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# SPREAD OF CYTOSPORA DISEASE

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**Abstract**. Cytosporosis is a necrosis-cancerous fungal disease that causes the drying of fruit and forest tree species. Caused by fungi of the genus Cytospora. Cytosporosis disease. Cytosporosis disease of apple is one of the diseases caused by drying of plant branches. This disease occurs in most fruit and ornamental trees, except for apples. The first information about cytosporosis was recorded in scientific sources of the 19th century. Currently, this disease is recorded in a number of countries: Italy, France, Japan, Greece, USA, Hungary, Markash, Romania, Germany, Canada, Syria, Turkey, Holland, Denmark, Czech Republic, Slovakia, Tunisia, Kazakhstan, and Uzbekistan.

**Annotatsiya**. Sitosporoz - nekroz-saratonli qo'ziqorin kasalligi bo'lib, meva va o'rmon daraxti turlarining qurib ketishiga olib keladi. Cytospora jinsining qo'ziqorinlari sabab bo'ladi. Sitosporoz kasalligi. Olmaning sitosporoz kasalligi o'simlik shoxlarini quritishdan kelib chiqadigan kasalliklardan biridir. Bu kasallik olmadan tashqari ko'pchilik mevali va manzarali daraxtlarda uchraydi. Sitosporoz haqida birinchi ma'lumotlar 19-asrning ilmiy manbalarida qayd etilgan. Hozirgi vaqtda ushbu kasallik bir qator mamlakatlarda qayd etilgan: Italiya, Frantsiya, Yaponiya, Gretsiya, AQSh, Vengriya, Markash, Ruminiya, Germaniya, Kanada, Suriya, Turkiya, Gollandiya, Daniya, Chexiya, Slovakiya, Tunis, Qozog'iston va O'zbekiston.

**Аннотация**. Цитоспороз – некрозно-раковое грибковое заболевание, вызывающее усыхание плодовых и лесных древесных пород. Вызывается грибами рода Cytospora. Цитоспорозная болезнь. Цитоспороз яблони — одно из заболеваний, вызываемых усыханием ветвей растений. Это заболевание встречается у большинства плодовых и декоративных деревьев, кроме яблонь. Первые сведения о цитоспорозе зафиксированы в научных источниках 19 века. В настоящее время это заболевание регистрируется в ряде стран: Италии, Франции, Японии, Греции, США, Венгрии, Маркаше, Румынии, Германии, Канаде, Сирии, Турции, Голландии, Дании, Чехии, Словакии, Тунисе, Казахстане и Узбекистан.

**Keywords:** Cytosporosis, disease, fungi, capitata, saprophytically, belongs.

**Ключевые слова:** Цитоспороз, болезнь, грибки, головчатые, сапрофитные, относится.

**Kalit so'zlar:** Sitosporoz, kasallik, zamburug'lar, kapitata, saprofit, tegishli.

Cytosporosis is caused by fungi belonging to the genus Cytospora. There are two different opinions about the disease caused by representatives of this fungus. Proponents of the first opinion say that Cytospora fungi live saprophytically on dead branches and accelerate their growth. Others, on the contrary, say that they cause diseases in plants and cause the death of trees.

In Japan, K. Togache (1924) reported that the disease caused by Cytospora fungi causes the death of trees, in the USA by A.W. Helton (1961), put forward in Germany by B. Kaltschmidt (1983). A number of researchers Florova I.P (1968), Kodyakova T.E. (1970), I.S.Popishoy (1971), A.Israilov (1974), V.I.Potlaychuk (1976) and M.Isin (2007) demonstrated its occurrence in fruit trees

A.S. Bondarsev (1931) and N.A. Naumovs (1952) stated that Cytospora fungi often cause the development of weakened trees.

M.I. Cytospora capitata Sacc.et Schulz and C. Personata Fr. Fungal species are believed to be the cause.

A number of works have been carried out on the study of the pathogenesis of diseases caused by fungi belonging to the genus Cytospora and the biological characteristics of their causative agents. The role of representatives of this group in the drying of fruit trees in the conditions of Georgia by T.A. Sakadze (1972) T.A. Sakadze, T.G. It was studied by Shelia (1954). Using the method of artificial infection of plants with these types of fungi, their pathogenicity was studied. Cytospora capitata fungus from dead apple branches. Sacc. Et Schulz. Type extracted. According to the author, due to the toxins released by the fungi, plant branches dry up and necrosis occurs in them. In addition, they also studied the morphological and biological characteristics of pure cultures of Cytospora fungi.

E.P. Kropie (1957) studied the premature withering of pome fruit trees in Moldavia. In order to study the pathogenicity of the Cytospora fungi isolated from the diseased trees, the researcher observed that most of them were infected with the disease when he artificially infested the fruit trees.

M.M. Kurbanov (1977) believes that representatives of this group are the cause of the establishment of seed and grain fruit trees in Azerbaijan. E.A. Dvoychenkova (1962) found out that representatives of Cytospora genus are responsible for the drying of apple trees in the Moscow region. In the central black soil zone of Russia, Cytospora schulzeri Sacc. Eat Syd. Distribution of the species was studied by M. T. Khomyakov (1971), who concluded that this fungus is a facultative parasite.

A.A. Ablakatova (1965) Sytospora saritata Sacc et Sehul: fungus. He found out that in the Far East of Russia, it was the reason for the establishment of not only grain fruit trees, but also apple and pear trees. When the healthy branches taken from healthy and diseased apple trees were artificially infected with this fungus by the author, the branches taken from the healthy tree were not infected,

but the branches of the diseased tree were observed to be infected, so the fungus that causes this disease is facultative. Concluded that the parasite.

T. E. Kodyakova studied apple cytosporosis in the Chuy Valley of Kyrgyzstan. It is Cytospora schulzeri Sacc. Eat. Schulz found that the fungus is a weak pathogen. The author of Shy Cabal came to the conclusion that the disease of apples in the Chuy Valley is caused by complex factors, that is, the noculia became weak due to weather conditions, and the fungi of Sutosrora on the trees cause the disease.

In the Republic of Uzbekistan, information on the occurrence of cytosporosis of fruit trees by fungi of the genus Sutosrora can be found in the scientific works of M.S. Panfilovani (1950-1956). The pathogenic properties of these fungi have been proven by artificial infection of fruit trees. The author notes that more fruit trees are affected by cytosporosis, and apples are less affected by this disease, and puts forward the opinion that it is caused by weakening.

In the monograph of Magjan Isinni (2007) dedicated to the genus Sutospora, which causes cytosporosis, the representatives of this genus were comprehensively evaluated, and their taxonomy, biology, and parasitism characteristics were widely discussed.

O.T. Khojaev (2010) also studied cytosporosis. The researcher showed that cytosporosis disease is more common in the mountainous region than in the plains and sub-mountainous regions. Due to cytosporosis disease, it was found that the number of fruits on tree branches decreased and the weight of ripe fruits was lost by 5.8-26.8% in apples and 3.8-20.2% in pears. It was observed that the Golden, Delishes, Borovinka Tashkentskaya, Jonaton, pear Royal zimnaya and Lyubimitsa, Klana varieties are resistant to cytosporosis. When combined with 0.044% Bayleton, 11.9% apple, 14.2% pear, 0.2 Soprel, 11.5% and 11.5% yield were saved in the corresponding field.

## References

1. Cytosporosis // Selsko-hozyaystvennyy entsiklopedicheskiy slovar. — M.: Soviet encyclopedia. Main editor: V. K. Mesyats. 1989.
2. Sokolova E. S. Cytosporosis and zelyonyx nasajdeniyax Moskvy // Lesnoy vestnik (1997-2002). 1999. No. 2. S. 57-63. Korchagin, 1987, p. 143.
3. Anatoly Mikheev. Kak zashchitit sad ot vrediteley i bolezney // Nauka i jizn. — 2019. — No. 3. — S. 110-114.

# MODERNIZED ASPECTS OF MANAGEMENT PATIENTS WITH RESTENOSIS

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**Relevance.** Over the past 50 years, many countries of the world have distinguished themselves by their economically rapid growth and development, which served as the basis for dividing them into the following groups: developed and developing. This fact leads to significant changes in both living conditions for the better, and directly increases the quality of life. In turn, the factors provoking the occurrence of atherosclerotic changes are the following types: adherence to an unhealthy lifestyle, in particular to an unhealthy diet; a high rate of arterial hypertension; hypodynamic work and lifestyle in general, smoking and all other risk factors designated as bad habits. These include atherosclerosis of the cardiovascular system (CVS), which was the definition of coronary heart disease (CHD). It is this above-mentioned nosology that acts as a leader in the level of death and disability in the countries of the world [1,3,5]. Percutaneous intervention (PCI) as the most widely used, in particular, the method of CV stenting, for therapeutic purposes of various forms of coronary artery disease, leading to a progressive increase in the number of restenoses, this method is currently the most urgent problem of interventional cardiology [2,4,7]. A reliably established frequency of restenosis, after PCI, is not such an easy task. Many reliable sources say that during the period before the creation of coronary stents, after balloon angioplasty, the frequency of restenosis reaches 38-58%.

**Introduction.** Over the past 25-35 years, a number of high-tech medical implementations have been introduced into practical medicine, the purpose of which was to reduce the number of emerging restenoses.

Initially, holometallic stents (HMS) appeared; the use of which allows to reduce the incidence of restenosis to 17.8—43.8%; later, stents with drug or

medicine coating (MS/DS) of the first and second generations and cylinders with MS / DS appeared; the introduction of this helps to reduce the number of restenoses to 7.85-9.85% and less [3,5,8-10]. All this as an innovation leads to the fact that patients who have been subjected to surgical revascularization (with lesions of the trunk of the left coronary artery; complex bifurcation lesions, stenoses with pronounced calcification), would have suffered PCI. As a consequence of the above, there is a difference in the number of restenoses that have occurred according to research data from various registries, including patients with more severe CVS lesions, showing a high level of restenoses compared with randomized studies [1,6,9]. The data of the majority of clinical studies on the detection of restenosis, came to the conclusion that it is necessary to define this term as a decrease in the lumen of the vessel after PCI by 50.31% compared with the original diameter [3,7,11]. Practices in the clinic most widely apply the definition of restenosis proposed by the Academic Consortium (AC) and is used when repeated revascularization is necessary, as a consequence of ischemic manifestation; it is a stenosed narrowed lumen, more than 70.25% or narrowing of more than 50.20%, accompanied by angina pectoris. In this case, objectively (ECG, EchoCG), signs of ischemia appear both during rest and during exercise. Including when reading the indicators of functional invasive tests, in particular the fractional reserve of blood flow (FRK) is more than 0.83; as a calculated indicator of pathology [6,8]. Many cases of restenosis should be considered as a relative benign condition, manifested in the form of indicators and symptoms of stable angina pectoris.; but there are also data confirming stent restenosis as a phenomenon of an independent risk factor for death, as well as other important clinical factors such as: age, gender, diabetes mellitus, smoking, coronary artery bypass grafting and a decrease in the left ventricular ejection fraction [7]. Most patients with the development of restenosis complain of the occurrence of unstable angina and myocardial infarction, including death [10].

Classification of restenosis, depending on the period of development from the moment of stent implantation, are divided into the following types:

- acute (during the first day);
- subacute (from the first day to 30 days);
- late (from 30 days to 1 year);
- and very late (more than 1 year) [8,9].

The actual indicator and the degree of study of predictors of the development of recurrent stenosis (restenosis), pathogenetic aspects of the above process, methodological data for its prediction, including preventive medicine in the form of primary, secondary and tertiary prevention. All of the above are open topical issues, since the development of such complications serve as the basis for the occurrence of repeated ischemias, which in turn reduce the quality and life expectancy of patients included in this study.

**Keywords:** high-tech research methods, percutaneous intervention, stenting, restenosis, revascularization, cardiovascular diseases, cardiovascular system, stent implantation.

**The purpose of the study.** Justification of the choice of a particular surgical method for the treatment of restenoses, in particular high-tech methods of medical care.

**Materials and methods of research.** We included 110 patients in the study who were treated for the first time or hospitalized for the first time with restenosis. The entire follow-up period for patients with restenosis was from 1.5 months to 5.5 years (median follow-up = 2.85±1.43 years). The quantitative indicator of patients who required PCI earlier or up to 10-12 months was 48 patients. Which, as a percentage, amounted to 43.63%. The quantitative indicator of patients who underwent PCI > 12 months ago was 62 people and 56.36%, respectively.

**The results of the study.** In order to eliminate the causes and consequences necessary in solving the tasks, a statistical analysis of patients treated for the first

time or hospitalized for the first time with restenosis was carried out; in accordance with the following characteristic features:

1) clinical features (Quetelet index within > 29.95 kg/m2; from 1st to 12th months of follow-up after PCI; female; diabetes mellitus (DM); 2 or more times suffered myocardial infarction (PIM) in anamnesis data confirmed by electrocardiographic (ECG) examination;

2) angiographic features (compliance with the indicators of high-class restenosis according to the R.Mehran classification; presence of subtotal and/or total occlusions; volume of vascular lesions, measured as length-(L); vessel diameter-as a meter of small vessel volume (d); presence of multivessel lesions and laboratory data (fibrinogen level and aggregation the ability of platelets (AST) in the form of a degree is an increased level).

**Discussion.** From all of the above studies, indicators of results were obtained: from all respondents who underwent coronary artery bypass grafting (CABG), clinical measurement markers (as a research factor excluded: female) occurred from 19.73 to 59.75%, with the peak indicator (59.75%) falling on the indicator - BMI > 29.85 kg/m2. When taking into account the markers of angiographic examination involved in the CABG sample, the presence of multivessel lesions (in all 100% of patients), stenosis ≥ 94.75% (79.5%) and d arteries <2.97mm (79.85%) played a significant role. According to laboratory studies – the degree of AST ≥ 2.75; significantly influenced the sample in favor of CABG.

A sample of patients who underwent intra–aortic balloon counterpulsation were included in the sample only if the factors had a certain influence in favor of this particular recanalization method: clinical sign - DM, for up to 1 year and the multiplicity of the presence of PIM in the anamnesis; angiographic sign - L vascular lesion >20.15 mm and d arteries <3mm; laboratory indication – PH level ≥ 3.85mg/dl. And at the same time, the occurrence of the above markers did not exceed 59.75%.

