KONFERENSIYALAR.COM
ANJUMANLAR PLATFORMASI

O‘ZBEKISTON — 2030: INNOVATSIYA, FAN VA TA’LIM ISTIQBOLLARI

VI RESPUBLIKA ILMIY-AMALIY KONFERENSIYA MATERIALLARI

SENTYABR, 2025-YIL

O‘ZBEKISTON 2030

KONFERENSIYALAR.COM
ANJUMANLAR PLATFORMASI

O‘ZBEKISTON — 2030: INNOVATSIYA, FAN VA TA’LIM ISTIQBOLLARI

VI RESPUBLIKA ILMIY-AMALIY KONFERENSIYASI MATERIALLARI

2025-yil, sentyabr

TOSHKENT-2025

ISBN 978-9910-09-297-8

O‘ZBEKISTON – 2030: INNOVATSIYA, FAN VA TA’LIM ISTIQBOLLARI. VI Respublika ilmiy-amaliy konferensiyasi materiallari. – Toshkent: Scienceproblems team, 2025. – 69 bet.

Elektron nashr: https://konferensiyalar.com

Konferensiya tashkilotchisi: “Scienceproblems Team” MChJ

Konferensiya o‘tkazilgan sana: 2025-yil, 8-sentyabr

Mas’ul muharrir:
Isanova Feruza Tulqinovna

Annotatsiya
Mazkur nashrda “O‘zbekiston — 2030: innovatsiya, fan va ta’lim istiqbollari” nomli VI Respublika ilmiy-amaliy konferensiyasi doirasida taqdim etilgan ilmiy maqolalar to‘plami jamlangan. Unda O‘zbekistonning turli oliy ta’lim va ilmiy-tadqiqot muassasalari, tarmoq tashkilotlari, mustaqil tadqiqotchilar tomonidan taqdim etilgan ijtimoiy-gumanitar, iqtisodiyot, huquq, biologiya, tibbiyot va boshqa sohalarga oid maqolalar kiritilgan. Maqolalarda ilm-fanning zamonaviy yo‘nalishlari, innovatsion texnologiyalar, ta’lim islohotlari hamda barqaror taraqqiyotga oid masalalar muhokama qilingan. To‘plam akademik izlanishlar, amaliy tajribalar va ilmiy xulosalarni birlashtirgan holda, fanlararo integratsiyani chuqurlashtirish va ilmiy hamkorlikni kuchaytirishga xizmat qiladi.

Kalit so‘zlar: ilmiy-amaliy konferensiya, innovatsiya, fan va ta’lim, O‘zbekiston 2030, barqaror rivojlanish, ilmiy izlanishlar, fanlararo integratsiya, ilmiy hamkorlik, texnologik taraqqiyot, zamonaviy ta’lim.

ISBN 978-9910-09-297-8

MUNDARIJA

TIBBIYOT FANLARI

QISHLOQ XO’JALIGI FANLARI

MAPPING TYPICAL IRRIGATED SEROZEM SOILS BASED ON SLOPE LEVEL INDICATORS USING GIS TECHNOLOGIES

Normatov Yodgor Mamanazarovich
Researcher
Institute of soil science and agrochemical research
E-mail: yodgor-normatov@mail.ru
Phone:+99899 476 79 24

Baxodirov Zafar Abduvalievich
(PhD) senior scientist
Institute of soil science and agrochemical research
E-mail: Baxadirov@mail.ru
Phone:+998998176114

Tursunov Shodmon Tog’aevich
(PhD) senior scientist, t.w.
Institute of soil science and agrochemical research
Phone:+99893 456-64-76

Annotation. The article provides extensive information on soil properties of typical irrigated serozem soils distributed in the Zamin district based on slope indicators. In particular, the dominance of areas with a slope of 1.1-30 in hectares and the amount of soil nutrients under this slope are presented, and geoinformation technologies are widely used in mapping.

Key words: soil, slope, typical soil, geoinformation technologies, remote sensing, nutrients, humus, nitrogen, phosphorus, potassium.

GIS TEXNOLOGIYALARIDAN FOYDALANGAN HOLDA QIYALIK DARAJASI KO'RSATKICHLARI ASOSIDA TIPIK SUG'ORILADIGAN SEROZ TUPROQLARNI XARITALASH

Normatov Yodgor Mamanazarovich
Tadqiqotchi

Baxodirov Zafar Abduvalievich
(PhD) katta ilmiy xodim

Tursunov Shodmon Tog‘aevich
(PhD) katta olim, t.v.

Annotatsiya. Maqolada Nishab ko‘rsatkichlari asosida Zomin tumanida tarqalgan tipik sug‘oriladigan seroz tuproqlarning tuproq xossalari haqida keng ma’lumotlar berilgan. Xususan, qiyaligi 1,1-30 gektarga teng bo‘lgan maydonlarning ustunligi va bu qiyalik ostidagi tuproq ozuqa moddalarining miqdori ko‘rsatilib, xaritalashda geoaxborot texnologiyalaridan keng foydalanilmoqda.

