, stand with 90 years and is a class A and is proposed to achieve a conversion to forest gardening. In places where regeneration difficulties will arise with artificial regeneration schemes we get close to closing as quickly massif. In this way forest leads to the multi-structure that is best suited for hydrological and erosion protection. In USH2 will also make a conversion to forest gardening with their passing functional category (as in USH1) with water protection functions. For all forest surface mining technologies will be adopted as ecological exploitation method is multiples of sorts and out of carts will be to produce minimal damage.

As a final conclusion to prevent, correct or diminish their training is necessary for these works to promote torrential correction becoming more

especially in our county Caraş-Severin, where disasters have increased following forest cutting wasteful and failure to comply with the laws of nature.

The local socio-economic context, investments in torrential correction leads to:

- protecting water sources (the lake is the source of drinking water for urban settlements in the area and will become one of the most important sources);

- maintaining the productive potential of agricultural land in the rural population, which, given the geomorphologic conditions, are located predominantly in the lower river floodplains and terraces;

- development and protection of tourism in particular and tourism in general, the basins that are to be arranged as a haven landscape and also of scientific interest for the urban regions located within a radius of about 80 km.

- absorption in construction of part of the labor force in economic sectors in the city (mining, oil processing);

- create business opportunities for small and medium-sized private building in the declared deprived of these localities.

In terms of hydrology, the impact was not felt at all, because they have blocked certain sections of river basins giving rise to accumulation typically used to produce electricity and to irrigate agricultural areas drier. As noted above, the table values, the largest pool of storage is used for recreation.

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