

for environmental control of natural environments

Address: Saint Petersburg - Pushkin, Peterburgskoye Shosse, 2, tel. 476-44-44 (ext. 303)

Accreditation certificate N POCCRU.0001.10CB25

REPORT #03/16 of february 24, 2016

of laboratory soil examination

Acquirer: Aistov V.V.

Name of the examination object: sapropel

Aim of examination: chemical analysis

Sampling conducted by: acquirer

Location of sampling: Omsk region, Krutinskiy area, Oglukhino lake.

Sampling date: 21.01.2016-21.02.2016

Sample number	Registration	Estimate	Unit	Result	Margin of error	Reference document
1	2	3	4	5	6	7
		Organic matter	%	56.54	0.99	government standard 26213-91
		Ash content	%	43.46	0.99	
		Salt extract hydrogen indicator	pH value	7.14	1.34	government standard 26483-85
		Labile phosphorus	Mln. ⁻¹	>250	14.8	government standard 54650-2011
		Mobile potassium	Mln. ⁻¹	39.2	13.6	government standard 54650-2011
		Hydrolytic acidity	mmol/kg	0.69	7.2	government standard
		Exchange potassium	mmol/kg	3.42	2.02	government standard
		Exchange magnesium	mmol/kg	1.66	4.16	government standard
		Zinc	mg/kg	232.2	23	M-02-902-125-2005
		Copper	mg/kg	31.5	15.6	M-02-902-125-2005
		Arsenic	mg/kg	10.22	3.42	M-02-902-125-2005
		Lead	mg/kg	13.64	11.10	M-02-902-125-2005
		Manganese	mg/kg	818	2.0	M-02-902-125-2005
		Iron	mg/kg	23792	15.0	M-02-902-125-2005
		Nickel	mg/kg	28	5.45	M-02-902-125-2005
		cadmium	mg/kg	0.0158	17.0	M-02-902-125-2005

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Notes:

The received results are only applicable to the samples indicated in this report

Error margins of results comply to the Regulatory documentation of Measuring procedure.

Principal of Federal State Educational Institution of Higher Education

Saint Petersburg State Agrarian University

/signature/

S.N. Shirokov

Laboratory chief

/signature/

M.V. Kiselev

Seal:

Ministry of Agriculture Russian Federation

Federal State Educational Institution of Higher Education

Saint Petersburg State Agrarian University

FGBOU VO SPBGU

main state registration number 1027908999299

**Federal State Institution
" Agrochemical centre "Omskiy"**

Stamp:

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Federal State Institution

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OGRN (main state registration number) 1025500755280

INN (personal tax reference number) 5502005925/KPP (Enterprise Classification Code) 550301001

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Soil and agrochemicals
analysis department

Test results #10

Product name: Sapropel (sample 4)

Acquirer: «Resurs» LLC

Sampling location: Oglikhino lake, Krutinskiy area

Sample amount: 1 sample, 2 kg

Date of examination: 25.06.2012 through 06.07.2012.

Ser./ No.	Performance, parameters	Reference document for test method	Reference document for product	Value, units of measurements	
				During examination	According to reference
1	2	3	4	5	6
	Appearance	Specifications TY 9899-001- 51622306-03	Specifications TY 9899-001- 51622306- 03	Dark-brown homogenous mass	Dark-brown to black homogenous mass
	Moisture content, at most %	government standard 26713- 85		87.6	60.0
	Acidity (pH), not less than	government standard 27979- 88		8.42	5.0
	Organic matter content, on a dry basis, not less than	government standard 27980- 88		29.6	50.0
	Absolute dry matter content, %, not less than: total nitrogen content total phosphorus total potassium	government standards 26715-85 26717-85 28718-85		0.98 0.44 1.39	1.50 0.15 0.30
	Absolute dry matter content, %,at most: Calcium (CaO) Iron (Fe 2 O 3) Sulphur (SO3)	methodology guidelines for agrochemical sapropel analysis M, 1982		7.15 4.64 2.24	12.0 5.0 6.0
	Mass concentration of	methodology			

	<p>toxic elements, mg/kg, at most:</p> <ul style="list-style-type: none"> -lead -including mobile lead -cadmium -mercury <p>Joint content Lead+mercury, mg/kg, at most</p>	<p>guidelines for heavy metal soil testing of agriculturally used areas and crop production M, 1992 Method. guidelines of Ministry of Agriculture RF 1993, Meth.guidelines M3 4242-87</p>		<p>20.5 3.50 0.90 0.024 20.5+0.024</p>	
	<p>Specific activity of natural radionuclides, becquerel/kg</p> <ul style="list-style-type: none"> - Potassium-40 - Radium-226 - Thorium-232 - Totally at most <p>$A_{eff} = A_{ra} + 1,31 A_{th} + 0,085 A_{\kappa}$</p>	<p>Meth.guidelines 2.6.1.1194-03, GNMTs “VNIIFTRI” (State Scientific Metrological Center “All-Russian Scientific Research Institute of Physical and Radio Technical Measurements (Metrology)” 2003 government standard P 53745-2009</p>		<p>243 31.4 21.0 79.5</p>	<p>< 300</p>
	<p>Specific activity of technogenic radionuclides, Bq/kg</p> <p>Cesium-137 (A_{Cs})</p> <p>Strontium-90 (A_{Sr})</p> <p>$\frac{A_{Cs}}{60} + \frac{A_{Sr}}{30}$, relative unit At most</p>	<p>Meth.guidelines 2.6.1.1194-03, GNMTs “VNIIFTRI” 2003</p> <p>Meth.guidelines 2.6.1.1194-03, GNMTs “VNIIFTRI” 2004</p>		<p>11.9 2.50 0.28</p>	<p>1.0</p>
	<p>Mass concentration of pesticide remains, mg/kg, less than:</p> <p>GHGC (HCH hexachlorocyclohexane) (isomer sum) DDT (dichloro-diphenyl-</p>	<p>Meth.guidelines M3 1766-77 12.10.77</p>		<p>< 0.003 < 0.05</p>	<p>0.1 0.1</p>

	trichloroethane) and its metabolites (total)				
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Action by:

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Head pro tempore

/signature/

E.N. Morosova

Date of issue: 06.07.12

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Test results #7

Product name: Sapropel (sample 1)

Acquirer: «Resurs» LLC

Sampling location: Oglikhino lake, Krutinskiy area

Sample amount: 1 sample, 2 kg

Date of examination: 25.06.2012 through 29.06.2012.