**Conclusion.** The combined recanalization technique was performed in patients who, in addition to restenosis, were diagnosed with stenotic narrowing of a non-target artery. Angiographic and laboratory markers were used as a basis for sampling this research method. In the statistical processing of research data from angiography indicators, the main percentage indicator fell on developed multivessel lesions, and laboratory ones affect the degree of AST $\geq$ 2.85.

The analysis of the correlation method between the total calculation of markers and the chosen tactics for restoring the blood flow of the cardiovascular system (CVS) revealed a direct dependence of a reliable nature, with a high index ($p<0.000021$), i.e. with an increase in the number of markers in a particular patient, the need for more complex therapies among high-tech medical care (HTMC) increased disproportionately.

**Acknowledgement.** Due to the statistical analyses carried out, an algorithm of differentiation tactics for surgical therapy of restenoses has been developed, taking into account the above-mentioned triad of leading syndromes.

## References

1. World Health Organization. WHO Methods and data Sources for Country-Level Causes of Death 2000—2012.Geneva,Switzerland:WHO;2014.Accessed March 09, 2021.
2. Byrne RA, Joner M, Kastrati A. Stent thrombosis and restenosis: what have we learned and where are we going? The Andreas Gruntzig Lecture ESC 2014. European Heart Journal. 2015;36(47):3320-3331.
3. Fischman DL, Leon MB, Baim DS, Schatz RA, Savage MP, Penn I, Detre K, Veltri L, Ricci D, Nobuyoshi M. A randomized comparison of coronary-stent placement and balloon angioplasty in the treatment of coronary artery disease. Stent Restenosis Study Investigators. The New England Journal of Medicine. 1994;331(8):496-501.
4. Kirtane AJ, Gupta A, Iyengar S, Moses JW, Leon MB, Applegate R, Brodie B, Hannan E, Harjai K, Jensen LO, Park SJ, Perry R, Racz M, Saia F, Tu JV, Waksman R, Lansky AJ, Mehran R, Stone GW. Safety and efficacy of drug-

eluting and bare metal stents: comprehensive meta-analysis of randomized trials and observational studies. Circulation. 2009;119(25):3198-3206.

5. Cortese B, Berti S, Biondi-Zoccai G, Colombo A, Limbruno U, Bedogni F, Cremonesi A, Silva PL, Sgueglia GA; Italian Society of Interventional Cardiology. Drug-coated balloon treatment of coronary artery disease: a position paper of the Italian Society of Interventional Cardiology. Catheterization and Cardiovascular Interventions. 2014;83(3):427-435.
6. Buccheri D, Piraino D, Andolina G, Cortese B. Understanding and managing in-stent restenosis: a review of clinical data, from pathogenesis to treatment. Journal of Thoracic Disease. 2016;8(10):1150-1162. https://doi.org/10.21037/jtd.2016.10.93
7. Roubin GS, King SB III, Douglas JS Jr. Restenosis after percutaneous transluminal coronary angioplasty: the Emory University Hospital experience. The American Journal of Cardiology. 1987;60(3):39-43.
8. Cutlip DE, Windecker S, Mehran R, Boam A, Cohen DJ, van Es GA, Steg PG, Morel MA, Mauri L, Vranckx P, McFadden E, Lansky A, Hamon M, Krucoff MW, Serruys PW; Academic Research Consortium. Clinical end points in coronary stent trials: A case for standardized definitions. Circulation. 2007;115(17):2344-2351.
9. Cassese S, Byrne RA, Schulz S, Hoppman P, Kreutzer J, Feuchtenberger A, Ibrahim T, Ott I, Fusaro M, Schunkert H, Laugwitz KL, Kastrati A. Prognostic role of restenosis in 10 004 patients undergoing routine control angiography after coronary stenting. European Heart Journal. 2015;36(2):94-99.
10. Bossi I, Klersy C, Black AJ, Cortina R, Choussat R, Cassagneau B, Jordan C, Laborde JC, Laurent JP, Bernies M, Fajadet J, Marco J. In-stent restenosis: long-term outcome and predictors of subsequent target lesion revascularization after repeat balloon angioplasty. Journal of the American College of Cardiology. 2000;35(6):1569-1576.

11. Nicolais C, Lakhter V, Virk HUH, Sardar P, Bavishi C, O'Murchu B, Chatterjee S. Therapeutic Options for In-Stent Restenosis. Current Cardiology Reports. 2018;20(2):7.
12. Chen MS, John JM, Chew DP, Lee DS, Ellis SG, Bhatt DL. Bare metal stent restenosis is not a benign clinical entity. American Heart Journal. 2006;151(6):1260-1264.
13. Dangas GD, Claessen BE, Caixeta A, Sanidas EA, Mintz GS, Mehran R. In-stent restenosis in the drug-eluting stent era. Journal of the American College of Cardiology. 2010;56(23):1897-1907.
14. Magalhaes MA, Minha S, Chen F, Torguson R, Omar AF, Loh JP, Escarcega RO, Lipinski MJ, Baker NC, Kitabata H, Ota H, Suddath WO, Satler LF, Pichard AD, Waksman R. Clinical presentation and outcomes of coronary in-stent restenosis across 3-stent generations. Circulation. Cardiovascular Interventions. 2014;7(6):768-776.
15. Aghababyan, I. R., Ismailov, J. A., & Ruziyeva, A. A. (2020). Chronic heart failure in young obese patients with chronic obstructive pulmonary disease. Achievements of science and education, (3 (57)), 84-87.
16. Pulatov, Sh. Sh., Ruziyeva, A. A., & Khasanzhanova, F. O. (2023). Aspects Of Cardioprotection Of Patients With Chronic Heart Failure As A Consequence Of Myocardial Infarction. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 17, 133-136.
17. Nizamov, H. S., Rakhmatzhanovna, Z., & Ruziyeva, A. A. (2023). Pandemic Features of Chronic Heart Failure in Young Patients. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 17, 155-158.
18. Askarov, I. K., Kushnazarov, R. S., Ruziyeva, A. A., & Khasanzhanova, F. O. (2023). Predictors Of Cardioprotection In Patients With Chronic Heart Failure As A Consequence Of Myocardial Infarction. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 17, 137-140.

# RESTENOZ KUZATILGAN BEMORLARNI OLIB BORISHDA MODERNIZATSIYALASHTIRILGAN ASPEKTLAR

***Nizomov X. Sh. , Kushnazarov R.S., Pulatov Sh.Sh., Ruziyeva A. A.***
*Respublika ixtisoslashgan kardiologiya ilmiy amaliy tibbiyot markazi Samarqand viloyat mintaqaviy filiali*

Mavzuning dolzarbligi. So'nggi 50 yil ichida dunyoning ko'plab mamlakatlari iqtisodiy jihatdan tez o'sishi va rivojlanishi bilan ajralib turdilar; bu ularni quyidagi guruhlarga bo'lish uchun asos bo'lib xizmat qildi: rivojlangan va rivojlanayotgan. Bu haqiqat hayot sharoitlarida yaxshi tomonga sezilarli o'zgarishlarga olib keladi va hayot sifatini to'g'ridan-to'g'ri nomutanosib ravishda oshiradi. O'z navbatida, aterosklerotik o'zgarishlarning paydo bo'lishiga olib keladigan omillar quyidagi turlarni ifodalaydi: nosog'lom turmush tarziga rioya qilish, xususan, nosog'lom ovqatlanish; arterial gipertenziyaning yuqori darajasi; gipodinamik ish va umuman turmush tarzi, chekish va yomon odatlar deb belgilangan boshqa barcha xavf omillari. Bularga yurak-qon tomir tizimining (YQT) aterosklerozi kiradi, bu koronar arteriya kasalligi (KAK) dan oldinroq bo'lgan. Aynan mana shu nozologiya dunyo mamlakatlarining o'lim va nogironlik darajasi yetakchisi vazifasini bajaradi [1,3,5]. Teri orqali koronar aralashuv (TOKA) saprning turli shakllarining terapevtik maqsadlari uchun eng keng tarqalgan, xususan, kardiovaskular sistemani (KVS)ni stentlash usuli sifatida, restenozlar sonining progressiv o'sishiga olib keladi, bu usul hozirgi vaqtda interventsion kardiologiyaning eng dolzarb muammosi hisoblanadi [2,4,7]. Pcidan keyin restenozning ishonchli aniqlangan chastotasi unchalik oson ish emas. Ko'pgina ishonchli manbalarda aytilishicha, koronar stentlar yaratilishidan oldingi davrda, balon angioplastikasi o'tkazilgandan so'ng, restenozning paydo bo'lish chastotasi 38-58% ga etadi.

Kirish. So'nggi 25-35 yil ichida amaliy tibbiyotga bir qator yuqori texnologiyali tibbiy dasturlar joriy etildi, ularning maqsadi restenozlar sonini kamaytirish edi.

Dastlab, golometalik stentlar (GMS) paydo bo'ldi; ulardan foydalanish restenozning paydo bo'lish chastotasini 17,8—43,8% gacha kamaytirishga imkon beradi; keyinchalik paydo bo'ldi-birinchi va ikkinchi avlod dori-darmon yoki medikomentoz (DS/MS) va DS/MS tsilindrlari bo'lgan stentlar; buni amalga oshirish paydo bo'lgan restenozlar sonini 7,85-9,85% gacha kamaytirishga yordam beradi. va undan kam [3,5,8-10]. Bularning barchasi yangilik sifatida jarrohlik revaskulyarizatsiya qilingan bemorlarga olib keladi (chap koronar arteriya magistralining shikastlanishi uchun; murakkab bifurkatsiya shikastlanishlari, aniq kalsifikatsiyaga ega stenozlar), teri osti aralashuvini o`tkazishi mumkin. Yuqoridagilardan kelib chiqqan holda, turli registrlarning tadqiqot ma'lumotlariga ko'ra, yuzaga kelgan restenozlar sonida farq bor, shu jumladan, randomizatsiyalangan tadqiqotlar bilan solishtirganda restenozlarning yuqori darajasini ko'rsatadigan KVT shikastlanishlari og'irroq bo'lgan bemorlar [1,6,9].

Restenozni aniqlash bo'yicha ko'plab klinik tadqiqotlar ma'lumotlari ushbu atamani PCIDAN keyin tomir lümeninin asl diametriga nisbatan 50,31% ga kamayishi sifatida aniqlash kerak degan xulosaga keldi [3,7,11]. Klinikadagi amaliyotlar AKADEMIK KONSORTSIUM (AK) tomonidan taklif qilingan restenoz ta'rifini eng ko'p qo'llaydi va agar kerak bo'lsa, ishemik namoyon bo'lishi natijasida takroriy revaskulyarizatsiya qo'llaniladi; stenozlangan toraygan lümen, 70,25% dan ortiq yoki 50,20% dan ortiq torayish, angina pektorisi bilan birga keladi. Bunday holda, dam olish davrida ham, yuklanish davrida ham ishemik belgilar ob'ektiv ravishda (EKG, Ekokg) namoyon bo'ladi. Shu jumladan, funktsional invaziv testlar ko'rsatkichlarini, xususan, fraksion qon oqimi zaxirasini (FQOZ) 0,83 dan ortiq o'qiyotganda; patologiyaning hisoblangan ko'rsatkichi sifatida [6,8]. Restenozning ko'plab holatlarini barqaror angina pektorisining ko'rsatkichlari va alomatlari sifatida namoyon bo'ladigan nisbiy benign holat sifatida ko'rib chiqish kerak; ammo stent restenozini mustaqil o'lim xavfi omili hodisasi sifatida, yosh, jins, qandli diabet, chekish, koronar arteriyalarni shuntlash va chap qorincha qisqaruvchanlik fraksiyasining pasayishi kabi boshqa muhim klinik omillar sifatida tasdiqlovchi dalillar mavjud [7]. Restenoz rivojlanishi bilan og'rigan bemorlarning aksariyati stabil zo`riqish stenokardiyasi va miokard infarkti, shu jumladan o'limga olib kelishi haqida shikoyat qiladilar [10]. Restenozning tasnifi stent implantatsiya qilingan paytdan boshlab rivojlanish davriga qarab quyidagi turlarga bo'linadi.

- o'tkir (birinchi kun davomida);
- subakut (birinchi kundan 30 kungacha);
- kech (30 kundan 1 yilgacha);
- va juda kech (1 yildan ortiq) [8,9].

Takroriy stenoz (restenoz) rivojlanishining prognozlarini, yuqorida tavsiflangan jarayonning patogenetik jihatlarini, uni bashorat qilishning uslubiy ma'lumotlarini, shu jumladan birlamchi shaklda profilaktika tibbiyotini o'rganishning dolzarb ko'rsatkichi va darajasi; ikkilamchi va uchinchi darajali profilaktika. Yuqorida aytilganlarning barchasi ochiq dolzarb masalalardir, chunki bunday asoratlarning rivojlanishi takroriy ishemiyalarning paydo bo'lishi uchun asos bo'lib xizmat qiladi, bu esa o'z navbatida ushbu tadqiqotga kiritilgan bemorlarning sifati va umrini pasaytiradi.

Kalit so'zlar: yuqori texnologiyali tadqiqot usullari, teri osti aralashuvi, stentlash, restenoz, revaskulyarizatsiya, yurak-qon tomir kasalliklari, yurak-qon tomir tizimi, stent implantatsiyasi.

Tadqiqot maqsadi. Restenozlarni davolashning u yoki bu jarrohlik usulini, xususan, tibbiy yordamning yuqori texnologiyali usullarini tanlashni asoslash.

Material va metodlar. Bizlar o`tkazgan tadqiqotga restenoz bilan birinchi marta davolanishga olingan, yoki birinchi marta kasalxonaga yotqizilgan 110 bemor kiritilgan. Restenozli bemorlarni kuzatishning butun davri 1,5 oydan 5,5 yilgacha bo'lgan davrni tashkil etdi (o'rtacha kuzatuv = 2,85±1,43 yil). Teri orqali koronar aralashuv (TOKA) ni ilgari yoki 10-12 oygacha talab qilgan bemorlarning miqdoriy ko'rsatkichi 48 bemorni tashkil etdi. Bu foiz nisbati 43,63% ni tashkil

etdi. TOKA > 12 oy oldin o'tkazilgan bemorlarning miqdoriy ko'rsatkichi mos ravishda 62 kishi va 56,36% ni tashkil qiladi.

