



UNIVERSITÄT
HOHENHEIM



**EKOLOGIYA,
ATROF MUHITNI ASRASH VA
YASHIL MAKON: MUAMMO,
YECHIMLAR VA NATIJALAR
MAVZUSIDAGI XALQARO
ILMIY-TEXNIK ANJUMAN**

TO'PLAMI

QARSHI 2025

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O‘ZBEKISTON RESPUBLIKASI OLIY TA’LIM,
FAN VA INNOVATSIYALAR VAZIRLIGI



QARSHI DAVLAT TEXNIKA UNIVERSITETI

“EKOLOGIYA, ATROF MUHITNI ASRASH VA
YASHIL MAKON: MUAMMO, YECHIMLAR VA
NATIJALAR”

MAVZUSIDA XALQARO ILMIY-AMALIY
ANJUMANI MATERIALLARI
TO‘PLAMI

2025-yil 30-31 may

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O‘zbekiston Respublikasi Oliy ta’lim, fan va innovatsiyalar vazirligining 2024-yil 27-dekabrda 490-sonli buyrug‘iga asosan Qarshi davlat texnika universitetida 30-31 may kunlari o‘tkazilgan “Ekologiya, atrof muhitni asrash va yashil makon: muammo, yechimlar va natijalar” mavzusidagi xalqaro ilmiy-amaliy anjumani materiallari asosida tayyorlangan.

Mazkur konferensiya materiallari sohaga aloqador mahalliy ilmiy-tadqiqot institutlari, oliy ta’lim muassasalari professor-o‘qituvchilari, tayanch doktorantlar, mustaqil izlanuvchilar, amaliyotchi mutaxassislar, talaba va magistrantlarning ilmiyommabop ishlari, ilmiy maqola va tezislari ushbu konferensiya to‘plamidan o‘rin olgan.

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Eslatma: to‘plamda chop etilgan maqolalar mazmuniga javobgarlik mualliflar zimmasiga yuklatiladi

Mazkur xalqaro ilmiy-amaliy anjumani materiallari to‘plami 30-may 2025-yil Qarshi davlat texnika universiteti Ilmiy kengashining 2 - sonli yig‘ilishida muhokama qilingan va chop etishga tavsiya etilgan.

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Assalomu alaykum, hurmatli anjuman ishtirokchilari!
Aziz mehmonlar!

Hozirgi kunda, Respublikamizda o'tkazilayotgan demokratik va huquqiy islohotlar zamonaviy, xalqaro standartlarga javob beradigan yuqori malakali kadrlarni tayyorlash tizimini yanada takomillashtirish, ta'lim tizimini tubdan isloh qilish va modernizatsiya jarayonlarini chuqurlashtirish, ilg'or texnologiyalar, innovatsiyalarni ta'lim va tarbiya jarayonlariga tatbiq etishni taqozo etmoqda.

Ilm-fan va texnika taraqqiy etgan hozirgi davrda Yerning tabiiy resurslari jiddiy antropogen ta'sirlarga duch kelganligi tufayli, tabiatni muhofaza qilish, ya'ni tabiiy resurslarni saqlab qolish hozirgi zamonning eng dolzarb muammolaridan biriga aylandi. Sanoatning asosiy vositasi bo'lmish yer usti va osti resurslari, bioqatlamning barqarorligi va uning ekologik holatini saqlab turish ham bugungi kunning dolzarb muammolaridan biridir.

Oxirgi 50 yil ichida sayyoramiz aholisi soni 3,5 barobarga, iste'mol qilinayotgan ichimlik suvining hajmi 11 barobarga, haydaladigan yerlar maydoni 2 martaga, ro'yxatdan o'tgan transport vositalari soni 10 martaga, neft mahsulotlaridan foydalanish 7 martaga, elektr stansiyalari quvvati 21 martaga oshdi. Hayvonot va o'simlik olami turlari esa 20 foizga kamaydi. Har yili atmosfera havosiga 5 milliard tonna karbonad angidrid gazi, 200 million tonna uglerod oksidi, 146 million tonna sulfat oksidi, 35 million tonna azot oksidi tashlanmoqda.

