Contributions to the Knowledge of Sandy Soils from Oltenia Plain

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Highlighting the sandy soil of Oltenia Plain calls for a better knowledge of their variability their correlation with major natural factors from each physical geography. Pedogenetic processes specific sandy soils are strongly influenced by nature parent material. This leads, on the one hand, climate aridity of the soil due to strong heating and accumulation of small water reserves, consequences emphasizing the moisture deficit in the development of the vegetation and favoring weak deflation, and on the other hand, an increase in mineralization organic matter. Relief under wind characteristic sandy land, soil formation and distribution has some particularly of flat land with the land formed on the loess. The dune ridges are less evolved soils, profile underdeveloped and poorly supplied with nutrients compared to those on the slopes of the dunes and the interdune, whose physical and chemical properties are more favorable to plant growth.Both Romanati Plain and the Blahnita (Mehedinti) Plain and Bailesti Plain, sand wind shaped covering a finer material, loamy sand and even loess (containing up to 26% clay), also rippled with negative effects in terms of overall drainage. Depending on the pedogenetic physical and geographical factors that have contributed to soil cover, in the researched were identified following classes of soils: protisols, cernisols, cambisols, luvisols, hidrisols and antrosols.Obtaining appropriate agricultural production requires some land improvement works (especially fitting for irrigation) and agropedoameliorative works. Particular attention should be paid to preventing and combating wind erosion.

Keywords: Oltenia Plain, sandy soils, clay, production potential, wind erosion, nutrients

In sandy soils category enters sense agronomic, soils with at least 50 cm thick (but usually more than 2 m) a coarse texture (sandy and loamy sandy 12% clay having 0.002 mm) and a relatively low humus content (usually less than 2%).

Among the regions with sandy soils, Oltenia Plain has weight of 170.000 ha, 146.000 ha of farm land that is distributed as follows: Blahnita Plain (Mehedinti) 45.000 ha, Bailesti Plain 44.000 ha and Romanati Plain (Left Jiu) 81.000 ha (fig. 1).

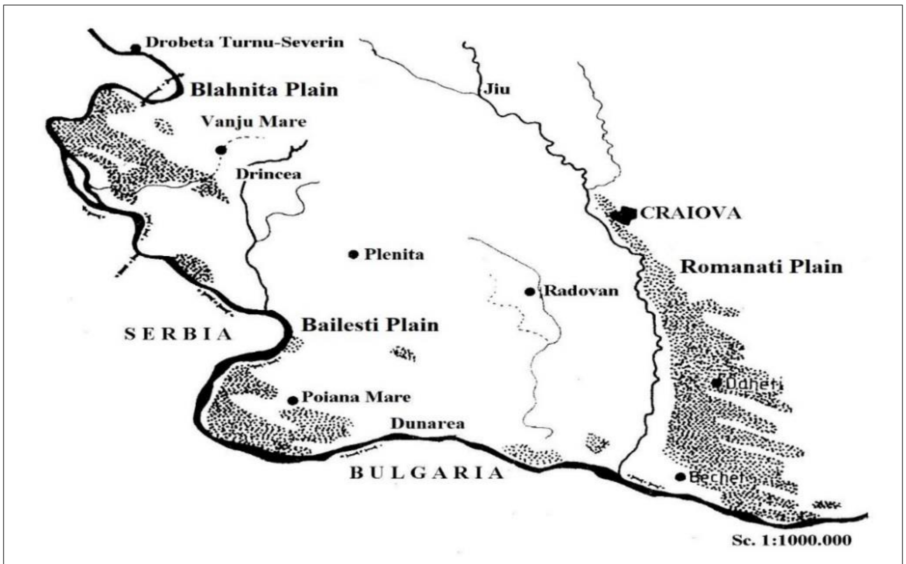

Fig. 1. Sandy soils from Oltenia Plain [1]

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Sandy soils from Oltenia Plain are characterized by a high content of coarse sand (50-70%), some clay and dust (2-8%). Granulometry is different dunes and interdunes. Dunes physical clay content is between 5.8 to 8.4% and more than 90% of coarse sand and fine sand, and in interdune physical clay content reached 12.1% or 15.8% and the proportion of coarse sand and fine sand drops to 75-80%.

