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G'O'ZA TUNLAMINING SAMARALI ENTOMOFAG VA MIKROORGANIZMLARI

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Annotasiya.

Maqolada g'ozalarning tunlamining agrobiosenozda tabiiy uchraydigan entomofag va mikroorganizmlari hisobga olingan va ularni g'ozalarning agrobiosenozida zararkunandalarga ixtisoslashganligi tadqiq etilgan. G'ozalarning agrobiosenozida zararkunandalar sonini tabiiy boshqarishi mumkin bo'lgan mikroorganizmlarning 8 ta turi aniqlandi. Ular g'ozalarning agrobiosenozining turli muhitlari va turli organizmlardan ajratib olindi. Jumladan, *Bacillus thuringiensis*, *Nuclear polyhedrosis*, *Beauveria bassiana*, *Streptomyces avermitilis*, *Metarhizium*, *Paecilomyces fumosoroseus*, *Bacillus amyloliquefaciens* turlari bugungi kunda turli shtaplarda saqlanmoqda va bir nechta turdagi biopreparatlar (Biogutten) ishlab chiqarishga joriy qilingan.

Kalit so'zlar: G'ozalarning agrobiosenoz, mikroorganizim, entomofag, zararkunanda, Lepidoptera, parazit, yirtqich, tadqiqot, natija.

Аннотация.

В статье рассматриваются встречающиеся в природе энтомофаги и микроорганизмы хлопкового агробиоценоза, изучается их специализация в хлопковом агробиоценозе. Выявлено 8 видов микроорганизмов, способных естественным образом контролировать численность вредителей в хлопковом



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агробиоценозе. Они были выделены из различных сред и из различных организмов хлопкового агробиоценоза. В частности, виды *Bacillus thuringiensis*, *Nuclear polyhedrosis*, *Beauveria bassiana*, *Beauveria bassiana*, *Streptomyces avermitilis*, *Metarhizium*, *Paecilomyces fumosoroseum*, *Bacillus amyloliquefaciens* в настоящее время хранятся в различных запасах, а в производство внедрены несколько видов биопрепаратов (Biogutten).

Ключевые слова: Хлопок, агробиоценоз, микроорганизмы, энтомофаг, вредитель, чешуекрылые, паразит, хищник, исследование, результат.

Abstract.

The article discusses naturally occurring entomophages and microorganisms of cotton agrobiocenosis, and studies their specialization in cotton agrobiocenosis. Eight species of microorganisms capable of naturally controlling the number of pests in cotton agrobiocenosis have been identified. They were isolated from various environments and from various organisms of cotton agrobiocenosis. In particular, the species *Bacillus thuringiensis*, *Nuclear polyhedrosis*, *Beauveria bassiana*, *Beauveria bassiana*, *Streptomyces avermitilis*, *Metarhizium*, *Paecilomyces fumosoroseum*, *Bacillus amyloliquefaciens* are currently stored in various reserves, and several types of biopreparations (Biogutten) have been introduced into production.

Keywords: Cotton, agrobiocenosis, microorganisms, entomophage, pest, Lepidoptera, parasite, predator, research, result.

Kirish.

Butun dunyoda global e'kologik o'zgarishlar bo'layotgani sabablik, qishloq xo'jaligi e'kinlariga kasalik va zararkunandalarning tasiri ortib bormoqda.

So'ngi yillarda g'o'za agrobiosenozida uchraydigan zararkunandalarni sonini boshqarish murakkablashib bormoqda. Bunga sabab zararkunandalarga qarshi tartibsiz qo'llanilayotgan kimyoviy vositalar tasirida foydali aranizimlarni ham biosenozdan qirilib ketishi va tabiiy boshqariluv muvozanatini buzulishiga olib kelmoqda. FAO ko'p yillar davomida qishloq xo'jaligi uchun mikroorganizmlar va o'simliklarni himoya qilish bo'yicha texnik ishlarni amalga oshirib kelmoqta, shu jumladan ulardan o'simliklarni himoya qilishning kompleks dasturlarida foydalanish ko'zda tutilgan. FAO, shuningdek, Biologik xilma-xillik to'g'risidagi konventsiya doirasida ushbu sohadagi ikkita global tashabbusni qo'llab-quvvatlaydi[2,4,5,13]. Mikrobiologik preparatlarni ishlab chiqarish bugungi kunda ularga bo'lgan talabning yuqoriligi sababli aktual hisoblanadi va bu preparatlarni ishlab chiqarish

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laboratoriya sharoitida, hasharotdan yoki tuproqdan turli xil mikroorganizmlarni aniqlash orqali amalga oshiriladi. Va ularni sun'iy oзуqalar yordamida ko'paytirib olinadi. Hozirgacha ko'plab foydali mikroorganizmlar o'rganilgan. Ular qishloq xo'jaligida muhim ahamiyatga ega. Mikroorganizmlar yordamida o'simliklar zarur bo'lgan oziq moddalarni o'zlashtiradi xamda zararkunandalar va o'simlik kasalliklari bilan ham qarshi kurashadigan turlari mavjud