Insonning nooqilona faoliyati natijasida biosferada ko'plab qaltis jarayonlar sodir bo'lmoqda. Birgina Orol fojeasi insonning ekologik muammolarga nisbatan mas'uliyatsizligining yaqqol namunasidir. So'nggi qirq yil mobaynida dengiz maydoni 7 martadan ortiqroqqa qisqardi, suv hajmi esa 13 barobarga kamaydi.

Kech bo'lsada, insoniyat tabiiy muhitga ehtiyotkorona va oqilona munosabatda bo'lish kerakligiga ishonch hosil qilmoqda. Ekologik muvozanatni saqlash barcha davlatlardan kuchli iroda va katta siyosiy kuchni ishga solishni talab etmoqda. 1992-yilning iyun oyida Rio-de-Janeyro shahrida bo'lib o'tgan Atrof-muhit va rivojlanish bo'yicha BMT konferensiyasida XXI asrda insoniyatning rivojlanishi uchun muhim bo'lgan hujjatlar qabul qilindi. Mazkur anjumanda ilk marta tabiatdan foydalanishning amaldagi bozor-iste'moli modeli insoniyatni juda tezlikda tabiat inqiroziga, hatto halokatga olib kelishi mumkinligi to'g'risidagi muhim xulosaga kelindi.

Hozirgi paytda mamlakatimizda atrof-muhitni saqlash masalalari bo'yicha bir qator ishlar amalga oshirilmoqda. Atrof-tabiiy muhitni muhofaza qilishning huquqiy asoslari birinchi navbatda O'zbekiston Respublikasining Konstitutsiyasida o'z aksini topgan. Konstitutsiyada fuqarolarning ushbu sohadagi huquq va majburiyatlari, atrof-muhitga munosabat va boshqaruv tizimi bo'g'inlarining faoliyati belgilangan. 1992 yil 9-dekabrda qabul qilingan "Tabiatni muhofaza qilish to'g'risida"gi O'zbekiston Respublikasining Qonuni, 2019-yil 22-mayda qabul qilingan "Qayta tiklanuvchi energiya manbalaridan

foydalanish to'g'risida"gi O'zbekiston Respublikasining Qonuni shular jumlasidandir.

Bugun ekologiya va atrof-muhit muhofazasi yo'lida boshlagan keng qamrovli ishlar mamlakatimiz aholisining qulay atrof-muhitga ega bo'lish huquqini ta'minlash bilan bir qatorda, ularning sog'lig'ini saqlash, ona tabiatimizni kelgusi avlod uchun sofligicha yetkazish, tabiiy resurlardan oqilona foydalanish kabi hayotiy maqsadlarni qamrab olgani bilan ahamiyatlidir.

Davlatimiz rahbarining tashabbusi bilan 2025-yilga "Atrof-muhitni asrash va yashil iqtisodiyot yili" deb nom berilgani va bu taklif nafaqat keng jamoatchilik tomonidan, balki xalqaro miqyosda faol qo'llab-quvvatlanganining o'ziyoq O'zbekistonning global ekologik muammolarga qarshi faol kurashga kirishganini, bu boradagi ishlar yangi bosqichga chiqayotganini ifodalaydi.

O'zbekiston Respublikasi Prezidentining 2025-yil 30-yanvardagi PF-16-son Farmoni bilan tasdiqlangan «O'zbekiston – 2030» strategiyasini «atrof-muhitni asrash» va «yashil iqtisodiyot» yilida amalga oshirishga oid davlat dasturi mamlakatimizda atrof-muhit muhofazasi va ekologik masalalar davlat siyosatining ustuvor yo'nalishiga aylanganini ifoda etish bilan birga, O'zbekistonda global ekologik tahdidlarga qarshi kurashishning o'ziga xos platformasi yaratilayotganidan darak beradi.