Because of the coarse texture, have high permeability for air and water, large air capacity and a low water retention capacity. Thus, sandy soils there is the phenomenon of leaching water and nutrients, registering a series of features on the implementation of irrigation and chemical fertilizers.

The total porosity and air capacity sands is high, causes intense mineralization of organic matter and large amplitudes of temperature up to a depth of 40 cm.

Recovery sandy soils from Oltenia Plain is a very topical issue. The need to increase agricultural production in recent decades has led to the cultivation of agricultural plant surfaces becoming higher these soils.

Experimental part

Materials and methods

The field studies consisted of mapping and spatial reambulating the studied area with sandy soils on maps at 1:10.000 and 1:25.000 scale, with observations on parent material, relief, micro-relief, vegetation [2].

Soil profiles were located on the ground so that to form a network of studied points. The method of parallel routes, located almost at equal distances has been used, to cover more or less uniformly the whole working area.

The morphological description of soil profiles was done according to the Romanian System of Soil Taxonomy (SRTS, 2003, 2012), ICPA, Bucharest [3].

In order to establish the soils diagnosis, their morphological features have been taken into account, namely the thickness of morphological horizons, color, texture, structure, composition, adhesion, etc.

Soil samples were taken from genetic horizons both in modified and unchanged settings.

In modified settings, soil samples of 20 cm thickness were taken in bags, for the chemical characterization to be carried.

In natural (unchanged) settings, soil samples were taken using a metal cylinder of known volume (200 cm^3), to characterize the physical and hydro-physical features, as well as the momentary soil moisture.

The following methods have been used for the physical and hydro-physical features:

Particle size analysis (granulometry):

-pipette method for fractions <0.002 mm, including;

-wet sieving method for fractions from 0.002 to 0.2 mm and dried sieving method for fractions > 0.2 mm

For the *textural classes* and *subclasses*, we used the Romanian system, according to the Methodology developed for soil studies, ICPA, 1987 [4].

Bulk density (DA) method: metal cylinder of known volume (200 cm^3) for the momentary soil moisture.

Total porosity (TP): by computing PT = (1-AD/D)*100

Water permeability (K): in the laboratory on samples with unchanged alignment taken, the method ICPA

Withering coefficient (CO) was estimated based on the content of clay (<0.002 mm), using the relationship:

CO (%)=0.05+0.35 A, where:

A = clay content < 0.002 mm

Field capacity (CC): by calculation based on texture and bulk density, % by weight

Useful water capacity (CU): by calculation from the formula CU=CC-CO, % by weight

The chemical characteristics were determined using the following methods [5, 6]:

pH: potentiometrically, with glass and calomel combined electrode, in aqueous suspension, at the ratio of ½, 5.

Humus: wet oxidation (Walkley-Black method, modified) and results expressed in percentage.

Total nitrogen (Nt): Kjeldahl method, decomposition of H_2SO_4 at 350°C, catalysts: potassium sulphate and copper sulphate.

Available phosphorus (mobile): Egner-Riehm-Domingod method and colorimetric dosed with blue molybdenum, according to Murphy-Riley method (ascorbic acid reduction).

Available potassium (mobile): extraction according to Egner-Riehm-Domingo method and dosing by flame photometry.

Calcium carbonate content**:** method Scheibler

Degree of base saturation (V%): was determined with the following formula V=(SB/T)*100, % by weight

Total cation exchange capacity (T me/100 g soil): was determined with the following formula T (me/100 g soil) = SB+Ah

Interpretation of the results has been submitted in accordance with "Methodology developing soil studies", ICPA Bucharest, 1987, provided for in current legislation on the subject.

Map making materials were used following map: Romanian soil map, scale 1:200.000, sheet Turnu Magurele [7]. Thus, those maps were scanned, then the images were vectorized. He data were then processed using CorelDRAW.

For each map, the computer result in a "polygon layer" mapping each polygon representing a territorial unit. Cartographic data validation was done by overlapping polygons layer the source data. Each territorial mapping unit, were entered as attributes: soil genetic unit, the surface texture, the parent material, pedogenetic processes and the relief.