Tadqiqot natijalari. Muammolarni hal qilishda zarur bo'lgan sabablar va oqibatlarni bartaraf etish maqsadida restenoz bilan birinchi marta davolangan yoki birinchi marta kasalxonaga yotqizilgan bemorlarning statistik tahlili o'tkazildi; quyidagi xarakterli xususiyatlarga muvofiq:

1) klinik xususiyatlari (Ketle indeksi 29,95 kg/m2; TOKAdan keyin 1 oydan 12 oygacha kuzatuv; ayol jinsi; qandli diabet (QD); elektrokardiografik (EKG) tadqiqot bilan tasdiqlangan anamnezda 2 yoki undan ko'p marta miokard infarkti (IKKS) ;

2) angiografik xususiyatlar (R. Mehran tasnifi bo'yicha yuqori darajadagi restenoz ko'rsatkichlariga muvofiqligi; subtotal va / yoki umumiy okklyuziyalarning mavjudligi; qon tomir lezyonlar hajmi, uzunlik sifatida o'lchangan - (L); tomir diametri - kichik tomir hajmining o'lchagichi sifatida (d); ko'p tomirli lezyonlar va laboratoriya ma'lumotlarining mavjudligi (fibrinogen darajasi va agregatsiya trombotsitlar qobiliyati (ast) daraja sifatida-yuqori daraja).

Muhokama. Yuqoridagi barcha tadqiqotlar natijasida natijalar ko'rsatkichlari olingan: AKSh o`tkazgan barcha respondentlardan klinik o'lchov belgilari (tadqiqot omili sifatida chiqarib tashlangan: ayol jinsi) 19,73 dan 59,75% gacha bo'lgan, bunda eng yuqori ko'rsatkich (59,75%) tana massasi indeksi (TMI)> 29,85 kg/m2 ga to'g'ri keladi. AKSh namunasida ishtirok etadigan angiografik tadqiqot markerlarini hisobga olishda ko'p qon tomir lezyonlar mavjudligi ( bemorlarning 100 foizida), stenoz ≥ 94,75% (79,5%) va D arteriyalari <2,97 mm (79,85%) muhim rol o'ynadi. Laboratoriya tadqiqotlari ma'lumotlariga ko'ra-ast darajasi ≥ 2,75; AKSh foydasiga namunaga sezilarli ta'sir ko'rsatdi.

Aorta ichidagi balon qarshi pulsatsiyasini o'tkazgan bemorlarning namunasi, agar omillar ma'lum bir ta'sir ko'rsatgan bo'lsa, ushbu rekanalizatsiya usuli foydasiga kiritilgan bo'lsa, namunaga kiritilgan: klinik belgi-QD, 1 yilgacha va IKKS anamnezining ko'pligi; angiografik belgi - l qon tomir shikastlanishi >20,15 mm va D arteriyalar <3mm; laboratoriya belgisi-fg darajasi ≥ 3,85 mg / dl. Shu bilan birga, yuqoridagi markerlarning paydo bo'lishi 59,75% dan oshmadi.

Xotima. Kombinirlagan rekanalizatsiya metodikasi usuli restenozdan tashqari, maqsadsiz arteriyaning stenotik torayishi tashxisi qo'yilgan bemorlarda amalga oshiriladi. Ushbu tadqiqot usulini namuna olish uchun angiografik va laboratoriya markerlari asos qilib olingan. Angiografiya ko'rsatkichidan olingan tadqiqot ma'lumotlarini statistik qayta ishlashda asosiy foiz ko'rsatkichi rivojlangan ko'p sudli lezyonlarga to'g'ri keldi va laboratoriya ko'rsatkichlari ast ≥ 2,85 darajasiga ta'sir qiladi.

Markerlarning umumiy hisobi va yurak-qon tomir tizimining (YQTT) qon oqimini tiklash bo'yicha tanlangan taktika o'rtasidagi korrelyatsion usulning tahlili ishonchli tabiatning to'g'ridan-to'g'ri bog'liqligini aniqladi, yuqori ko'rsatkich (p<0,000021), ya'ni. ma'lum bir bemorda markerlar sonining ko'payishi bilan yuqori texnologik tibbiy yordam (YTTY) orasida yanada murakkab terapiya usullariga ehtiyoj to'g'ridan-to'g'ri.

Xulosa. O'tkazilgan statistik tahlillar tufayli restenozlarning jarrohlik terapiyasini farqlash taktikasi algoritmi ishlab chiqilgan, bunda etakchi sindromlarning yuqoridagi uchligi hisobga olingan.

**Adabiyotlar ro`yxati**

1. World Health Organization. WHO Methods and data Sources for Country-Level Causes of Death 2000—2012.Geneva,Switzerland:WHO;2014.Accessed March 09, 2021.
2. Byrne RA, Joner M, Kastrati A. Stent thrombosis and restenosis: what have we learned and where are we going? The Andreas Gruntzig Lecture ESC 2014. European Heart Journal. 2015;36(47):3320-3331.
3. Fischman DL, Leon MB, Baim DS, Schatz RA, Savage MP, Penn I, Detre K, Veltri L, Ricci D, Nobuyoshi M. A randomized comparison of coronary-stent placement and balloon angioplasty in the treatment of coronary artery disease. Stent Restenosis Study Investigators. The New England Journal of Medicine. 1994;331(8):496-501.
4. Kirtane AJ, Gupta A, Iyengar S, Moses JW, Leon MB, Applegate R, Brodie B, Hannan E, Harjai K, Jensen LO, Park SJ, Perry R, Racz M, Saia F, Tu JV, Waksman R, Lansky AJ, Mehran R, Stone GW. Safety and efficacy of drug-eluting and bare metal stents: comprehensive meta-analysis of randomized trials and observational studies. Circulation. 2009;119(25):3198-3206.
5. Cortese B, Berti S, Biondi-Zoccai G, Colombo A, Limbruno U, Bedogni F, Cremonesi A, Silva PL, Sgueglia GA; Italian Society of Interventional Cardiology. Drug-coated balloon treatment of coronary artery disease: a position paper of the Italian Society of Interventional Cardiology. Catheterization and Cardiovascular Interventions. 2014;83(3):427-435.
6. Buccheri D, Piraino D, Andolina G, Cortese B. Understanding and managing in-stent restenosis: a review of clinical data, from pathogenesis to treatment. Journal of Thoracic Disease. 2016;8(10):1150-1162. https://doi.org/10.21037/jtd.2016.10.93
7. Roubin GS, King SB III, Douglas JS Jr. Restenosis after percutaneous transluminal coronary angioplasty: the Emory University Hospital experience. The American Journal of Cardiology. 1987;60(3):39-43.
8. Cutlip DE, Windecker S, Mehran R, Boam A, Cohen DJ, van Es GA, Steg PG, Morel MA, Mauri L, Vranckx P, McFadden E, Lansky A, Hamon M, Krucoff MW, Serruys PW; Academic Research Consortium. Clinical end points in coronary stent trials: A case for standardized definitions. Circulation. 2007;115(17):2344-2351.
9. Cassese S, Byrne RA, Schulz S, Hoppman P, Kreutzer J, Feuchtenberger A, Ibrahim T, Ott I, Fusaro M, Schunkert H, Laugwitz KL, Kastrati A. Prognostic role of restenosis in 10 004 patients undergoing routine control angiography after coronary stenting. European Heart Journal. 2015;36(2):94-99.
10. Bossi I, Klersy C, Black AJ, Cortina R, Choussat R, Cassagneau B, Jordan C, Laborde JC, Laurent JP, Bernies M, Fajadet J, Marco J. In-stent restenosis:

long-term outcome and predictors of subsequent target lesion revascularization after repeat balloon angioplasty. Journal of the American College of Cardiology. 2000;35(6):1569-1576.
11. Nicolais C, Lakhter V, Virk HUH, Sardar P, Bavishi C, O'Murchu B, Chatterjee S. Therapeutic Options for In-Stent Restenosis. Current Cardiology Reports. 2018;20(2):7.
12. Chen MS, John JM, Chew DP, Lee DS, Ellis SG, Bhatt DL. Bare metal stent restenosis is not a benign clinical entity. American Heart Journal. 2006;151(6):1260-1264.
13. Dangas GD, Claessen BE, Caixeta A, Sanidas EA, Mintz GS, Mehran R. In-stent restenosis in the drug-eluting stent era. Journal of the American College of Cardiology. 2010;56(23):1897-1907.
14. Magalhaes MA, Minha S, Chen F, Torguson R, Omar AF, Loh JP, Escarcega RO, Lipinski MJ, Baker NC, Kitabata H, Ota H, Suddath WO, Satler LF, Pichard AD, Waksman R. Clinical presentation and outcomes of coronary in-stent restenosis across 3-stent generations. Circulation. Cardiovascular Interventions. 2014;7(6):768-776.
15. Агабабян, И. Р., Исмаилов, Ж. А., & Рузиева, А. А. (2020). Хроническая сердечная недостаточность у молодых пациентов с ожирением на фоне хронической обструктивной болезни легких. Достижения науки и образования, (3 (57)), 84-87.
16. Пулатов, Ш. Ш., Рузиева, А. А., & Хасанжанова, Ф. О. (2023). Аспекты Кардиопротекции Пациентов Хронической Сердечной Недостаточности, Как Последствие Инфаркта Миокарда. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 17, 133-136.
17. Низамов, Х. Ш., Рахматжановна, З., & Рузиева, А. А. (2023). Pandemic Features of Chronic Heart Failure in Young Patients. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 17, 155-158.
18. Аскаров, И. К., Кушназаров, Р. С., Рузиева, А. А., & Хасанжанова, Ф. О. (2023). Предикторы Кардиопротекции Пациентов Хронической Сердечной Недостаточности, Как Последствие Инфаркта Миокарда. Periodica Journal of Modern Philosophy, Social Sciences and Humanities, 17, 137-140.

# FOREL BALIQLARINI O'ZBEKISTON IQLIMIGA IQLIMLASHTIRISH

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**Annotatsiya.** Bu maqolada O'zbekistonda forel balig'ini iqlimlashtirishning muhimligi ,forel balig'ining qanday iqlim sharoitlari va ularning o'zgarishi bilan bog'liq ehtimolliklar ko'rsatilgan. Maqolada iqlim o'zgarishining forel baligi ekologiyasiga qanday ta'sir ko'rsatishi va bu ta'sirni kamaytirish uchun qanday chora-tadbirlar olib borilishi kerakligi haqida ham ma'lumot berilgan. Maqola, O'zbekistonda forel balig'i iqlimlashtirishning o'ziga xos xususiyatlarini ham ko'rsatilgan.

**Kalit so'zlar:** Iqtisodiy ahamiyat, *seleksiya*, *Sovet Ittifoqi*,*k*amloops daryo foreli, YoSTQ, bir yillik baliqlarni qishlatish, yetishtirish, kaliforniya tilla daryo foreli, proteinlar,uglevodlar, moylar, mineral modda-lar, vitaminlar.

**Аннотация.** В данной статье показана важность акклиматизации форели в Узбекистане ,какие климатические условия характерны для форели и вероятности их изменения. В статье также содержится информация о том, как изменение климата влияет на экологию форели и какие меры необходимо предпринять для уменьшения этого воздействия. В статье также указаны особенности акклиматизации форели в Узбекистане.

**Ключевые слова:** хозяйственное значение, селекция, Советский Союз,речная форель Камлупс, подушка, зимовка однолетних рыб, разведение, калифорнийская золотая речная форель, белки,углеводы, жиры, минеральные вещества-клетчатка, витамины.

**Annotation.** This article shows the importance of acclimatization of forelfish in Uzbekistan ,what climatic conditions of forelfish and the probabilities associated with their change. The article also details how climate change affects the ecology of forelfish and what measures should be taken to mitigate this effect. The article also shows the peculiarities of acclimatization of forelfish in Uzbekistan.

**Keywords:** economic significance, selection,Soviet Union, kamloops River foreleg, YoSTQ, wintering of annual fish, cultivation, California Gold River foreleg,proteins, carbohydrates, oils, mineral substances, vitamins.

O'zbekiston sharoitida baliqlarni iqlimlashtirish xozirgi kunning dolzarb vazifalaridan biridir. Chunki baliqlar katta iqtisodiy ahamiyatga ega bo'lib, baliq go'shti tarkibida oqsil miqdori boshqa xayvonlar go'shtiga nisbatan yuqoridir. Baliq go'shti, ikralari tez hazm bo'ladi. Baliq go'shtida xolesterin deyarli bo'lmaydi.Forel baliqlari dunyoda eng ko'p iste'mol qilinadigan, xaridorgir, eksportbop va noyob baliq turi hisoblanadi. Ammo bu baliq turi juda nozik xususiyatga ega, har qanday suv havzasida ham rivojlanib ketavermaydi. Bu baliq suvga juda injiq bo'lib amaliyotda qilib ko'rgan tadbitkorlar chuqurligi 40metr issiqlik darajasi 170C da yaxshi rivojlanadi.Bu baliq 6 oyda 1.5 kg ga yetadi va bemalol bozrbob tavarga aylanadi.

Forel baliqlari faqatgina toza va sovuq suvda yashagani sababli noyob hisoblanadi. Undan tayyorlangan taomlar esa hamisha tansiq bo‘lib kelgan. Shu sababli, ushbu baliq turiga ichki va tashqi bozorda talab yuqori, narxi ham biroz qimmat. Suvimiz yil davomida 17 darajada, undagi elementlar ham juda mos keldi. Ozuqa vaqtida berilib, hovuzlar doim pokiza saqlanishi hamda suv tinimsiz aylanib turishi muhim omillar ekan. Baliqlar 1,5 kilogramm bo‘lgach, boshqa hovuzga olinadi va ozuqa ratsioni kuchaytiriladi. Baliqlar 4 oyda 3,5 kilogrammdan 4,5 kilogrammgacha vaznga ega bo‘ladi. 7 kilogrammlik baliqdan 1,5 kilogrammgacha qimmatbaho ikra (uvildiriq) olinishi mumkin.Forel balig‘i fosfor, omega-3 va omega-6 kabi yog‘ kislotalariga boy. Uning iste'moli esa insonda xotira susayishi, qon-tomir va asab kasalliklarining oldini oladi.

