

LAND USE CHANGES ON THE HILLSLOPE OF THE FEKETE HILL (KÁLI BASIN) BETWEEN 1958-1993

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Introduction

The aim of the historical ecological investigations and landscape history is to obtain information on the changes of the landscape structure and land use, and to collect a database for planning landscape reconstruction and landscape rehabilitation. Most of the researches dealing with this field have made endeavour to study as long periods as possible using the first, second and third military mappings (*Gábris Gy. – Miczek Gy 1999, Csemez A. 1999*). The most pronounced element of landscape changes, which can be presented on maps easily, is the alteration of land-use. In this paper the author presents the results of a study dealing with those changes which influenced landscape development on the Fekete Hill in the recent past.

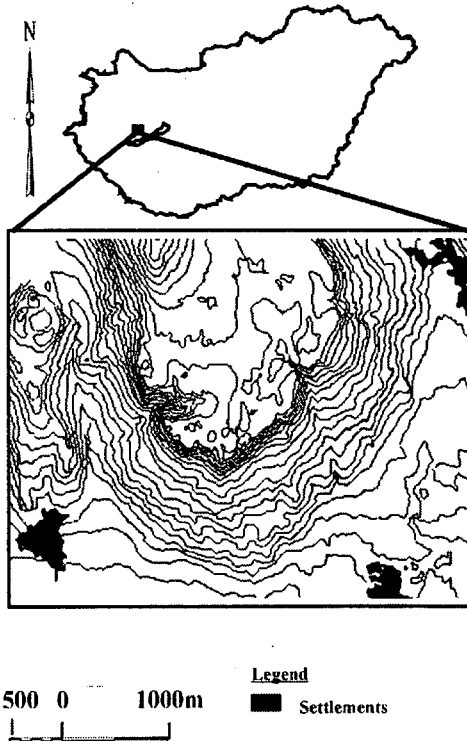


Figure 1 Topographical location of the study area

Aims

The study area belongs to one of the small basins of the Balaton Upland – the Káli Basin – occupying its northern part (*Fig. 1*).

The Fekete Hill is one of the remnant hills of the basalt volcanoes of the Balaton Upland. On its slopes viticulture has been the traditional way of land-use since the Roman Times (*Böhönyei Á. – Szantkuty G. 1982*). The aim of our study is to describe and evaluate the spatial and temporal changes in land use during the last three decades on the slopes of the hill. This paper studies only two ways of land use: vineyards and forests. The area is under protection since 1984 and it is part of the Balaton Upland National Park since 1997, these facts gave motives for the research. The aim of the National Park is not only the protection of natural values, but the preservation of the traditional ways of land use as well (in our case the viticulture). Therefore, it is very important to reveal the characteristics of landscape evolution, and in this way to get data for future landscape reconstruction.

Methods

For the evaluation of changes on the territory of vineyards and forests, airphotos (1973, 1984, 1993) and topographical maps with 1:10,000 scale (1958-, 1979) were used. The airphotos and maps therefore represent five dates. We have transformed them to the EOVS system by using ERDAS Image 8.3 software. In this common system we have outlined the different land use types on the maps and photos, then we made a digital thematic map. The resulted borderlines of the land use patches were overlapped by ARC/Info software. As a result, we got spatial data on the different types of coverages by using a 10x10 raster-web. The result of cross tabulation of the thematic raster map was a table showing the degree of changes between two or more dates. We constructed a table of these results showing the changes in „ha” or in percentage of the whole territory.

Results

Analyses of spatial changes in land-use

Comparing the 1958 and 1993 extent of vineyards and forests (*Fig. 2-3*) it can be seen that the changes concerning these two ways of land-use are different in sign and in space.

The territory of vineyards has decreased considerably and they remained on the lower parts of slopes, but at the same time the size of parcels decreased. This spatial redistribution can be explained by social reasons:

- The population of the villages around the Fekete Hill (Balatonhenye, Köveskál, Szentbékáll) has been decreasing since the 1960s. Their age structure is becoming less and less favourable: the percentage of people older than 60 years is far higher than the Hungarian average (*Szilassi P. 1999*). Therefore one explanation for the transformation of vineyards, is the unfavourable age structure and the transmigration, i.e., less and less local citizens can cultivate their own land.
- The other reason of the dramatic decrease of vineyards is in connection with their changing ownership. The Káli Basin is part of the Balaton Recreation Zone, where the recreational function has become more important since the beginning of the

1970s. The vineyards were bought by citizens of the neighbouring towns (e.g. Tapolca, Veszprém) and of Budapest. The new owners are giving up the laboursome viticulture for horticulture, or they leave their lands uncultivated. Therefore, the strengthening recreational function of the area caused great changes in the structure of the landscape (Szilassi P. 1999).

- The third reason of the decrease and redistribution of vineyards is the disintegration of the local co-operatives and the privatisation of their lands. The new owners could not continue the cultivation of these lands because of the deficiency of funds or because it is not profitable any more.

The territory of forests changed in a reverse way (Fig. 3)

- On the upper parts of the hillslopes the forest limit had moved down to lower altitudes. The re-established forests are mostly locust stands, because on the edges of the basalt plateau the former vineyard owners planted locust.
- Other characteristic areas of the expanding forests are those former dirt roads, which were running downslope. They drain the running water and as a result they become erosional gullies very quickly, therefore, they are not in use anymore. On the airphotos one can notice that along these gullies the forest belts and groves expand downslope.
- In the third case the expansion of trees started from the dispersely spotted groves on the middle slopes of the Fekete Hill. The number and area of these groves grew continuously between 1958 and 1993.