Results and discussions

Sandy soils from Blahnita (Mehedinti) Plain

Blahnita (Mehedinti) Plain, a subdivision of Oltenia Plain is constituted for the most part a succession of terraces (five levels), partially covered with sandy sediments arranged in certain alignments. The main source of sandy material was the alluvium Danube. They generated a moderately - strong wind relief rippled dunes and interdune, with amplitudes 2-8 m [8].

Groundwater it is small and medium depths (2-5 m), and in some areas appear even lakes. The average annual temperature is 10.5-11^{0}C and precipitation of about 480 mm [9].

The granulometry of sediment sand, dust and clay have less than 10%, coarse sand between 43-70%, and fine sand up to 40% (Table 1). The latter becomes predominant only interdune.

Soil reaction varies from one type of soil to the next, being weakly acidic to neutral (*p*H 6.2 to 7.0) if reddish preluvosols sandy, moderately acidic to slightly alkaline (*p*H 5.4 to 7.7) to lamellar reddish preluvosols and moderately acidic (*p*H 5.7 to 5.9) to eutric psamosols [10-16].

In terms of content humus soils Blahnita (Mehedinti) Plain are very low in humus, reaching rarely exceed 1.0%.

Table 1

THE PHYSICAL AND CHEMICAL PROPERTIES OF SANDY SOILS FROM BLAHNITA (MEHEDINTI) PLAIN

Horizon	Depth (cm)	Granulometry				pH (H_2O)	Humus %	V %	Total N %	Total P_2O_5 %
		< 0.002 mm	0.002-0.02 mm	0.02-0.2 mm	0.2-2.0 mm					
Reddish preluvosol sandy - Southeast Flamanda										
Ap	0-20	3.8	6.1	29.9	60.2	6.2	0.9	55	0.053	0.085
AB	26-46	3.3	4.6	31.7	60.4	6.7	0.3	72	0.033	0.088
Bt	50-70	2.8	4.2	28.6	64.4	7.0	0.2	72	0.017	0.079
	80-90	13.4	5.4	27.4	53.8	6.9	0.4	80	0.033	0.127
	105-125	14.4	8.7	25.2	51.7	6.7	0.3	83	0.031	0.123
BC	136-156	6.7	7.6	29.6	56.1	6.8	0.3	78	0.030	0.121
	136-156	12.9	6.8	20.6	59.7	6.9	0.2	80	0.028	0.118
C	160-180	11.7	3.6	22.0	70.0	7.0	0.1	80	0.026	0.116
Lamellar reddish preluvosol – South Cioroboreni										
Ap	0-16	4.6	6.5	29.6	59.3	5.4	0.9	49	0.053	0.096
Ao	16-31	4.5	6.8	31.7	57.0	6.6	0.8	70	0.048	0.091
AB	31-46	3.2	6.9	29.9	60.0	7.0	0.4	76	0.023	0.076
Bt1la	55-75	7.7	7.3	30.3	54.7	7.5	0.4	97	0.020	0.065
Bt2la	100-120	18.5	4.0	23.1	54.4	6.7	0.3	79	0.019	0.063
	100-120	9.8	5.0	24.0	61.2	6.2	0.2	74	0.018	0.061
Bt3la	130-150	13.2	1.5	20.7	64.6	7.7	0.2	96	0.016	0.059
	130-150	4.8	1.7	19.7	73.8	6.7	0.1	81	0.015	0.056
Eutric psamosol – Northwest Devesel										
Ap	0-20	4.6	4.8	34.0	56.3	5.8	0.05	50	0.040	0.080
Ao	20-30	4.5	4.2	38.0	53.3	5.9	0.04	60	0.035	0.114
AC	30-54	3.0	4.9	38.4	53.7	5.7	0.02	57	0.019	0.075
C1	60-80	2.6	4.0	33.4	60.0	7.2	0.03	53	0.017	0.073
C2	115-125	3.5	3.3	40.1	53.1	7.4	0.02	64	0.014	0.069

The sandy sediments under pedogenetic conditions Blahnita (Mehedinti) Plain formed a relatively wide range of soils among which mention eutric psamosols, sometimes with thin strips (lamellar psamosols) covering an area of 7011 ha, of which 4740 ha in forests and pasture, molic sandy soils type chernozem, characterizing the landscape of low dunes rippled, cambic sandy soils type cambic chernozem, occupying both dune ridges and their slopes, sandy soils Bt horizon in strips type reddish preluvosols sandy and lamellar, typical eutricambosols and lamellar. Lower surfaces of the dunes, dominate the reddish preluvosols sandy loam, which appear alongside some gleyic psamosols or molic gleiosols and some tehnosols [17].