Mamlakatimizda ham bu boradagi muammolarni xal qilish maqsadida 2024-2025-yillarga Xitoy davlatidan paxtaning g'o'za tunlami chidamli navlarini olib kelinishi ham zararkunandalarga qarshi kurashishning naqadar dolzarb muammoga aylanganini ko'rsatadi. Mamlakatimiz olimlari tamonidan yaratilgan paxta navlari juda serhosil va turli eksterimal sharoitlarga maslashuvchan ammmo ko'sak qurtiga chidamli emas. Xitoy davlatida yaratilgan BT navlari aynan g'o'za tunlami zararkunandalariga chidamli ekanligi bilan istiqbolli ko'rilmogda.

Natijalar va munozara.

Bu borada O'zbekiston sharoitida g'o'za tunlamiga qarshi e'ng samarali mikrobiologik preparat va entomofaglarni o'rganish, yangi turlarini tadqiq etish dolzarbligicha qolmogda. Olib borilgan tadqiqotlarga ko'ra Toshkent viloyatining turli xududlaridagi g'o'za agrobiosenozi entomofaklar va entomomikroorganizmlar faunasi o'rganildi va turlari tadqiq etildi.

1-jadval

G'o'za agrobiosenozida zararkunandalar sonini tabiiy boshqarishi mumkin bo'lgan mikroorganizmlar

№	Mikroorganizmlarni turlari	Zararkunanda turlari
1	<i>Bacillus thuringiensis</i>	<i>Coleoptera</i> va <i>Lepidoptera</i>
2	<i>Nuclear polyhedrosis</i>	G'o'za tunlami
3	<i>Beauveria bassiana</i>	<i>Lepidoptera</i>
4	<i>Beauveria bassiana</i>	<i>Lepidoptera</i>
5	<i>Streptomyces avermitilis</i>	Tunlamlar, kuya, bargo'rar
6	<i>Metarhizium</i>	Mevaxo'r
7	<i>Paecilomyces fumosoroseum</i>	Tunlamlar lichinkalari
8	<i>Bacillus amyloliquefaciens</i>	Bacterial kuyish

Toshkent viloyati g'o'za agrobiosenozida 8 ta turdagi mikroorganizmlar uchradi va ular turli darachada g'o'za agrobiosenozida uchraydigan zararkunandalarni sonini boshqarib turishda katta ahamiyatga ega ekanligi kuzatildi. Jumladan *Bacillus thuringiensis*, *Nuclear polyhedrosis*, *Beauveria*

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bassiana, *Beauveria bassiana*, *Streptomyces avermitilis*, *Metarhizium*, *Paecilomyces fumosoroseum*, *Bacillus amyloliquefaciens* turlari aniqlandi.

Ushbu turlar havo harorati issiq kelgan yillari malum bir darachada kam tarqalib ko'p xollarda tinim davriga tushishi kuzatildi. Biz olib borgan tadqiqotlarda asosan *Beauveria bassiana* va *Bacillus thuringiensis* keng tarqalganligi kuzatildi. Bu mikroorganizmlar g'o'za tunlami qurtlaridan ajratib olindi va laboratoriyada ko'paytirildi.



1-rasm. *Bacillus thuringiensis* (Bt) bakteriyasi bilan zararlangan g'o'za tunlami qurtlari (TDAU. 2025-yil)

Afsuski, biologik mahsulotlar uchun ommaviy ko'payish va rivojlanish uchun optimal harorat 20-25C° hisoblanadi. Bu shuni anglatadiki, ularni 10 ° C dan yuqori bo'lgan va 30-35 ° C dan yuqori bo'lmagan havo haroratida foydalanish mumkin, 28°C dan keyin preparatning faolligi pasayadi. Shu munosabat bilan Markaziy

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Osiyoda biopreparatlarni entomofaglar bilan integrasiyalash qilish tartibi va tavsiyasini ishlab chiqishimiz kerak.

