

## SPECIFIC FEATURES OF VINE CULTURE ON THE TERRACED VERSANTS

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### **Abstract**

*The viticultural plantations on the terraces present a series of agro-phytotechnic characteristics. On the versants, whose slope is between 14-24%, the water erosion of the soil is controlled by the reclamation of the versants in terraces, which follows the contour 209 lines. On the lands that represent the object of this paper, there are recommended the local or sprinkling irrigation and on the lands with a longitudinal slope lower than 1.5%, the furrow irrigation can be applied.*

*For a better exploitation of gradients, the vine on the peripheral rows in the upstream or downstream region, has to be led on high stems, increasing the space offered to each vine, thus, increasing the production.*

**Key words:** sloping land, soil erosion, sloping canal, terrace, versant, and gradient

### **INTRODUCTION**

The culture of vine found on the terraced lands presents some characteristics regarding the climatic, edaphic and orographic conditions. More favourable conditions of humidity are found on the terraces on the foot of the slope and more reduced on the terraces on the central and superior part of the versant. Higher temperatures and more intensive light are recorded on the superior third of the slope and more reduced ones on the inferior part. The natural fertility of the soil is higher on the inferior third of the versant and decreases by passing to the central and superior third of the versant. The fertility differs on the same terrace, being higher upstream and lower downstream the platform.

By chamfering, a certain surface of the reclaimed land is lost, according to the land slope.

Taking into account the sensibility of the Riparia gloire father plant to drought, lime, soil fertility, it is not recommended to be used on the terraces.

The varieties of the table grapes will cover the terraces with the most fertile soils, those of high quality red wines will cover the superior third and the varieties of white wines will cover the rest of terraces on the versant.

For facilitating the mechanization, the upstream interval will be of 1.5m and the downstream one will be of 1.7m.

Due to the fact that the slope of a platform is reduced at  $V_2$  in time, the vines in the upstream part of the platform are planted with 5cm lower in

comparison with the soil level, and in the downstream part of the platform with about 5cm above the soil level.

## **MATERIAL AND METHOD**

About 70% of the Romanian viticulture cover sloping lands, lands submitted to erosion; thus, they are also submitted to great losses of soil, which contains considerable quantities of humus, phosphorous, nitrogen and potassium.

Soil erosion depends on the slope of the land, the length of the slope, quantity and intensity of precipitation. Its aggressiveness is stronger on sloping lands with no slope canals, ditches parallel with the contour lines, which are able to take over the high volume of precipitation; thus, preventing the concentration of water streams, and surface leaches.

On the versants, whose slope is between 14-24%, the water erosion of the soil is controlled by the reclamation of the versants in terraces, which follows the contour lines. These terraces can have horizontal platform - where the volume of precipitation is insufficient and the soil has a high permeability or can have a platform inclined with 5-6% along the slope, in order to facilitate the removal of water excess, where the volume of precipitation is annually higher than 500mm.

The embankment of the versant has always to be begun from the foot to the top; thus, after making the first terrace, the fertile soil on second terrace to be pushed on the first one where it will be leveled up; and after making the second terrace, the fertile soil on the third terrace will be pushed and leveled up on it, and so on. The last terrace will remain with no fertile soil, but it usually coincides with a road.

After embankment some gradients result, having a height, lower or higher, according to the slope of the land and wideness of the terrace. In order to prevent the soil erosion, these gradients are weeded with perennial herbs, and in some cases are strengthened with stone.

The large share of the viticulture practiced on terraced lands imposes the knowledge of agro-phytotechnic characteristics in these culture conditions. The culture of vine on these lands is facing some differences, characteristics regarding the climatic, edaphic and orographic conditions.

## **RESULTS AND DISCUSSIONS**

The displaced relief creates microclimatic differences with more favorable conditions of humidity on the terraces on the foot of the slope and more reduced on those on the central and superior side of the versant.

A higher temperature and a more intense light are recorded in the superior third of the versant and a more reduced one on the inferior side. For instance, between the soil temperature at 10cm depth on the superior extremity of the terraced versant and that on the inferior extremity, there is a surplus difference of about 2.5C for each day of July, leading, during to the whole vegetation period, to a surplus of 330C. Differences in temperature are also recorded at a depth of 40-50cm, where the roots have a higher density.

Due to the processes of erosion and silting, the natural fertility of the soil is higher in the inferior third of the versant, decreasing by passing to the middle and superior third of it. Fertility differs even on the same terrace, being higher downstream and lower upstream the platform.

The process of getting closer to the gradient of the downstream row, exposes the vine logs to dryness and the planting of the last row too close to the base of the upstream gradient places the vine logs on the land with the lowest fertility.

By chamfering, a certain surface of the reclaimed land is lost according to the slope of the land. Thus, on the versants with a slope of 14-15%, the losses are of 15% and on the versants with a slope of 21-25% the losses are of 22-28%) of the reclaimed land surface.

The selection and placement of the varieties are made according to the direction of production and of the different regime of temperature, light, humidity and fertility on different parts of the versant. Taking into account the sensibility of Riparia gloire father plant to drought, lime and soil fertility, it is not recommended to be used on terraces. The varieties of table grapes will cover lands with fertile soils, those of high quality red wines will cover the superior third and the varieties of white wines will cover the other terraces on the versant.

For the mechanization of works on the upstream region, the distance from the row to the gradient will be of 1.5m and on the downstream region, the vine row will be placed at 1.7m to the gradient limit.

The process of planting vine also presents some characteristics in comparison with the usual technique.

Due to the fact that, in time, the slope of a platform is reduced to about  $V_i$ , the vines on the upstream platform are planted with 5cm under the soil level and on the downstream platform with about 5cm above the soil level. In order to homogenize the depth of the displaced soil, it is recommended as the planting holes to be made upstream the picket. A layer of manure will be applied at 3-4cm under the level of root settlement.

## CONCLUSIONS

The viticultural plantations on the terraces present a series of agrophytotechnic characteristics.

Tillages applied rationally lead to the homogeneousness of the soil fertility degree on the platform and to the achievement of some high productions of grapes. As concerns the fertilizers, there are applied 30-40t/ha of manure altogether with 100-200kg/ha of phosphorous and 200-300 kg/ha of potassium.

The fertilizers will also be applied differently on the terraced platforms, that is, they will be doubled upstream in comparison with the downstream region.

On the lands that represent the object of this paper, there are recommended the local or sprinkling irrigation and on the lands with a longitudinal slope lower than 1.5%), the furrow irrigation can be applied.

For a better exploitation of gradients, the vine on the peripheral rows in the upstream or downstream region, has to be led on high stems, increasing the space offered to each vine, thus, increasing the production.

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