*Bu daryo forelini seleksiya qilish ishlari L. Donaldson tomonidan 1932 yilda boshlangan. Boshlang‘ich shakl sifatida mahalliy soydagi 4 yoshli tana og‘irligi 450–700 gramm bo‘lgan, hosildorligi 500–1000 uvildiriq bo‘lgan daryo foreli asos qilib olindi. Qirq yillik ishlardan so‘ng daryo foreli 2 yilda 2–3 kg og‘irlik bilan balog‘atga yetadigan bo‘ldi, uning o‘rtacha hosildorligi 5–7 ming uvildiriqni tashkil etgan, uch yillik baliqlarning hosildorligi esa 5 dan 12 mingtagacha uvildiriqni, ya’ni 10 barobar ko‘pni tashkil etgan. 1982 yilda AQShdan Sovet Ittifoqiga (shu jumladan, O‘zbekistonga) keltirilgan. Tahlillar shuni ko‘rsatdiki, hayotining ilk yilida og‘irligi 0,25 dan 1 kg gacha, ikkinchi yilda — 0,5 dan 2 kg gacha, uchinchi yilda 2 dan 4,5 kg gacha bo‘lishi mumkin. Bir urg‘ochi baliqning hosildorligi 20 mingdan ortiq uvildiriqni tashkil etishi mumkin. Urug‘ sochishi suv haroratidan kelib chiqib ishlab chiqaruvchilar mavjud bo‘lgan holda dekabr – mart oylarida o‘tishi mumkin.*

Kamloops daryo forelisi *Daryo forelining chuqur suvda yashovchi shakli, Britaniya Kolumbiyasi (Kanda) daryo va ko‘llarida yashaydi. Sobiq Sovet Ittifoqiga 1982 yilda keltirilgan. 2–3 yoshligida balog‘atga yetadi, lekin balog‘atga yetgan baliqlar hissasi daryo foreliga qaraganda kam. O‘ziga xos jihati — erta kuzda (avgust – oktabr), kamalak baliqdan 2–3 oy erta urug‘ sochishi. Bu belgi nasldan naslga o‘tadi. Erkak baliqlarning aksariyat qismi 3 yoshidayoq balog‘atga yetadi, urg‘ochi baliqlarda esa bu davrda sterillik 59% ga yetadi. Jinsiy mahsulotlar 2–3 yoshli erkak va 4 yoshli urg‘ochi baliqlarda kuzatiladi. Uvildiriq inkubatsiyasi 6–12°S haroratda kechadi. Bir xil sharoitlarda oddiy daryo forelidan ko‘ra 10–20% tezroq o‘sadi. Balog‘atga yetishi uchun 3800– 4000 gradus/kun kerak bo‘ladi, ya’ni bu oddiy daryo forelidan biroz kam. Uvildirig‘i maydaroq, lekin hosildorligi kattaroq. Harorat 3°S dan past bo‘lganda balog‘atga yetmaydi. Suv harorati past bo‘lganda (6°S dan past) embrionlarning nobud bo‘lishi, mayda baliqlarning sekin o‘sishi kuzatiladi, shu sababli qishki suv harorati 6–10°S bo‘lganda yetishtirish rentabel bo‘ladi. Kamloops daryo foreli erta urug‘ sochishi tufayli tezroq o‘sishi mumkin.*

*An’a naviy ikki yillik yetishtirishda (tabiiy ozuqa yoki tarkibidagi protein 30% gacha bo‘lgan ozuqa berilganda) kamloops daryo foreli yetishtirishning ikkinchi yili birinchi yarim yilligidayoq 150–200 gramm tovar vazniga yetishi mumkin, ayni paytda daryo foreli esa bunday vaznga faqat yilning oxiriga kelib yetadi.*

*Kamloops daryo foreli osh vaznigacha o'stirish davri, odatda, 10–18, mahalliy daryo forelida esa 17–24 oyni tashkil etadi.*

*Kamloops daryo foreli daryo foreli bilan birgalikda aralash yetishtirish ishlab chiqarilayotgan mahsulotning umumiy hajmini saqlab qolgan holda inkubatsiya apparatlari va inkubatsiya sexidagi boshqa baliqchilik uskunalaridan ikki marotaba kam foydalanish imkonini beradi.*

Kaliforniya tilla daryo foreli *Kaliforniya tilla daryo foreli daryo forelining turlaridan biri bo'lib, oddiy daryo forelidan qator jihatlari bilan ajralib turadi.*

*Tilla daryo forelini ilk bor D.Jordan 1882 yilda tavsiflagan, keyinchalik 1905 yilda B.Evermann batafsil tavsif bergan. 1939 yildan uni AQShdan eksport qilish taqiqlangan.*

*Tilla baliqning kelib chiqishi, sistematikasi, morfometriyasi, biologiyasi va ekologiyasini AQShlik ko'plab tadqiqotchilar o'rgangan. Bu baliq Kern daryosi tepa havzasi, AQSh Kaliforniya shtati Serr-Nevada platosi daryo, irmoq va ko'llarida endemik yashaydi. Bugungi kunda kengroq tarqalgan, AQShning 9 shtati 19 okrugidagi 300 dan ortiq ko'llar va umumiy uzunligi 1,5 ming kilometrlik irmoqlarda yashaydi. Tilla daryo foreli boshqa daryo foreli shakllaridan yashash joyidagi ekologiyaga qarab o'zgarib turadigan yaltiroq tillarang tusi bilan ajralib turadi. Hayotining ilk yillarida unda kumush-kulrang va limon-tillarang ustunlik* Daryo forelini yetishtirish uchun maqbul bo'lgan suv harorati — 14—18°S. Suv harorati pastroq bo'lganda daryo foreli o'zini yaxshi his etadi, lekin sekinroq o'sadi, harorat 22°S bo'lganda esa ovqatlanmay va o'smay qoladi. Suvda erigan kislorod miqdori yetishtirish davrida doimo 6–8 mg/l dan kam bo'lmasligi juda muhim. Suvda aralashgan kislorod miqdrini kuzatib borish — baliqchilar uchun g'oyatda muhim masaladir.

Keyingi paytda suv tanqisligi hamda yuqori mahsuldor omuxta yemlarning yaratilishi munosabati bilan yopiq suv ta'minoti tizimlari jadal rivojlanib bormoqda. Undagi suv baliqchilik havzalaridan majburiy ravishda mexanik va biologik filtrlar tarmog'iga haydaladi va tozalangan holda baliqchilik havzasiga qaytadi. Ayni paytda suv zarasizlantiriladi hamda suv haroratini o'sish uchun maqbul darajada saqlash uchun isitiladi/sovutiladi. Bunday tizimlar xalqaro amaliyotda akvakultura resirkulyatsiya tizimlari (recirculating aquaculture system — RAS), rus tilidagi adabiyotda esa boshqa nomda — yopiq suv ta'minoti qurilmalari (YoSTQ) deb nomlanadi. YoSTQ haqida shu seriyada nashr qilingan boshqa yo'riqnomadan bilib olishingiz mumkin. Havzalar baliqlarni ikki mavsum davomida yetishtirish mumkin, lekin tarkibida protein ko'p bo'lgan zamonaviy omuxta yemlardan foydalangan holda bir mavsumda (lichinkadan tovarbop baliq ko'rinishigacha) va hatto 6–7 oyda yetishtirish mumkin. Mayda baliqlarni qo'nish zichligi 2–5 ming. ekz./m3 bo'lganda, tovarbop baliqning qo'nish zichligi 300–350 ekz./m3 bo'lganda yetishtirish mumkin. Demak, mahsuldorlik 50–70 kg/m3 bo'lishi mumkin. To'g'ri to'rtburchakli havzalarni uzunligi 10–30 m, eni 2–3 m, chuqurligi 0,9–1,2 m qilib qurish mumkin. Havzalarning devorlari umumiy bo'lishi hisobiga iqtisod qilish mumkin. Yer maydonining qiyaligi va suv miqdori imkon bersa, aylana havzalarni ham qurish mumkin.Ammo O'zbekistonda daryo

foreli fermalari yangidan qurilyapti. Bu — bir tomondan, katta sarmoya kiritish, boshqa tomondan bir necha avlod uchun barqaror biznes demak. Havzalar qurish masalasiga ma'suliyat bilan yondashish, ya'ni o'zboshimchalik bilan qurishning o'rniga loyihalashtirish va qurish uchun muhandislarni taklif qilish afzal. Har bir kubometr suv havza devorlari va tubiga 1 tonnaga teng kuch bilan bosadi. Havzalar oqmasligi lozim, chunki buni to'g'rilash ancha murakkab bo'ladi. avzalarga qancha baliq sig'dirish mumkinligini hisoblab chiqish muhim. Fermerlarimizga sig'imi 40 kg/m3 bo'lgan havzalarni tavsiya qilamiz. Yuqorida ta'kidlaganimizdek, siz oqar suv mavjudligidan kelib chiqib qanday hajmdagi havza qurish mumkinligini hisobladingiz. Endi qurilgan havzalarning hajmi sizga qancha baliq olib kelishi va havzalarning har biriga qancha baliq joylashtirishingiz kerakligini hisoblash mumkin. Aytaylik, sizda sig'imi 5 m3 bo'lgan havza mavjud. Baliqlarni joylashtirishni hisoblash teskarisidan boshlanadi: baliqchi bir kubometr suvdan 40 kg Tovar baliq olishni istaydi, ya'ni 5 m3 dan baliqchi 200 baliq olmoqchi. Aytaylik, shu vaqtning o'zida tovar baliqning og'irligi, masalan, 250 gramm bo'lishini istaydi. 40 kg ni 0,25 kg ga bo'lish va u ovlashi mumkin bo'lgan baliqlar miqdorini hosil qilish mumkin. Reajalashtirilayotgan baliqlar miqdori hisoblanadi — 1 m3 160 ta baliq yoki sig'imi 5 m3 bo'lgan havzadan 800 ta baliq. Baliq joylashtirish materiali miqdoridan baliqlar nobud bo'lishi hisobiga 10% ga yaqin to'g'rilash kiritish lozim. Odatda, baliq joylashtirish materiali bu o'rtacha og'irligi 20–25 gramm bo'lgan baliqlardir. Unda havzani 880 dona yosh baliq bilan to'ldirish kerak bo'ladi. Daryo foreli chovoqlari tez va sog'lom o'sishining muhim omili yaxshi oziqlantirishdir. Bugungi kunda tobora ko'p baliqchilar tarkibida protein 40% dan ortiq bo'lgan omuxta yemlardan foydalanmoqda. Baliqlar zichligi bu darajada ko'p bo'lganida havzadagi suvning tozlagini nazorat qilish, ozuqa qoldiqlarini muntazam yig'ishtirish lozim, chunki ular chirib, kislorod sarflaydi va suv sifatini buzadi.

Yetishtirish davrida har haftada nazorat ovini o'tkazish, baliqlarning o'rtacha og'irligi va haftalik ratsionni aniqlashni tavsiya qilamiz.

Baliq ko'paytirish materialini oqilona yetishtirishning muhim omili uyurni o'lchamiga qarab saralashdir. Shu orqali baliqchi baliqlarning bir maromda o'sishi, ozuqa va mavjud suv havzasi hajmlaridan oqilona foydalanishga erishish imkonini beradi. Yetishtirish davomida 2–3 marta saralashni bajarishni tavsiya etamiz. Har bir havzadagi baliqlarni ikkita o'lcham guruhlariga bo'lish va ularni keyinchalik alohida saqlash maqsadga muvofiq.Baliqchilar havza, katak, hovuzchalarning tozaligi ustidan nazorat qilishlari lozim. Kichik kataklar devorlarini har kuni cho'tka bilan tozalash lozim.

Havzalar mavsumda 2–3 marta tozalanadi, ayni vaqtda baliq bo'sh havzaga ko'chiriladi. Havzalar cho'tka bilan tozalanadi, so'ng suv bilan yuviladi.Baliqchilik havzasidagi suv sifati hamda epizotik ahvol ustidan muntazam nazorat qilish lozim. Baliqlarning harakatlari yaxshi ko'rsatkich bo'la oladi, sog'lom baliqlar butun suv qatlami bo'ylab faol suzadi. Kasalliklarning aksariyatida baliqlar lanj bo'ladi, yonga yoki qornini tepaga qaratib yotadi.

Zarurat tug'ilganda profilaktika va davolash tadbirlarini o'tkazish lozim.

Fermaga kelib turadigan yoki zarurat tug‘ilganda murojaat qilish mumkin bo‘lgan baliqlar kasalliklari sohasidagi mutaxassis bilan shartnoma tuzish maqsadga muvofiq. Yetishtirish davrining davomiyligi birinchi navbatda ozuqa sifati va oqilona oziqlantirishga bog‘liq.