Entomofaglar ikkita katta guruhga bo'linadi, yirtqichlar va parazitlar. Parazitlar xo'jayin tanasi ichiga yoki tanasining ustiga tuxum qo'yadi va lichinkalari xo'jayinini nobud qiladi. Yirtqichlar o'ljani ovlaydi, o'ldiradi va yiydi. (2-jadval)

2-jadval

Yirtqich va parazit entomofaglarining turlari

Entomofag turlari	O'simlik zararkunandalarining turlari
Parazit entomofaglar	
<i>Encarsia formosa</i>	Oq qanot
<i>Eretmocerus eremicus</i>	Oq qanot
<i>Aphidius colemani</i>	shiralar
<i>Aphidius ervi</i>	shiralar
<i>Diglyphus isaea</i>	Tanga qanotlilar
<i>Anagyrus pseudococci</i>	Qalqondori va soxta qalqondorilar
<i>Brobracon hebetor</i>	Har xil turdagi kapalaklarning lichinkalarida, <u>Galleria mellonella</u> , <u>Sitotroga cerealella</u>
Yirtqich entomofaglar	
<i>Amblyseius montdorensis</i>	Trips, oq qanot, kanalar
<i>Amblyseius swirskii</i>	Trips, oq qanot, kanalar
<i>Hypoaspis miles</i>	Kamstok qurti, shiralar va b,sh
<i>Macrolophus pygmaeus</i>	Tamaki va issiqxona oq qanoti
<i>Delphastus catalinae</i>	oq qanot
<i>Cryptolaemus montrouzieri</i>	Kamstok qurti
<i>Orius laevigatus</i>	Trips
Akorifaglar	
<i>Neoseiulus californicus</i>	O'rgamchik kana
<i>Amblyseius andersoni</i>	O'rgamchik kana
<i>Neoseiulus cucumeris</i>	Trips, oq qanot, O'rgamchik kana
<i>Phytoseiulus persimilis</i>	O'rgamchik kana

O'zbekiston laboratoriyalarida zararkunandalarda parazitlik qiluvchi entomofaglarining ko'plab turlari ommaviy ko'paymoqda.

G'o'za tunlamiga qarshi samarasi yuqori bo'lgan mikrobiologik preparat va entomofagni aniqlash: G'o'zaning eng xavfli zararkunandasi ko'sak qurti bo'lib, har yili hosilning sifati va miqdoriga katta zarar yetkazadi.

Unga qarshi kurashish uchun biz chuqur o'rganib, O'zbekiston sharoitida integratsiya uchun eng mos mikrobiologik preparat va entomofagni aniqladik.

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Ko'sak qurtiga qarshi olib borgan tadqiqotlariga ko'ra, eng yaxshi ko'rsatkich *Trichogramma chilonis* Ishii entomofagidir. Trichogrammaning yangi issiqlikka chidamli turi Xitoy davlatidan integrasiya qilingan issiq iqlimga moslashuvchanligi yuqori. Agrobiotsenozda Trichogrammatidae oilasigamansub parazitlarning yetakchi turlari va ularni uchrash darajalari (3-jadvalda) keltirilgan.

3-jadval

Agrotsenozlarda Trichogrammatidae oilasiga mansub parazitlarning yetakchi turlari va ularning nisbati, uchrashi.

№	Trichogrammatidae oilasi	Aniqlangan xo'jayin turi	Nisbat	Uchrash darajasi
	<i>Trichogramma chilonis</i>	<i>Agrotis ipsilon</i> Hufn. <i>Helicoverpa armigera</i> Hbn <i>Agrotis segetum</i> Schiff	1:15	+++
1	<i>Trichogramma dendrolimi</i>	<i>Helicoverpa armigera</i> Hbn <i>Agrotis segetum</i> Schiff <i>Autographa gamma</i> . L	1:25	+
2	<i>Trichogramma pintoi</i>	<i>Agrotis ipsilon</i> Hufn. <i>Helicoverpa armigera</i> Hbn <i>Agrotis segetum</i> Schiff	1:18	+++
3	<i>Trichogramma evanescens</i>	<i>Helicoverpa armigera</i> Hbn <i>Agrotis segetum</i> Schiff	1:20	++

Mamlakatimiz g'o'za agrobiosenozida g'o'za tunlamining tabiiy boshqarilishiga katta xissa qo'shadigan mikroorganizmlar guruhi mavjud. Lekin ularni parazit-xo'jayin muvozanati buzilganligi kuzatildi. O'zbekistonda ko'plab olimlar g'o'za tunlamiga zarar yetkazuvchi mikroorganizmlarni o'rganishiga qaramasdan, bugungi kunda bu yo'nalish dolzarbligicha qolayaotganligi kutazilmoqda. G'o'za tunlami, g'o'za va boshqa qishloq xo'jaligi o'simliklarining asosiy zararkunandalaridan biridir. Virusli mikroorganizmlarni o'z ichiga olgan bunday zararkunandalar sonini cheklaydigan tabiiy omillar mavjud. Ular orasida viruslar katta ahamiyatga ega, ular faqat xo'jayin-hasharotlarni nobut qiladigan o'ziga xos ta'sirga ega. Tadqiqot natijalariga ko'ra, ana shunday entomopatogen virus g'o'za tunlamiga qarshi istiqbolli biologik mahsulot yaratishga asos bo'ladi.

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