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DIASPIDIOTUS BERLESE, 1896 AVLODI BO‘YICHA ILMIY TADQIQOTLARNING BIBLIOMETRIK TAHLILI

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Maqolada Diaspidiotus avlodi vakillariga oid ilmiy tadqiqotlar bibliometrik tahlil asosida o‘rganildi. “Scopus”, “Web of Science” va “PubMed” bazalarida jami 181 ta maqola (2025-yil holatiga ko‘ra) aniqlanib, Bibliometrix va VOSviewer dasturlari orqali tahlil qilindi. Biologik nazorat, molekulyar identifikatsiya va ekologik monitoring asosiy mavzular sifatida ajralib turdi. Yetakchi mualliflar, jurnallar va ilmiy klasterlar aniqlanib, Diaspidiotus bo‘yicha global tadqiqotlar dinamikasi yoritildi. Tahlil natijalari samarali nazorat strategiyalarini belgilashda muhim o‘rin tutadi.

Kalit so‘zlar: *Diaspidiotus, Diaspididae, Scopus, Web of Science, PubMed, VOSviewer, bibliometrik tahlil, ilmiy tadqiqotlar*.

В статье проведен библиометрический анализ научных исследований, посвящённых представителям рода Diaspidiotus. По состоянию на 2025 год в базах данных Scopus, Web of Science и PubMed выявлена 181 статья. Весь массив данных был проанализирован с использованием программ Bibliometrix и VOSviewer. Установлено, что основными направлениями работ являются биологический контроль, молекулярная идентификация и экологический мониторинг. Определены ведущие авторы, ключевые журналы и исследовательские кластеры, отражающие глобальную динамику научной активности по роду Diaspidiotus. Полученные результаты актуальны для разработки эффективных стратегий контроля вредителей.

Ключевые слова: *Diaspidiotus, Diaspididae, Scopus, Web of Science, PubMed, VOSviewer, библиометрический анализ, научные исследования*.

Kirish

Hozirgi kunda qishloq xo‘jaligi ekinlari hosildorligiga salbiy ta’sir ko‘rsatadigan zararkunanda hasharotlarni chuqur o‘rganish, ularni aniqlash va samarali nazorat qilish usullarini ishlab chiqish muhim ahamiyatga ega. Shu nuqtayi nazardan, Diaspididae oilasiga mansub *Diaspidiotus* avlodi vakillari qishloq xo‘jaligi, bog‘dorchilik va o‘rmon xo‘jaligi uchun iqtisodiy jihatdan xavfli zararkunandalar sifatida e’tirof etiladi [33]. Xususan, *Diaspidiotus perniciosus* turi olma, shaftoli va gilos kabi mevali daraxtlarga jiddiy zarar yetkazadi [3].

So‘nggi yillarda Diaspidiotus avlodiga oid hasharotlarning biologik xususiyatlari, ekologik holati, areali va invaziv potensialini o‘rganishga qaratilgan keng qamrovli ilmiy ishlar turli davlatlarda faol olib borilmoqda. O‘zbekiston hududida ham ushbu avlod vakillari bo‘yicha ilmiy izlanishlar olib borish yo‘lga qo‘yilgan [29, 38, 39]. Xorijiy mamlakatlarda esa, masalan, Shveytsariyadan S.Bacher va chexiyalik ekolog P.Pishek tomonidan global iqlim o‘zgarishi sharoitida begona organizmlarning, xususan, Diaspidiotus turlarining yangi hududlarga yoyilishi va ularning ekologik ta’siri bilan bog‘liq tadqiqotlar amalga oshirilgan. [14, 32]. X.H.Vearing (Yangi Zelandiya) esa ushbu avlodning fenologiyasi va biologik kurash usullari bo‘yicha muhim tadqiqotlar olib borgan [37]. Shuningdek, “PubMed”, “Scopus” va “Web of Science” xalqaro ma’lumotlar bazalarida *Diaspidiotus* avlodiga oid ilmiy maqolalar soni yildan-yilga ko‘paymoqda. Masalan, “PubMed” ma’lumotlar bazasidagi ushbu avlodga bag‘ishlangan maqolalarda molekulyar tahlil, biologik nazorat va mavsumiy tarqalish masalalari yoritilgan. Xitoy olimlari Che Yongsheng va Chen Shenxi *Diaspidiotus*ning kimyoviy va biologik xususiyatlarini o‘rgangan [6].

Ushbu tadqiqotda *Diaspidiotus* avlodining ilmiy manbalarda yoritilishi, yetakchi olimlarning hissasi va nashrlarning vaqt bo‘yicha o‘zgarish tendensiyasi tahlil qilindi. Bu kelajakda mazkur zararkunanda ustidan samarali nazorat choralarini ishlab chiqish va fundamental tadqiqotlarni chuqurlashtirish uchun zamin yaratadi.

Material va tadqiqot usullari

1. Ma'lumot manbai va adabiyotlarni kiritish mezonlari.

Ma'lumotlarni aniqlash A.Deo, N.Savant, A.Arora, S.Karmakarning usuli orqali amalga oshirildi [7]. Bunda 2025-yil 21-aprel holatiga ko'ra, "Scopus", "Web of Science" va "PubMed" ma'lumotlar bazalaridan olingan materiallar "*Diaspidiotus*" so'zi bo'yicha sarlavha, annotatsiya va kalit so'zlarni qidirish orqali tanlandi. Dastlabki tahlil natijasida "Scopus"da 30 ta, "Web of Science"da 134 ta va "PubMed"da 17 ta *Diaspidiotus* avlodiga oid material aniqlandi. Ma'lumotlar "Scopus"-dan scopus.csv, "Web of Science"dan savedrecs.bib va "PubMed"dan "PubMed" formatida yuklab olindi. Maqolalar sarlavhalari, annotatsiyalari va zarur hollarda to'liq matnlari asosida takrorlanishlar va mazmun jihatidan sinchkovlik bilan tekshirildi. Mavzuga aloqador bo'lmagan maqolalar chiqarib tashlandi. Tanlash jarayonining bosqichlari 1-jadvalda keltirilgan.

