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LANDSCAPE TYPES OF SLOVAKIA FROM THE AGRICULTURAL POTENTIAL STAND POINT

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The calculation of the landscape agricultural potential was made by the method of the coefficient of canonical correlation. From 22 explanatory variables we selected 5 explanatory variables by tests, which have the highest coefficient of determination and also the highest linearity and by it they show the lowest multicollenearity. They are: 1. geographical longitude, 2. gradient of landscape, 3. thickness of topsoil horizont, 4. soil reaction, grain size of arable soil. As explanatory variables we chose: 1. efficiency of direct material expenses for plant production, 2. production of biomass in dry state per ha. Both calculated coefficients of canancial correlation are important statistically. The calculated values of the landscape agricultural potential were divided into 8 degrees, which where represented on the map of Slovakia on scale 1:500 000.

INTRODUCTION

To know the agricultural landscape potential is important not only for the agriculture, but also for the experts of other professions. Based on this knowledge we can organize the agriculural production so as to consider in its organization two fundamental dialectically connected aspects. economic and protective. An incessant effort to obtain the maximum agricultral production must not, in long-termed time, either decrease, or affect the landscape reproduction capacity. Therefore it is necessary to preserve the agricultural landscape potential for the agricultural production for the future.

The agricultural production in the landscape is not an isolated activity, but it is closely connected with the other activities. These activities form a certain system, they are connected one with another and developed in mutual relationship. This system will be affected if any of the activities is given preference and grows at the detriment of the others. To grasp, as well as to support this system of activities in the landscape, we made the first experience of evaluating the agricultural landscape potential. The agricultural potential is understood as the landscape capacity and of human society to assure growth and production conditions of agricultural products. What the landscape is and what the well-developed human society is, such will be the agricultural landscape potential. The agricultural potential we elucidated is not incidental, but is is the reflexion of synergic relationship between individual landscape compontents on the one hand and the landscape, human society and agricultural production on the other.

EVALUATION OF THE ČSSR AGRICULTURAL LANDSCAPE BASIC CLASSIFICATIONS

Study and classification of the agricultural landscape are of the great importance. They were and are dealt so much by the geographers, agricultural economists, as well as by pedologists. The study results of the landscape classification correspond to the landscape knowledge in the given time.

The first agricultural landscape zoning in Bohemia starts from the needs of agricultural statistics. In 1869 the Committee for Economic and Forest Statistics, for the first time, made a list of agriculural products according to 13 countries. It used the district as the smallest unit. Karel Kořistka [17] did not agree with this classification and in 1872 he prepared a new classification of Bohemia. The territory of Bohemia at that time he divided into 11 natural landscapes. In delineating the individual landscapes he considered the orographic conditions, i. e. the shape of the earth's surface in connection with the above sea level, the earth's geologic structure and the soil agronomic nature. Analogous division of Moravia and Silesia into natural landscapes was made by the Austrian Ministry for Cultivation in the seventies of the last century. The territory of Slovakia, belonging to Hungary, was not divided into natural landscapes for the purposes of agricultural statistics.

However, the division into natural landscapes did not suit the agricultural practice. It is why, based on natural and economic conditions (economic position of the enterprise with regard to market center, transport line, intensity of production, expenses relations of individual products), Brdlík Vl. delineated (1) in Bohemia in 1915 4 production regions: sugar-beet, corn, corn-potato and fodder. Dokladal J. delineated similar regions for Moravia and Silesia in 1918 and Holum Ed. for Slovakia in 1920.

After the formation of the state territory of Czechoslovakia, it was necessary to make a new classification of the entire republic based on a uniform approach, on a uniform method. The works on the new classification was carried out by a large collective under the leadership of Novák V. [23, 24], who started from the principles of Kořistka K., but also of Brdlík Vl. The work results of this collective was the delineation of 4 production, but adjusted regions in the sense of Brdlík Vl. and 48 natural agricultural landscape in the sense of Kořistka *K.*

The development of agriculture in Czechoslovakia after the Second World War required a new classification of the agricultural landscape, which was prepared by the collective of the Research Institute for Agriculture Economics in Prag and in Bratislava in 1958 [8]. The collective of authors under the term of zoning of agricultural production meant the preparation of documents for a planned repartition of production labour in agriculture so that they corresponded to the development requirements of the national economy. Even though the authors started in zoning the agriculutral production from natural conditions, in substance it was in connection with the classification of Brdlík Vl. Neither this classification was of use to full extent in the agricultural practice, because the production spheres did not respect perfectly the climatic differences on the one hand and on the other the authors started from obsolete data on soil.