Kalit so’zlar: tuproq, qiyalik, tipik tuproq, geoaxborot texnologiyalari, masofadan zondlash, ozuqa moddalari, chirindi, azot, fosfor, kaliy.

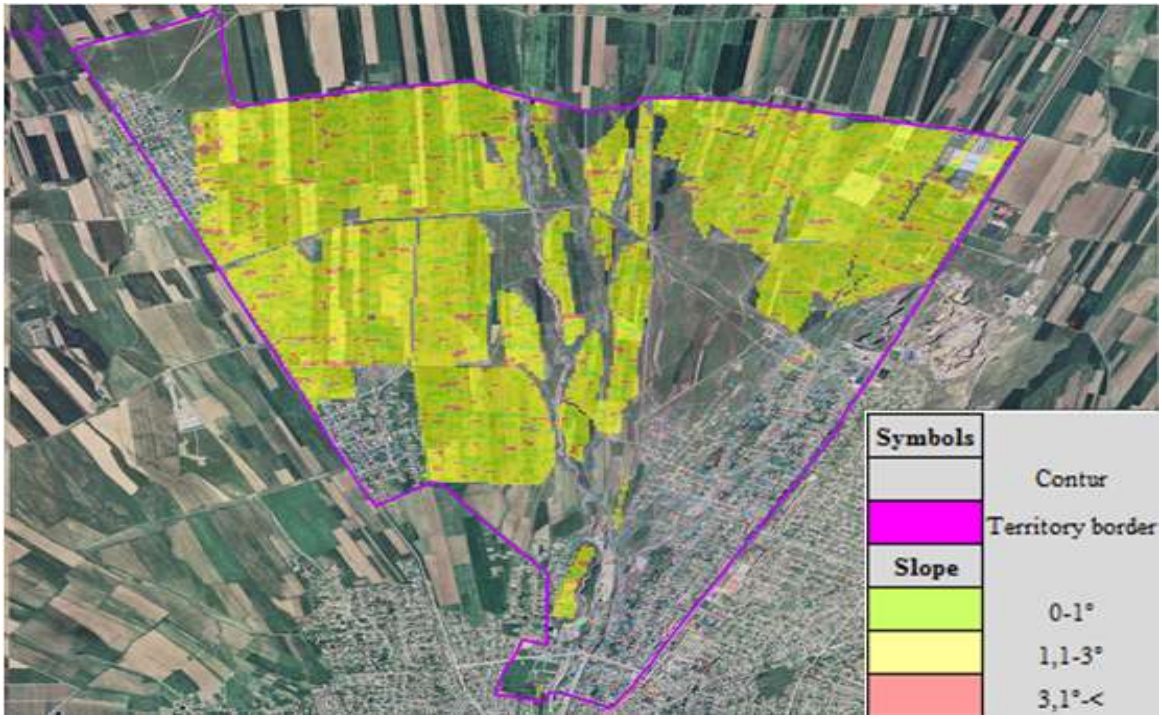
Introduction. As the world population is expected to reach 10 billion by 2050 and the area of land used for agriculture is decreasing, it is necessary to use modern computer technologies to keep track of land areas used in agriculture, maintain and restore their fertility, and increase crop yields. Therefore, the use of GIS technologies in agriculture provides several proposals that allow the collection, storage, and analysis of spatial data. With the help of GIS technologies, it is possible to effectively use agricultural products [1].

Today, several countries, including China, Italy, the United States, Germany, and India, are leading the way in the use of geospatial technologies. GIS technologies are currently playing a significant role in forest conservation, climate change, education, health, and disaster management, among other areas. [2].

Geographic information systems are widely used to monitor and manage water, land, forest, agriculture, and climate change. In addition, they allow for the detection, monitoring, and management of environmental changes based on remote sensing data [3].

Research object and methods. The research area was conducted on typical gray soils of the “Laylak Uya” massif of the Zamin district of the Jizzakh region. The instructions for conducting soil surveys and compiling soil maps for maintaining the state land cadastre [4], Ye.V. Arinushkina’s manuals [5] and generally accepted methods were used. Analysis based on geographic information systems was carried out using the ArcGIS program and its Geostatistical Analyst modules.

Research results and their analysis. Typical irrigated serozem soils with a slope of 0-1^0 in the studied area were low (0,4-0,8%) -16,4 hectares, medium (0,81-1,2%) -127,9 hectares, high (1,21-1,6%) -19,2 hectares, exchangeable potassium low (101-200 mg/kg) -35,2 hectares, medium (201-300 mg/kg) -148,6 hectares, high (301-400 mg/kg) -14,4 hectares, mobile phosphorus very low (>15 mg/kg) -35,9 hectares, low (16-30 mg/kg) -125,2 hectares, medium (31-45mg/kg) -2,4 hectares.