1-jadval

Tadqiqotga kiritilgan maqolalarni tanlash jarayoni bosqichlari

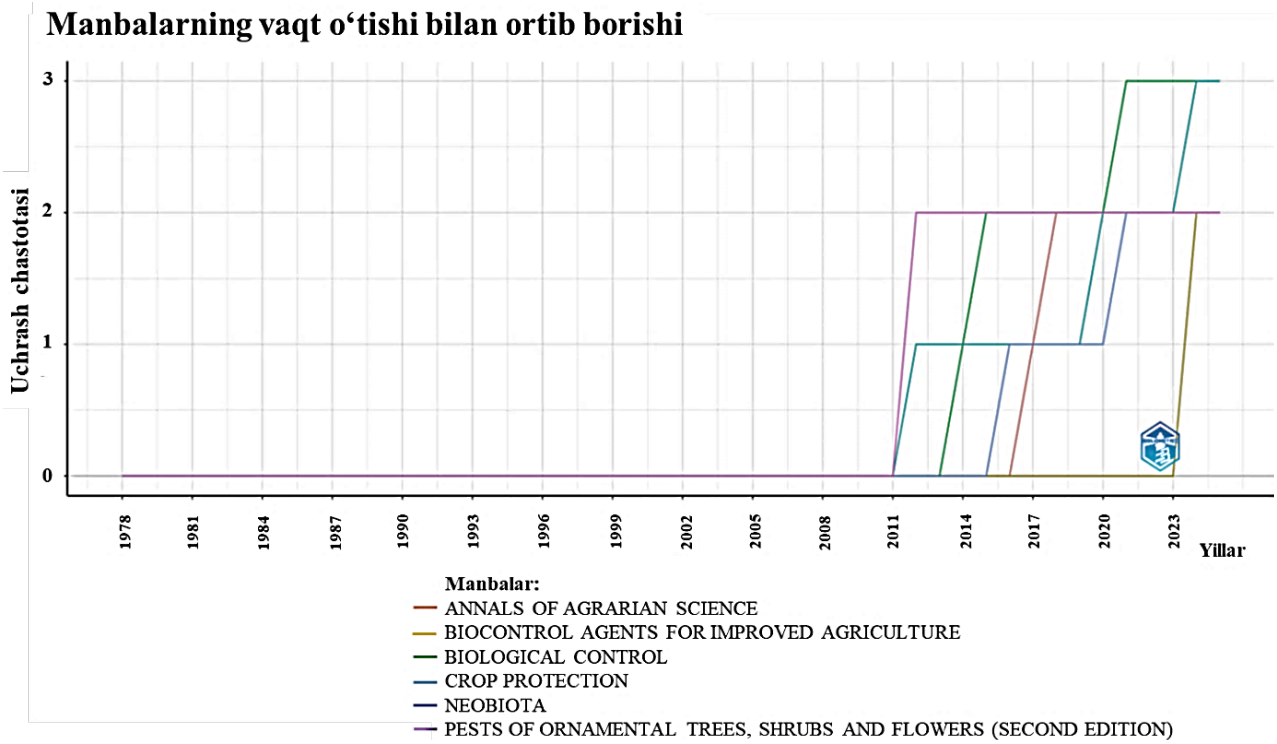
Mavzu, qamrov va muvofiqlik	Mavzu	"*Diaspidiotus*" avlodi
	Qamrov va qidiruv maydoni	Ma'lumotlar bazasi: "Scopus", "Web of Science", "PubMed". Qidiruv maydoni: Sarlavha-kirish-kalit so'z. Vaqt oralig'i: Hammasi
	Kalit so'zlarni qidiruv satri	"*Diaspidiotus*"
Skrinning	Chiqarilgan sana	"Scopus" – 18.04.2025 "Web of Science" – 17.04.2025 "PubMed" – 16.04.2025
	Yozuv aniqlangan va tekshirilgan	"Scopus" n=30 "Web of Science" n=134 "PubMed" n=17
Kiritilgan	Yozuv olib tashlandi	1-manba. Material turi: maqola. 2-manba. Manba turi: jurnal. 3-manba. Til: ingliz tili, fransuz tili, nemis tili, ispan tili, turk tili.
	Yozuv Bibliometrik uchun kiritilgan tahlil	Scopus n=28 Web of science n=134 Pub Med n=11

2. Ma'lumotlarni tahlil qilish.

Bibliometrik tahlillar va muallif kalit so'zlarining o'zaro muvofiqligini aks ettiruvchi tarmoq xaritasi "Bibliometrix" (4.1.3-versiya) R paketi va "VOSviewer" (1.6.18-versiya) yordamida tuzildi. Klaster tahlili orqali tugunlar va bog'lanishlardan iborat tarmoq xaritasi shakllantirildi. Klasterlar maqolalardagi kalit so'zlarning uchrash chastotasi asosida aniqlangan.

Natija va muhokama

"Scopus" ma'lumotlar bazasida "*Diaspidiotus*" avlodini o'rganish bo'yicha 30 ta ilmiy maqola chop etilgan bo'lib, dastlabki manba 1978-yilga to'g'ri keladi. Vilyam Olkovski, Helga Olkovski, Alan I. Kaplan va Robert Van Den Boshlar tomonidan yozilgan "Shahar hududlarida biologik kurash imkoniyatlari: soya beruvchi daraxtlar hasharot zararkunandalari" nomli kitobda ushbu avlod haqida ma'lumot berilgan [24]. 1978–2025-yillardagi maqolalar tahlili shuni ko'rsatadiki, 2012 va 2024-yillarning har birida 5 tadan maqola "*Diaspidiotus*" avlodini o'rganishga bag'ishlangan. Ko'pincha yillar kesimida ushbu avlodni o'rganishga qaratilgan maqolalar soni 1 tadan oshmaydi (1-rasm).



1-rasm. *Diaspidiotus* avlodiga oid maqolalarning "Scopus" ma'lumotlar bazasidagi nashr tendensiyasi.

Tadqiqot jarayonida "Scopus" ma'lumotlar bazasidagi *Diaspidiotus* avlodiga doir 30 ta ilmiy maqola 21 ta jurnalda e'lon qilingani aniqlandi. Ushbu bazada nashr etilgan maqolalar soni asosida eng ko'p hissa qo'shgan 10 ta jurnal ro'yxati tuzildi. Bu jurnallar ichida zoologiya yo'nalishiga alohida e'tibor qaratadigan nashrlar yetakchi o'rin tutadi. "Biological Control" jurnali ushbu avlod xususiyatlarini o'rganuvchi 3 ta maqola bilan yetakchilik qilmoqda. Undan keyin "Crop Protection" jurnali keladi, bu jurnalda ham shu mavzu bo'yicha 3 ta maqola chop etilgan. Uchinchi o'rinda esa "Annals of Agrarian Science" jurnali joylashgan bo'lib, unda mazkur mavzuga oid 2 ta maqola nashr qilingan (2-jadval).