Production potential of these soils is low. Requires measures to stem deflation, remove excess moisture in some areas low, increase in the content of humus in the soil, mineral and organic fertilizer and preservation of forest areas.

The use of the territory remains the main field crops, plus fruit trees in some areas.

Sandy soils from Bailesti Plain

Bailesti Plain consists of a sequence of five terraces decrease in altitude from north to south, it appears partially covered with material transported in the Danube Valley by the high intensity winds, blowing from west to northwest and deposited as dunes. Identified several alignments relief rippled dunes as: Cetate-Bailesti, Calafat-Poiana Mare and Ciuperceni. Dunes strung on 2-6 km have height 2-8 m and widths of up to 300 m and interdunes have a width of 200-500 m [18, 19].

The granulometry of sandy material predominates fine sand (65-72%), followed by coarse sand (10-45%); finer fractions usually occur in low proportions: 3-10% clay, 2-10% dust (Table 2).

Table 2
THE PHYSICAL PROPERTIES OF SANDY SOILS FROM BAILESTI PLAIN

Horizon	Depth (cm)	Granulometry				DA g/cm^3	PT %
		< 0.002 mm	0.002-0.02 mm	0.02-0.2 mm	0.2-2.0 mm		
Cambic chernozem sandy - Southeast Ciupercenii Noi							
Ap	0-20	7.0	4.3	59.7	29.0	1.33	49.5
Am	20-40	7.4	4.5	59.0	29.1	1.43	45.6
AB	42-60	7.4	4.1	58.9	29.6	1.56	41.2
Bv	70-90	7.4	3.5	65.5	23.6	1.51	43.2
BC	100-120	7.1	3.4	64.8	21.7	1.44	45.8
C	130-150	6.9	4.9	69.2	19.1	1.53	42.3
Chernozem sandy – South Calafat							
Ap	0-15	4,3	5.8	62.0	27.9	1.45	47.5
Am	30-45	4.0	5.1	63.9	27.0	1.44	47.4
AC	48-62	6.7	4.9	62.6	25.8	1.40	49.1
Cca	70-85	5.1	5.8	65.0	24.1	1.41	48.2
	105-120	3.4	5.6	68.2	22.8	1.42	48.3
C	160-175	3.2	1.9	51.0	43.9	1.45	46.4

The climate region is temperate continental, characterized by mild winters and hot summers. The average annual temperature exceeds 11^{0}C (11.5^{0}C) and in july reaches the 22.7-22.9 ^{0}C, maximum climbing even up to 40 ^{0}C. Annual rainfall around 500 mm, falling usually in late spring and early summer. Greater intensity winds knock particular spring, with serious consequences for certain sectors (Ciuperceni, Desa, Nebuna). Ground water is within the range from 0.5 to 8.0 m relief wind, its influence is being felt in the soil profile, especially in interdune.

Regarding the soil cover specific relief rippled dunes Bailesti Plain, it is dominated by sandy soil moderate humiferous or even strong humiferous (chernozems, cambic chernozems) associated with poor sandy soil humiferous (psamosols) on positive forms of relief, and interdune with cambic chernozems, groundwater wet.

In most cases, the above mentioned soils have a low bulk density (1.40 to 1.45 g /cm^3) expressing a state of loosening the sand material which corresponds to a high total porosity (46-49%) (Table 3). With the exception of permeability (35-45 mm /h), the other hydro- physical properties are low and very low (CO = 2.1 to 2.6%, CU = 5.1 to 8.0% and CC = 6.3 to 10.3%). The reaction is weakly acidic to weakly alkaline (it contains $CaCO_3$) (6.2 to 8.4).

Containing more than 1% humus in the upper horizon and a total cation exchange capacity of from 7.5 to 13.5 me /100 g soil [20].