Avvalo, Dastur loyihasida davlatimiz rivojlanishining ustuvor yondashuvlari tarmoq va sohalarning uyg'un "yashil transformatsiya"sini amalga oshirish, ularning raqobatbardoshligi va resurs tejamkorligini ta'minlash, iqlim o'zgarishiga moslashish va uning oqibatlarini yumshatish hamda aholining yashash sifatini yaxshilash va iqtisodiy o'sishning yangi "yashil rivojlanish" modeliga o'tishning aniq va samarali yo'nalishlari belgilab berilgan.

Bugungi kunda iqlim o'zgarishi sharoitida suv resurslari tobora qisqarishi mamlakatimiz uchun ham dolzarb muammoga aylanib bormoqda. Dastur loyihasida yomg'ir va oqova suvlardan samarali foydalanish bo'yicha aniq tadbirlar belgilanmoqda. Xususan, yangi quriladigan ko'p xonadonli uy-joylarga tutash hududlarda yomg'ir suvini yig'ish, saqlash va daraxtlarni sug'orishda foydalanish tizimini yo'lga qo'yilishi orqali hududdagi yashillikni ta'minlash mumkin bo'ladi.

Ana shu jihatdan, atrof-muhit tabiiy holatining o'zgarishi sharoitida Atrof muhitni muhofaza qilish, tabiiy resurslardan oqilona foydalanish masalalariga bag'ishlangan ilmiy-texnik anjuman o'tkazilishi muhim ahamiyatga egadir.

Anjuman ishiga muvaffaqiyat tilagan holda barcha anjuman ishtirokchilariga yana bir bor o'z minnatdorchiligimni bildiraman.

Sherzod Nematov,
Qarshi davlat texnika universiteti rektori

biosferadagi barcha tirik organizmlar hayotini izdan chiqaradi. Shuning uchun bu korxonalarni odam ishlaydigan joylardan mutloq uzoq joylarga qurish lozimdir. Bunga yaqqol misol Tojikistonning O'zbekistonga chegaradosh hududga alyumin zavodidan uchgan zaharli moddalar ta'siridan mevali daraxtlar hosil berishni to'xtatadi, tuproq tarkibidagi mikroorganizmlar kamayib ketishi bilan tuproq strukturasi yomonlashadi. Oxir oqibat madaniy o'simliklar hosildorligi kamayib ketadi. Qoramollarning ko'payishi va semirish ham eng past darajaga tushib ketadi. O'rtacha 100 sigirdan 55-60 dona buzoq olindi, oldingi ko'rsatkich 100 sigirdan 85-87 dona buzoq olingan edi. Qoramollarning og'zi ochib ko'rilsa ularning tishi tushib ketgan. Qattiq, dag'al xashaklar bilan ozuqlana olmaydi.

Bugungi kunda turmushimizni kimyo sanoatisiz tasavvur qilish qiyin, xalq xo'jaligida kislotalar, tuzlar ishqorlar, mineral o'g'itlar, gerbisidlar, pestidlar, polimerlar, sun'iy tolalar, sun'iy plastmassa idishlar, linoliumlar, bo'yoqlar, laklar va boshqa kimyo sanoati yutuqlari hisoblanadi.

Azotli o'g'itlardan biri ammiakli o'g'itlar ishlab chiqarish jarayonida vodorod va azotni sintez qilish reaksiyasi beradi. Bu reaksiya juda yuqori haroratda yuqori bosim ta'sirida qilinadi. Ammiak ajratib olish jarayonida atmosfera havosi is gazi, ammiak, metan kabi gazlar bilan ifloslanadi. Bir tonna ammiak olinganda havoga 100 kg ammiak, 45 kg metan, 100 kg is gazi tashlanadi.

Fosforli o'g'itlar ishlab chiqarishda ham atmosferaga fosforli birikmalar va ftor changi, oltingugurt, is gazi va azot oksidi ajralib chiqadi.