2-jadval

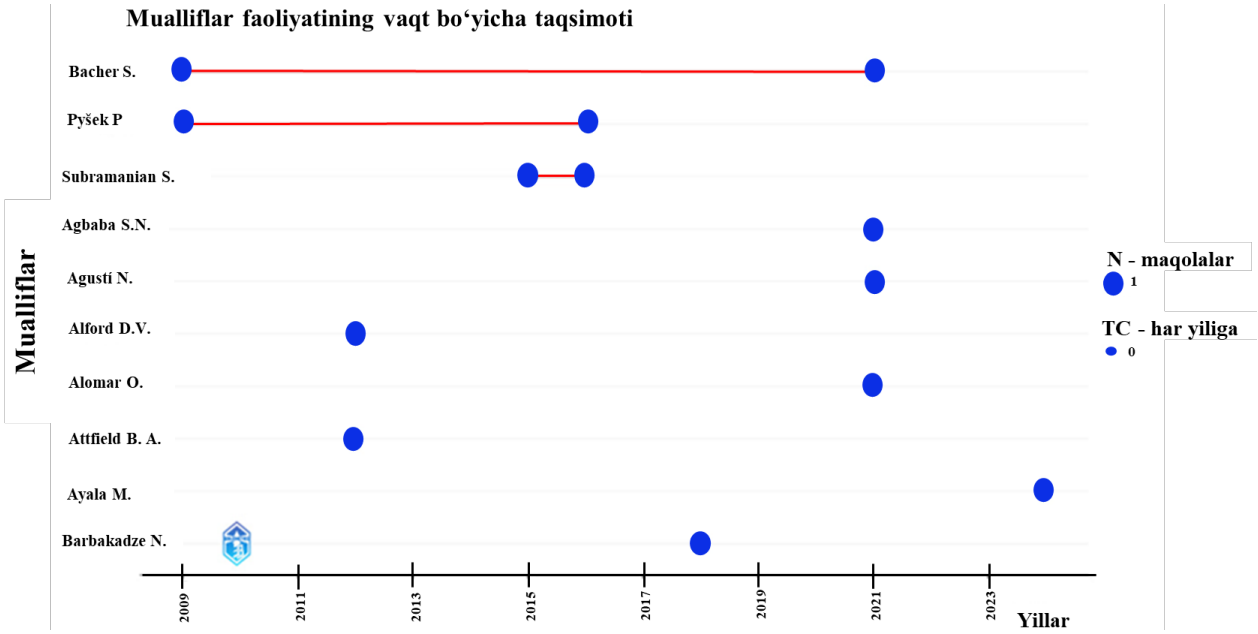
“Scopus” ma’lumotlar bazasida *Diaspidiotus* avlodiga oid maqolalar soni bo‘yicha yetakchi jurnallar

T/r	Jurnal nomi	Maqolalar soni
1	“Biological Control”	3
2	“Crop Protection”	3
3	“Annals of Agrarian Science”	2
4	“Biocontrol Agents for Improved Agriculture”	2
5	“Neobiota”	2
6	“Pests of Ornamental Trees, Shrubs and Flowers (Second Edition)”	2
7	“Arthropod Structure & Development”	1
8	“Braconidae of the Middle East (Hymenoptera)”	1
9	“Comparative Cytogenetics”	1
10	“Concise Illustrated Dictionary of Biocontrol Terms”	1

“Scopus” ma’lumotlar bazasida *Diaspidiotus* avlodini o‘rganishga 160 nafar muallif hissa qo‘shgan bo‘lib, ular tomonidan ushbu mavzuga oid jami 146 ta maqola nashr etilgan. Shveytsariyalik ekolog S.Bacher (h-indeksi 52 bo‘lib, 25364 ta maqoladagi 18504 ta iqtibosga ega) va Chexiya Fanlar akademiyasining olimi P.Pishek birgalikda 2 ta ilmiy maqola yozgan. Ular iqlim o‘zgarishi sharoitida yangi paydo bo‘lgan turlarning invaziv xususiyatlarini o‘rganib, begona turlarni atrof-muhitga ta’sir darajasiga qarab boshqarishda ularning ustuvorligi muhim ahamiyat kasb etayotganini ta’kidlagan. Bu tadqiqotlar *Diaspidiotus* avlodi kabi hasharotlarga ham qaratilgan [14, 32].

Hindistonlik entomolog olim S.Subramanian (h-indeksi 12 bo‘lib, 562 ta maqolasidan 517 tasida iqtiboslar keltirilgan) 78 ta maqolaning muallifi hisoblanadi. U hasharotlar gormonlari va Thripidae oilasining morfologik tuzilishi bo‘yicha tadqiqotlarida *Diaspidiotus* avlodi haqida ma’lumotlar keltirib o‘tgan [13, 30].

Ispaniyalik N.Agusti tomonidan Artropod yirtqichlarining beda dalasidan shaftoli bog‘iga o‘tishini tekshirish uchun hasharotlarning tarqalishini molekulyar kuzatishda *Diaspidiotus perniciosus* (Comstock) turida o‘zining tajribalarini o‘tkazgan [2]. Olim ushbu tadqiqotlari jarayonida *Diaspidiotus perniciosus* (Comstock) turidan foydalanib, o‘zining ilmiy tajribalarini amalga oshirgan [1].



2-rasm. Eng yaxshi mualliflar nashrlarining vaqt bo‘yicha taqsimoti.

