

THE FAVORABILITY OF THE LANDS ON THE TERRITORY OF S.C. AGROTEHNIC SRL PAULESTI

Daniela DANA¹, Ioan GRIGORE²,
Alexandra Mihaela VASILIU²

¹Mihai Viteazul Technological Secondary School Calugareni, Giurgiu, România, Stoenesti School, Giurgiu, România, e-mail: ddanaddaniela@gmail.com

²Mihai Viteazul Technological Secondary School Calugareni, Giurgiu, România, high school student, class XII-A

REVIEW, RESEARCH ARTICLE – ARTICLE

Abstract

For agricultural land, credit rating aims to establish the suitability classes of land for different crops.

Also, certification contributes to the rational management of soil units and contributes to the knowledge of plant growth conditions.

In this situation, the current study aims to quantify the favorability of the lands from S.C. Agrotehnic Paulesti for arable and pasture use.

Following the study, it can be said that most of the land on the territory of S.C. Agrotehnic SRL Paulesti has a good and average favorability for arable land and for wheat cultivation.

Keywords: favorability, land, wheat.

#Corresponding author: ddanaddaniela@gmail.com

INTRODUCTION

Land crediting aims to establish grades and classes of favorability for various crops and quality classes of land with agricultural uses: arable, vineyards, orchards and pastures. The certification contributes to the rational use of soil resources, the establishment of the best structures of uses and cultures.

Through the credit rating of agricultural land, the knowledge of the growth and development conditions of plants is achieved and the degree of favorability of these conditions for various crops and uses is determined with the help of a system of technical indicators and credit rating notes.

Land valuation is carried out both at the level of the cadastral plot and at the level of the homogeneous ecological territory (H.E.T.). The productive potential of the lands is highlighted by the credit rating of the H.E.T.s for agricultural crops and uses (Dana et al, 2017, Dana et al, 2021; Dana et al, 2022; Chereji et al, 2022; Chiurciu et al, 2021, Chiurciu et al, 2022).

Credit ratings result from the accumulation of the favorability of ecological factors: land slope, landslides, land exposure, groundwater depth in relation to the soil texture, average annual precipitation corrected in relation to the land slope, soil texture in the

surface horizon, salinization, total porosity, useful edaphic volume, inundability, soil pollution.

As a result of the application of some ameliorative measures, such as the introduction of irrigation, most uses and agricultural crops increase by at least one favorability class.

The most suitable to be irrigated are cereal and technical crops that need large amounts of water during the dry period of the year (Paltineanu et al, 1999, Paltineanu et al, 2000, Seceleanu et al, 1994, Seceleanu et al, 1995, Teaci, 1980).

MATERIAL AND METHOD

Under natural conditions, the credit score is obtained by multiplying by 100 the product of the coefficients of the indicators listed above. The credit rating for arable represents the arithmetic mean of the ratings for the agricultural crops with the highest favorability (8 crops): wheat, corn, rice, sunflower, sugar beet, potatoes, peas and soybeans.

Depending on the listed factors, each culture and use receives coefficients that vary between 1 and 0, according to whether the respective characteristic is optimal or totally unfavorable for the requirements of the plants or use under study.

The favorability classes by crops (under natural regime) and credit scores are shown in table 1.

In order to increase the degree of favorability of the land for various crops and uses (besides irrigation), other negative properties can be improved:

-of soils: pseudoglazing, glazing, pH, salinity, low humus content;

-or of the land: floodability, slope, presence of hard rock close to the ground surface, etc.

Ameliorative measures increase the favorability of natural factors, determining the reduction of penalties and the weighting of credit ratings. The weighting of the credit ratings is achieved by multiplying the natural credit rating with superunit coefficients. Enhanced credit ratings can exceed one or two credit ratings obtained, in natural conditions, on land.

Table 1

The favorability classes and the credit scores for crops, in natural regime in accordance with RISSA methodology (1987)

Favorability classes	INTERVALS - bounty points
I	91 -100 points
II	81 -90 points
III	71 -80 points
IV	61 -70 points
V	51 - 60 points
VI	41-50 points
VII	31 -40 points
VIII	21-30 points
IX	11 - 20 points
X	1-10 points

RESULTS AND DISCUSSIONS

Favorability of lands

The credit ratings of the soils on the territory of S.C. Agrotehnic SRL Paulesti have values:

- for the wheat crop from 19 points (T.E.O. 3) to 73 points (H.E.T.s 5,9, 13, 16);

- for arable use from 11 points (T.E.O. 6) to 71 points (H.E.T.s 13, 16, Table 2).