As the predecessor of the present improvement of soils in Czechoslovakia we can consider the work of Lukniš M.: Soil Improvement in Slovakia [19], in which, based on the value of net yield from 1929, he divided Slovakia into 7 kvalitative degrees. The individual degrees he represented on the map at scale 1 : 500 000. Although the landscape is evaluated only by one indicator, the work is of a great importance even today in that it expresses the natural fertility of soil and can serve still today to calculate mans' influence on the agricultural landscape potential.

The unified complex investigation of spill throughout the whole territory of Czechoslovakia gave new facts on the soil. The agriculture economists profited from the facts of this investigation and prepared a new classification of the agricultural landscape. Dušek J. and Korbíni J. [4] based the new classification on ecologic principles and created naturel sites, which express comprehensively the influence of the external environment on the size of the production process. For its theoretical preparation and perfect administrative classification of each agricultural enterprise in a certain site unit, this classification is recognized still today by the government agricultural organs.

In the process of classification of the agricultural landscape joined also the pedologists in Prag and Bratislava. The pedologists prepared the system of the improved soil-ecologic units [3,5]. The soil-ecological units were delineated on the basis of fenetic properties of soils, soil substrates, soil grain size, climate, soil depth, skeleton and gradient.

The Research Institute of Soil Science and Nourishment of Plants in Bratislava made use of the system of improved soil-ecological units for the appreciation and evaluation of soil. Aided by the synthetic-parametric method Džatka M. [6] calculated a certain economic point value of the soil potential, which is presently being introduced to practice.

A new landmark in the classification of landscape not only in our country but also in the world is the map of Mazúr E. and collective: Geoekologic (landscape) types of Slovakia (21). Based on all the landscape components: genetic types of relief, climata, soils, groundwaters and potential vegetation the collective of authors delineated the basic geoecological, landscape types of Slovakia. The map is the basic and starting document for delineating individual potentials of Slovakia. It was the fudanmental starting source also for our work.

The above mentioned classifications of the agricultural landscape are based on the physical-geographical structuralization of landscape. In our parctice, however, we start from the geoecologic classification of landscape, but we have also a higher objective than solely the physical-geographical structuralization. Aided by the konwledge of synergic realizationships we try in our country for the first time to evaluate economically the landscape and establisch its agricultural potential and to differentiate this one in the space.

The agricultural landscape, according to the way of cultivation and present use, can be divided into tillage and non tillage landscape. Each landscape type possesses its laws, which must be studied praticularly on the basis of characteristics corresponding to the given landscape type. In our work we devoted mainly to determine the tillage landscape potential. The non tillage landscape is an arable but also a non arable one, presently used for other purposes (permanent grass plants, vineyards, orchards, etc.).

STARTING VALUES AND DELINEATION OF HOMOGENEOUS REGIONS

As starting values we chose such landscape elements, which characterize the most the landscape as a complex, represent its appearance, which help to determine the processes of corpe creation. It is why we considered all the basic elements of the yandscape production capacity and as stable (static and dynamic), relatively stable and unstable ones.

In evaluating the potential we started from the following initial values:

Geographical position

1. geographical latitude,
2. geographical longitude,
3. above sea level,
4. distance from the leeward ridges,
5. distance from the windward ridges,

Relief

6. landscape gradient,
7. landscape articulation,
8. strike of the principal leeward ridges,
9. super-elevation of leeward ridges,
10. strike of the principal windward ridges,
11. super-elevation of windward ridges,
12. landscape isolation.