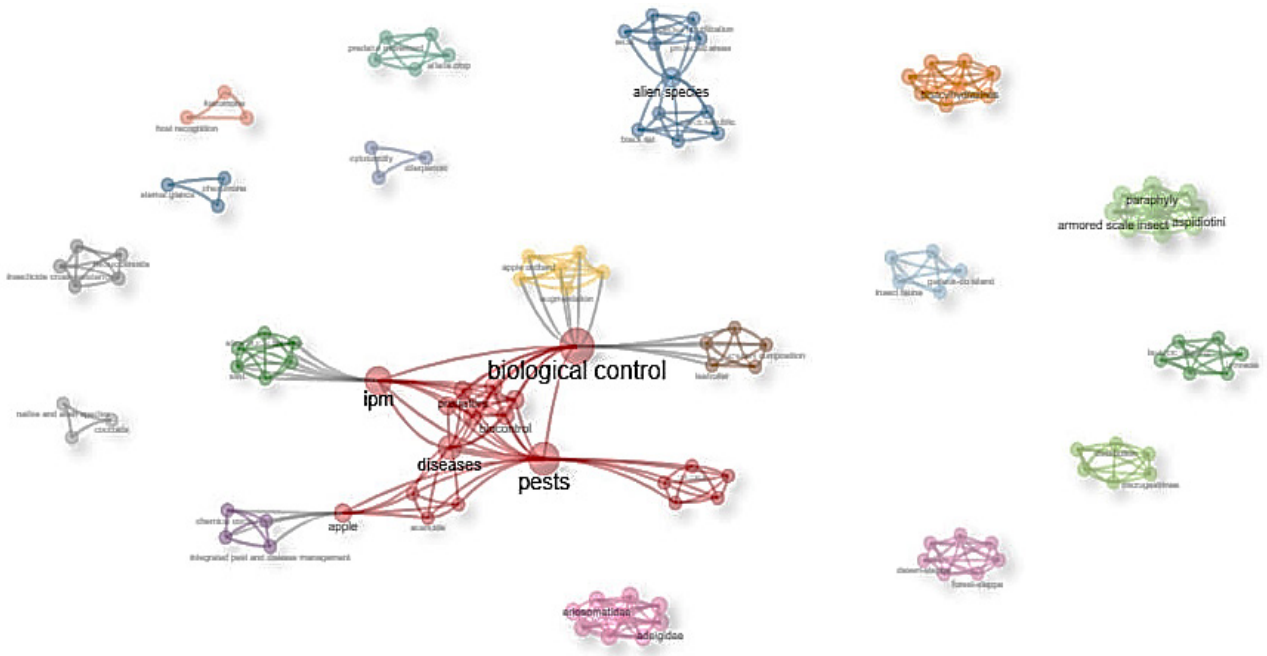
Eslatma: Doiralar o‘lchami yilda nashr etilgan maqolalar chastotasi bilan bog‘liq; doiralar rangining intensivligi maqolalarning ahamiyatini ko‘rsatadi.

3-jadval

“Scopus” bazasidagi *Diaspidiotus* avlodiga oid ishlar mualliflari va nashrlar haqida ma’lumot

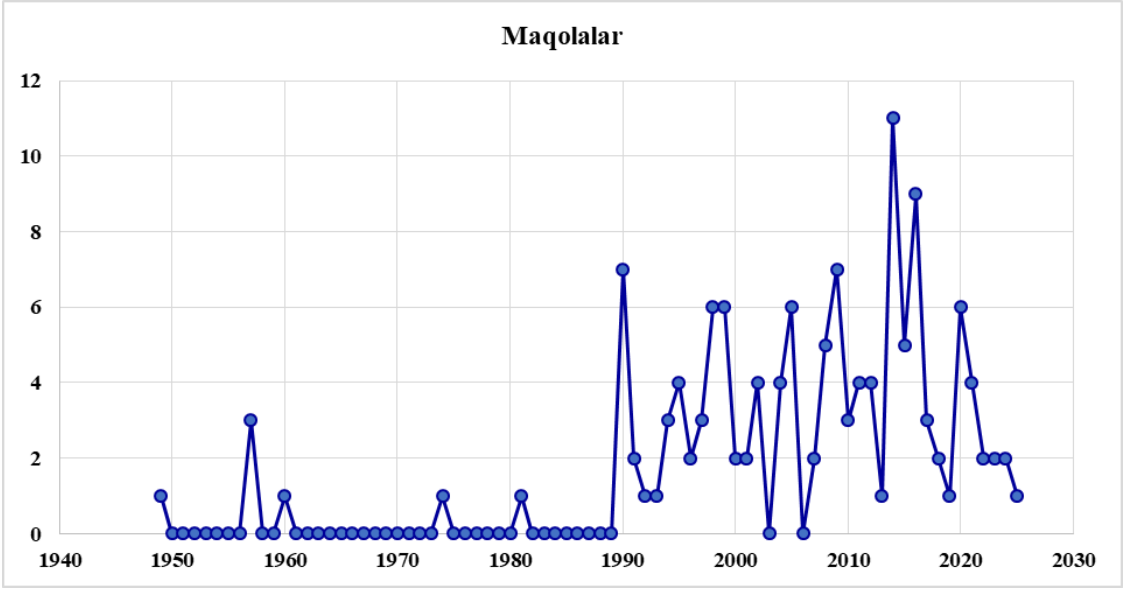
T/r	Muallif	Mansublik	Nashrlar soni	Muallif ulushi
1	Bacher S.	Friburg universiteti Ekologiya va evolyutsiya bo‘limi, Shveytsariya.	2	0,08
2	Pishek P.	Chexiya Fanlar akademiyasi Botanika instituti, Chexiya.	2	0,13
3	Subramanian S.	Hindiston qishloq xo‘jaligi tadqiqot instituti Entomologiya bo‘limi, Nyu-Dehli, Hindiston.	2	0,75
4	Agbaba S.N.	Xorvatiya o‘rmon tadqiqot instituti, Xorvatiya.	1	0,04
5	Agusti N.	IRTA, Kabrils, Barselona, Ispaniya.	1	0,25
6	Alford D.V.	Mintaqaviy entomolog, Qishloq xo‘jaligi, baliqchilik va oziq-ovqat vazirligi Entomologiya bo‘limi boshlig‘i, Kembrij, Buyuk Britaniya.	1	1,00
7	Alomar O.	IRTA, Cabrils, Barselona, Ispaniya.	1	0,25
8	Attfield B.A.	Yangi Zelandiya o‘simliklar va oziq-ovqat tadqiqotlari instituti, Klayd tadqiqot markazi.	1	0,25
9	Ayala M.	Agronomiya va o‘rmon xo‘jaligi fakulteti Meva yetishtirish va enologiya bo‘limi, Chili.	1	0,25
10	Barbakadze N.	Petre Melikishvili nomidagi Fizikaviy va organik kimyo instituti, Iv. Javaxishvili nomidagi Tbilisi davlat universiteti, Gruziya.	1	0,20

“Scopus” ma’lumotlar bazasidagi *Diaspidiotus* avlodiga oid 30 ta maqola tahlili natijasida eng ko‘p uchragan kalit so‘zlar “biological control” (“biologik nazorat”) va “alien species” (“begona turlar”) ekanligi aniqlandi. Ushbu kalit so‘zlar bir nechta maqolada kamida 3 martadan takrorlangan. Shuningdek, “pests”, “apple”, “diseases”, “IPM” (“integratsiyalashgan zararkunandalar nazorati”), “alien species” kabi boshqa muhim kalit so‘zlar ham aniqlangan bo‘lib, ularning har biri maqolalarda 2 martadan ortiq qo‘llangan (3-rasm).