Eng zararli moddalarni havoga tashlaydigan yana bir soha bu neftni qayta ishlash sanoati hisoblanadi. Atmosferada parnik effektini tashkil qilgan soha bu neftni qayta ishlash sohasidir. Neftni qayta ishlash sohasiga yiliga 225 ming tonna is gazini havoga chiqaradi, bir kecha kunduzda 600 tonnadan ziyod moddani atmosferaga tashlaydi. Neftni qayta ishlayotganda uglevodorodlar, sulfid angdrid, azot va karbonat angdridi, aldegit, ammon zarralari atmosferani zaharlaydi. Bu sohaga sintetik kauchik ishlab chiqarish ham kiradi, bu tarmoq havoga yengil uchuvchan va erituvchi moddalar tashlaydi.

Plastmassa va metallar olishda ham polimerizatsiyalashda fenol, ammiak moddalari, efir, organik kislotalar va boshqa zaharli moddalar ajraladi.

Havoni zararlaydigan manbalardan biri issiqlik manbaini hosil qiluvchi, quvvat beruvchi elektr stansiyalari hisoblanadi. Elektr stansiyalariga olov yoqish natijasida ko'mir, mazut, gazlarning yonishida issiqlik hosil bo'ladi. Shu jarayonda yoqilg'ini hamma vaqt ham to'la va toza yonadi deb bo'lmaydi, chala yonish natijasida ko'proq, to'liq yonish natijasi kamroq zararli moddalar havoga tushadi. Ayniqsa ko'mir tarkibidagi oltingugurt yonish jarayonida sulfid angdridga aylanadi, mana shu modda havoni juda ifloslantiradi.

Havoni ifloslaniruvchi ohirgi eng katta tarmoq bu avtotransport tarmog'i hisoblanadi. Ma'lumki yer sharida avtomobillar soni juda tezlik bilan oshib bormoqda, ulardan tashqari havoda uchuvchi samolyotlar, tez yurar passajir va yuk poyezdlari, bularning xarakati uchun albatda yoqilg'i kerak. Yoqilg'i yonganda ozmi ko'pmi miqdorda zaharli gazlar atrofga tarqaladi. Avtotransportning havoni ifloslantiruvchi zaharli is gazi, uglevo-dorodlar, azot oksidlari, aldegidlar, ketonlar eng xavfli qo'rg'oshin-lardan iborat.

Inson o'ziga kerakli sharoitni yaratishi uchun ko'p miqdorda xomashyoni qayta ishlaydi va ko'plab yoqilg'ilarni yoqishga majbur bo'ladi. Bunday ishlarni bajarish jarayonida tabiatga bilgan holda katta zarar yetkaziladi. Ammo inson harakat qilsa tabiatga yetkazilayotgan zararni kamaytirish mumkin. Ular quyidagilar hisoblanadi:

- Ishlab chiqarishdagi zararli tarmoqlarni ekologik jihatdan mukammallashtirish;
- Kam chiqindi ishlab chiqarish jarayonini tashkil qilishga erishish;
- Havoga, suvga va tuproqqa tashlanadigan chiqindilarni to'liq tozalashga erishish.

Kimyo sanoati har qanday milliy iqtisodiyotning tayanchlaridan biridir. Sanoat va ishlab chiqarishni rivojlantirmoqchi ekanmiz, kimyo sanoatisiz buning iloji yo'q. Ammo tarmoqning atrof-muhitga zarar yetkazish bilan bog'liq risklarini ham e'tibordan chetda qoldirib bo'lmaydi. Ushbu xatarlarni kamaytirish bir necha yo'nalishda amalga oshiriladi [2-3].

Jumladan, samarali nazorat va tartibni ta'minlash orqali kimyoviy va sanoat avariylarining oldini olish, yashil va yanada xavfsiz texnologiyalarni joriy etish orqali havo ifloslanishini kamaytirish, ish jarayonida ximikatlardan odamlarga zarar yetmasligi uchun xavfsiz ishlash muhitini yaratish shulardan iborat.