Favorability for arable land within the territory of S.C. Agrotehnic SRL Păulești is:

-good for H.E.T.s 5, 6, 8, 9, 12, 13, 16, 20 and 25;

-average for H.E.T.s 7, 10, 14, 17, 21, 22, 23, 24 and 26;

-weak and very weak in the case of H.E.T.s 3 and 4 (Figure 1).

For wheat, the favorability of the land is:

-good for H.E.T.s 5, 6, 8, 9, 12, 13, 16, 20 and 25;

-average for H.E.T.s 7, 10, 14, 17, 21, 22, 23, 24 and 26;

-weak and very weak in the case of H.E.T.s 3 and 4 (Figure 2).

In conclusion, it can be stated that most of the land on the territory of S.C. Agrotehnic SRL Paulesti has a good and average favorability for arable land and for the wheat crop.

The climate map of the microzones in the experimental perimeter of SC AGROTEHNIC SRL PAULESTI (precipitation and temperature) is presented in figures 3-4.

From the climatic point of view, the territory of Paulesti belongs to the temperate continental type.

Regarding the distribution of precipitation during the year, the period May-June-July receives a third (200 mm) of the annual average, the rains being torrential accompanied by hail and strong wind in gusts.

The rest of the precipitation is relatively evenly distributed for the other months of the year (40 mm/month), with a slight decrease during the winter when they do not exceed 30 mm/month.

The average monthly temperature becomes positive (3-4 °C) starting from March to November, with a maximum in July-August (22-23 °C) generally characterized by atmospheric calm and strong sunshine.

The month of December is the month of thermal transition, the monthly average often showing values above 0 °C extending the sector with positive temperatures. The winter season is characterized by monthly averages around -2-3 °C and a reduced frequency of frost phenomena.

The first days with frost appear in the cold mornings towards the end of October against the background of the strong radiation of the earth's surface, while the month of April marks the last day with negative temperatures and frost.

In this month, the insulation still has low values, the heat received by the active surface during the day being lost during clear nights when the radiative flux is maximum (positive radiative balance).

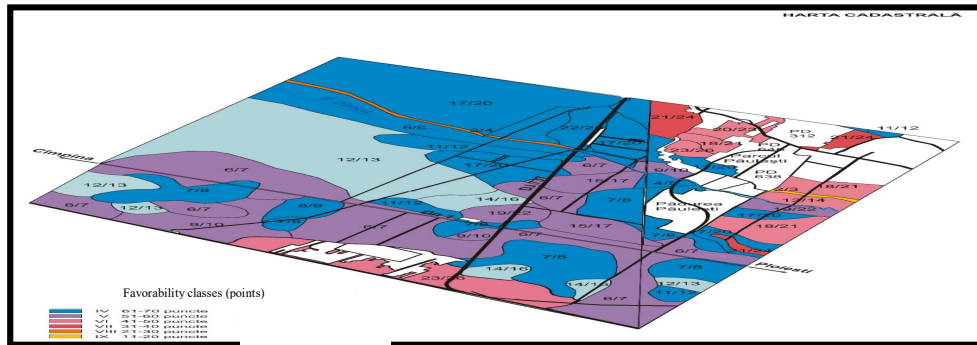


Figure 1 Favorability for arable at SC AGROTEHNIC SRL PAULESTI
Source: own determination, GRIFOX Project

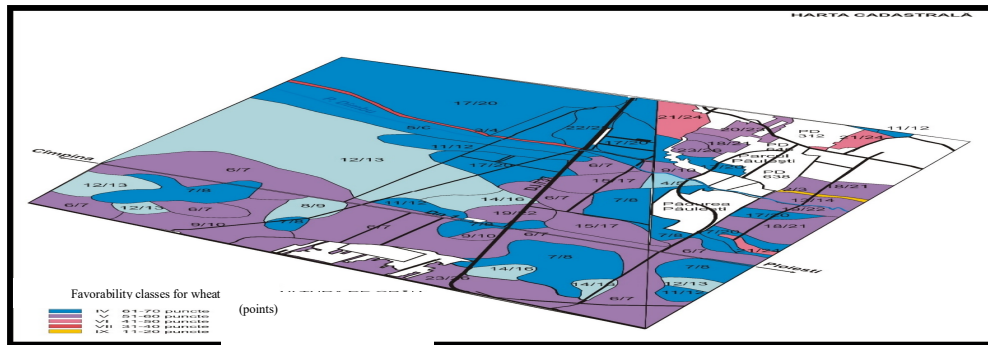


Figure 2 Favorability for the wheat crop at SC AGROTEHNIC SRL PAULESTI
Source: own determination, GRIFOX Project