3-rasm. “Scopus” ma’lumotlar bazasida mavjud *Diaspidiotus* avlodiga oid maqolalardagi kalit so‘zlar tahlili.

"Web of Science" ma'lumotlar bazasida *Diaspidiotus* avlodini o'rganishga bag'ishlangan jami 134 ta ilmiy maqola chop etilgan bo'lib, eng dastlabki manba 1940-yilda e'lon qilingan. 1940-yildan 2025-yilgacha bo'lgan davrda chop etilgan maqolalar tahlili shuni ko'rsatadiki, 2014-yilda ushbu avlodga oid 11 ta ilmiy maqola nashr etilgan. Bu esa mazkur yilda *Diaspidiotus* avlodi turlariga bo'lgan qiziqishning sezilarli darajada ortganligini anglatadi.



4-rasm. *Diaspidiotus* avlodiga oid maqolalarning "Web of Science" ma'lumotlar bazasidagi nashr tendensiyasi.

Tadqiqot doirasida "Web of Science" ma'lumotlar bazasida *Diaspidiotus* avlodiga oid 30 ta maqola 21 ta ilmiy jurnalda nashr etilgani aniqlandi. Tahlil natijalariga ko'ra, maqolalar soni bo'yicha yetakchi bo'lgan 10 ta jurnal 4-jadvalda keltirilgan. Ushbu jurnallarning aksariyatida entomologiya va zoologiyaga alohida e'tibor qaratilgan.

Nashrlar soni bo'yicha birinchi o'rinni "Journal of Economic Entomology" egallab, *Diaspidiotus* avlodiga bag'ishlangan 7 ta maqola bilan ajralib turadi. Ikkinchi o'rinda "Environmental Entomology" va "Indian Journal of Agricultural Sciences" jurnallari joylashgan bo'lib, har birida ushbu mavzuga oid 5 tadan maqola chop etilgan. Uchinchi o'rinda esa "New Zealand Entomologist" va "Zootaxa" jurnallari turibdi, har biri 4 tadan maqola bilan ushbu mavzuning o'rganilishiga hissa qo'shgan (4-jadval).

4-jadval

"Web of Science" ma'lumotlar bazasida *Diaspidiotus* avlodiga oid eng ko'p maqola nashr etgan yetakchi jurnallar

T/r	Jurnal nomi	Maqolalar soni
1	"Journal of Economic Entomology"	7
2	"Environmental Entomology"	5
3	"Indian Journal of Agricultural Sciences"	5
4	"New Zealand Entomologist"	4
5	"Zootaxa"	4
6	"Annals of the Entomological Society of America"	3
7	"Communications in Agricultural and Applied Biological Sciences"	3
8	"Journal of Applied Entomology"	3
9	"Journal of Applied Entomology-Zeitschrift Fur Angewandte Entomologie"	3
10	"Proceedings of the Entomological Society of Washington"	3

“Web of Science” ma’lumotlar bazasidagi *Diaspidiotus* avlodiga oid tadqiqotlarga 350 nafar muallif hissa qo‘shgan. Ular orasida eng faol mualliflardan biri — yangi zelandiyalik X.H.Vearing bo‘lib, uning h-indeksi 21 ga teng. U tomonidan yozilgan 83 ta maqola mavjud bo‘lib, 1793 ta umumiy manbada 1400 ta iqtibos keltirilgan.

X.H.Vearing o‘z tadqiqotlarida, xususan, *Diaspidiotus ostreaeformis* turini Otago va Kenterberi hududlaridagi mevali ekinlar uchun xavfli zararkunanda sifatida o‘rgangan. U olma bog‘larida bu zararkunandaga qarshi insektitsidli purkash dasturlari samarali natija berishini ta’kidlaydi. Shu bilan birga, tashqi ozuqa o‘simliklarining bog‘larga kirib borishi mevalarning zararlanishiga olib kelishini qayd etadi. Shuningdek, u *Diaspidiotus perniciosus*ning fazoviy taqsimotini o‘rganib, bu tur olma daraxtlarida qanday tarqalishini tahlil qilgan [31, 15, 34, 36, 37, 35].

Angliyalik tadqiqotchi B.B.Normark ham Diaspididae oilasi bo‘yicha izlanishlar olib borgan. Uning h-indeksi 32 bo‘lib, u muallifligida 78 ta ilmiy maqola chop etilgan. 3092 ta materialda uning ishlaridan iqtibos keltirilgan bo‘lib, 2228 tasida to‘g‘ridan-to‘g‘ri uning maqolalariga havola berilgan.