Picture-1. Map of the slope of irrigated typical serozem soils the "Laylak Uya" massif in the Zamin district

Table-1.

Massif of Laylak uya		Slope		
		0-1⁰	**1,1-3⁰**	**3⁰-<**
Humus	0,4-0,8%	16,4/he	52,1/he	2,3/he
	0,81-1,2%	127,9/he	478,2/he	35,1/he
	1,21-16%	19,2/he	62,1/he	3,9/he
Potassium	101-200mg/kg	35,2/he	110,9/he	7,3/he
	201-300 mg/kg	148,6/he	401,3/he	30,8/he
	301-400 mg/kg	14,4/he	45,5/he	3,3/he
Phosphorusp	0-15 mg/kg	35,9/he	100,8/he	8,4/he
	16-30 mg/kg	125,2/he	485,6/he	32,5/he
	31-45 mg/kg	2,4/he	6,0/he	0,31/he

It was observed that typical irrigated soils soils with a slope of 1,1-3⁰ were low in humus (0,4-0,8%) -52,1 hectares, medium (0,81-1,2%) -478,2 hectares, high (1,21-1,6%) -62.1 hectares, exchangeable potassium was low (100-200 mg/kg) -110,9 hectares, medium (201-300 mg/kg) -401,3 hectares, high (301-400 mg/kg) -45,5 hectares, mobile phosphorus was very low (>15 mg/kg) -100,8 hectares, low (16-30 mg/kg) -485,6 hectares, medium (31-45 mg/kg) -6,0 hectares.

It was observed that the area under this 3⁰-< slope was low (0,4-0,8%) with humus – 2,3 hectares, medium (0,81-1,2%) – 35,1 hectares, more (1,21-1,6%) – 3,9 hectares, exchangeable potassium was low (101-200 mg/kg) – 7,3 hectares, medium (201-300 mg/kg) – 30,8 hectares,

high (301-400mg/kg) – 3,3 hectares, mobile phosphorus was very low (>15) – 8,4 hectares, low (16-30 mg/kg) – 32,5 hectares, and medium (31-45 mg/kg) – 0,31 hectares.

Slope is one of the main indicators in describing surface hydrogeological processes and soil erosion. [6].

Conclusion. In conclusion, it should be noted that the slope of the studied area is different, the area of typical irrigated serozem soils with a slope of 1,1-3^0 is higher in hectares, and the amount of humus and nutrients also occupies large areas under this slope. In the agricultural sector, the slope of arable land is of great importance and plays an important role in the correct placement of crops, that is, plants, on irrigated soils, preventing and combating erosion processes, designing irrigation networks, and a number of other tasks.

Adabiyotlar/Литература/References:

1. LANKI D. A. et al. Geographic Information System (GIS) application in soil fertility management: a review //Journal of Global Agriculture and Ecology. – 2024.
2. Vinueza-Martinez J. et al. Geographic information systems (giss) based on webgis architecture: Bibliometric analysis of the current status and research trends //Sustainability. – 2024. – Т. 16. – №. 15. – С. 6439.
3. Dutta J. et al. Application of Remote Sensing and GIS in Environmental Monitoring and Management //Remote Sensing and GIS Techniques in Hydrology. – IGI Global, 2025. – С. 1-34.
4. Koziev R.K., Abdurakhmonov N.Yu. and others. Instructions for conducting soil surveys and compiling soil maps for maintaining the state land cadastre.Тошкент-2013. Ch-52.
5. Arinushkina. E.V. Guide to chemical analysis of soil. Moscow, 1970.
6. Ashraf M. I. et al. GIS-evaluation of two slope-calculation methods regarding their suitability in slope analysis using high-precision LiDAR digital elevation models //Hydrological Processes. – 2012. – Т. 26. – №. 8. – С. 1119-1133.

O‘ZBEKISTON — 2030: INNOVATSIYA, FAN VA TA’LIM ISTIQBOLLARI

VI RESPUBLIKA ILMIY-AMALIY KONFERENSIYASI MATERIALLARI

2025-yil, 8-sentyabr

Mas’ul muharrir: *F.T.Isanova*
Texnik muharrir: *N.Bahodirova*
Diszayner: *I.Abdihakimov*

O‘ZBEKISTON — 2030: INNOVATSIYA, FAN VA TA’LIM ISTIQBOLLARI. VI Respublika ilmiy-amaliy konferensiyasi materiallari. – Toshkent: Scienceproblems team, 2025. – 69 bet.

Elektron nashr: https://konferensiyalar.com

Konferensiya tashkilotchisi: Scienceproblems Team

Konferensiya o‘tkazilgan sana: 2025-yil, 8-sentyabr

ISBN 978-9910-09-297-8