The expansion of the forests is in correlation with the retreat and suppression of vineyards and with the growing size of uncultivated lands.

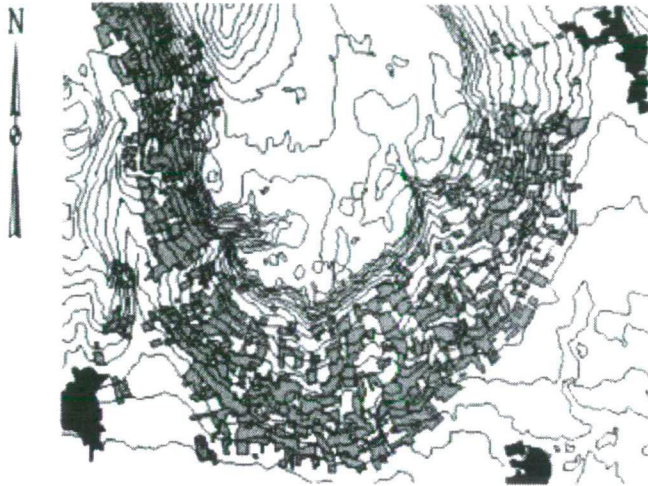
Summary

Comparing the changes in land use structure during the last 30 years we can state that the area of vineyards was decreasing considerably (Fig.4).

Simultaneously, on the higher parts the reestablishment of the forests can be studied, and along the gullies the stands are largely expanding as well.

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1958



1993



Legend

500 0 1000m

A horizontal scale bar with three segments. The first segment is labeled '500', the second '0', and the third '1000m'.

■ Settlements
■ Vineyards

Figure 2 Territory of vineyards in 1958 and 1993 on the Fekete Hill

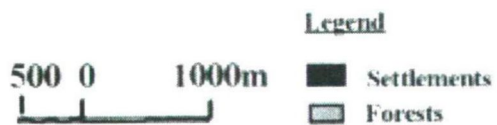
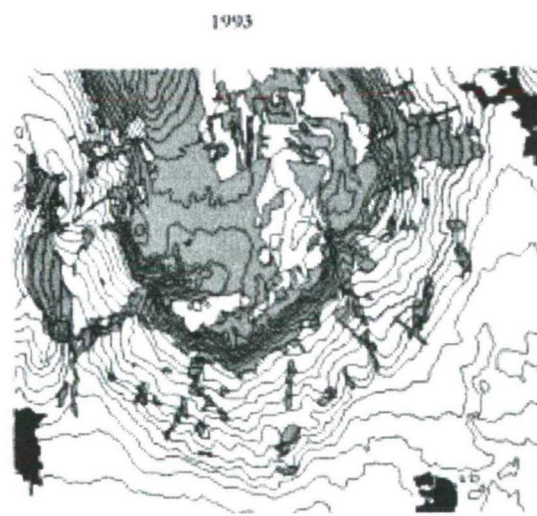
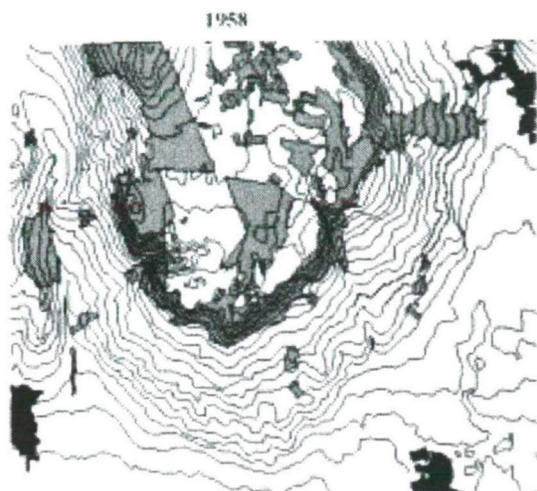


Figure 3 Territory of forests in 1958 and 1993 on the Fekete Hill

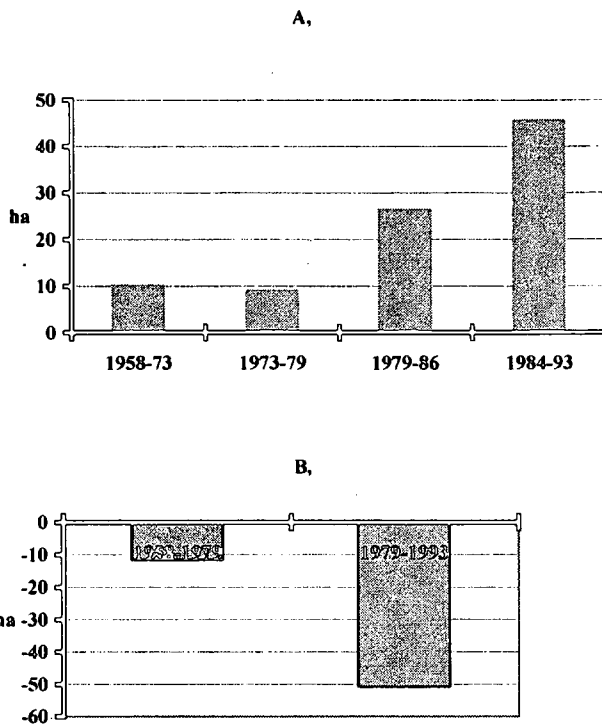


Figure 4 Changes in the territory of A, forests and B, vineyards between 1958 and 1993 on the Fekete Hill

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