Climate

13. total of frosts for winter period,
14. total of temperatures for the vegetation period from +5 °C in Spring to +5 °C in Autumn,
15. vegetation period precipitations from +5 °C in Spring to +5 °C in Autumn.

Soils

16. tiller depth,
17. topsoil humus depth,
18. $CaCO_3$ content,
19. soil raction,
20. reserves of acceptable phosphorus in the tiller,
21. reserves of acceptable potassium in the tiller,
22. tiller grain size.

Based on the above sea level, landscape gradient, landscape articulation, climate and soil the tiller landscape of Slovakia we divided into 327 homogeneous regions, which represent the smallest and non repeated units. To prevent the delineated regions losing their character of repeatless individuals, we did not group them in higher units before the landscape evaluation, but the delineated regions became the starting units of the model and each delineated region was evaluted separately.

The average economic values for individual regions represent averages for those Uniform Agricultural Cooperatives and State Tenancies which spread

totally in the delineated regions, or in predominant part and for years 1969—
—70.

APPLIED METHOD

Several mathematical-statistical methods can be used for the agricultural landscape evaluation. The most currently used method is the factor one, as well as the multifold regression.

The factor analysis [27] will precisely clarify the relationships between the variables, but the calculated communality explains only the percentage of the clarified scattering. According to this method we do not know what relationships exist between the clarifying and clarified variables.

The multifold regression [28] studies the development of the variable dependently on several explanatory variables. However, by this method we can study the development of only one explained variable.

In our work we intend to clarify the relationship between the clarifying and clarified variables. Our objective is not only to detect the production development, but also the development of direct material expenses. We want to know under what natural conditions the maximum production at minimum expenses is attained, i.e. we want to know the size of the agricultural landscape potential. For these reasons we chose the method of Canonical Correlations [2], whose objective is the determination of relationships between the group of explaining and explained variables. The value of these relationships is expressed by the Coefficients of Canonical Correlation and the weight of influence is expressed by the coefficients calculated for the explaining and explained variables. The coefficients for the explaining and explained variables are calculated for each Coefficient of Canonical Correlation. There are calculated as many Coefficients of Canonical Correlation, as is the number of explained variables. The statistical significance of each calculated Coefficient of Canonical Correlation is tested by Chi-Square.

As statistically significant Coefficient of Canonical Correlation we consider that one, whose calculated Chi-Square value is higher than the table value in calculated Degrees of Freedom.

MODEL FOR CALCULATING THE TILLER LANDSCAPE POTENTIAL

Before entering the model, each explaining variables was tested from the stand point of its statistical significance, linearity, as well as multicollinearity. As criterium for statistical significance we considered the Coefficient of Determination. The Multicollinearity was tested by the Farar-Glauber method [7]. From a number of twenty two explaining variables we chose 5 explaining variables which have the highest Coefficient of Determination and by it also the highest linearity and showing the lowest multicollinearity.

They are:

1 — Geographical longitude, *2.* — Landscape gradient, *3.* — Depth of humus horizon, *4.* — Soil raction, *5.* — Soil grain size.

As explained variables we chose:

1. — Efficiency of direct material expenses for plant production, *2.* — Production of biomass crope in dry state.

Tab. 1. Values of Coefficients of Canonical Correlation

Coef. order	Proper value	Value of Coef. of canou. correlation	Value of Chi — Square	Number of degrees of freedom
1	2	3	4	5
1	0.694	0.833	409.991	10
2	0.082	0.287	27.834	4

Tab. 2. Values of canonical coefficients

For the first coefficient of canonical correlation	
a) explaining variables	
1. geographical longitude	0.562
2. landscape gradient	0.615
3. depth of humus horizon	—0.165
4. soil reaction	—0.379
5. tiller grain size	—0.210
b) expained variables	
1. efficiency of direct material expenses for plant production	0.739
2. biomass production in dry material from ha	—0.672
For the second coefficient of canonical correlation	
a) explaining variables	
1. geographical longitude	—0.185
2. landscape gradient	0.270
3. depth of humus horizon	—0.307
4. soil reaction	0.387
5. tiller grain size	—0.083
b) explained variables	
1. efficiency of direct material expenses for plant production	0.701
2. biomass production in dry material from ha	0.712

The biomass in dry state was calculated from 11 main products of the following staples: wheat, barley, oat, rye, maize for seed, maize for silage, early and late potatoes, sugar-beet, clovers and lucern, which we calculated per ha of arable soil in tons.