Ser./ No.	Estimate	Measurement unit	Test results		Reference document for test methods
			For absolute dry matter	For natural moisture content	
1	Moist	%	85.7		Gov. standard 26713-85
2	pH (salt)	pH unit		8.51	Gov. standard 27979-88
3	Ash	%	71.3		Gov. standard 26714-85
4	Organic matter in terms of carbon	%	28.7 14.3		Gov. standard 27980-88
5	C:N ratio	%	14.5		Gov. standard 27980-88
6	Total Nitrogen	%	0.99	0.14	Gov. standard 26715-85
7	ammonium Nitrogen	%	0.017	0.002	Gov. standard 26715-85
8	Nitrogen, nitrate	%	-	-	Meth.guidelines M3 1766-77 CINAO (Central Research Institute of agricultural chemical services for the agricultural sector) 1984
9	Phosphorus, general	%	0.43	0.06	Gov. standard 26717-85
10	Total Potassium (K ₂ O)	%	1.31	0.19	Gov. standard 26717-85

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Date of issue: 29.06.2012

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Test results #8

Product name: Sapropel (sample 2)

Acquirer: «Resurs» LLC

Sampling location: Oglikhino lake, Krutinskiy area

Sample amount: 1 sample, 2 kg

Date of examination: 25.06.2012 through 29.06.2012.

Ser./ No.	Estimate	Measurement unit	Test results		Reference document for test methods
			For absolute dry matter	For natural moisture content	
1	Moist	%	88.7		Gov. standard 26713-85
2	pH (salt)	pH unit		8.57	Gov. standard 27979-88
3	Ash	%	68.5		Gov. standard 26714-85
4	Organic matter in terms of carbon	%	31.5 15.7		Gov. standard 27980-88
5	C:N ratio	%	11.2		Gov. standard 27980-88
6	Total Nitrogen	%	1.41	0.16	Gov. standard 26715-85
7	ammonium Nitrogen	%	0.02	0.002	Gov. standard 26715-85
8	Nitrogen, nitrate	%	-	-	Meth.guidelines M3 1766-77 CINAO (Central Research Institute of agricultural chemical services for the agricultural sector) 1984
9	Phosphorus, general	%	0.45	0.05	Gov. standard 26717-85
10	Total Potassium (K ₂ O)	%	1.25	0.14	Gov. standard 26717-85

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Test results #9

Product name: Sapropel (sample 3)

Acquirer: «Resurs» LLC

Sampling location: Oglikhino lake, Krutinskiy area

Sample amount: 1 sample, 2 kg

Date of examination: 25.06.2012 through 29.06.2012.

Ser./ No.	Estimate	Measurement unit	Test results		Reference document for test methods
			For absolute dry matter	For natural moisture content	
1	Moist	%	87.1		Gov. standard 26713-85
2	pH (salt)	pH unit		8.48	Gov. standard 27979-88
3	Ash	%	70.1		Gov. standard 26714-85
4	Organic matter in terms of carbon	%	29.9 14.9		Gov. standard 27980-88
5	C:N ratio	%	13.5		Gov. standard 27980-88
6	Total Nitrogen	%	1.11	0.14	Gov. standard 26715-85
7	ammonium Nitrogen	%	0.01	0.001	Gov. standard 26715-85
8	Nitrogen, nitrate	%	-	-	Meth.guidelines M3 1766-77 CINAO (Central Research Institute of agricultural chemical services for the agricultural sector) 1984
9	Phosphorus, general	%	0.42	0.05	Gov. standard 26717-85
10	Total Potassium (K ₂ O)	%	1.46	0.19	Gov. standard 26717-85

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Test results #11

Product name: Sapropel (sample 5)

Acquirer: «Resurs» LLC

Sampling location: Oglikhino lake, Krutinskiy area

Sample amount: 1 sample, 2 kg

Date of examination: 25.06.2012 through 29.06.2012.

Ser./ No.	Estimate	Measurement unit	Test results		Reference document for test methods
			For absolute dry matter	For natural moisture content	
1	Moist	%	83.1		Gov. standard 26713-85
2	pH (salt)	pH unit		8.24	Gov. standard 27979-88
3	Ash	%	65.1		Gov. standard 26714-85
4	Organic matter in terms of carbon	%	34.9 17.4		Gov. standard 27980-88
5	C:N ratio	%	13.8		Gov. standard 27980-88
6	Total Nitrogen	%	1.26	0.21	Gov. standard 26715-85
7	ammonium Nitrogen	%	0.01	0.001	Gov. standard 26715-85
8	Nitrogen, nitrate	%	-	-	Meth.guidelines M3 1766-77 CINAO (Central Research Institute of agricultural chemical services for the agricultural sector) 1984
9	Phosphorus, general	%	0.33	0.05	Gov. standard 26717-85
10	Total Potassium (K ₂ O)	%	1.31	0.22	Gov. standard 26717-85

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