

NATURAL-AGROGENIC SOIL CATENAE OF SOUTHWESTERN PART OF PRIMORSKY KRAI



In two parts

Part 2



Physicochemical and chemical properties



Vladivostok
2015

The Ministry of Education and Science of the Russian Federation
Far Eastern Federal University
Far Eastern Branch of the Russian Academy of Sciences Botanical Garden-Institute
G.B. Yelyakov Pacific institute of bioorganic chemistry
Institute of Biology and Soil Sciences of the Far Eastern Branch of the Russian Academy of Sciences

NATURAL-AGROGENIC SOIL CATENAE OF SOUTHWESTERN PART OF PRIMORSKY KRAI

In two parts

Part 2

Physicochemical and chemical properties

Monograph

Vladivostok
Far Eastern University Press
2015

UDC 631.41+577.34 (075.8)
LBC 40.3
N28

Scientific editor:

A.M. Derbentseva, professor of department of soil science, School of natural sciences,
Far Eastern Federal University, doctor of agricultural sciences, professor

Reviewers:

N.M. Kostenkov, Doctor of biological sciences, professor, manager of sector of soil science
and ecology of soils of Federal State budgetary institution of science of Soil Biology Institute
Far Eastern Department of Russian Academy of Sciences

A.I. Stepanova, professor of department of oceanology and hydrometeorology
of School of natural sciences of FEFU, candidate of geographical sciences

Group of authors:

*A.M. Derbentseva, O.V. Nesterova, G.V. Roslik, R.V. Doudkin, L.A. Davydova, K.V. Gorobets,
A.V. Brikmans, V.A. Semal, G.L. Ardeeva, V.B. Kolycheva, E.A. Popova, I.A. Kurochkina*

Text translated:

G.L. Ardeeva, V.B. Kolycheva

- Natural-agrogenic soil catenac of southwestern part of Primorsky Krai : monograph.** In 2 p. P. 2.
N28 Physicochemical and chemical properties / A.M. Derbentseva, O.V. Nesterova, G.V. Roslik, R.V. Doudkin,
L.A. Davydova, K.V. Gorobets, A.V. Brikmans, V.A. Semal, G.L. Ardeeva, V.B. Kolycheva, E.A. Popova,
I.A. Kurochkina ; [transl. G.L. Ardeeva, V.B. Kolycheva] ; [scientific ed. A.M. Derbentseva]. – Vladivostok :
Far Eastern University Press, 2015. – 78 p. : il.
ISBN 978-5-906739-93-3 (Part 2)
ISBN 978-5-906739-15-5

This monograph describes ecological state of the soil cover and soils as the main component of natural and agrogenic soil catenas of the southwest of Primorye. The attention is focused on physicochemical and chemical properties of soils developed in natural and antropogenic transformed landscapes. The monograph is addressed to a wide range of the experts dealing with issues of agriculture and ecology of soils; also it can be applied in education for training pedologists, ecologists, agronomists.

UDC 631.41 : 577.34 (075.8)
LBC 40.3

ISBN 978-5-906739-93-3 (Part 2)
ISBN 978-5-906739-15-5

- © Derbentseva A.M., Nesterova O.V., Roslik G.V., Doudkin R.V.,
Davydova L.A., Gorobets K.V., Brikmans A.V., Semal V.A.,
Ardeeva G.L., Kolycheva V.B., Popova E.A., Kurochkina I.A., 2015
© Ardeeva G.L., Kolycheva V.B., translation, 2015
© Far Eastern Federal University, 2015
© Far Eastern Branch of the Russian Academy of Sciences
Botanical Garden-Institute, 2015
© G.B. Yelyakov Pacific institute of bioorganic chemistry, 2015
© Institute of Biology and Soil Sciences of the Far Eastern Branch
of the Russian Academy of Sciences, 2015
© Design. Far Eastern University Press, 2015