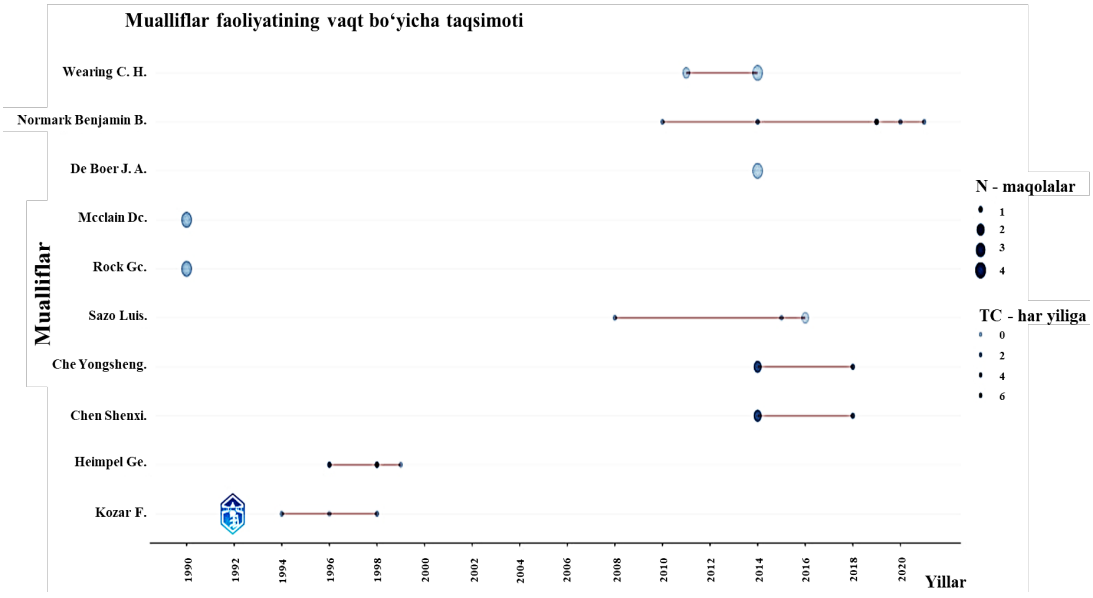
B.B.Normarkning tadqiqotlari asosan Diaspididae oilasining filogeniyasi (evolyutsion qarindoshlik aloqalari)ga qaratilgan. U o‘z izlanishlari davomida Panama hududida ushbu oilaga mansub *Diaspidiotus fraxini* (McKenzie) turining mavjudligini aniqlagan va uni batafsil o‘rgangan [9, 10, 20, 21, 22, 23].

J.A.Boer iqlim o‘zgarishi va invaziv turlar, shuningdek, ularning atrof-muhitga ta’siri bo‘yicha keng qamrovli izlanishlar olib borgan. Uning “Iqlim o‘zgarishi sharoitida begona turlar” va “Begona o‘simliklar, hasharotlar va patogenlarning atrof-muhitga ta’sirini taqqoslash” nomli maqolalarida *Diaspidiotus* avlodi ekologik bosqinchilik jihatidan o‘rganilgan. Ushbu tadqiqotlarda invaziv turlar, jumladan, *Diaspidiotus* turkumining atrof-muhitga ta’siri va uning ekologik bosqinchilikdagi o‘rni tahlil qilingan [35, 36, 37].

D.K.MakKleyn va G.K.Roklar tashqi muhit omillarining ta’sirini o‘rganishgan. Ularning tadqiqotlari entomofaunaning monitoringi, feromonli tuzoqlar yordamida zararkunandalarni aniqlash, shuningdek, parazitoidlar fenologiyasi va biologik nazorat usullariga qaratilgan. Tadqiqotchilar bu usullarning ekotizimlar va zararkunandalar bilan bog‘liq ekologik jarayonlarni yaxshiroq tushunishga yordam berishini ta’kidlashgan [4, 16, 17, 18, 25].

L.Sazo (Chili) *Diaspidiotus* avlodi vakillarining mevali daraxtlarga zarar yetkazish biologiyasini o‘rganib, *D. ancylus* turi biologiyasi, unga qarshi kurashish choralari bo‘yicha tadqiqotlar olib borgan. U ushbu zararkunanda turlarining biologik xususiyatlarini, zararlash jarayonlarini va samarali nazorat qilish usullarini o‘rgangan [26, 27, 28].

M.B.Kaydan (Turkiya) va F.Kozar (Vengriya) tashqi nazorat va taksonomik aniqlash borasida izlanishlar olib borgan. Ularning tadqiqotlari Afg‘oniston, Turkiya va Kavkaz mintaqasidagi zararkunandalarning taksonomik xususiyatlarini o‘rganishga qaratilgan. F.Kozar ushbu hududlarda zararkunandalarning ekologik ta’sirini aniqlash va tasniflash bo‘yicha muhim ilmiy natijalarga erishgan [8, 11, 12].



5-rasm. Eng faol mualliflar tadqiqotlarining vaqt bo‘yicha taqsimoti.

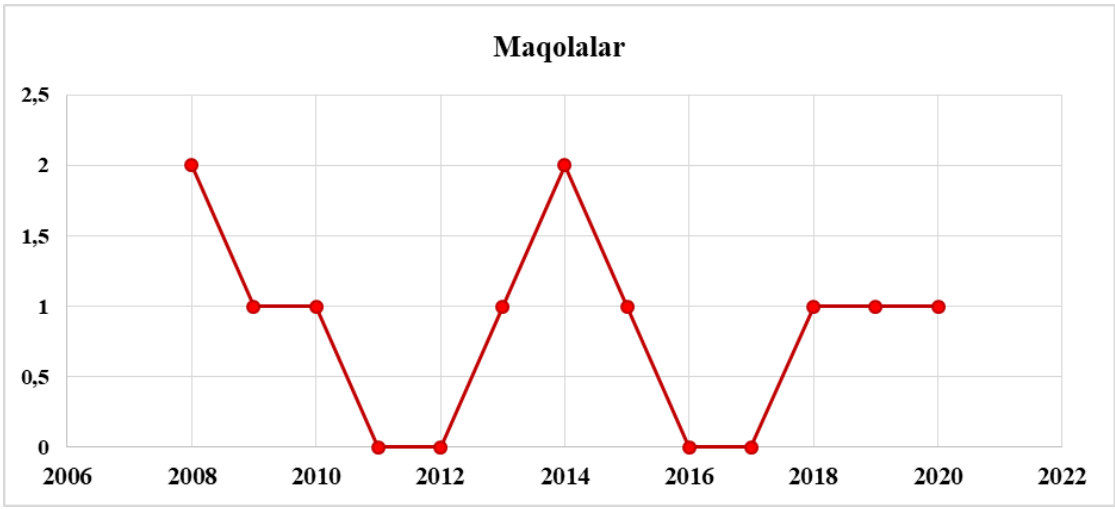
Eslatma: Doiralar o‘lchami yilda nashr etilgan maqolalar chastotasi bilan bog‘liq; doiralar rangining intensivligi maqolalarning ahamiyatini ko‘rsatadi.