Table 3
THE HYDRO-PHYSICAL AND CHEMICAL PROPERTIES OF SANDY SOILS FROM BAILESTI PLAIN

Horizon	Depth (cm)	CO %	CC %	CU %	K mm/h	Humus %	pH (H_2O)	$CaCO_3$ %	Total N %	T me/100 g sol	V %
Cambic chernozem sandy – Southeast Ciupercenii Noi											
Ap	0-20	1.2	12.3	11.1	90.8	1.1	6.2	-	0.060	7.3	75
Am	20-40	1.1	11.2	10.1	46.2	0.8	6.4	-	0.047	7.4	82
AB	42-60	0.7	10.3	9.6	45.3	0.5	7.2	-	0.030	7.5	86
Bv	70-90	0.5	10.2	9.7	56.1	0.4	7.7	-	0.025	6.4	81
BC	100-120	0.5	10.1	9.6	46.5	0.3	7.8	0.2	0.023	6.3	79
C	130-150	0.6	9.7	9.1	53.8	0.2	8.0	11.3	0.020	6.1	77
Chernozem sandy – South Calafat											
Ap	0-15	2.6	7.5	5.9	35	1.6	6.4	-	0.076	13.6	81
Am	30-45	2.5	7.2	5.8	34	1.4	7.3	-	0.066	12.5	91
AC	48-62	2.7	10.3	8.0	34	1.1	8.1	3.7	0.049	9.0	95
Cca	70-85	2.1	8.5	6.7	19	0.7	8.3	11.6	0.038	8.8	98
	105-120	1.6	6.5	5.2	30	0.6	8.4	18.2	0.036	8.4	100
C	160-175	1.3	6.3	5.1	31	0.4	8.4	8.5	0.033	8.2	97

Production potential of sandy soils from Bailesti Plain is at a low level is low on humus (1.6 to 0.4%) and nitrogen (0.060-0.010%).

Around 40% of the area covered by sandy soils is in irrigation. It recommends extending irrigation over the entire surface, as in summer, the moisture deficit is felt on very large areas, even in soils formed on loess-like deposit. There are no interest measures to prevent deflation, that currently exist with high intensity in apex dunes and proper fertilization.

Sandy soils from Romanati Plain

Since the right of Craiova south, to the Danube, a width of 2-16 km, left Jiu develop a strong relief dunes wavy wind, with amplitudes of up to 7-8 m (fig. 2).

Fig. 2. Relief dunes in the Dabuleni Field

Source sand was a sandy sediments from the Jiu River. They were transported in several stages of West-Northwest winds and made not only on bridges terraces Jiu, but also in contents Plain between the Jiu and Olt, by distances ranging from 3 to 16 km from the source.

Unlike other Oltenia Plain, sands from Romanati Plain contain very coarse sand (60-80%) and very little fine material (2-10% clay 0.002 mm) [21].

Groundwater it is currently at depths ranging from 1.5 to 10.0 m. Compared to the non-irrigated before planning system Sadova-Corabia there is a rise in the groundwater to 2-4 m.

Danube and its two tributaries, the same system in the plains, consists of 5 terraces, altitude relatively close and age the related.

After Cotet (1976) [22], these terraces are formed early in the Quaternary (Pleistocene) under the influence of ice ages and interglacial phases which were followed (Table 4).

Table 4
SCHEME TERRACES FROM OLTENIA PLAIN

Age		**Altitude terraces (m)**	**Valleys**		
			Danube	Olt	Jiu
Holocene	Current	3-5	Flood-plaine (flood-plaine terrace)		
Pleistocene	Würm II	5-10	T. Ciuperceni	T. Stoenesti	T. Rojiste
	Würm I	15-22	T. Corabia	T. Hotarani	T. Malu Mare
	Riss	27-35	T. Bailesti	T. Caracal	T.Barza (Giorocul Mare)
	Mindel	50-60	T. Flamanda	T. Slatina	T. Simnic
	Günz	70-110	T. Perisoru	T. Coteana	T. Carcea

Submission abundant material terrace held in interglacial stages with warmer climates. These deposits follows the five terraces according to the progress of the deepening of the Danube within quaternary period (Fig. 3).