With the indicated 5 explaining and 2 explained variables we entered the canonical analysis. By it we calculated the values, (Tab. 1, 2),

As Tab. 1 shows, the calculated Coefficients of Canonical Correlation are statistically significant, because even the Chi-Square value of the second Coefficient of Canoncial Correlation is higeher than the table value at 4 Degrees of Freedom and the level of significance: $\alpha = 0.01 / \chi^2 = 27.834 / / \chi^2 = 7{,}77$.

It means that by the aid of the established model we clarified sufficiently the high relationship for determining the height of the agricultural landscape potential.

The calculation of Coefficients of Canonical Correlation, as well as of their coefficients, is but one part of the natural potential calculation. The given calculated values give us what average relationship existing between the explaining and explained variables and what is the average influence of individual explaining variables on the explained variables in Slovakia. If we want to determine and delineate the natural potential of tiller landscape, we must know the potential value of each delineated region. The general laws calculated by the canonical model we must calculate over to the starting values of regions — i.e. to calculate the canonical scores. The model values we did not calculate over to absolute values, but to standard values. To calculate the canonical score the following relations were used:

$$K_{s1} = Z_{11} \cdot K_{11} \,. \tag{4.1}$$

$$K_{s2} = Z_{12} \cdot K_{12} \,. \tag{4.2}$$

$$K_{s3} = Z_{11} \cdot K_{21} \,. \tag{4.3}$$

$$K_{s4} = Z_{12} \cdot K_{22} \,. \tag{4.4}$$

where K_{s1-4} = the first to fourth canoncial scores,

K_{11} = the coefficient of the explaining variable of the first koefficient of canonical correlation,

K_{12} = the coefficient of the explained variable of the first coefficient of canonical correlation,

K_{21} = the coefficient of the explaining variable of the second coefficient of canonical correlation,

K_{22} = the coefficient of the explained variable of the second coefficient of canonical correlation,

Z_{11} = standardized starting explaining variable,

Z_{12} = standardized starting explained variable.

The standardization was carried out according to the following relation:

$$Z_{i_j} = \frac{x_{i_j} - \bar{x}}{S_j}, \tag{4.5}$$

where Z_{i_j} = the standardized value of j variable in i unit,

x_{i_j} = the starting value of j variable in i unit,

$\bar{x}$ = the medium value of j variable,

S_j = the standard deviation of i variable.

Aided by the given relations we calculated four canonical scores. Each canonical score expresses a certain value: the first canonical score expresses the conditons of expenses formation at a given production, the second canonical score expresses the expenses at a given production, the third canonical score expresses the conditions of production formation at given expenses and the fourth canonical score expresses the production at given expenses.

The result is that each coefficient of canonical correlation expresses one factor. The first coefficient expresses the factor of expenses and the second coefficient the factor of production. In each factor are expressed the expenses and the biomass production, but they are not of an equal value. In the first factor the main component is formed by the expenses and complementary production. In the second factor the main component is formed by the production and completing expenses. In order to prevent distortion of values in expressing the potential values, we extracted the complementary component

Tab. 3. Distribution of explained coefficients

	Efficiency of direct material expenses (e)	Biomass production (p)
I. Coefficient of canonical correlation	b_{11}	b_{12}
II. Coefficient of canonical correlation	b_{21}	b_{22}

in each factor and calculated the potential value solely by the aid of pure factors. The extraction of the complementary component in the first and in the second coefficient of canonical correlation was carried out as follows, (Tab. 3):

$$e_1 = \frac{0.5 \, . \, b_{22}}{b_{11}b_{22} - b_{12}b_{21}}, \tag{4.6}$$

$$e_2 = \frac{-0.5 \, . \, b_{12}}{b_{11}b_{22} - b_{12} \, . \, b_{21}}, \tag{4.7}$$