5-jadval

“Web of Science” bazasidagi *Diaspidiotus* avlodiga oid ishlar mualliflari va nashrlar haqida ma’lumot

T/r	Muallif	Mansublik	Nashrlar soni	Muallif ulushi
1	Vearing X.H.	Yangi Zelandiya o‘simlik va oziq-ovqat tadqiqotlari instituti.	6	3,00
2	Normark Benjamin B.	Massachusets Amxerst universiteti, Pensilvaniya Oliy ta’lim hamdo‘stligi tizimi (PSHE), Garvard universiteti, London tabiiy tarix muzeyi, Kornell universiteti.	5	1,07
3	De Boer J.A.	Vestfrisgastxeys, Rotterdam Erasmus universiteti, Amsterdam universiteti, Tvente universiteti.	4	2,00
4	MakKleyn D.	Muqaddas oila universiteti, Lixay universiteti.	4	1,50
5	Rok G.	Shimoliy Karolina davlat universiteti.	4	1,50
6	Sazo Luis	Chili universiteti Qishloq xo‘jaligi fanlari fakulteti, Santyago, Chili.	4	1,08
7	Che Yongsheng	Tibbiyot biotexnologiyasi instituti, Xitoy tibbiyot fanlari akademiyasi va Pekin ittifoqi tibbiyot kolleji.	3	0,49
8	Chen Shenxi	Guychjou universiteti, Xubey pedagogika universiteti, “Jing Brand Co Ltd”, “Jingpai Co Ltd”, Xitoy Fanlar akademiyasi.	3	0,49
9	Heimpel G.	Agronomiya va o‘rmon xo‘jaligi fakulteti Meva yetishtirish va enologiya bo‘limi, Chili.	3	1,08
10	Kozar F.	Vengriya Fanlar akademiyasi O‘simliklarni himoya qilish instituti, Budapesht, Vengriya.	3	0,87

“PubMed” ma’lumotlar bazasida *Diaspidiotus* avlodiga oid 17 ta ilmiy maqola nashr etilgan bo‘lib, dastlabki maqola 1940-yilda chop etilgan. 2006–2025-yillargacha bo‘lgan davrdagi ilmiy maqolalar tahlil qilindi. 2014-yilda ushbu avlodga bag‘ishlangan 2 ta maqola nashr etilgan. Bu esa *Diaspidiotus* avlodiga bo‘lgan ilmiy qiziqishning ortganligini ko‘rsatadi.



6-rasm. *Diaspidiotus* avlodiga oid maqolalarning “PubMed” ma’lumotlar bazasidagi nashr tendensiyasi.

Tadqiqot davomida “PubMed” ma’lumotlar bazasidagi 21 ta jurnalda *Diaspidiotus* avlodiga oid 30 ta maqola nashr etilganligi aniqlandi.

“PubMed” ma’lumotlar bazasida nashr etilgan maqolalar soni bo‘yicha eng yaxshi 6 ta asosiy jurnal keltirilgan. Bu yetakchi jurnallarda zoologiyaga alohi-

da e’tibor qaratilgan. “Communications in Agricultural and Applied Biological Sciences” jurnali *Diaspidiotus* avlodiga bag‘ishlangan 3 ta maqola bilan birinchi o‘rinni egallaydi. “Journal of Economic Entomology”, “Journal of Natural Products”, “Zootaxa” jurnallarining har birida ushbu mavzuga oid 2 tadan maqola chop etilgan bo‘lib, ular mos ravishda keyingi o‘rinlarni egallagan (6-jadval).

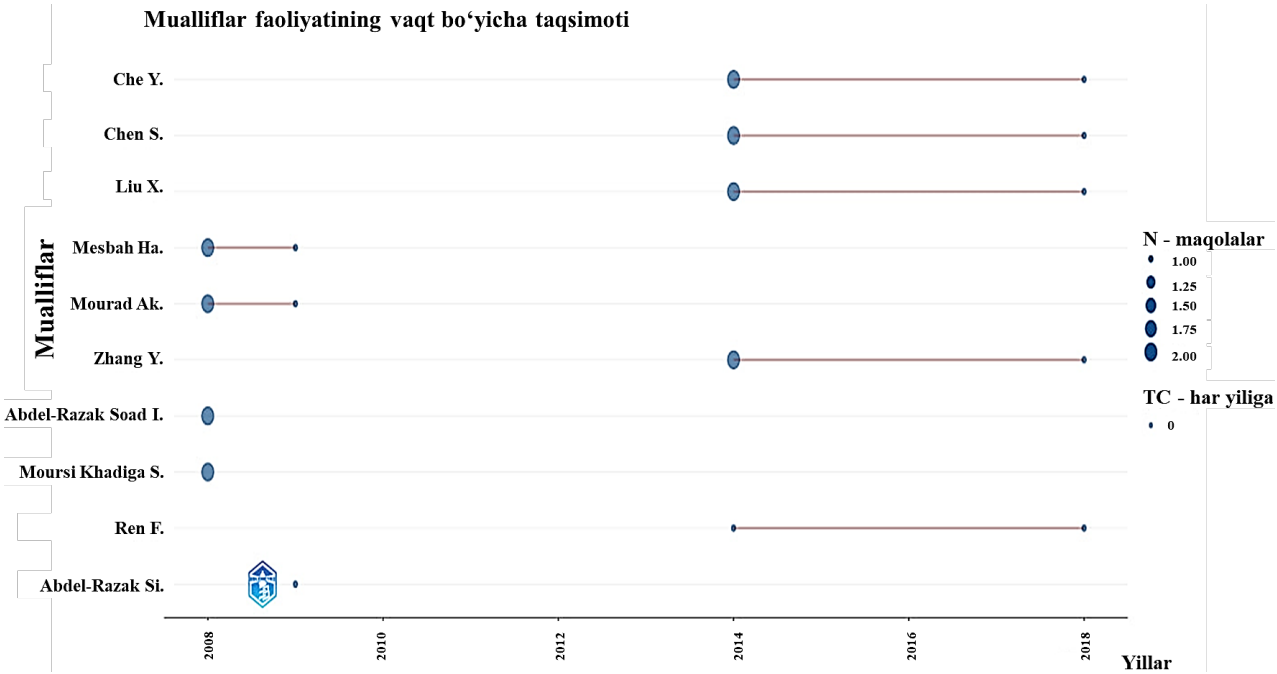
6-jadval

“PubMed” ma’lumotlar bazasida *Diaspidiotus* avlodiga oid eng ko‘p maqola nashr etgan yetakchi jurnallar

T/r	Jurnal nomi	Maqolalar soni
1	“Communications in Agricultural and Applied Biological Sciences”	3
2	“Journal of Economic Entomology”	2
3	“Journal of Natural Products”	2
4	“Zootaxa”	2
5	“Fitoterapia”	1
6	“Zookeys”	1

“PubMed” ma’lumotlar bazasida 30 dan ortiq mualliflar tomonidan ilmiy maqolalar chop etilgan [5]

Burg el-Arab hududidagi nok daraxtlarida uchraydigan miqyosli hasharotlar turlari (Hemiptera: Coccoidea: Diaspididae) va ularning parazitoidi *Aphytis diaspidis* (Howard) ning qiyosiy tahlilini o‘tkazgan [19].