СОДЕРЖАНИЕ

INTRODUCTION.....	3
Chapter 1. LANDSCAPES AND SOILS.....	5
1.1. Variety of landscapes.....	5
1.2. Change of soils in noosphere landscapes.....	7
1.3. Behavior of chemical elements in landscapes (according to Glazov, Kasimov, Teplitskaya, etc., 1989).....	7
Chapter 2. PHYSICOCHEMICAL AND CHEMICAL PROPERTIES OF NATURAL AND AGROGENIC SOIL CATENAS OF HANKAYSKO-RAZDOLNENSKIY HILLY AND STEEPLY-SLOPING DISTRICT.....	10
2.1. Lipovetskaya natural and agrogenic soil catena.....	10
2.1.1. Physicochemical properties of the soils forming the catena.....	14
2.1.2. Chemical properties of soils.....	17
2.2. Novozhatkovskaya natural and agrogenic soil catena.....	18
2.2.1. Physicochemical properties of the catena soils.....	22
2.2.2. Chemical properties.....	25
Chapter 3. PHYSICOCHEMICAL AND CHEMICAL PROPERTIES OF NATURAL AND AGROGENIC SOIL CATENAS OF ARSEN'EV-HANKA-USSURIYSK GENTLY RUGGED DISTRICT.....	26
3.1. The natural and agrogenic soil catena of Snegurovka area.....	26
3.1.1. Physical and chemical properties of the catena constituting soils.....	31
3.1.2. Chemical properties.....	33
3.2. Vassianovskaya natural and agrogenic soil catena.....	34
3.2.1. Physicochemical properties of soil constituents of the catena.....	37
3.2.2. Chemical properties of soils.....	39
3.3. Rakovskaya natural and agrogenic soil catena.....	40
3.3.1. Physicochemical properties of soils making the catena.....	44
3.3.2. Chemical properties of soils.....	46
Chapter 4. PHYSICOCHEMICAL AND CHEMICAL PROPERTIES OF NATURAL AND AGROGENIC SOIL CATENA OF THE RAZDOL'NO-ARTEMOVSKY INDUNDABLE GENTLY RUGGED AREA.....	47
4.1. Surazhevskaya natural and agrogenic soil catena.....	47
4.1.1. Physicochemical properties of soils making the catena.....	51
4.1.2. Chemical properties of soils.....	53
Chapter 5. MECHANISMS OF SOIL FUNCTIONING STABILITY.....	54
5.1. Functioning of the system of soil chemical element compounds.....	54
5.1.1. Soil buffering.....	56
5.1.2. Acid-base soil balance.....	57
5.2. Stability mechanisms of various organization levels of soil system to external chemical effect.....	57

5.2.1. Material carriers of soil stability to external chemical effect.....	59
5.2.2. Stability of compounds system of typomorphic chemical soil elements (silicon, aluminium, iron, etc.) to external effect.....	60
5.2.3. Stability mechanisms of compounds system of the basic plant food elements (phosphorus, potassium, nitrogen, etc.) in agrocenosis soils.....	64
Chapter 6. ENERGY PARAMETERS OF AGROGENIC LANDSCAPE SOILS AND THEIR ENVIRONMENTAL ASSESSMENT.....	66
REFERENCES.....	74

Научное издание

**Дербенцева Алла Михайловна
Нестерова Ольга Владимировна
Рослик Галина Владимировна и др.**

**ПРИРОДНО-АГРОГЕННЫЕ ПОЧВЕННЫЕ КАТЕНЫ
ЮГО-ЗАПАДНОЙ ЧАСТИ ПРИМОРЬЯ**

Монография

В двух частях

Часть 2

Физико-химические и химические свойства

Владивосток
Издательство Дальневосточного университета
2015

На английском языке

Scientific publication

**Derbentseva Alla
Nesterova Olga
Roslik Galina et al.**

**NATURAL-AGROGENIC SOIL CATENAE
OF SOUTHWESTERN PART OF PRIMORSKY KRAI**

Monograph

In two part

Part 2

Physicochemical and chemical properties

In author's edition
Cover design and layout by *E.A. Prudkoglyad*