Foydalanilgan adabiyotlar

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ASSESSING CONSERVATION AGRICULTURE IN ARID ENVIRONMENTS: URTACHIRCHIK DISTRICT, UZBEKISTAN

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Abstract: Accurate measurement of crop residue cover is essential for understanding its role in soil conservation and sustainable agriculture. This study focuses on quantifying the percentage of crop residue cover on agricultural fields in Urtachirchik district using field-based methods. A systematic sampling approach was employed to collect data across diverse field conditions. Results

revealed that crop residue cover ranged from 3% to 97%, highlighting variations due to differences in crop type, management practices, and field conditions. The findings provide a reliable baseline for evaluating residue management practices and their contribution to conservation agriculture. This study underscores the importance of field-based measurements in monitoring and enhancing soil conservation efforts, particularly in regions adopting conservation agriculture practices.

Keywords: conservation agriculture, traditional agriculture, soil, crop residue cover, winter wheat, field-based measurement, a line-transect approach.

Introduction. Agriculture in the 21st century confronts a myriad of diverse and complex challenges, ranging from urban sprawl to the necessity of sustainable nutrient management, all demanding immediate and innovative responses [1][2]. With the global population expected to surge to 10 billion by 2050 [3], there is an escalating demand for a substantial increase in food production [4]. In addressing the multifaceted agricultural challenges, conservation agriculture (CA) emerges as a strategic approach, advocating for sustainable land management practices that not only safeguard the environment but also support climate change adaptation and mitigation [5][6].

According to the Food and Agriculture Organization [6], CA operates on three core principles that are tailored to meet the specific conditions and requirements of local areas. The principles include minimal mechanical disturbance of the soil, maintaining a permanent organic cover on the soil, and promoting species diversification.

Studies in Uzbekistan's irrigated agricultural lands demonstrate the effectiveness of CA practices. Research shows that CA techniques such as reduced tillage and residue retention can improve soil health in several ways. They link to decreased soil salinity, increased soil moisture retention [7][8][9], and reduced soil erosion and compaction [10][11].

Crop residue cover (CRC) is the primary physical variable that directly indicates the application of CA practices [12]. Crop residue, encompassing standing dead vegetation, surface plant litter, and residues left after crop harvest, such as corn stalks or soybean stubble, refers to non-photosynthetic vegetation that accumulates on the soil surface of farmlands following harvest completion and crop senescence [12][13][14]. The percentage of CRC on the soil surface is frequently utilized as an indicator of tillage intensity [14].

The amount of residue cover on agricultural fields is mostly assessed using a line-transect method. In the line-transect method, a long cord marked with evenly spaced intervals is stretched diagonally across a field, and observers visually count the instances where the markers touch pieces of crop residue on the ground, providing data for estimating the overall percentage of CRC [15].

The objective of the study is to accurately measure and quantify the percentage of crop residue cover on agricultural fields using field-based method.

Materials and methods. The study area is situated within the fields of the Research Education Center at the “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, located in

the Urtachirchik District of Tashkent Province, Uzbekistan, covering 0.05 km² with dimensions of 500 m in length and 100 m in width (Figure 1). The fields are positioned on the right bank of the Karasu River, a tributary of the Akhangaran River. The starting point of the experimental field is positioned at coordinates 41°02'16"N latitude and 69°01'15"E longitude, at an altitude of 355 meters.