$$p_1 = \frac{-0.5 \, . \, b_{21}}{b_{11}b_{22} - b_{12}b_{21}}, \tag{4.8}$$

$$p_2 = \frac{0.5 \, . \, b_{11}}{b_{11}b_{22} - b_{12}b_{21}}. \tag{4.9}$$

To calculate the pure factors the following relations were used:
Efficiency factor
of direct expenses $F_1 = e_1 \, . \, K_{s1} + e_2 \, . \, K_{s3} + e_1 \, . \, K_{s2} + e_2 \, . \, K_{s4}$.
Production factor
of biomass $F_2 = p_1 \, . \, K_{s1} + p_2 \, . \, K_{s3} + p_1 \, . \, K_{s2} + p_2 \, . \, K_{s4}$,
where K_{s1-4} = the value of canonical scores.
The landscape potential (PK) was calculated as follows:

$$PK = F_2 - F_1 \, .$$

The agricultural landscape potential is expressed by a relative value, which is well comparable between the 327 regions and which expresses precisely the differentiation of the agricultural landscape potential in Slovakia.

In fact the calculated value expresses the degree of homogeneity of the agricultural landscape. However, it does not express only the homogeneity of physical-geographical elements, but also the homogeneity of relations between the landscape, the agricultural production and efficiency of direct material expenses. From the above it results that the degree of thus expressed landscape homogeneity expresses the landscape suitability for agricultural production — therefore potential.

When the calculated relative values of the agricultural landscape potential are ordered from the smallest number to the highest one, the numbers have the from of Gauss'curve. For a more explicit and simpler expression of the landscape potential degree the calculated values were standardized. The standardization was made according to the following formula:

$$Z_i = \frac{PK_i - PK_{min.}}{PK_{max} - PK_{min.}}, \qquad (4.10)$$

where Z_i = the standardized value of the landscape potential for the i region,

PK^i = the value of the landscape potential for the i region.

The standardized values of the landscape potential are within the range [0.1], they are positive and express simultaneously the part of the value of the i region from the value of the most suitable region for plant production in Slovakia.

We made the degrees of the landscape potential from the calculated standardized values of the agricultural landscape potential. The potential of the tiller landscape we ranged into 8 degrees:

Name of the potential degree	Range of the calculated values
1. Biggest	0.90—1.00
2. Very big	0.80—0.90
3. Big	0.70—0.80
4. Good	0.60—0.70
5. Average	0.50—0.60
6. Small	0.40—0.50
7. Very small	0.30—0.40
8. Smallest	0.00—0.30

The potential of tiller landscape was represented on the map of Slovakia at scale 1 : 500 000.

TYPES OF TILLER LANDSCAPE

1. Landscape with the biggest potential.

It froms the biggest connected region which extends along the river Váh from Trenčín to Komárno with two separated parts: in the surroundings of Holíč and in the basin of the middle Nitra river. It extends on the plain with deep and predominantly carbonate soils. The landscape of this degree is ranged between the warmest regions.

In the landscape there is attained not only the highest production of dry material from ha (4.4 t)[1], but also of all thermophile products. The crops of all productions are equalized in all regions, which belong to this degree. Further on here is the most efficient agriculture. The production of 100 Kčs of gross plant production requires only 22 Kčs of direct material expanses.

2. Landscape with a very big potential.

The substantial part of this type extends in the Danubian Plain, and this equally on lowlands, as well as on lower hilly countries. It is not connectd, but by the landscape of the first degree it is divided into two big units. To

[1] Average production and expenses are given for the illustration of differences of individual degrees.

this landscape is ranged also the hilly conutry of Chvojnice in the surroundings of Senec and the middle part of the Nitra hilly conutry. The landscape of the second degree extends predominantly in the chernozem pedogenetic process.

Even in the landscape of the second degree of potential agriculture is highly profitable and productive. For 100 Kčs of gross plant production the direct material expenses amount to 23 Kčs. The total average production of dry material per ha attains 3.9 t. High yields attain also the other products.