Fig. 3. Danube seen from the Port of Bechet

Climatic region is characterized by 10.8-11.5^{0}C average annual temperature and rainfall between 486-560 mm/year. Winds with highest intensity bat, usually from the West-Northwest and especially in spring, starting in April.

In conditions pedogenetic above, on sands of Romanati Plain were formed cambic chernozems sandy, typical eutricambosols sandy and lamellar, reddish preluvosols sandy, reddish luvosols with Bt horizon lamellar, a wide range of psamosols (eutric, molic, gleyic, saline), eutric aluviosols and aric antrosols sandy.

In general these soils are characterized by a low clay content (from 0.9 to 14%) and very coarse sand (50-88%) (Table 5).

Table 5
GRANULOMETRY SANDY SOILS FROM ROMANATI PLAIN

Horizon	Depth (cm)	Granulometry			
		< 0.002 mm	0.002-0.02 mm	0.02-0.2 mm	0.2-2.0 mm
Eutric psamosol - Dabuleni					
Ao	0-20	2.5	3.8	19.4	74.3
AC	30-50	3.0	4.0	14.2	78.8
C1	60-80	2.1	3.3	15.9	78.7
C2	100-120	0.7	2.3	12.5	84.5
C3	130-150	0.9	1.8	8.9	88.4
Cambic chernozem sandy – South Amarasti					
Ap	0-20	10.2	6.6	13.6	69.6
Am	24-41	10.0	6.9	21.1	62.0
AB	41-60	10.6	7.2	11.1	71.1
Bv1	63-83	10.4	7.0	22.1	60.5
Bv2	90-110	11.9	10.2	9.6	68.3
Lamellar eutricambosol – Amarasti					
Ap	0-20	0.9	3.1	16.9	79.1
Ao	20-40	2.7	3.9	16.8	76.6
AB	50-70	2.6	4.4	15.7	77.3
Bv1la	75-95	2.6	3.6	16.7	76.9
Bv2la	100-120	1.2	4.4	15.6	78.2
Bv3la	120-140	1.2	2.8	21.6	74.4
Reddish preluvosol sandy – North Marsani					
Ao	0-20	4.3	4.0	29.3	62.3
Ao	20-40	6.7	4.9	29.4	59.0
AB	50-70	8.3	6.6	28.9	56.2
Bt	90-110	12.0	3.9	22.9	61.2
	125-140	5.2	2.9	36.4	55.6
	160-180	6.6	1.4	36.7	55.3
Reddish preluvosol sandy – Apele Vii					
Ap	0-15	6.2	6.9	36.5	50.4
Ao	20-35	7.6	7.3	34.0	51.1
AB	50-65	6.0	7.6	34.2	52.2
	85-100	5.6	7.4	34.0	53.0
	110-130	14.4	7.6	30.6	47.4
	110-130	9.7	6.4	31.8	52.1
Bt	150-170	12.3	5.4	26.1	56.2
	150-170	5.3	4.0	24.9	65.8
	200-205	6.0	1.3	38.8	53.9
	215-230	12.4	1.0	34.4	52.2

After the pH value (determined in aqueous suspension) which fall into the category of weak acid-neutral. A high humus content is observed only in the case cambic chernozems sandy (1.9-2.0%) and reddish preluvosols sandy (1.3-0.7%), compared with psamosols and aric antrosols sandy (0.4-0.7%) (Table 6).

Table 6
THE CHEMICAL PROPERTIES OF SANDY SOILS FROM ROMANATI PLAIN

Horizon	Depth (cm)	pH (H_2O)	Humus %	V %	T me/100 g sol	Total N %	Mobile P ppm	Mobile K ppm
Eutric psamosol - Dabuleni								
Ao	0-20	6.9	0.6	79.7	5.71	0.032	35.8	32.4
AC	30-50	7.2	0.4	82.4	5.67	0.021	22.6	23.9
C1	60-80	7.0	0.3	82.6	5.28	0.020	21.4	22.6
C2	100-120	6.0	0.2	78.5	5.33	0.018	20.3	20.5
C3	130-150	6.0	0.1	78.2	5.52	0.015	18.7	19.2
Cambic chernozem sandy – South Amarasti								
Ap	0-20	5.6	1.9	84.0	7.33	0.091	6.0	38.0
Am	24-41	5.8	2.0	88.7	6.72	0.097	3.0	35.0