Bir yillik baliqlarni qishlatish, yetishtirish *Ochiq tizimlarda baliq ko‘paytirish materialini qishlatish vazifasi dolzarb ahamiyatga ega. Daryo foreli hatto harorati 3–4oS dan ortiq sovuq suvda ham o‘sishini inobatga olsak, bunday suv esa O‘zbekistonning butun hudida mavjud, bu jarayonni aniqroq qilib, qishlash emas, balki bir yillik baliqlarni yetishtirish (ya’ni shu yillik baliqlardan bahorgacha — bir yillik baliqlargacha yetishtirish) yoki daryo forelini qish davrida yetishtirish deb atash maqsadga muvofiq. Ana’anaviy ravishda daryo forelini ikki yillik yetishtirishda baliqchi kuzda hovuz, havzalardagi barcha baliqlarni ovlaydi. Baliq sanoqdan o‘tadi, unga antiparazitar ishlov beriladi, o‘lcham guruhlariga saralanadi, suv havzalari tozalanadi va qishlovga tayyorlanadi. Saralangan baliqlar suv havzalariga qishki parvarishlash uchun joylashtiriladi.* Qishda daryo foreliga suvning harorati 2–3oS va yuqori bo‘lganda yemak beriladi. Nazorat ovi kamroq o‘tkaziladi, 2–3 haftada 1 marta yetarli. Imkon qadar, hovuz, basseyn va havzalardagi suv usti muz bilan qoplanmasligiga e’tibor qaratish zarur. Qish faslida daryo foreli 20 g dan 35–40 g gacha yetishi mumkin. Qishlovga jo‘natish 10% dan oshmasligi lozim. Tovarbop daryo foreli uchun hovuzlar suzuvchi, dumaloq yoki to‘g‘ri to‘rtburchak bo‘lgani ma’qul. To‘g‘ri to‘rtburchak hovuzlarning yon tomoni uzunligi yoki dumaloqlarining diametri 4–6 m, suvning chuqurligi 2–3 m bo‘lgani ma’qul. Uning usti baliqlar hovuzlardan sakrab chiqmasligi uchun 0,5 m ga ko‘tarilib turishi kerak. Tovarbop hovuzli xo‘jalik uchun ularni guruhli qilib, parallel chiziqlar bo‘yicha o‘rnatish foydali. Bu holda bitta pirs bo‘ylab ikki qator hovuzlar o‘rnatish mumkin bo‘ladi va hovuzlarning ikki tomoni ochiq qoladi, bu esa ulardagi suvni saqlashga ijobiy ta’sir ko‘rsatadi. Hovuzlar liniyalari oralig‘idagi masofaning 3 metrdan kam bo‘lmasligi tavsiya qilinadi. Daryo foreli (boshqa turdagi baliqlar ham) normal rivojlanishi va o‘sishi uchun ozuqa tarkibidagi ozuqaviy moddalarning muayyan miqdori va nisbati bo‘lishi zarur. Ozuqaga oqsillar (proteinlar), uglevodlar, moylar, mineral modda- lar, vitaminlar kirishi kerak. Ozuqa retsepturasi baliqlar ehtiyojini to‘liq qoplashi, ozuqaning barcha komponentlariga ega bo‘lishi zarur. Turli yoshdagi va o‘lchamdagi baliqlar tarkibiy moddalar va omuxta yemga ko‘ra farqlanadi. Ehtiyojlar, shuningdek, suv sifati va uning haroratiga ko‘ra farqlanishi mumkin.

Xulosa o’rnida shuni aytish mumkunki, forel balig'ining O'zbekiston iqlimi bilan qanday muloqotda bo'lishi kerakligi haqida ma’lumot berildi. Forel balig'i suvning sifatli va haroratining mosligi bilan bog'liqdir. O'zbekistonda esa, suv resurslarining kengligi va turli iqlim sharoitlari mavjud. Bu esa, Forel balig'inin O'zbekiston iqlimida o'sishiga imkon beradi.Aholini qo`shimcha ozuqa maxsulotlari bilan taminlash maqsadida baliq va baliq maxsulotlarini ko`paytirish lozimdir. Bundan bir necha yillar oldin Yaponiya va O`zbekistonda yillik baliq go`shtini istemol qilish taqqoslanganda Yaponiyada bu aholi soniga 16kg dan to`g`ri kelgan bo`lsa, O`zbekistonda 400g ni tashkil etgan. Baliq maxsulotlari eng

oqsilga boy, to`yimli, tansiqliligi bilan yuqori o`rinni egallaydi. Shularni hisobga olgan holda O`zbekiston Respublikasi vazirliklari hovuz xo`jaligida baliq yetishtirish, baliq konservalari ishlab chiqish bo`yicha maxsus qarorlar chiqargan.

Yuqoridagilarni hisobga olib, o`zimning bitiruv-malakaviy ishim natijalariga tayanib quydagilarni ko`rsatib o`tish lozim.Sun`iy suv havzalarini barpo etish uchun ekologik toza tuproqli aholi yashash joyidan olisda joy tashlash lozim. Hovuzlarni suv bilan to`ldirishda suvning ifloslanmaganligiga e`tibor qaratish kerak.

Baliqlarni iqlimlashtirishdan oldin ularga mos ekologik sharoit yaratish talab etiladi.Baliqlarni ikralarini tez yetilishi, baliq sutlarini kuchli urug`larga boy bo`lishini taminlash uchun gipofizar in'eksiya metodidan foydalanish maqsadga muvofiqdir. Baliq lichinka-chavoqlarini yuqorida ko'rsatilgan ratsion asosida boqish tavsiya qilinadi.Baliqlar kasalliklarga chidamsiz bo'lib, ayniqsa baliq uchun bakterial va zamburug' kasalliklari ular uchun havflidir. Kasallik nimjon va yosh baliqlarga tez yuqadi. Shuning uchun baliq kasalliklariga qarshi chora-tadbirlarni ishlab chiqish kerak.

## Foydalanilgan adabiyotlar

1. Сборник нормативно-технологической документации по товарному рыбоводству. Том 2. М: Агропромиздат, 1986, 317 с.
2. Канидьев А. Н. Биологические основы искусственного разведения лососевых рыб. М.: Легкая и пищевая промышленность, 1984, 214 с.
3. Гамыгин Е.А. Корма и кормление рыб: обзорная информация — М., Центр. НИИ Информации и технико-экономических исследований рыб. хоз-ва, вып. 1, с. 1–82.

# TESTING THE TECHNOLOGY OF OBTAINING TWO GRAINS FROM ONE FIELD IN ONE EAR UNDER PRODUCTION CONDITIONS

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**Abtract.** In this article, methods of growing two crops in one ear by planting moss between rows of cotton and their planting schemes, irrigation and agrotechnical measures are given.

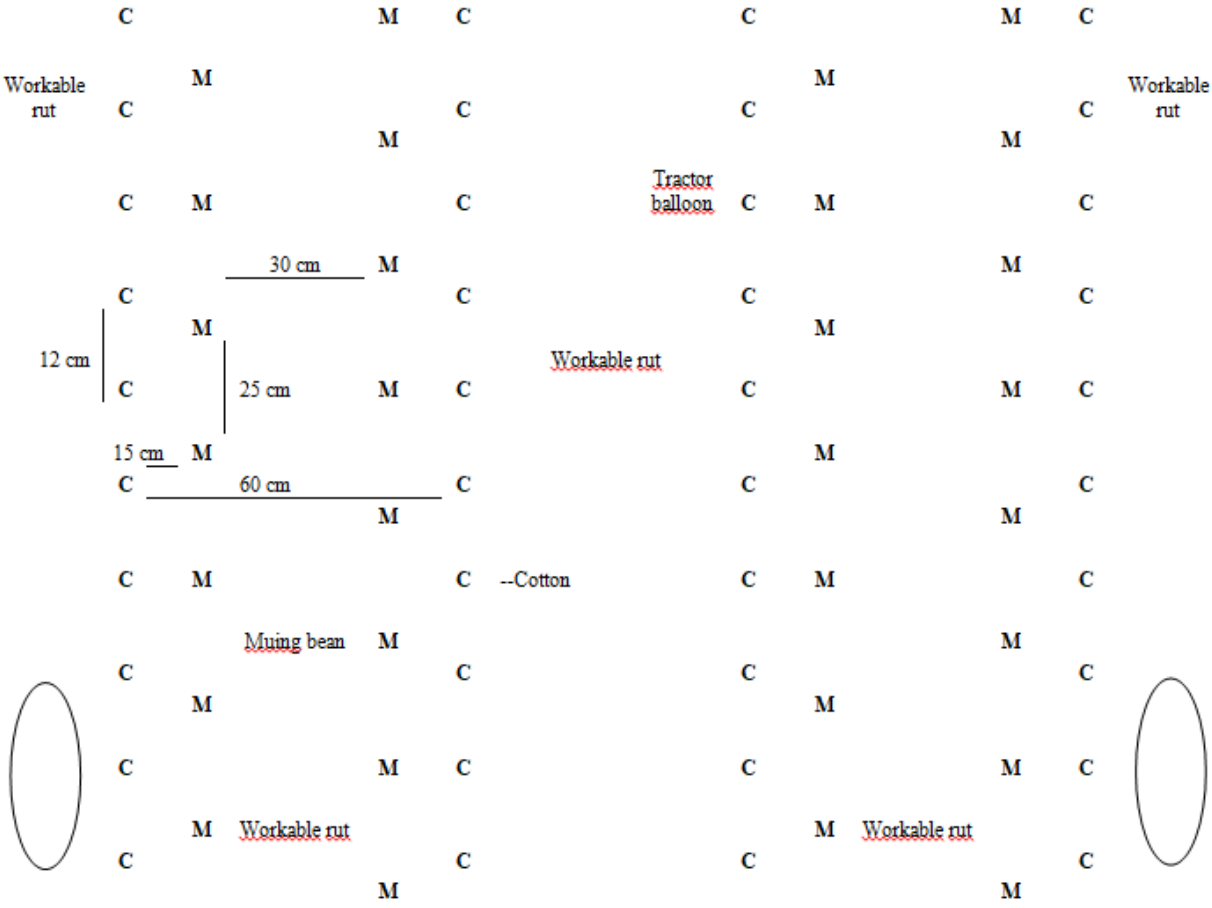
**Keywords:** mung bean, Cotton row spacing, yield, soil, planting method, fertilizer.

**Аннотация.** В данной статье приведены способы выращивания двух культур в одном колосе путем посадки мха между рядами хлопчатника и схемы их посадки, поливные и агротехнические мероприятия.

**Ключевые слова:** маш, междурядье хлопчатника, урожайность, почва, способ посева, удобрения.

The purpose of the experiment: Researches were conducted on the development of technology for efficient cultivation of land, water and mineral fertilizers, two crops growing on the same field. Experiments "Ibrahim Karim" farm in Qalandar Dormon QFY area, Yangibazar district, Khorezm region. Water supply and productivity: Water is taken from the Khaybat internal channel in the Shavat system using 2 SNP 500 pumps. The quality of the soil is 68 points, it consists of meadow swampy soils.

Experiments are conducted according to the following schemes.




The experimental field is a total of 5 hectares, planted with Khorezm 127 varieties. 2.5 hectares are divided into experimental options. The seed was planted on April 13 at the rate of 70 kg per hectare. The sown seeds germinated on April 26. On May 8, 200 kg of saltpeter and 100 kg of amphos per hectare were given to the farm land. Phenological observations were made on June 1. As a result, it was observed that each bush produced 5-6 leaves and the height of the stem was 13.4 cm. In the separately planted version, the height of the tuber was 13.5 centimeters.

Option 1 is based on current agrotechnics. 2nd variant "Pobeda-104" variety was sown on May 28 in a row without cultivation, and it started to germinate on June 2.

4 kg of mung bean seeds were planted in ash at a depth of 4 cm, 15 cm between the rows of cottonwood, 25 cm between the nests in the mush, and 30 cm between the mush rows. The rate of seed germination was 85.4%.

*Table -3*

*Results of phenological observations in Mung beans (planting date 28.05)*

| № | Phenology | Unit of measure | Date of follow-up | | |
|---|---|---|---|---|---|
| | | | 01.07 | 01.08 | 01.09 |
| | Seeds | germination rate 85,4% | | | |
| 1 | The number of leaves | дона | 9,0 | 24,6 | 36,0 |
| 2 | Plant height | cm | 7,6 | 38,7 | 106,0 |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Number of crop branches | дона | 2,5 | 3,6 | 10,0 |
| 4 | The number of flowers | дона | - | 10,0 | 5,0 |
| 5 | Number of legume | дона | - | 0,0 | 18,0 |
| 6 | seedling thickness period of operation<br>- at the beginning<br>- at the end | Минг/дона<br>Минг | - | - | 66,4 64,7 |
| 7 | 1000 дона дон Массаси (аМал даври охирида) | граММ | - | - | 51 |

*Table – 4*

*Agrotechnical activities on the topic of testing the technology of two harvests from one area in one ear (1 hectare area)*

| № | Performed agrotechnical activities | execution time | | Amount of expenses, sum |
|---|---|---|---|---|
| | | beginning | End | |
| 1 | Plowing land | 20.11 | 20.11 | 34791 |
| 2 | Preparation of land for salinity washing | 25.11 | 26.11 | |
| 3 | 1-st salty soil washing | 10.12 | 10.12 | |
| | 2-nd salty soil washing | 05.01 | 05.01 | |
| | 3-rd salty soil washing | 01.02 | 05.02 | |
| | 4-th salty soil washing | 05.03 | 05.03 | |
| 4 | harrowing with the 1st 2-row zig-zag harrow | 01.04 | 03.04 | |
| | harrowing with the 1st 2-row zig-zag harrow | 02.04 | 03.04 | |
| | harrowing with the 1st 2-row zig-zag harrow | - | - | 68133,8 |
| | Preparing the land for planting | | | |
| 5 | cleaning of weed residues | 04.04 | 04.04 | |

| | | | | |
|---|---|---|---|---|
| 6 | Applying phosphorus and potassium fertilizers before preparing the land for planting (1 option phosphorus 217 kg/ha, potassium 90 kg/ha, 2-3 option. Phosphorus 217 kg/ha, potassium 135 kg/ha). | | | |
| 7 | 1-st time chiseling | 05.04 | 05.04 | |
| | 2-nd time chiseling | 05.04 | 05.04 | |
| 8 | 1-чи Мола босиш | 05.04 | 05.04 | |
| | 2-чи Мола босиш | 05.04 | 05.04 | |
| | 3-чи Мола босиш | 05.04 | 05.04 | |
| | 4-чи Мола босиш | - | | |
| 9 | Sowing seeds (hairy seed 60 kg/ha, hairless - 25-30 kg per hectare) | 13.04 60 кг | 13.04 | 21506.1 |
| 10 | Unify | 28.04 | 29.04 | 28189.3 |
| 11 | 1-st cultivation | 05.05 | 05.05 | 66478.6 |
| | 2-nd cultivation | 20.05 | 20.05 | 41541.0 |
| | 3-rd cultivation | - | - | - |
| | 4-th cultivation | - | - | - |
| | 5-th cultivation эгат олиш | 27.06 | 27.06 | 41541.0 |
| | get the main ditch | 28.07 | 29.07 | 9684.7 |
| 12 | softening the hard layer of the garden | - | - | - |
| 13 | weeding of the field 1st plow | 15.07 | 16.07 | 46108.2 |
| | 2-plow | 20.07 | 21.07 | 46108.2 |
| | 3-plow | - | - | - |

