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PBORLEMS OF LAND UTILIZATION ON THE VINEYARDS OF HUNGARY

Viticulture looks back upon more than thousand years in Hungary. Over centuries, and under commodity production particularly, there developed fairly delimitable vine-regions first on the southern slopes of the Hungarian Middle Mountains. At the end of the 19th century a vine-pest phoylloxera deteriorated the greatest part of the vineyards. At that time viticulture spread over the immune sand areas of the Great Hungarian Plain. Subsequent to the replantations the historical vine-regions could not maintain their former significance any longer.

Actually, viticulture occupies a round 300 000 hectares, i. e. 2.6 p. c. of the total agricultural area. In the past 50 years the size of this area has not changed considerably, although the old vineyards have gone through a large-scale reconstruction. Fifty-eight per cent of the viticultural area is found in the Great Hungarian Plain.

In the course of land use mapping we had special regard for viticultural areas as they show some geographical concentration, determining also the chief economic trend of several regions. The well-known studies on land utilization — such as the English or the Polish ones — do not present any basis for the classification of viticultural areas. During the sample surveys — effected in four vine-regions of distinct character — we have elaborated a key-system suitable for classification. Of course, this system reflects Hungarian conditions particularly, however, it may serve as and addition to the common key-system of Eastern Europe elaborated on Polish initiative.

Ownership conditions are diversified. *State farms* do not own large viticultural areas. The established instead new, up-to-date, mechanized vineyards and executed largescale reconstructions in some historical wine-districts. State farms show a vigorous specialization; they produce quality wines rather than commerce wines, in general; they own big wineries, too.

Cooperative farms own a great number of new-planted or modernized vineyards. At the time of collectivization, cooperatives obtained small-scale vine plots too, a part of which is used by individual holdings, the rest being under collective cultivation. The so-called cooperatives of vine-type (grape and wine make at least 50 p. c. of the commodity production) are found mainly in the Danube- Tisza Interfluve, on the shores of Lake Balaton and on some pediment areas as well. Due to the high inputs of handwork, productivity and per capita income are under the average.

(E. g. cooperatives specialized in wheat-growing produce a per capita value of 55 000 Forints annually, i. e. gross output per one working member, while those of vine-type do 39 400 Forints only). Wine-grape production shows a deficit, especially if they sell vintage to state wholesalers instead of processing it themselves. Tablegrape production is profitable but it is outnumbered by wine in significance.

The low average yields of vines also contribute to the insufficient outputs of the cooperatives. Viticultural areas wrestle with manure deficiencies (in the cooperatives of vine-type the density of standard animals makes 45 p. c. of the national average). There are lots of young vine-yards requiring inputs without returning any profit as yet. Finally, mention must be made of the fact that most of the viticultural cooperatives have to reckon with a poor productive capacity of soil.

Specialized producerst' group represents the third form of ownership. As regards their organization, they remind us of the simple consumers' and sale cooperatives. This form is wide-spread, and is working efficiently, in those parts of the vine-regions where the scattered small holdings were not fit for contracting them into large-scale vine-yards. The land owned by the members remained in individual property and is under individual cultivation increasing the common financial basis of the group by 10 p. c. of the net income. The common financial basis is used for establishing wineries, large-scale vineyards, etc.

A relatively considerable part of the viticultural area is in *individual* property. Even a small-vine holding may provide favourable incomes in case of a sufficiently high investment of family labour. Frequently, vineyards are owned by people with non-agricultural occupation, too.

The next stage of classification is the *age* of vineyards. Three groups can be distinguished: a) young (0—3 years old: young, non-viniferous; 3—6 years old: young, partially viniferous; 6—25 years old: young, viniferous); b) old (25—50 years old); c) deteriorating (over 50 years of age).

We have used vine-deficieny as the determinant factor for the state of vineyards. Three types are distinguished here again: full vine-stock, vine-deficiency and vineyards reconstructed by vine-supply. The latter type includes vines of varying productivity.

The characteristics of the mode of cultivation are also significant, being one of the determinants of productivity. The principal criteria are here: the presence of intercultural fruit-trees and the type of support-system.