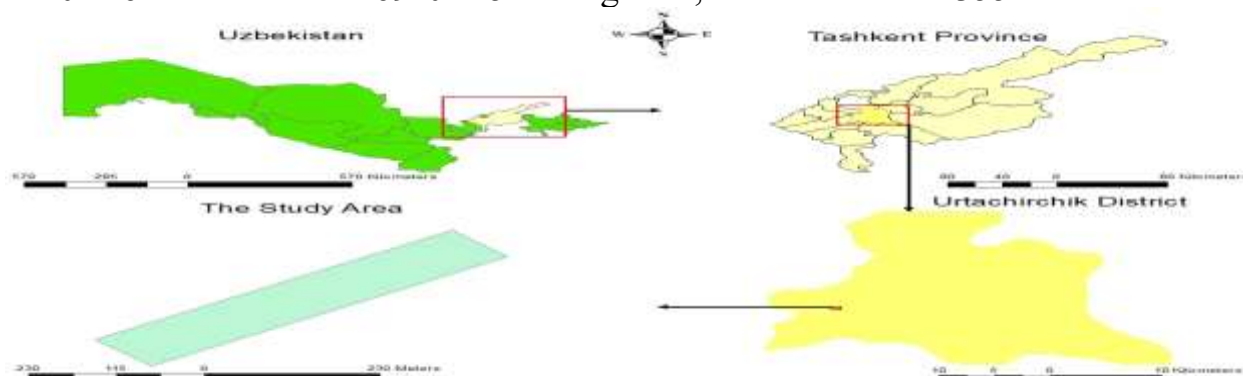


Figure 1. Nested maps illustrating the geographic context of the study area within the Urtachirchik District, Tashkent Province, Uzbekistan.

In alignment with national agricultural practices, winter wheat was planted in the study area in December 2021 using traditional methods, which include tillage. Subsequently, the winter wheat harvest was completed by July 2022, and in August 2022, one month later, the field was replanted with mung bean (*Vigna radiata*), demonstrating a rapid shift to secondary cropping.

After the winter wheat harvest, the study area was artificially segmented into 72 sub-fields, each measuring 55 m long and 12.5 m wide. Afterwards, winter wheat residue from specific sub-fields was manually cleared and relocated to other sub-fields. Consequently, two distinct groups emerged: one consisting of 40 sub-fields almost completely covered with winter wheat residue and another comprising 32 sub-fields with minimal or no residue, prepared for CA and TA practices, respectively. Mung bean was then sown in the residue-rich sub-fields using CA techniques (i.e., no-tillage), whereas TA methods (i.e., with tillage) were applied to the sub-fields lacking residue.

On 10 August 2022, two days after planting the mung bean in the study area, on-site measurements were taken from 20 sample locations (Figure 2), with management practices ranging from tillage to no-till.

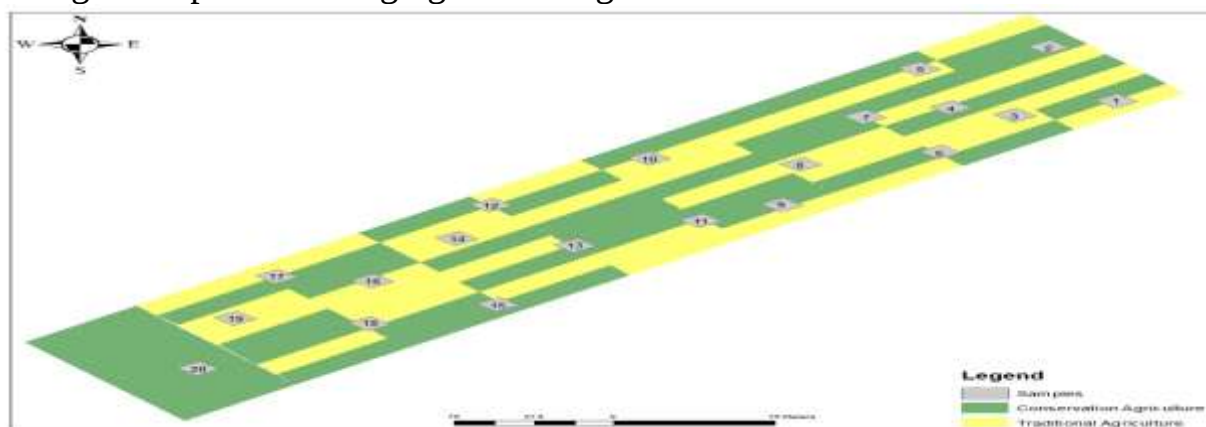


Figure 2. Map of the research field showing 20 sample locations with conservation and traditional sub-fields (Note: Numbering of the sample locations begins corresponding to the starting point of the field).