AB	41-60	6.2	0.8	83.4	5.94	0.093	2.8	33.7
Bv1	63-83	6.4	0.6	85.6	5.91	0.090	2.6	32.6
Bv2	90-110	6.6	0.4	88.3	5.88	0.086	2.5	31.7
Lamellar eutricambosol - Amarasti								
Ap	0-20	7.7	0.9	85.2	5.81	0.043	31.2	26.7
Ao	20-40	7.4	0.5	84.2	5.71	0.030	30.2	21.0
AB	50-70	7.3	0.4	82.1	5.30	0.022	30.5	32.4
Bv1la	75-95	7.3	0.3	82.0	5.34	0.020	29.7	32.2
Bv2la	100-120	7.2	0.2	80.6	5.54	0.019	28.5	31.8
Bv3la	120-140	7.1	0.1	80.1	5.67	0.017	27.8	30.6
Reddish preluvosol sandy – North Marsani								
Ao	0-20	5.9	1.3	56.0	2.52	0.059	38	83
Ao	20-40	5.9	0.7	67.1	3.26	0.043	36	74
AB	50-70	6.3	0.3	76.1	4.63	0.025	18	40
Bt	90-110	6.2	0.2	71.1	6.01	0.023	17	39
	125-140	6.4	0.3	76.6	3.08	0.021	15	37
	160-180	6.5	0.2	76.7	3.56	0.018	14	36
Reddish preluvosol sandy – Apele Vii								
Ap	0-15	7.1	1.2	88.0	2.72	0.053	36	81
Ao	20-35	7.1	0.6	85.1	3.28	0.038	34	70
AB	50-65	7.4	0.3	81.4	4.58	0.028	21	52
	85-100	6.7	0.3	81.3	4.62	0.026	20	51
	110-130	6.2	0.2	81.2	4.63	0.025	18	48
	110-130	6.5	0.2	81.0	4.61	0.023	15	44
Bt	150-170	6.7	0.1	88.5	4.60	0.022	14	43
	150-170	6.8	0.1	81.4	4.57	0.020	12	41
	200-205	6.9	-	86.3	-	-	-	-
	215-230	7.0	-	86.9	-	-	-	-

As the main limiting factors can be considered the dominant uses texture and deflation for the 1/3 region, climatic moisture deficit and raising the risk of groundwater under irrigation.

Production potential of sandy soils from Romanati Plain is medium. Is recommended measures to prevent and combat deflation, increase in the content of humus in the soil by the application of chemical fertilizers and organic and preservation of forest areas.

Conclusions

Sandy soils from Oltenia Plain formed by wind deposits, seen as a resource land have a particular importance for the country's agriculture, because it has certain characteristics that make them valuable in relation to plant development, namely: warming faster than other soils, it offers the possibility of early crops; easier work the soil and in a longer time interval, with the energy and lower fuels; greater capacity mineralization of organic matter.

Has a potential production low-middle due to low content of humus and nutrients and because they are exposed to wind erosion [23].

They are used with good results for vines (Fig. 4) the fruit (peach, apricot, cherry), of grain legumes (beans, pea, lupine) (Fig. 5), technical plants (tobacco, unflower, potato), vegetables (tomato, cucumber, onion, cabbage) (Fig. 6, 7), forage crops (sorghum, alfalfa, mash, maize, maize sillage) and various medicinal plants.

Fig. 4. Vitis vinifera (vine) on eutric psamosols in the Dabuleni Field

Fig. 5. Beans culture on eutric psamosols in the Dabuleni Field

Fig. 6. *Citrullus lanatus* (watermelon) on eutric psamosols in the Dabuleni Field

Fig. 7. *Cucumis melo* (melon) on eutric psamosols in the Dabuleni Field

To protect and improve these soils requires special measures. Thus, for stopping deflation recommended the establishment of shelter-belt (especially *Robinia pseudoacacia*) (Fig. 8) and using fences of twigs. Also, irrigation have important role in the stability of soils, as well as vegetation.

Fig. 8. Protection of the locust curtains (*Robinia pseudoacacia*) in the Dabuleni Field

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