Intercultural fruit-trees are common on the old (small-scale) vineyards of the Great Hungarian Plain. They characterize, however, only 35—40 p. c. of the vineyards in the hill- and mountain regions. Staking one by one serves as support, row-space is suitable to *handwork* only (possibly horse-hoe). This is true of each vineyard over 15—20 years of age, practically. On the young vineyards support is made of wire. Intercultural fruit-trees occur in young vineyards, too — e. g. in vineyards of individual holdings —, however, in a smaller part only. The young large-scale vineyards are monocultures, suitable to *mechanized* cultivation.

In the vineyards of the hill- and mountain regions terrace cultivation is also found, occasionally.

Accordingly, the categories of viticultural areas can be determined by the combinations of the following factors (within the individual forms of ownership):

1. *Age*

a) Young, non-viniferous
b) Young, viniferous
c) Old viniferous, reconstructed
d) Old viniferous, vine-defective
e) Deteriorating
f) Deteriorated

2. *Intercultural production*

a) No intercultural production (monoculture)
b) Intercultural fruit-trees
   — young, non-viniferous
     young, viniferous
     full
     defective
   — fruit varieties

3. *Mode of cultivation*

a) Staking
b) Support of wire
c) Hand-cultivation
d) Cultivable by horse-hoe
e) Mechanized cultivation

4. *Grape variety*

a) Wine-grape
b) Table-grape

Accordingly any viticultural area may be characterized in the following manner e. g.: old vineferous, vinedefective vine-grape with a deficiency in intercultural fruit-trees (peach: 60 p. c., apricot: 40 p. c.), hand-cultivated.

We suppose that these categories could facilitate the comprehensive characterization of viticultural areas on the detailed land use map.

In the following we present the outlines of two wine-districts of different character in order to furnish examples.

A) **Kiskőrös** belongs to the viticultural area of the Danube-Tisza Interfluve (Great Hungarian Plain). Large-scale viticulture looks back upon some hundred years in this region.

The annual mean temperature of the area is + 10° C, annual precipitation: 550 mm, annual sunshine duration: 2050 hours. Among soil types sand soil is characteristic with a clay content of 3—13 p. c., humus content of 0.5—1.8 p. c., with a poor nutritive content and water holding capacity and with an excellent airing. In several places humic subsoil is found at a depth of 1—2 m, the nutritive content of which is favourable for grapes. However, arable crop is difficult to produce on this soil.

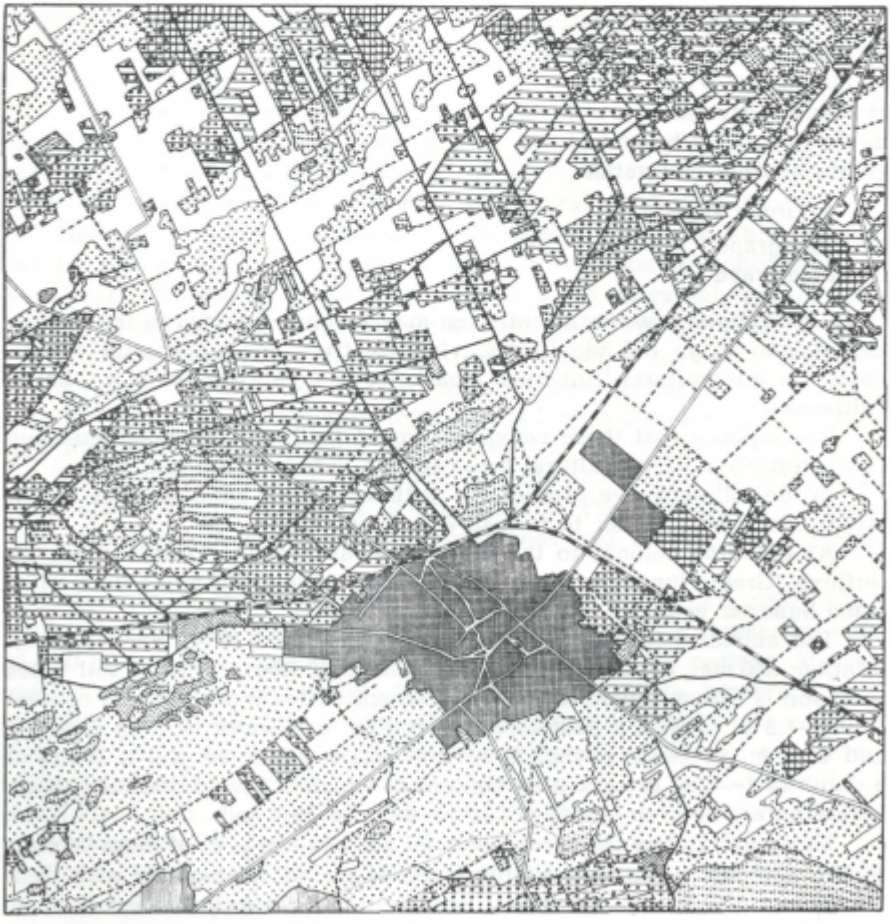
Vineyards follow the spread of sand soil; 75—80 p. c. of them belongs to the category of »old viniferous, reconstructed wine-grape with deficiency in intercultural fruit-trees, hand-cultivated. Vineyards are over 40