For each sampling location, CRC was quantified employing the line-transect method as described by [15]. A 15-meter tape marked at 0.3-meter intervals, dividing it into 50 sections, was utilized for measurements. At every sampling site, the tape was laid diagonally across the rows [16], and intersections of crop residue with the marked sections were tallied. The process was repeated on an adjacent diagonal, and the percentage of CRC was determined by averaging the two intersection counts. The central location of the pair of line-transects was recorded using a Garmin global positioning system (GPS) 72 device with a positional accuracy of 5.2 meters.

Results and Discussions. The percentage of residue cover at the selected locations (n=20) varied between 3% and 97% (Figure 3 and Figure 4), predominantly consisting of winter wheat residue, with rice residue present in smaller amounts. The results at sample locations 6 and 17 were identical (both at 6%), while diverse outcomes were observed at the remaining observation sites. Despite endeavors to gather specimens from diverse sections of the study area, the findings were largely concentrated in two brackets, with seven samples falling within the 0-25% range and eight samples in the 75-100% range. It should be noted that the field experiment was conducted just two days after planting mung bean, resulting in virtually zero green vegetation cover in the research field.

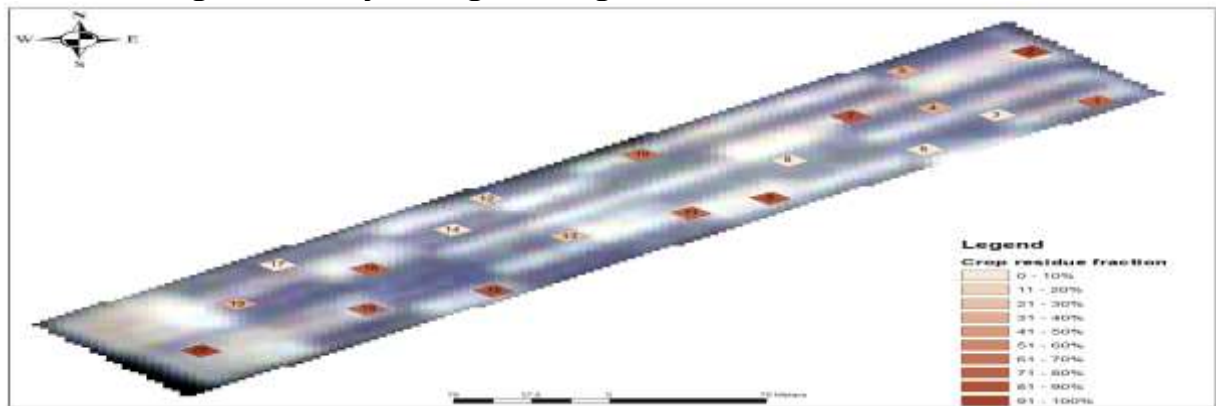


Figure 3. Percentage of residue cover at 20 sample locations in the research area, in the image dated August 10, 2022 (Note: Numbering of the sample locations begins corresponding to the starting point of the field).

