

## Field site guide

### 4. Ecosystems on loess deposits in the Wachau area, Lower Austria

Wachau is a characteristic and well-known landscape of Lower Austria with old settlements and vineyards on hill sides along the Danube river. The field excursion of the ERASMUS IP Soil&Water was dedicated to the large loess deposits east of the town of Krems. The typical continental climate is leading to very low annual precipitation, in some years even below 500 mm. This leads to widespread drought stress. The aim of the excursion was to demonstrate drought-resistant vegetation types together with the management of sites on loess. Other aspects were the biodiversity on such sites as well as erosion protection and the impact of climate change.



Figure 1: View from the hills with vineyards to the valley of the Danube

Forests are still present on hills but the landscape is dominated by vineyards on loess soils. The forest are only extensively managed but they provide ecological services as protection against erosion and as habitat for forest species. Due to high nutrient supply and water storage in deep layers, such on loess have high production potential. Especially remarkable is the deep rooting of the vine plants (Figure 2).



Figure 2: Deep roots are visible on edges and in hollows created by erosion

The walls created in the loess are an important living space for solitary bees and wasps. They drill small holes into the loess where they lay eggs and supply their offspring with pollen and other nutrients for its development. Within this ecosystem, a red list species bird, the Bee-eater (Meropidae) nests also in loess walls.

Loess is an aeolian deposit of low erosion stability. Due to continental climate, precipitation events of high intensity can cause substantial erosion problems. Figure 3 shows some construction work done in order to prevent erosion due to surface flow after heavy precipitation. Such events are likely to increase in the future and the climate change is already affecting the vine production. The harvest of grapes has shifted by about four weeks from End of October to September and the typical grape "Grüner Veltliner" is to low in vine acids. Therefore the vine growers are managing their vineyards in high uncertainty regarding future yields and sort selection.





Figure 3: Construction works between vineyards for erosion prevention