5

| | | | | |
|---|---|---|---|---|
| | 4-plow | - | - | - |
| 14 | Planting mung bean in the middle of Rut | 28.05 | 01.07 | 62000.8 |
| 15 | 1st watering | 30.06 | 01.07 | 6945.5 |
| | 2nd watering | 14.07 | 15.07 | 5601.2 |
| | 3rd watering | 04,08 | 05,08 | |
| | 4th watering | 14,08 | 15,08 | |
| | 5th watering | - | - | |
| 16 | 1-Fertilization 2-3 nitrogen fertilizers on the leaves of the plant with ammonia nitrate 150 kg/ha or Urea 108 kg/ha | 05,05 | 05,05 | 42780 |

| | | | | |
|---|---|---|---|---|
| 17 | 11 - feeding during grinding. Nitrogen fertilizer is 150 kg/ha of sodium nitrate in physical hair | 20,05 | 20,05 | 40718 |
| 18 | 111- nutrition in flowering. Nitrogen fertilizer is 200 kg/ha of ammonium nitrate in physical hair | 27,06 | 27,06 | 110800 |
| 19 | Deep processing:<br>1 - time<br>2 - time | 13,06 | 13,06 | 11087,8 |
| 20 | In pest control 1st biological control 2nd chemical control | 10,05 | 10,08 | 24895 |
| 21 | Suspension spraying on the 2-4th leaf: carbamide 5 kg/ha, | 15,05 | 15,02 | 10200 |
| 22 | In the case of suspension ash raking: carbamide 8 kg/ha, | 10,06 | 15,05 | 10200 |
| 23 | Suspension ash during flowering: corbamide 10 kg/ha, | - | - | - |
| 24 | cutting the growing area | 26,07 | 26,07 | 10185,4 |
| 25 | Defoliation | 25,08 | 25,08 | 56300 |
| 26 | 1-picking cotton | 10,09 | 14,09 | - |
| 27 | 2-picking cotton | 22,09 | 24,09 | - |
| | 3-picking cotton | 05,10 | 06,10 | 265000 |
| | Transportation to the cotton threshing floor | | | 4090,8 |
| 28 | plucking the stalk of cotton and weaving it in rows | | | |
| 29 | loading cotton stalks into transport | | | |
| 30 | Preparing the land for autumn plowing | | | |
| 31 | Plowing | | | |
| | Total: | | | 1053492 |

During the period of biological identification of the crop, in which all phases of the growth period of the boll were fully reflected, it was determined that there were 10.2 bolls on each bush, the length of the boll was 97.6 cm, and the presence of 26.2 centners of cotton per hectare. In the conventional method of cotton development, there are 10.3 bolls and 26.5 bolls/ha, and boll length is 97.8 cm. In the case of mixed planting of mung bean and guza, the number of guza bushes decreased from 81,300 to 78,000 at the end of the ear, by 3,300 per hectare. Guza is so suitable in the variant planted separately. 81,300 bushels per hectare at the beginning of the growing season were 78,1 bushes at the end of the growing season and decreased to 3,200 bushels. The phenological observations of the moss (table 3) are reflected in the number of leaves of the moss at the end of the growing season: 36 pieces, 106 cm long, 10.0, the number of dukas is 11. The number of plants per hectare decreased from 7 thousand plants to 1.7 thousand. On average, 3.2 centners of grain was obtained from Mung beans.

## References

1. Djanibekov et al. 2010 Djanibekov N, Rudenko I, Lamers J, Bobojonov I (2010) Pros and cons of cotton production in Uzbekistan, Case study 7-9 of the program: "Food policy for developing countries: the role of government in the global food system". Cornell University,Ithaca (NY).
2. Nurbekov A. i dr. Praktika pochvozaщitnogo i resursosberegayuщego zemledeliya v Azerbaydjane, Kazaxstane i Uzbekistane. Prodovolstvennaya i selskoxozyaystvennaya OON. Ankara, 2016 file:///C:/Users/User/Downloads/a-i5694r.pdf
3. Юсупов Ю. Central Asian Bureau for Analytical Reporting. 25.03.2019 https://cabar.asia/ru/agrarnyj-sektor-uzbekistana-osobennosti-klyuchevye-problemy- neobhodimost-reform.
4. Allahmoradi, P., Ghobadi, M., Taherabadi, S. and Taherabadi, S. 2011. Physiological aspects of mungbean (Vigna radiata L. Wilczek) in response to drought stress. Inter. Conf. Food Eng. Biotech. 9: 272- 275.
5. Abd El-Lateef E. M.et al /Int.J. ChemTech Res. 2015,8(12),pp 477-487
6. Wang, L.; Wang, S.; Luo, G.; Zhang, J.; Chen, Y.; Chen, H.; Cheng, X. Evaluation of the Production Potential of Mung Bean Cultivar "Zhonglv 5". Agronomy 2022, 12, 707. https://doi.org/10.3390/ agronomy12030707

# SUG'ORILADIGAN O'TLOQI-ALLYUVIAL TUPROQ TARKIBIDAGI MIKROORGANIZMLAR MIQDORIGA BIOPREPARATLARNING TA'SIRI

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**Annotatsiya**. Maqolada sholi ekiladigan maydonlarda Novogumin va Mikroustirgich biopreparatlarini qo'llanganda, ularning tuproq tarkibidagi mikroorganizmlar miqdoriga ta'siri o'rganilgan. Bunda Mikroustirgich biopreparati gektariga 2100-2400 ml, Novagumin esa gektariga 1000-1200 ml qo'llanildi. Sug'oriladigan o'tloqi-allyuvial tuproqlarda biopreparatlar qo'llanilganda, tuproq tarkibidagi mikroorganizmlar bir muncha oshgani aniqlandi.

**Kalit so'zlar:** Sug'oriladigan o'tloqi-allyuvial tuproq, mikroorganizm, Novogumin, Mikroustirgich, biopreparat.

Tuproqlarning paydo bo'lishida, unumdorligining shakllanishida mikroorganizmlarning ahamiyati katta. Tuproqda turli xildagi mikroorganizmlar, bakteriyalar, aktinomitsetlar, zamburug'lar, suv o'tlari, lishayniklar va sodda, tuban jonivorlar yashaydi. Ularning miqdori o'zgaruvchan bo'lib, 1g tuproqdagi soni million va mlrd. gacha etadi.

Tuproq mikroorganizmlarining asosiy massasi (90-99% gacha) tuproqning qattiq fazasi bilan bog'liq, faqat ularning kichik ulushi tuproq eritmasida topiladi. Bu tuproq qattiq zarrachalarining mikroorganizmlar hujayrasini ushlab turish, ya'ni adsorbsiyalash qobiliyati bilan bog'liq. Olimlar tomonidan tuproqda kichik mexanik zarrachalar (il va mayda chang) mikroorganizmlarni eng faol yutishi (adsorbsiyalashi) isbotlangan. Shuning uchun tuproqda ushbu mayda zarrachalar ko'p bo'lsa, ular mikroskopik mavjudotlarni shuncha kuchli adsorbsiyalaydi [5, 6].

Bakteriyalar – tuproqda eng ko'p tarqalgan mikroorganizmlar guruhiga kiradi. Ularning soni gidrotermik sharoitlarga ko'ra 1 g tuproqda o'nlab, yuzlab, milliondan milliardgacha etadi. Tuproq unumdorligini oshishida va tuproq hosil bo'lish jarayonlarida ishtirok etuvchi mikroorganizmlarning ammonifikator guruhlari katta rol o'ynaydi. Bunda, ayniqsa, o'simliklarning o'sishi va tuproq unumdorligini oshishi uchun zarur bo'lgan oziqa moddalarining hosil bo'lish jarayonlari muhim hisoblanadi [5,6].

Tadqiqotlarda ammonifikator mikroorganizmlar organik moddalarning parchalanishida faol ishtirok etishini aniqlagan, sholi ekilgan maydonda suvning yuzada turishi natijasida azot shakllari sholining oziqa rejimida qulay sharoit yaratishda ishtirok etadi. Bu tuproq sho'rlanish darajasi bilan bog'liq [7,8].

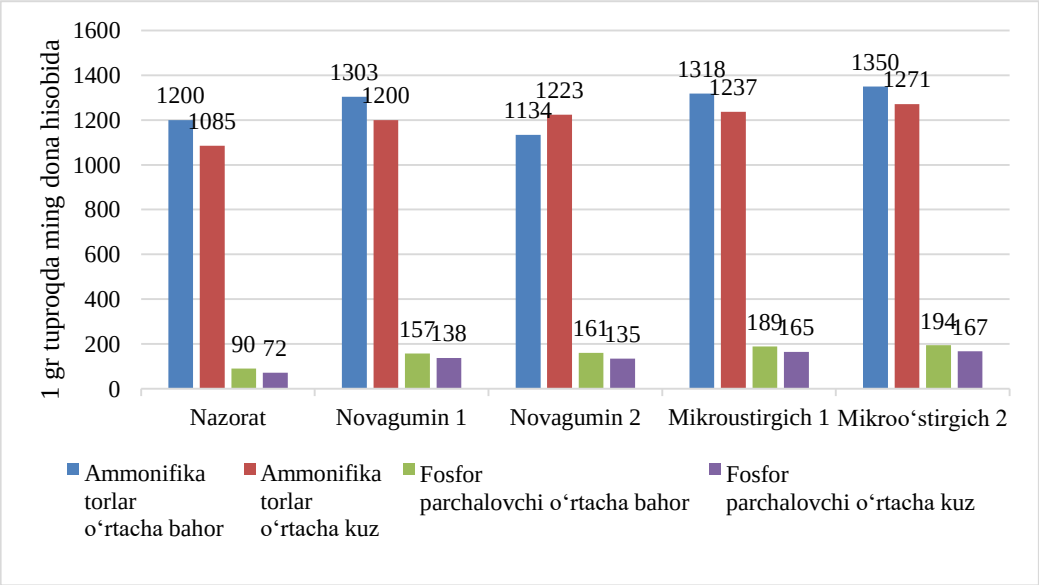
Olimlar izlanishlarida o'zining genezisi bo'yicha farqlanadigan bir qator tuproqlarni elektron mikroskopda o'rgandi. Qo'riq tuproqlarning mikroflorasi tekshirildi. Bunda janubiy mintaqa tuproqlarida mikroflora soni ko'pligi aniq bilindi. Bu ularning tuproq-iqlim sharoitining o'ziga xosligi bilan aniq tushuntiriladi. Turli xil tuproqlarning mikrobiologik analizi uchun

S.N.Vinogradskiy tavsiya etgan to‘g‘ridan-to‘g‘ri mikroskoplash usulini qo‘lladi. Yuqorigi qatlamlar gumusli gorizontda mikroorganizmlar ko‘p, pastki qatlamlarda gumusli gorizont qalinligiga bog‘liq ravishda mikroorganizmlar soni kamayib boradi. 1 gramm tuproqda 300 dan 3000 mln gacha tebranadi. Shimoldan janubga harakatlangan sari tuproqni mikroblarga boyligi ortadi. Har bir tuproq-iqlim mintaqasida tuproqni madaniylashtirish uning qatlamida mikroblar soni ortishiga olib keladi [1,2,3,4].

Tadqiqotimizda sholi ekilgan suv bostirilgan tuproqlarda ammonifikatorlar organik moddalarni faol parchalab, azotning oson o‘zlashtirilishini ta’minlagan.

Tajribalarimiz natijalarida 0-70sm qatlamda ammonifikatorlarning boshqa mikroorganizmlarga nisbatan ustinlik qilganligini ko‘rishimiz mumkin. Ammonifikatorlar miqdori Nazorat variantida ammonifikatorlar bahorgi davrda 224-1200 ming dona, kuzgi davrda 165-1085 ming dona/1g tuproq hisobidani tashkil etgan, bio va nanopreparatlar qo‘llanilgan variantlarda Novaguminda o‘rtacha - bahorgi davrda 262-1334 ming dona, kuzgi davrda 204-1223 ming dona/1g tuproqda, Mikroo‘stirgich variantida o‘rtacha - bahorgi davrda 275-1350 ming dona, kuzgi davrda 221-1271 ming dona/1g tuproqda hisobida tashkil etgan (1-rasm).

Fosfor parchalovchi bakteriyalar Nazorat variantida o‘rtacha - bahorgi davrda 34-90 ming dona, kuzgi davrda 18-72 ming dona/1g tuproqda hisobidani, bio va nanopreparatlar qo‘llanilgan variantlarda Novaguminda o‘rtacha - bahorgi davrda 47-161 ming dona, kuzgi davrda 28-138 ming dona/1g tuproqda hisobidani, Mikroo‘stirgich variantida o‘rtacha - bahorgi davrda 51-194 ming dona, kuzgi davrda 29-167 ming dona/1g tuproqda hisobida tashkil etgan.




*1-rasm. Sug‘oriladigan o‘tloqi-allyuvial tuproqlarning mikroorganizmlar miqdoriga biopreparatlarning ta’siri (2020-2022 yy, 1 gr tuproqda ming dona hisobida)*

Ammonifikatorlarning eng kam miqdori Nazorat variantida, eng ko‘p miqdori Novagumin va Mikroo‘stirgich qo‘llanilgan variantlarda aniqlandi, ya’ni ularning tarkibidagi gumin va fulvo kislotalari, azot, kaliy va biologik boshqa qo‘shimchalar tuproq tarkibiga faol ta’sir etganligi aniqlandi.

Bundan xulosa qiladigan bo‘lsak, qonuniyat bo‘yicha ammonifiksiyalovchi bakteriyalar tuproq qatlamlari bo‘yicha pastga tomon kamayib borgan, 50-70sm chuqurlikda ularning miqdori keskin kamaygan. Tuproq mikroorganizmlarining hayot faoliyati va faolligi tuproq sharoitlari bilan bevosita bog‘liq.

Xulosa qilib aytadigan bo‘lsak, mikroorganizmlar tuproqdagi barcha jarayonlarda ishtirok etadi, qo‘llanilgan bio va nanopreparatlar mikroorganizmlarning faolligini oshiradi, buning natijasida tuproqda etarli oziqa moddalar hosil bo‘ladi, o‘simliklarning o‘sishi, rivojlanishi va hosildorligi ortadi.