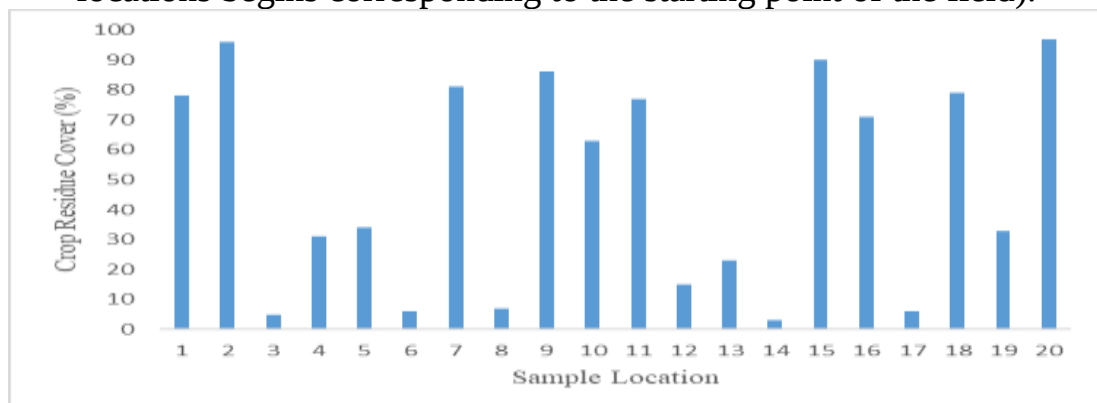


Figure 4. Percentage of residue cover at 20 sample locations in the research area, in the image dated August 10, 2022.

Conclusion. This study successfully measured and quantified the percentage of crop residue cover on agricultural fields using field-based methods. The results confirmed that the selected methods were effective and provided reliable data on residue distribution. The study found that crop residue cover ranged between 3% and 97% across the sampled fields. These measurements offer a valuable baseline for assessing the implementation of residue management practices and their alignment with conservation agriculture principles. This work highlights the importance of accurate field-based residue cover measurements as a fundamental step in evaluating agricultural management strategies and their impact on soil conservation.

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ATROF-MUHITNI MUHOFAZA QILISHDA QONUN VA QONUN OSTI HUJJATLARNING AHAMIYATI

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Annotatsiya. Ushbu maqolada atrof-muhitni muhofaza qilish qonunlarining ahamiyati va ekologik ongni rivojlantirish masalalari tahlil etilgan. Ekologik qonunlar tabiatni asrash, inson salomatligini himoya qilish va barqaror rivojlanishni ta'minlashda muhim rol o'ynaydi. Shuningdek, ekologik madaniyatni shakllantirish va uni rivojlantirishning asosiy yo'nalishlari, jumladan, ta'lim, targ'ibot, amaliy harakatlar va davlat siyosati orqali amalga oshiriladigan chora-tadbirlar yoritilgan. Maqolada insonlarning ekologik mas'uliyatini oshirish va tabiatga ehtiyotkorlik bilan munosabatda bo'lishning muhim jihatlari yoritilib, jamiyatning har bir a'zosi bu jarayonda faol ishtirok etishi kerakligi ta'kidlanadi.

Kalit so'zlar. Ekologik qonunlar, ekologik madaniyat, ekologik ong, ekologik mas'uliyat, ekologik xavfsizlik, yashil iqtisodiyot, ekologik ta'lim, chiqindilarni qayta ishlash.

Annotation. This article analyzes the importance of environmental protection laws and the development of ecological awareness. Environmental laws play a crucial role in preserving nature, protecting human health, and ensuring sustainable development. The article also explores key directions for forming and enhancing ecological culture, including education, advocacy,

MUNDARIJA

1-SHO'BA: EKOLOGIYA, ATROF MUHIT MUHOFAZASI, YASHIL IQTISODIYOTGA O'TISH ISTIQBOLLARI

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Kotib: dotsent - Boyirov Zafar Ravshanovich

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Kotib: Raximov Uchqun Uktamovich

T/r	Muallif va mavzu nomi	Betlar
1.	Ibragimova N.E. Markaziy Osiyoda PM2.5 va TSP zarrachalarining kimyoviy tarkibi va sog'liq uchun xavfini o'rganish: Toshkent, Surxondaryo va Nukus misolida namunalar tahlili	150
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Rais: b.f.n. dotsent - Raximov Tulqin Uktamovich

Kotiba: Mamatova Dilnoza Navro'zovna

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