

FERTILIZATION RECOMMENDATIONS FOR SEVERAL FIELD CROPS ON A TYPICAL CHERNOZEM FROM VALEA STANCIULUI – DOLJ

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Abstract

There have been made soil analysis with samples taken from 0-20 cm depth from Centrotrans s.r.l. company from Valea Stanciului – Dolj; the surface was split in 23 homogenous plots. The fertilization recommendations have been calculated after actual methodology in Romania, for the following crops: wheat, corn, soybean, oilseed rape and sunflower.

Keywords: soil, fertilizers, wheat, corn, soybean, oilseed rape, sunflower

INTRODUCTION

One of the major tasks of teachers from Faculty of Agriculture Craiova is to advise farmers in order to apply the most suitable technologies in function of the soil nutrient supplying, expected yields, endowment, etc. The recommendations take account of the soil fertility preservation, too. The present research is according with these requirements.

MATERIAL AND METHOD

The soil agrochemical analysis and the interpretation of results have been made according with the methods

elaborated by the Institute for Pedology and Agrochemistry Bucharest (ICPA) and well known specialists (Borlan Z., 1973; Obrejeanu G., 1964; ICPA, 1980, 1981).

The calculus of the fertilizer doses and their recommendations for applying has been made according methods used in Romania (Hera C., 1980; Vintilă Irina, 1984; Rusu M., 2010).

RESULTS AND DISCUSSIONS

The soil data are written in the first table and the ones on fertilizer doses for different crops are written in the second and third tables.

Table 1

The results of soil analyses of samples from Valea Stanciului

plot	pH		Humus %		Available P, ppm		Available K, ppm	
	Value	Apprec.	Value	Apprec.	Value	Apprec.	Value	Apprec.
1	7.01	N	2.97	B	34.84	M	458	E
2	7.18	N	3.24	B	35.36	M	496	E
3	6.93	N	3.07	B	11.44	S	452	E
4	6.94	N	3.02	B	9.91	S	470	E
5	6.97	N	3.04	B	7.80	FS	455	E
6	7.07	N	3.03	B	10.45	S	398	FB
7	6.84	N	2.99	B	7.83	FS	476	E
8	6.80	N	3.18	B	8.32	S	407	E
9	6.88	N	3.29	B	10.44	S	420	E
10	6.67	SA	2.91	M	24.44	M	442	E
11	6.51	SA	3.11	B	15.08	S	454	E
12	6.97	N	3.08	B	22.36	M	438	E
13	6.52	SA	2.99	M	26.08	M	356	FB
14	7.53	SAC	2.96	B	32.76	M	446	E
15	6.95	N	2.94	B	7.82	FS	418	E
16	6.69	N	3.11	B	9.88	S	692	E
17	6.71	SA	3.00	B	40.56	B	4116	E
18	6.77	SA	2.80	M	58.24	B	398	FB
19	6.76	SA	2.61	M	8.85	S	508	E
20	6.60	SA	3.08	B	6.25	FS	474	E
21	6.61	SA	3.17	B	17.68	S	484	E
22	6.64	SA	2.98	B	31.72	M	407	E
23	6.65	SA	3.46	B	29.64	M	602	E

Legend: N – neutral reaction
 SA – low acid reaction
 SAC – low alkaline reaction
 FS – very low supply
 S – low supply

M – average supply
 B – good supply
 FB – very good supply
 E – excessive supply
 Apprec. – appreciation

Beside the soil supplying degree by nutrients (table 1), for the calculus of fertilizer doses there must be known the

specific consumption of nutrients for harvest.

Crops	kg active ingredient/tonne of main yield
Winter wheat, 1t grains + 1.3 t straw	26.5
Corn grains, 1t kernels + 1.6 t stalks	27.5
Sunflower, 1t seeds + 3 t stems	36.5
Oilseed rape, 1t seeds + 3 t stems	51.5
Soybean for oil, 1t beans + 1.5 t stalks	70.0

kg active ingredient/tonne of main yield	N	P ₂ O ₅	K ₂ O
Winter wheat, 1t grains + 1.3 t straw	26.5	13.7	16.4
Corn grains, 1t kernels + 1.6 t stalks	27.5	12.5	16.5
Sunflower, 1t seeds + 3 t stems	36.5	17.5	50.0
Oilseed rape, 1t seeds + 3 t stems	51.5	36.0	44.0
Soybean for oil, 1t beans + 1.5 t stalks	70.0	22.5	34.0

Within tables 2 and 3 the plots were assigned as follows:

- for nitrogen (N) A=all plots excepting 19 and 23

- for phosphorus (P) B= plots 3, 4, 6, 9 and 16, C= plots 10, 11, 12, 13 and 21, D= plots 14, 22, and 23, M=plots 17 and 18, N= plots 5, 7, 8, 15, 19 and 20.

Table 2

The recommended fertilizer doses for oilseed rape, sunflower and soybean

a.i.	P	Planned yield, t/ha											
		Oilseed rape				Sunflower				Soybean			
		2	3	4	5	2	3	4	5	2	3	4	5
N	19	100	160	200	220	65	93	112	126	18	44	60	69
	23	82	140	175	202	59	87	106	121	3	30	46	56
	A	90	150	185	2110	61	89	109	123	10	36	52	61
P ₂ O ₅	1.2	79	173	259	333	37	84	126	163	9	48	76	100
	B	184	282	370	442	89	136	178	215	71	110	138	161
	C	140	230	300	390	67	114	155	215	34	73	103	124
	D	94	190	278	350	46	93	135	172	14	54	82	105
	M	45	1123	209	284	113	60	102	139	-	41	68	92
	N	193	288	375	450	94	141	182	220	80	125	150	175

a.i. – active ingredient; P – plots;

Table 3

Recommended fertilizer doses for winter wheat and corn crops

a.i.	P	Expected yield, t/ha												
		Winter wheat						Corn for grains						
		2	3	4	5	6	7	8	3	4	5	6	7	8
N	19	57	86	109	127	142	154	1165	56	86	113	138	160	181
	23	47	76	99	1117	132	144	155	42	72	100	1124	147	167
	A	52	81	103	121	136	148	159	48	78	1106	130	153	173
P ₂ O ₅	1.2	-	6	31	51	68	83	95	-	19	34	47	58	67
	B	39	70	95	115	133	147	159	48	67	82	95	1106	115
	C	5	36	61	81	99	106	125	26	45	61	74	85	93
	D	-	14	39	59	76	84	103	8	27	42	55	67	75
	M	-	-	15	35	52	67	79	-	-	14	27	38	47
	N	48	79	104	124	142	156	168	56	72	87	100	111	120

a.i. – active ingredient; P – plots;

CONCLUSIONS

The analyzed surface is relatively even as regard the supplying degree by N (humus) and potassium as well as regard the pH yet uneven as phosphorus supplying.

The soil reaction is neutral (52%) or low alkaline (43%) of surface, optimal for plant growth; 83% of the surface is well supplied and 17% is average supplied by nitrogen (humus); 87% of the surface is excessively supplied and 13% is well supplied by available potassium; 17% of the surface is low supplied, 39% is low

supplied, 35% is average supplied and 9% is well supplied by phosphorus.

Generally, the soil is considered fertile and lucrative. There can be obtained yields of 2t/ha corn without fertilizers and 2t/ha wheat with low doses of NP. For all crops, including the high consuming ones (oilseed rape, soybean, sunflower) and for all expected yields there is no need for potassium fertilizers due to high content of the soil.

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