## Foydalanilgan adabiyotlar

1. Бессонов Е.Г. Агрохимические свойства почв районов рисосеяния низовий Аму-Дарьи. Агрохимия. 1967. № 6. –С. 28-35.
2. Вухрер Э.Г., Абдужалалова М.У. Микробиологическая и биохимическая активность пустынных почв Каршинской степи, её роль в плодородии // Ташкент, «ФАН», 1977. –С.30-71.
3. Махкамова Д.Ю. Жиззах вилояти Зарбдор туманидаги шўрланган гипсли тупроқларининг микрофлораси // Ер ресурсларидан самарали фойдаланиш, тупроқ унумдорлигини сақлаш, қайта тиклаш ва ошириш йўллари. Республика илмий-амалий анжумани маърузалари тўплами. Тошкент, 2012. –Б.164-166.
4. Мишустин Е. Н., Емцев В. Т. Микробиология. –М.: Агропромиздат, 1987. –386 с.
5. Хаджиев Т.Х., Князева Е.В., Касымова С. Микрофлора почв южной части Хорезмского оазиса. Сборник докладов и тезисов III съезда почвоведов и агрохимиков. 5 декабря, 2000 г. Ташкент, 2000, стр. 151-153.
6. Хазиев Ф.Х. Методы почвенной энзимологии // –М.: Наука. 2005. 252 с.
7. Шеуджен А.Х. Агрохимия цинка в рисовом агроценозе. Майкоп: ОАО “Полиграф-Юг”, 2019. –164 с.
8. Шеуджен, А.Х. Агробиоэнергетическая эффективность возделывания риса в зависимости от мелиоративного состояния рисовой оросительной системы // А.Х.Шеуджен, О.А.Гуторова // Известия Самарского научного центра Российской академии наук. 2018. – Т. 20. № 2-2. – С. 313-319.

# КОЛЛЕМБОЛАЛАРНИНГ ҒЎЗА АГРОЦЕНОЗИ ТУПРОҚ ҚАТЛАМЛАРИДА ТАРҚАЛИШИ

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**Аннотатция.** Дунёда қишлоқ хўжалиги ишлаб чиқаришига бўлган талабнинг ортиши агроценозлар ҳосилдорлигини ошириш ва биохавфсизлигини таъминлашга бўлган талабнинг ҳам ошишига олиб келмоқда. Бироқ сўнгги йилларда табиий ва сунъий экотизим тупроқларига бўлган босимнинг кескинлашуви тупроқ унумдорлигини оширишда муҳим ўрин тутадиган микрофауна вакиллари хилма-хиллигининг камайишига сабаб бўлмоқда. Бу ўринда, агроценозлардаги коллемболалар фаунасини аниқлаш ҳамда экологик-таксономик таркибини баҳолаш долзарб илмий-амалий аҳамият касб этади.

**Калит сўзлар:** Коллембола, ғўза агроценози, тупроқ, *Poduromorpha*, *Entomobryomorpha*.

**Аннотация**. На сельскохозяйственную продукцию в мире приводит к увеличению спроса на повышение продуктивности агроценозов и обеспечение их биобезопасности. Однако в последние годы усиление нагрузки на естественные и искусственные почвы экосистем приводит к уменьшению разнообразия микрофауны, играющей важную роль в повышении плодородия почв. В настоящее время выявление фауны коллемболла в агроценозах и оценка эколого-таксономической структуры имеют актуальное научное и практическое значение.

**Ключевые слова:** Collembola, хлопковый агроценоз, почва, Poduromorpha, Entomobryomorpha.

**Annotation.** The increase in the demand for agricultural production in the world leads to an increase in the demand for increasing the productivity of agrocenoses and ensuring their biosecurity. However, in recent years, the increasing pressure on natural and artificial ecosystem soils is causing a decrease in the diversity of microfauna, which plays an important role in increasing soil fertility. At this point, identification of collembola fauna in agrocenoses and evaluation of ecological-taxonomic structure is of actual scientific and practical importance.

**Key words:** Collembola, cotton agrocenosis, soil, Poduromorpha, Entomobryomorpha.

**Кириш**. Коллемболалар – бўғимоёқлилар (Arhtropoda) типининг ҳашаротлар (Insecta) синфининг, коллемболалар - Collembola туркумига мансуб. Уларнинг барча вакиллари орибатид каналари ва имиллаб юрувчилар билан бирга тупроқ микрофаунасини ташкил этади [1]. Коллемболалар қуруқликда яшашга ўтган энг қадимги бўғимоёқли ҳайвонлар. Уларнинг танаси қаттиқ хитинли кутикула билан қопланган. Кутикуланинг сиртидаги сув буғлантирмайдиган эпикутикула танасини қуриб қолишдан ҳимоя

қилади. Улар ноқулай шароит таъсирига жуда чидамли бўлгани туфайли жуда кенг тарқалган ва хилма-хил бўлади. Тропик иқлимда учрайдиган турлари $+40^0$C гача бўлган иссиқликка чидамли. Улар айниқса сернам ўрмон тупроқларида кўп учрайди. Тўшалмадаги умуртқасиз ҳайвонлар биомассасииинг 10-15% ни ташкил этади. Бир йил давомида коллемболаларнинг 2 - 3 авлоди ривожланади. Тупроқ кесмаси бўйлаб тарқалиш хусусиятига кўра коллемболалар тўшалмада, тўшалма-тупроқ ва тупроқда яшовчи гуруҳларга бўлинади [2].

Материал ва метод. Тадқиқот материаллари 2022-2023 йиллар давомида Ўзбекистонинг Шимоли ҳисобланган Хоразм вилояти Шовот тумани "Эрбоев Баходир", "Яхшимуродов Улуғбек", "Эшжанов Одилбек", "Бодомзор –Обод" фермер хўжаликлари ҳудудлари ғўза ва буғдой агроценозлари тупроқ қатламларидан йиғилди. Намуналарни агроценозлар тупроқларининг 0-10 см, 10-20 см, 20-30 см. қатламларидан 1 $дм^3$ миқдорда жами 960 та намуналар олинди. Тупроқ намуналари даладан белгиланган нуқталардан олиниб, қопчаларга жойлаштирилди ва ёрлиқ қоғоз билан белгилаб қўйилди. Ёрлиқ қоғозга намуна олинган сана, жойнинг номи, агроценозлар ёки табиий экотизимлар номи, тупроқ қатлами ва бошқа маълумотлар қайд этилди. Юқорида кўрсатилган ҳудудлардан коллемболаларнинг тур таркиби ва экологиясини ўрганиш учун намуналар олишда маршрут ва мавсумий динамикасини ўрганиш учун стационар услублардан фойдаланилди. Тупроқ намуналаридан коллемболаларни ажратиб олишда умумий қабул қилинган "Берлезе-Тульгрен аппарати" дан фойдаланилди [3,5].

Олинган натижалар тахлили. Ер юзида коллемболалар жуда кенг тарқалган ва тупроқ ҳамда ўсимликларнинг қатор турлари билан боғлиқ. Улар тупроқ қатламининг гумусли ва минералларга бой қисмини кенг ўзлаштирган ва улар учун қулай бўлган шароитда 1,5-2 метр чуқурликкача кириб бориши мумкин. Шу билан бир қаторда коллемболартупроқнинг унумдорлигини оширишда ҳамда тупроқ ҳосил бўлишида фаол иштирок этиши исботланган [4].

Олинган натижаларга кўра коллемболаларнинг агроценозлардаги тарқалиш хусусиятлари тур таркиби ва жамоалар структураси аниқланди. Хоразм вилояти Шовот тумани ғўза агроценозлари тупроқ қатламларининг 30 см. гача бўлган қатламларида жами 8 та турга, 8 та (*Xenylla, Hypogastrura, Haloxenylla, Ongulonychiurus, Onychiurus, Axenyllodes, Adbiloba, Archisotoma*) авлодга, 2 та (Poduromorpha, Entomobryomorpha) кенжа туркумга мансуб коллемболалар учраши аниқланди (1-жадвалга қаранг).

*1-жадвал*

*Коллемболаларнинг ғўза агроценози тупроқ қатламларидатарқалиши*

| № | Турлар | Хоразм вилояти Шовот тумани | | |
|---|---|---|---|---|
| | | Ғўза агроценози | | |
| | | 10 см | 20 см | 30 см |
| | *Xenyllaschillei* | + | + | + |
| | *Hypogastruratullbergi* | + | + | - |
| | *Xenyllamaritime* | + | + | + |
| | *Metaphoruraaffinis* | + | + | + |
| | *Ongulonychiuruscolpus* | + | + | + |
| | *Onychiurus taimyrica* | + | + | - |
| | *Xenyllodesbayeri* | + | + | + |
| | *Isotomabesselsi* | - | + | + |

Хоразм вилояти Шовот туманида жойлашган ғўзадалалари тупроқ қатламларидан аниқланган коллемболалардан 6 та тури (*Xenyllaschillei,Xenyllamaritime,Metaphoruraaffinis,Ongulonychiuruscolpus,Xenyllodesbayeri,Isotomabesselsi*) ғўза агроценозларининг 0-10, 10-20, 20-30 см қатламларида учраши, 2 та (*Hypogastruratullbergi,Onychiurus taimyrica*) турлари фақат 0-10, 10-20 см қатламларида учрашикузатилди.

Хоразм вилояти Шовот тумани ғўза агроценозларида доминант тур - *Xenylla maritima* (1-расмга қаранг) 18% ни ташкил қилди.Доминант тур*Xenylla maritima* нинг миқдорини энг кўп учраши баҳор фаслида кузатилди. Ғўза далалари тупроқ қатламларида доминат тур тупроқ тўшалмасининг юза қатламида яшовчи коллемболалар кичик гуруҳига мансублиги аниқланди.


*1-расм. Xenylla maritimaTullberg, 1869 турининг мофологик кўриниши (ён томондан). Асл нусха. Доминант тур.*

Юқорида аниқланган турлар Хоразм вилояти Шовот тумани "Эрбоев Баходир", "Яхшимуродов Улуғбек", "Эшжанов Одилбек", "Бодомзор-

Обод"фермер хўжаликлари ҳудудлари буғдой агроценозлари тупроқ қатламларининг 0-30 см гача бўлган қатламларидан аниқланди.

Хулоса. Коллемболаларнинг ценозларда тарқалиши айниқса ғўза агроценозилари тупроқ қатламларининг 30 см. гача бўлган қатламларида жами 8 та турга, 8 та (*Xenylla,Hypogastrura,Haloxenylla, Ongulonychiurus, Onychiurus, Axenyllodes, Adbiloba, Archisotoma*) авлодга, 2 та (Poduromorpha, Entomobryomorpha) кенжа туркумга мансуб коллемболалар учраши аниқланган.

**Фойдаланилган адабиётлар рўйхати**

1. Айтекова М. Состав и распределение фауны коллембол Курушского высокогорного массива: Автореф. дисс.... канд.биол.наук. – Махачкала, 2008. - 20 с.
2. Бондаренко-Борисова И.В. Коллемболи (Collembola, Entognatha) лісів v степу південного сходу України: фауна та екологія. - Автореф. дис... канд біол наук - Київ, 2002.- 20 с.
3. Элмуратова З.У. Жанубий Ўзбекистон тупроқлари коллемболаларининг фаунаси ва экологияси. Автореф. дисс. б.б.ф.док. – Нукус, 2021. – 20 б.
4. Козлов Д. П. Коллемболы — возможные хозяева Avitellina arctica (Cestoda, Anoplocephalata), Паразитология, 1986. - №20(1), С. 73-74.
5. Рахимов М.Ш. Шимолий-шарқий Ўзбекистон коллемболалар туркуми фаунаси, тарқалиш хусусиятлари ва экологияси. Дисс... биол. фан. док. – Тошкент, 2019. -200 б.

# SHOLINI TURLI EKISH MUDDATLARIDA KO'CHAT USULIDA EKISHNING BARG SATHIGA TA'SIRI

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**Annotatsiya**. Yer yuzidagi ko'pgina mamlakatlarda sholi eng qadimgi oziq – ovqat mahsulotlaridan biri hisoblanadi. Sholi qimmatbaho yorma ekini, dunyoda bug'doy ekinidan keyingi ikkinchi ekin. Sholi asosiy oziq-ovqat manbai hisoblanadi. Sholining hosildorligini oshirishning asosiy yo'li bu har bir hudud uchun hududning tuproq sharoitiga moslashgan navlarini yetishtirishdir. Ushbu ilmiy maqolada sholi o'simligining turli ekish muddatlarida ko'chat usulida ekishning barg sathiga ta'siri aniqlangan.Sholi navlaridan yuqori hosil olishning yetishtirish texnologiyasining asosiy elementlari ishlab chiqilgan.

**Tayanch so'zlar:** Sholi, kechpishar, ekin, muddat, nav, usul, hosildorlik, tezpishar, gerbitsid, xo'jalik belgilar, urug', ko'chat, mahsuldorlik, o'rtapishar.

Kirish. Sholi guruchi to'yimliligi bilan, tez hazm bo'lishi bilan ajralib turadi, guruch tarkibida 75,2 % karbon suvlari (asosan kraxmal), 7,18 % oqsil, 0,26 % moy, 2,2 % kletchatka, 0,5 % kul moddalari va 14 % suv va har xil vitaminlar bor. Guruch qaynatmasi tabobatda davolash maqsadida ko'p ishlatiladi. Guruch bilan parxez yuqori qon bosimida foydalaniladi. Guruch odam organizmi uchun yuqori sifatliligi va tez hazm bo'lishi bilan ajralib turadi. Uning tarkibida inson organizmi uchun kerak bo'lgan oziq moddalar: oqsil, fosforli birikmalar va vitaminlar mavjud. Guruchdan tayyorlangan ovqat juda tez pishadi, inson organizmida u boshqa yormalarga qaraganda tez hazm bo'ladi va to'liq o'zlashadi. Guruchning o'zlashtirilish koeffitsienti eng yuqori – 96 % ga, kaloriyaliligi 3594 ga, bug'doyniki esa – 6310 ga teng. Sholining maxsus turidan (glyutinozli sholidan) koreys xalqi non tayyorlaydi. Sholini oqlag'idan spirt, aroqning alohida xillari (sake), pivo tayyorlanadi va kraxmal olinadi. Guruchning kraxmali to'qimachilik sanoatida, parfyumer, meditsina sohasida ko'p ishlatiladi.