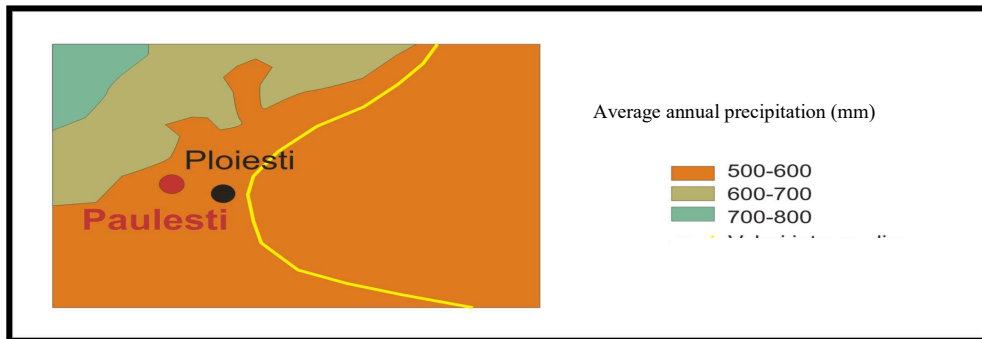


Figure 3 Climate map (average annual precipitation) of microzones in the experimental perimeter of SC AGROTEHNIC SRL PAULESTI
Source: own determination, GRIFOX Project



Figure 4 Climate map (average annual temperature) of microzones in the experimental perimeter of SC AGROTEHNIC SRL PAULESTI
Source: own determination, GRIFOX Project

**Credit ratings of homogeneous ecological territory (H.E.T.) for arable land
at S.C. Agrotehnic Paulesti
Source: own determination, GRIFOX Project**

No. H.E.T.	Current use	GR	OR	PB	FS	CT	SZ	SO	MF	IU	IF	CN	LU	TR	LG	AR
3	Pasture	19	19	10	9	5	5	10	16	17	19	11	21	23	10	11
4	Pasture	31	31	23	25	18	17	28	31	27	23	23	26	22	25	26
5	Pasture	73	73	73	58	59	73	73	73	72	81	81	81	73	65	69
6	Arable	65	65	65	52	46	63	65	65	50	65	63	65	52	57	61
7	Arable	52	52	46	42	53	58	52	52	52	65	51	51	52	52	51
8	Arable	66	66	59	52	59	73	66	66	65	81	66	66	66	58	63
9	Arable	73	73	66	58	59	73	73	73	65	73	73	66	73	73	68
10	Arable	58	58	58	47	46	57	58	58	45	65	57	58	58	51	55
12	Arable	66	66	66	52	53	66	66	66	65	73	73	73	66	58	62
13	Arable	73	73	73	58	66	81	73	73	65	81	81	73	73	73	71
14	Arable	58	46	41	37	36	46	52	46	58	51	46	51	52	41	45
16	Arable	73	73	73	58	66	81	73	73	65	81	81	73	73	73	71
17	Arable	58	58	58	47	46	57	58	58	45	65	57	58	58	51	55
20	Arable	66	66	66	52	59	73	66	66	65	81	73	73	66	58	64
21	Arable	58	52	52	41	37	45	52	52	40	52	50	52	58	45	49
22	Arable	58	58	58	47	46	57	58	58	45	65	57	58	58	51	55
23	Arable	52	52	52	42	37	51	52	52	36	58	45	47	52	46	49
24	Arable	47	42	42	34	29	41	42	42	29	47	36	37	47	37	40
25	Arable	66	66	66	52	59	73	66	66	65	81	73	73	66	58	64
26	Arable	52	52	52	42	37	51	52	52	36	58	45	47	52	46	49

GR-wheat; OR-barley; PB-maize; FS-sunflower; CT-autumn potato; SZ-sugar beet; SO-soybean; MF-green peas-beans; IU-flax for oil; IF-flax for fiber; CN-hemp; LU-lucerne; TR-clover; LG-vegetables; AR-arable.