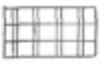
years of age, in general, but continuous vine-supply and careful cultivation keep them in full productiveness. Intercultural fruit-trees are wide-spread, raising but difficulties against the consolidation of holdings and mechanized cultivation.

Intercultural fruit-trees serve as shelters from the early spring and autumn winds which bring sand in motion. They increase and balance the incomes of the vine-growers, too.

The bulk of the stock yields commerce red-wine. The vast majority of the viticultural area is owned by a specialized producers' group. The vineyard remained under individual cultivation; the group aims at the procurement of artificial manure, plant protectives and collective sale. From the common financial basis large-scale vineyards were established being under collective and mechanized cultivation. Intercultural fruit-trees are not found in these vineyards, orchards have been established, separately. The members of the team receive to wage-like income according to work performed. The new vineyards are being shifted from the sand-

Fig. 1: Map of the agricultural land utilization of Kiskörös environment




[1] Young, not bearing vine without fruit tree intercrops, cultivated by cordon system.


[2] Young, bearing vine, without fruit tree intercrops, cultivated by cordon system.


[3] Young, bearing vine, with fruit tree intercrops, cultivated by cordon system.


[4] Young, bearing vine, with fruit tree intercrops, manual cultivation.


[5] Old, bearing, improved vine, with full fruit tree intercrops, manual cultivation.


[6] Old, bearing, improved vine, with missing fruit tree intercrops, manual cultivation.


[7] Old, bearing vine, with missing stocks, and missing fruit tree intercrops, manual cultivation.


[8] Old, bearing, depopulating, with missing fruit tree intercrops, manual cultivation.

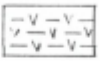
[9] Depopulated vine.

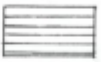

[10] Orchard.

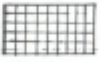

[11] Arable land.


[12] Meadow, pasture.


[13] Forest.


[14] Reeds.


[15] Territory covered with water.


[16] Interior of the country.

[17] Highway.

[18] Railway.

[19] Narrow-gauge railway.

[20] Earth road.

[21] By-way.

[22] Gutter.

arable crops were cultivated previously. The top layer of the sand-dunes poorest soils) forms the zone of deteriorating and abandoned vineyards. dunes to the plain surfaces of more favourable soil properties, where

B) **The Nagy-Mountain of Tokaj** (516 m) is part of the centuries old historical wine-district of world fame. Vineyards occupy the southern and southeastern slopes covered by loess. Sunny hours (1950 in number) and the heat amount of the growing season are lower than those of the Danube-Tisza Interfluve however, microclimate and savourable soil properties offer an excellent quality of wine.