3. Landscape of a big potential.

Even this landscape type extends predominantly on the Danubian Plain, that is on the piedmont, higher situated hilly countries. In the landscape there predominate two pedogenetic processes: chernozem and predominantly brown soil.

Apart from several pedogenetic processes we observe also several climatic types.

The production of dry material, as well as the profitability of plant production are good and balanced in all the regions belonging to this degree of potential. The average dry material production attains here 3.4 t per ha and the direct material expenses for 100 Kčs amout to 26 Kčs. The production of cereals is balanced. Higher crop scatters are observed in thermophile products (maize for seed and sugar beet).

4. Landscape with a good potential.

The landscape of this type attains a great spatial differentiation. It extends in the Záhorská nížina lowlands, in the Danubian Plain and in the Eastern Slovakian lowland. Further on this type is observed in the lower-situated basins, as well as in the higher situated basins. Due to this spatial dispresion in the landscape we observe also a great dispersion of climatic types and pedogenetic processes.

Even when in the landscape there is a great spatial dispersion, the biomass production from ha, as well as the efficiency of direct material expenses are balanced in all the agroecological regions belonging to this degree of potential. The biomass production here attains in average 3.5 from ha and the direct material expenses of 30 Kčs for 100 Kčs of gross production in plants. Balanced is also the crop of cereals. A relatively great unbalance in crop is observed in thermophile plants, which confirms the fact that in the degree there occurs an unbalanced specialization of plant production.

5. Landscape with an average potential.

It occurs mainly in basins, but it is observed also in the Eastern Slovakian lowland. The landscape of this degree of potential forms the transition between the landscape with suitable conditions for agricultural production and less siutable ones. The landscape is very varied as to climate, as well as to soil.

The more the landscape is ranged to the lower degree of suitability, the less is its crop of products, as well as their representation balanced even when the total dry material production, as well as the expenses in the given degree are relatively balanced. This unbalance of representation, as well as of crops results from various spatial structures of plant production — from a varied specialization. In this degree the dry material production attains

2.9 t from ha and direct material expenses of 34 Kčs for 100 Kčs of gross plant production.

6. Landscape with a small potential.

It covers a small area scattered throughout the teritory of Slovakia. The biggest connected area of this degree is observed in the Košice basin in the Torysa river watershed.

The biomass production decreases below the all-Slovak average (2.7 t per ha) and the expenses increase above the all-Slovak average (37 Kčs of expenses for 100 Kčs of gross plant production).

7. Landscape with a very small potential.

The landscape of this degree extends predominantly in the mountainous valleys of Central Slovakia, but it is observed also in the intermontane depressions, as well as in the Eastern Slovakian lowland.

In the landscape 2.3 t from ha are obtained, which makes only 91 % from the average of the first degree. The direct material expenses amount to Kčs 42 for 100 Kčs of gross plant production, which is by 91 % more than in the first degree.

8. Landscape with the smallest potential.

The substance of this landscape is formed by the outer flysch zone of the Carpathians, as well as by the narrow inner-mountainous basins of the Crystalline-Secondary zone. The lowest biomass production is attained here (2.0 t from ha), which is a value by 120 % lower than in the first degree. The direct material expenses here attain 52 Kčs for 100 Kčs of gross plant production, which is by 136 % more than in the first degree.

CONCLUSION

In establishing the landscape potential we started from synergic relationships between the landscape, production and efficiency of plant production. They determine the basic laws of production development and plant production efficiecy. The evaulation of the landscape potential by these laws is more precise as the point method used to now, because by the attained laws it expresses a certain way of process of crop ceration. The delineated landscape types express homogeneous areas from the stand point of dry material production and efficiency of direct material expenses.