The main soil units

The main soil units are shown in the pedological map (Figure 5) of the microzones within the experimental perimeter of SC AGROTEHNIC SRL PĂULEȘTI (Dana et al, 2017):

- S.U. No 1, REGOSOL CALCARIC LITIC PROXICALCARIC MEZOLITIC LN/LN, RSKa,li d3-k1-3q1/31- Spp/NB-e12 / D-NS-P22-Q7;
- S.U. No. 2, REGOSOL CALCARIC, LITIC, PROXICALCARIC EPILITIC LA/LA, RSKa d2 -k1 -5q1 /5g2 -Spp/NI-e11 / C-IS-P12-Q7;
- S.U. No. 3, ALUVIOSOL CALCARIC PROXICALCARIC LL/LL, ASka K1-4/4-Tfm/NI / C-SJ-P03-Q5;
- S.U. No. 4, CERNOZIOM PRUNDIC EPIPRUNDIC LL/LL, CZpr d2-4q1/4q2-Ssp/NI /C-DF-P03-Q7;
- S.U. No. 5, CERNOZIOM PRUNDIC MEZOPRUNDIC LL/LL, CZpr d3-4q1/4q1-Ssp/NI / C-CD-P03-Q7;
- S.U. No. 6, CERNOZIOM PRUNDIC MEZOPRUNDIC LA/LA, CZpr d3-5q1/5q1 -Ssp/NB / C-DR-P03-Q7;
- S.U. No. 7, EUTRICAMBOSOL TIPIC LL/LA, Ecti 4/5-Ssa/NI /C-DF-P03-Q7;
- S.U. No. 8, EUTRICAMBOSOL MOLIC LA/LA, ECmo 5/5-Ssa/NI /C-DR-P03 Q1;
- S.U. No. 9, EUTRICAMBOSOL MOLIC LITIC MEZOLITIC LL/LL, Cmoli D4-4q1/5q1-Ssp/NI / C-DR-P03-Q7;
- S.U. No. 10, EUTRICAMBOSOL ALUVIC AL/AL, ECal 6/6-Tft/NI / C-DR-P03-Q7;
- S.U. No. 11, EUTRICAMBOSOL LITIC BATILITIC LL/LL, Ecli d5-4/4-Ssp/NI/C-DR-P03-Q7;
- S.U. No. 12, PRELUVOSOL TIPIC LA/AL, ELti 4/5-Sst/NI/ C-DC-P03-Q7;
- S.U. No. 13, PRELUVOSOL ROȘCAT LL/LA, ELrs 4/5-Ssa/NI/C-DF-P03-Q7;
- S.U. No. 14, PRELUVOSOL ROȘCAT LA/AL, ELrs 5/6-Ssa/NI/C-DF-P03-Q7;
- S.U. No. 15, PRELUVOSOL ROȘCAT LITIC MEZOLITIC LL/LA, ELrs,li d4-4/5-Ssp/NI/C-DR-P03-Q7;
- S.U. No. 16, PRELUVOSOL STAGNIC MEZOSTAGNIC LL/AL, ELst W3-4/6-Ssa/NI/C-DC-P03-Q7;
- S.U. No. 17, LUVOSOL ROȘCAT LL/LA, LVrs 4/5-Ssa/NI/C-DR-P03-Q7;
- S.U. No. 18, LUVOSOL STAGNIC MEZOSTAGNIC LL/LA, LVst W3-4/5-Ssa/NI/C-DR-P03-Q7;

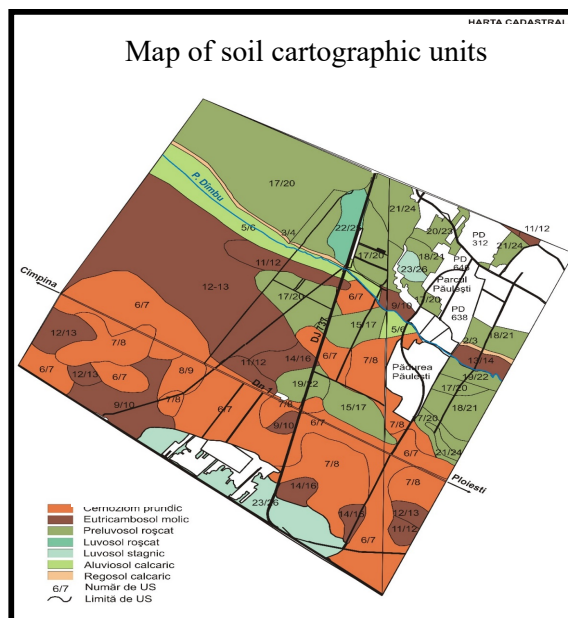


Figure 5 Pedological map of the microzones in the experimental perimeter of SC AGROTEHNIC SRL PĂULEȘTI

Source: own determination, GRIFOX Project

CONCLUSIONS

The credit ratings of the soils on the territory of S.C. Agrotehnic SRL Paulești have values for the wheat crop from 19 points to 73 points and for arable use from 11 points to 71 points.

Therefore, it can be said that a large part of the studied lands has a good and medium favorability for arable and wheat crops.

A number of 18 soil units were identified in the territory, the types being predominant Cernoziom prundic and Eutricambosol molic.

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