Subsequent to the vine-pest of the past century, only 80 p. c. of the original vine-land was put under replantation. The embanked viticultural area lying above 250 m, suffered a total deterioration. Actually, the viticultural belt is found between the heights of 100—120 m and 200—250 m above sea level.

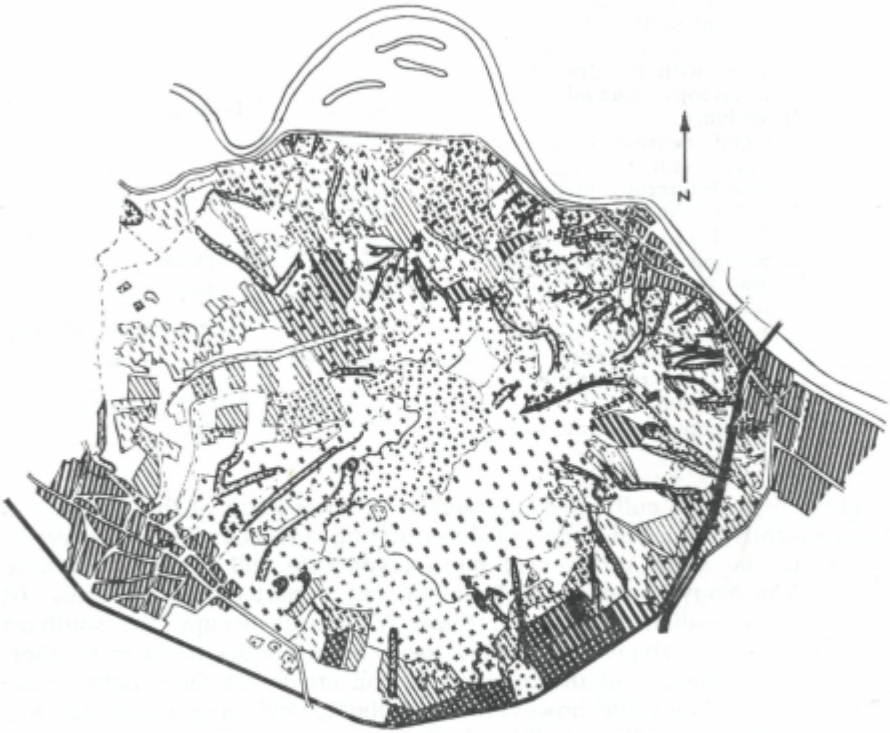
Viticulture occupies 30—35 p. c. of the surface of the Nagy-Mountain.

The state of the vineyards is connected with the angle of slope. The bulk of the vintage derives from the old viniferous, vine-defective vineyard situated on steep slopes as small holdings, on a height of 150—200 m. The form of support is staking, hand-cultivation is general. Intercultural fruit-trees are found sporadically mainly on the eastern and southeastern slopes of the mountain. As a matter of ownership, specialized producers' groups are characteristic (i. e. individual property and cultivation). On the steep slopes the destructive activity of soil erosion can be observed.

The new-planted, young vineyards are found on the gently sloping pediment areas with favourable soil properties. These up-to-date vineyards are owned by state farms and are under mechanized cultivation. Due to the high costs of plantation, only 10—15 p. c. of the new vineyards is found in the original viticultural belt, where up-to-date vineyards can be established by embankment.

An important task is the construction of erosion-defensive installations.

Fig. 2: Map of the agricultural land utilization of the Nagy Kopasz Mountain of Tokaj M = 1 : 25.000.



1 Depopulated vine.

2 Depopulating vine.

3 Old bearing vine, with missing stocks, cultivated by staking.

4 Old, bearing, improved vine, cultivated by staking.

5 Young vine, cultivated bay staking.

6 Young vine, cultivated by cordon system.

7 Fruit tree intercrops.

8 Forest.

9 Schrub.

[10] Bare, slightly grassy surface, with thin layer of ground.

[11] Arable land.

[12] Ravine.

[13] Loess hollowroad.

[14] By-way.

[15] Strip cultivation.

[16] Stone-pit.

[17] Interior of the country.

Compiled by dr. István Berényi.