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TYPY KRAJINY SLOVENSKA Z HĽADISKA POĽNOHOSPODÁRSKEHO POTENCIÁLU

Výpočet poľnohospodárskeho potenciálu krajiny sme urobili pomocou metódy koeficientu kanonickej korelácie. Spomedzi 22 vysvetľujúcich premenných sme pomocou testov vybrali 5 vysvetľujúcich premenných, ktoré majú najvyšší koeficient determinácie a tým aj najvyššiu linearitu, pričom vykazujú najnižšiu multikolinearitu. Sú to zemepisná dĺžka, sklonitosť krajiny, hĺbka humusového horizontu, pôdna reakcia, zrnitosť ornej pôdy. Za vysvetľované premenné sme si zvolili efektívnosť priamych materiálových nákladov na rastlinnú výrobu, produkciu biomasy v suchom stave z ha. Oba vypočítané koeficienty kanonickej korelácie sú štatisticky významné. Vypočítané hodnoty potenciálu poľnohospodárskej krajiny sme rozdelili do 8 stupňov, ktoré sme znázornili na mape Slovenska mierky 1:500 000.

Mapa 1. Typy krajiny Slovenska z hľadiska poľnohospodárskeho potenciálu

1 — poľnohospodárska krajina,

1.1 — oráčinová krajina,

1.1.1 — krajina s najväčším potenciálom,

1.1.2 — krajina s veľmi veľkým potenciálom,
1.1.3 — krajina s veľkým potenciálom,
1.1.4 — krajina s priemerným potenciálom,
1.1.5 — krajina s podpriemerným potenciálom,
1.1.6 — krajina s malým potenciálom,
1.1.7 — krajina s veľmi malým potenciálom,
1.1.8 — krajina s najmenším potenciálom,
1.2 — neoráčinová krajina,
1.2.1 — vinohrady,
1.2.2 — trvalé trávne porasty,
2 — lesná krajina,
3 — neužitky,
4 — administratívne centrá,

Tab. 1. Hodnoty koeficientov kanonickej korelácie,

Tab. 2. Hodnoty kanonických koeficientov,

Tab. 3. Rozloženie vysvetľovaných koeficientov.

Конштантин Зеленски

ТИПЫ ЛАНДШАФТА СЛОВАКИИ С АСПЕКТОВ СЕЛЬСКОХОЗЯЙСТВЕННОГО ПОТЕНЦИАЛА

Расчет сельскохозяйственного потенциала ландшафта нами произведен при использовании метода коэффициента канонической корреляции. Из числа 22 разъясняющих переменных при помощи тестирования нами избрано 5 разъясняющих переменных, имеющих максимальный коэффициент детерминации и, тем самым, максимальную линеарность, причем они характерны минимальной мультиколинеарностью. Это: географическая долгота, средний угол наклона ландшафта, глубина гумусного горизонта, почвенная реакция и зернистость пахотного слоя. В качестве разъясняемых переменных нами избраны: эффективность прямых материальных затрат на растениеводство, продукция биомассы в сухом состоянии из одного гектара. Оба вычисленные коэффициенты канонической корреляции являются статистически значимыми. Вычисленные значения потенциала сельскохозяйственного ландшафта нами подразделены до 8 градаций, которые изображены на карте Словакии в м-бе 1:500 000

Карта 1. Типы ландшафта Словакии с аспектов сельскохозяйственного потенциала
1 — сельскохозяйственный ландшафт,
1.1 — ландшафт с пахотой,
1.1.1 — ландшафт с максимальным потенциалом,
1.1.2 — ландшафт с очень большим потенциалом,
1.1.3 — ландшафт с большим потенциалом,
1.1.4 — ландшафт со средним потенциалом,
1.1.5 — ландшафт с потенциалом ниже среднего,
1.1.6 — ландшафт с небольшим потенциалом,
1.1.7 — ландшафт с очень небольшим потенциалом,
1.1.8 — ландшафт с минимальным потенциалом,
1.2 — ландшафт без пахоты,
1.2.1 — виноградники,
1.2.2 — постоянный травянистый покров,

2 — лесистый ландшафт,
3 — скалы,
4 — политико-административные центры.

Табл. 1. Значения коэффициентов канонической корреляции.

Табл. 2. Значения канонических коэффициентов.

Табл. 3. Распределение разъясняемых коэффициентов.

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