Tadqiqot uslublari.

Toshkent davlat agrar universitetining "Qishloq xo'jaligida innovatsion ishlanmalar va maslahat markazi" tajriba dalasining tipik bo'z tuproqlar sharoitida tajribalar olib borildi. Ilmiy-tadqiqotlarda dala tajribalarini joylashtirish, barcha hisob-kitob va kuzatuvlar "Qishloq xo'jalik ekinlari navlarini sinash Davlat komissiyasining uslubiy qo'llanmasi", "Dala tajribalarini o'tkazish uslublari" (PSUEAITI) asosida amalga oshirilgan. Guruchning shishasimonligi GOST 10987-76, guruch chiqimi va butun guruch miqdori GOST ISO 6646-2013 bo'yicha aniqlangan. Sholi barg sathini hisoblash Vishnu.M. Bhan va H.K. Pande (IRRI) uslubida, iqtisodiy ko'rsatkichlar V.N.Polojiy uslubida, matematik-statistik

tahlillar Microsoft Excel dasturlari yordamida (B.A.Dospexov, 1985) bo‘yicha hisoblandi.

Tajribada ko‘p yillik va ko‘p o‘rimli sudan o‘tining Chimbayskiy yubileyniy navining urug‘ ekish me’yori va o‘rish muddatlari o‘rganiladi. Variantlar soni 12 ta, paykallar soni 36 ta.

Dala tajribalari 3 qaytariqda qo‘yiladi, paykallar kengligi 20 m2, shundan o‘rtadagi 2 ta qator hisobli, chetdagi 2 ta qator himoya qatorlari qilib belgilanadi., tajribaning umumiy maydoni 0,024 ga Variantlar rendomizatsiya usulida joylashtiriladi.

Ilmiy tadqiqotlarda dala tajribalarni joylashtirish, hisob-kitoblar, kuzatishlar “Qishloq xo‘jalik ekinlari navlarini sinash davlat komissiyasining uslubiy qo‘llanmasi”, “Dala tajribalarini o‘tkazish uslublari” (PSUEAITI) asosida amalga oshiriladi.Tajriba 2022-yili may oyining birinchi o’n kunlik to’rtda qaytariqda to’rtda variantda 0,10ga maydonga joylashtiriladi. Sholining Iskandar va Tarona navlari ekiladi.

Tadqiqot natijalari va ularning muhokamasi.

Hosilning fotosintez jarayonida, quyosh nurlarining energiyasi o‘simlik biomassasi energiyasiga, ya’ni quyosh kinetik energiyasi potensial energiyaga aylanadi. Bu jarayonning samaradorligi hosil, ekinzorning fotosintezlaydigan tizim sifatidagi faoliyatiga bog‘liq. Fotosintez tizimining xususiyatlari bitta alohida olingan o‘simlik xususiyatlaridan farq qiladi. Misol uchun, bitta o‘simlikning oziqlanish maydoni oshirilsa, u bilan bog‘liq holda yoritilganlik ham oshirilsa o‘simlikning urug‘ mahsuldorligi oshadi. Ammo senoz uchun hosildorlikni oshirish o‘simliklar qalinligini ma’lum darajada oshirish bilan bog‘liq. Buning uchun senoz va alohida bir o‘simlikning mahsuldorligini maksimal oshirish sharoitlari bir-biriga to‘g‘ri kelmaydi. Fotosintez mahsuldorligini A.N.Nichiporovich, I.S.Shatilov o‘rganishganlar [1, -27 b.].

Juda ko‘p omillarni – tuproq unumdorligi, ma’danli oziqlanish, begona o‘tlar, kasalliklarning ta’sirini boshqarish mumkin. Hosil shakllanishini o‘simliklarning rivojlanishi, fotosintiz faolligini oldindan belgilangan o‘lchamlar asosida boshqarish mumkin. Fotosintetik faol radiatsiya. Fotosintez jarayonida quyosh radiatsiyasining energiyasi yashil o‘simliklar tomonidan qancha ko‘p yutilsa don hosili shuncha ko‘p bo‘ladi. Fotosintez jarayonidaquyosh nuri energiyasi ta’sirida o‘simlikdagi suyuqlik erkin gaz holatida ajralib chiqadi, bu jarayonda vodorod o‘simlikda karbonat gazi bilan organik moddalarni tashkil qiladi.

O‘simliklarda fotosintetik faoliyatining asosiy ko‘rsatkichlaridan biri barg yuzasining kattaligi va uning shakllanish dinamikasidir. Yuqori va sifatli hosilni asosan optimal barg yuzasini hosil qilgan, butun o‘suv davomida, uzoq vaqt ishlay oladigan ekinzorlardangina olish mumkin. Shu maqsadda xar bir o‘simlik uchun aniq o‘stirish sharoitida, o‘suv davri davomida eng qulay o‘sish, rivojlanish, fotosintetik potensial quvvatiga ega bo‘lishi uchun maqbul tup qalinligi, oziqlanish rejimi hosil qilinadi. Bunda hamma agrotexnik usullar o‘simlikda optimal barg yuzasini hosil qilishga, hamda davomli faol ishlaydigan fotosintetik quvvatga ega ekinzor tashkil qilishga qaratilgan bo‘lishi kerak.

Yorug'lik sholi o'simligi hayotining eng muhim omillaridan biridir. Yorug'lik, kunining uzunligi, yorug'likning intensivligi va uning spektr tarkibi, fotosintez intensivligiga, organik moddalarning to'planishiga, o'simlikning o'sishiga, rivojlanishiga, ayrim organlarning shakllanishiga ta'sir qiladi. Yorug'lik barglar tuproq yuzasida paydo bo'lmasdan o'simlikka ta'sir ko'rsatadi.

Sholi o'simligida barglar 3 ta yarusga ajralib o'rganiladi. O'rta yarusdagi barglar o'sish konusining rivojlanishini ta'minlaydi va ularning faoliyati tufayli ruvakda boshoq hosil bo'ladi. Bu barglar o'simliklarning vegetativ xolatidan generativ xolatiga o'tishiga ta'sir etadi. Ularning funksiyasi jarayonida paydo bo'ladigan noqulay sharoit, ya'ni uzoq vaqt bostirib sug'orish sholi tuplarining qalinligi, poya quyi qismiga yorug'lik yaxshi tushmasligi, azotli oziqalarning yetishmasligi tufayli barglarning faoliyati yomonlashadi, o'simliklarning o'sishi va rivojlanishi sekinlashadi. P.S.Yerigin tajribalarida 5-7 barglar olib tashlanganda sholi hosili 35 % ga kamayganligi kuzatilgan [2, -24-25 b.].

Kechpishar sholi navlarining barg yuzasi juda ko'p tashqi muhit omillariga, shu jumladan, ekish muddatlariga bog'liq holda o'zgaradi. Tajribalarda sholining «Tarona» va o'rtapishar «Iskandar» navlarini Toshkent viloyati sharoitida (1-jadval) turli ekish muddatlarida ko'chat usulida ekilganda barg yuzasining o'zgarishi o'rganildi. Ikkala navda ham o'simliklarning barg yuzasi birinchi aprelda kassetaga va o'ttizinchi aprelda dalaga ekilgan variantlarda oshib borishi bilan ko'payib bordi.

Barglar yuzasining ortib borishi bilan barg indeksi 4-5 ga yetganda bir gektarda 40-50 ming $m^2$ barg yuzasi hosil bo'ladi va FARning barglar tomonidan yutilishi maksimal darajaga 75-80 % yoki umumiy radiatsiyaning 40 % iga yetadi. Barglar yuzasining yanada oshishi FAR yutilishini oshirmaydi. Ekinzorda barglarning shakllanishi optimal bo'lsa, FARning yutilishi o'suv davrida tushayotgan radiatsiyaning 50-60 % iga teng bo'ladi.

Tadqiqot olib borilgan yillarda Toshkent viloyatida sholining «Tarona» navining bitta o'simlikning barg sathi tuplanish fazasida birinchi aprelda kassetaga va o'ttizinchi aprelda dalaga ekilgan variantlarda 194,2-201,7 $sm^2$/o'simlikni, ro'vaklash fazasida 273,5-282,9 $sm^2$/o'simlikni, pishish fazasiga kelib 199,6-206,5 $sm^2$/o'simlikni tashkil qildi. Lekin maydon birligidagi barg sathi hamma ekish muddatlarida ko'chat usulida ekilganda 33,2-42.8 $m^2$/gektar bo'lganligi aniqlandi (1-jadval).

O'rganilayotgan «Iskandar» navida ham yuqoridagi qonuniyat yana bir bor takrorlandi. Eng yuqori ko'rsatkich birinchi aprelda kassetaga va o'ttizinchi aprelda dalaga ekilgan variantlarda kuzatilib maydon birligidagi o'simliklarning barg sathi 41,2 $m^2$/gektarni tashkil qildi. Bu 1 $m^2$ maydondagi o'simliklarning qo'p bo'lganligi bilan bog'liq bo'ldi (1-jadval).

Hosil miqdori FARdan foydalanish koeffitsientiga bog'liq bo'lib, bu ko'rsatkich 2-3 %, juda yuqori hosil olinganda 4-5 % va undan yuqori bo'lishi mumkin.

O'simliklarning vegetatsiyasi davrida fotosintezning sof mahsuldorligi rivojlanish fazalarida o'zgarib turadi. O'simliklarning rivojlanishini boshlarida

unchalik yuqori bo‘lmaydi, keyingi bosqichlarida asta – sekin yuqorilashib, gullash fazasigacha ortib boradi. Keyingi fazalarida (sut va mum pishish) fotosintezning sof mahsuldorligi kamayib boradi. Ro‘vaklash fazasida ikkala navda ham («Tarona», «Iskandar») o‘simliklarni barg yuzasini ko‘payganligi, bu jarayon gullash fazasigacha davom etganligi kuzatildi.

Bu davrda ya’ni ro‘vaklash fazasidan mum pishish fazasigacha fotosintez sof mahsuldorligi oshib bordi. O‘simlik ekish muddatlariga bog‘liq ravishda tup qalinligining oshib borishi bilan fotosintez sof mahsuldorligi kamayib boradi.

*1-jadval*

*Kechpishar sholi navlarini ekish muddatlari va me’yorlarining barg sathiga ta’siri (Toshkent viloyati, 2022-2023 yy.)*

| Sholi navlari | Ekish muddati | | Bir o‘simlikdagi barg sathi, $sm^2$/o‘simlik | | | Maydon birligidagi o‘simliklar barg sathi, $m^2$/ga | | |
|---|---|---|---|---|---|---|---|---|
| | kassetaga | dalaga | Tuplash | Ruvaklash | Pishish | Tuplash | Ruvaklash | Pishish |
| Tarona | 01.04. | 30.04. | 194,2 | 273,5 | 199,6 | 41,7 | 58,7 | 42,8 |
| | 10.04. | 10.05. | 201,7 | 280,1 | 204,5 | 37,3 | 51,8 | 37,8 |
| | 20.04. | 20.05. | 198,1 | 282,9 | 206,5 | 31,8 | 45,4 | 33,2 |
| Iskandar | 10.04. | 01.may | 179,3 | 276,5 | 201,8 | 37,8 | 56,5 | 41,2 |
| | 20.04. | 15.may | 168,4 | 266,1 | 194,3 | 36,4 | 52,8 | 38,6 |
| | 30.04. | 25.may | 163,8 | 250,4 | 182,8 | 31,9 | 46,2 | 33,7 |

Xulosa. Shunday qilib kechpishar sholini “Tarona” va “Iskandar” navlarining sof mahsuldorligi faqat o‘simlikning assimilyasiya apparatining (bargning) kattaligiga, ishlashining davomiyligiga, barglar ishining intensivligigagina bog‘liq bo‘lmasdan agrotexnik usullarning to‘g‘ri qo‘llanishiga ham bog‘liq bo‘ladi. Tajribalarda fotosintezning sof mahsuldorligining eng yuqori ko‘rsatgichi “Tarona” navida “Iskandar” naviga nisbatan hamma rivojlanish fazalarida yuqori bo‘ldi.

## Foydalanilgan adabiyotlar

1. Aripov R., Xalilov N. O‘simlikshunoslik. T.:- 2008. 27b
2. Чирков В.Н ва бошқалар. Шоличилик, Т.:Ўқитувчи,- 1977. 24-25б
3. https://acsess.onlinelibrary.wiley.com/doi/full/10.1002/agj2.20593
4. https://www.mdpi.com/2223-7747/12/9/1899

**MUNDARIJA**

*D: Qishloq xo'jaligi. Kimyo. Biologiya. Tibbiyot. Ekologiya. Fanlari*

**Matyakubova Y.A., Jumaniyozova Ch.E., Ro'zmetova M.I.** Spread of cytospora disease ...2
**Maxmudov N.M., Ruziyeva A.A., Muinova K.K., Rustamova S.B.**Modernized aspects of management patients with restenosis.....5
**Nizomov X. Sh. , Kushnazarov R.S., Pulatov Sh.Sh., Ruziyeva A. A.** Restenoz kuzatilgan bemorlarni olib borishda modernizatsiyalashtirilgan aspektlar .....12
**Shayqulov D.O'., Yodgorova M.N.** Forel baliqlarini O'zbekiston iqlimiga iqlimlashtirish ...17
**Ravshanova N.A., Polvonov S.A., Otayorova G.** Testing the technology of obtaining two grains from one field in one ear under production conditions .....23
**Shamuratova G.M.** Sug'oriladigan o'tloqi-allyuvial tuproq tarkibidagi mikroorganizmlar miqdoriga biopreparatlarning ta'siri .....29
**Атоева Д.О.** Коллемболаларнинг ғўза агроценози тупроқ қатламларида тарқалиши .....32
**Ўразметов Қ., Jabberganov A.** Sholini turli ekish muddatlarida ko'chat usulida ekishning barg sathiga ta'siri .....36