

CASE HISTORY VINEYARD DRAINAGE - IDROSAC-MONTALCINO (SIENA)-TUSCANY-ITALY-2011

1 - Description of the land defense intervention

The purpose of the intervention is to achieve a shallow drainage in the trench using the IDROSAC 500 system. In detail it is necessary to drain the excess water to the contact between the schistose shales and the landfill, in order to stabilize the movement in act in the central portion of the vineyard, which caused damages to the new plant (Figure 1). From the information gathered from the property and from the insiders it appears that the area subject to intervention has always been for agricultural use with crops used in the sector of wine and the need for drainage is of primary importance in order to ward off the excess of water from the ground to improve its use and to safeguard the growth of water plants with a consequent increase in agricultural production and speeding up of operations agricultural.

It should be noted that the vine is clearly suffering from excess moisture in the soil; the interventions that allow a rapid disposal of excess water allow to reduce and / or prevent erosion and at the same time create a hypogeal environment more suited to radical activity. For the hill lands it becomes then a priority both the sowing and / or storing the turf that prevents surface runoff water, which is accompanied by the transport of earth particles, as the installation of hydraulic underground drainage facilities that reduce unproductive areas.

The IDROSAC 500 system (Figure 2) was chosen both for the lightness and versatility of the material as for the logistics of the intervention area that had to be minimally invasive in order to preserve the state of the vines and do not damage the end posts, columns, or rows, etc..

Because of this, IDROSAC flexible bags have proven to be easily transportable by hand Rows, otherwise it would have been for gravel wheelbarrows and / or PVC pipes that would have involved: attentions, times and efforts certainly greater.



Figure 1 - Movements of the land that have destabilized the vineyard.



Figure 2 - Flexible draining non-woven bags mod. IDROSAC 500 used

3 - Executive phases

The laying of the IDROSAC system took place according to the following steps:

- 1) excavation and construction of a trench using a mechanical excavator;
- 2) flooring of the excavation floor through the laying of TNT and laying of flexible bags draining;
- 3) filling the excavation with the previously excavated material;

The individual construction phases followed for the realization are described in detail below work.

3.1 - Excavation and construction of the trench

The first phase of work was the realization of the excavation excavation by excavator mechanical equipped with universal digging bucket (Figure 3). Taking account of the foregoing the excavation operation has saved the need to intervene with earth movements reduced to minimum to preserve the present cultures from damage. Based on the explorative essay performed with

the excavator and taking into account the operational needs of the client (at least 1 m franc lateral from the rows of vines to guarantee future operations of vineyard processing) the Director Works (DL), considered a surface possible of dissection next to the meter and a half. So it was decided to make an excavation between the rows (18 in total) with a 40 cm bucket until reaching the vineyard slope downstream the drained water flows out of the unstable area. To facilitate the subsequent laying of the bags draining was advised to pay attention to the profile of the excavation walls and to refine the bottom of the same so that it turns out more flat and horizontal and less loose as possible.



Figure 3 - Excavation with a mechanical excavator for the installation of the IDROSAC 500 system at the Montalcino estate (SI).

With regard to the excavation support works, they have not been necessary since the same settling on compact clayey lithologies at a maximum height of 1.5 m. from the p.c. is stable result.

To this consideration it should be added that the duration of the works is almost instantaneous since the IDROSAC 500 system as well as being easy to install is extremely quick to avoid thus problems of instability of the excavation front due to the excavation operation and to the thrusts side of the terrain.

3.2 - Arrangement of the TNT and laying of the draining bags

The DL considered it appropriate to use a layer of geotextile (Figure 4) of the type non-woven fabric (TNT) 2 m wide as IDROSAC 500 draining bags casing.

The DL decided the laying system along the direction of the excavation (Figure 7 draining bags). Once the draining bags were laid, the manual closure of the TNT was carried out above the sack itself (Figure 8)



Figure 4 - Pieces of geotextile of the type non-woven fabric (TNT) used for cover IDROSAC 500 draining bags at the estate in Montalcino



Figure 5 – Positioning of draining bags IDROSAC 500 at the bottom of the trench



Figure 6 – Lining operation
draining bags with the TNT carried out manually inside the trench



Figure 7 – Drawing up the TNT patch so
longitudinal with respect to the excavation directrix



Figure 8 –

Manual closure of the TNT above the IDROSAC 500 draining bag

Relative to the junction of the draining modules, necessary to give a hydraulic continuity to the system, has been proposed to the DL of:

- execute this connection outside the excavation, before laying it on the bottom of the trench;
- can join the head of each draining module with wire;

in order to obtain a drainage cylinder equal to the length of the trench excavation.

3.3 – Filling the excavation

For the excavation section in which the IDROSAC 500 system was placed, provision was made to the recombination of the excavation previously carried out. The material of Excavation in excess and up to the final quota provided and adequately compacted so as not to create areas of preferential rainwater retention. This material is particularly strong suitable since it has a similar permeability and filtration capacity to the adjacent one in place.

During the superficial reset it was finally advised to proceed with regularization of slopes according to the morphometry of adjacent areas.

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