7-rasm. Eng faol mualliflar tadqiqotlarining vaqt bo‘yicha taqsimoti.

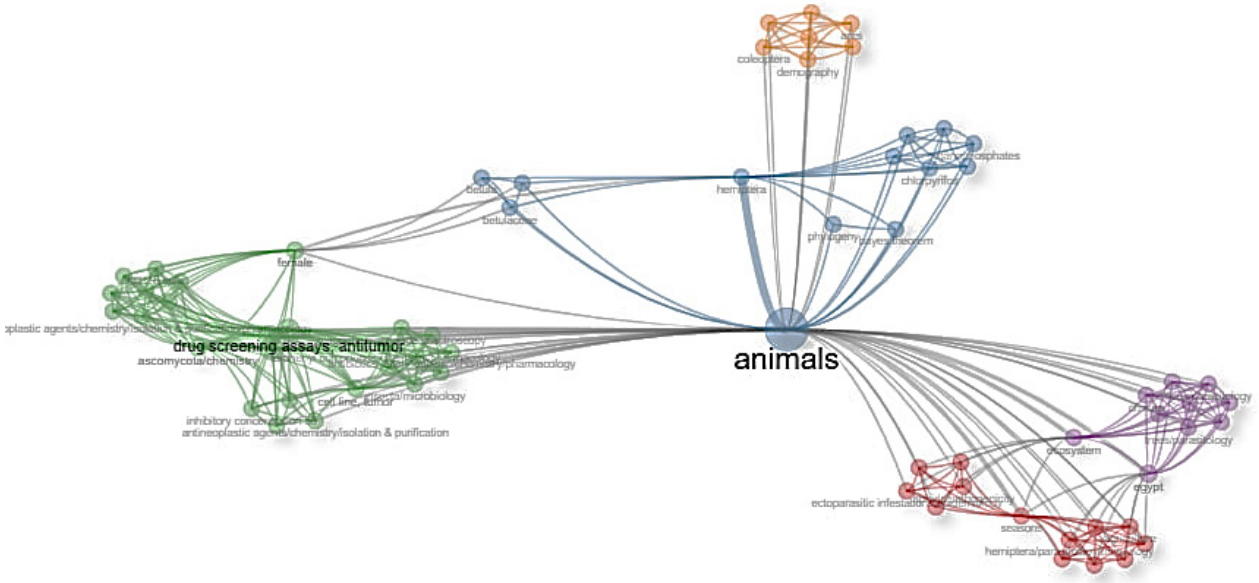
Eslatma: Doiralar o‘lchami yilda nashr etilgan maqolalar chastotasi bilan bog‘liq; doiralar rangining intensivligi maqolalarning ahamiyatini ko‘rsatadi.

7-jadval

“PubMed” bazasidagi *Diaspidiotus* avlodiga oid ishlar mualliflari va nashrlar haqida ma’lumot

T/r	Muallif	Mansublik	Nashrlar soni	Muallif ulushi
1	Che Y.	Friburg universiteti Ekologiya va evolyutsiya bo‘limi, Shveytsariya.	3	0,49
2	Chen S.	Pekin farmakologiya va toksikologiya instituti Toksikologiya va tibbiy qarshi choralar davlat asosiy laboratoriyasi, Mikrobiologiya instituti, Xitoy Fanlar akademiyasi.	3	0,49
3	Liu X.	Mikrobiologiya instituti, Xitoy Fanlar akademiyasi, Pekin, Xitoy.	3	0,49
4	Mesbah Ha.	Pekin farmakologiya va toksikologiya instituti Toksikologiya va tibbiy qarshi choralar davlat asosiy laboratoriyasi, Mikrobiologiya instituti, Xitoy Fanlar akademiyasi.	3	0,67
5	Mourad Ak.	Mikrobiologiya instituti, Xitoy Fanlar akademiyasi, Pekin.	3	0,67
6	Jang Y.	Pekin farmakologiya va toksikologiya instituti Toksikologiya va tibbiy qarshi choralar davlat asosiy laboratoriyasi, Mikrobiologiya instituti, Xitoy Fanlar akademiyasi.	3	0,49
7	Abdel-Razak Soad I.	Iskandariya universiteti Qishloq xo‘jaligi fakulteti O‘simliklarni himoya qilish bo‘limi, Iskandariya, Misr.	2	0,50
8	Moursi Khadiga S.	Iskandariya universiteti Qishloq xo‘jaligi fakulteti O‘simliklarni himoya qilish bo‘limi, Iskandariya, Misr.	2	0,50
9	Ren F.	Iskandariya universiteti Qishloq xo‘jaligi fakulteti O‘simliklarni himoya qilish bo‘limi, Iskandariya, Misr.	2	0,29
10	Abdel-Razak Si.	Iskandariya universiteti Qishloq xo‘jaligi fakulteti O‘simliklarni himoya qilish bo‘limi, Iskandariya, Misr.	1	0,17

“PubMed” ma’lumotlar bazasidagi *Diaspidiotus* avlodiga oid 30 ta maqolada o‘tkazilgan tahlilda asosiy e’tiborga olingan kalit so‘zlar “seasons”, “animals”, “drug screening assays” va “antitumor” bo‘lib, bu so‘zlar ko‘p maqolalarda 3 marta takrorlanib ishlatilgan. Muhim kalit so‘zlar sifatida esa “hemipteran”, “humans”, “molecular structure”, “ascomycota/chemistry”, “cell line”, “tumor” va “female” so‘zlari uchraydi, ular maqolalarda 2 martadan ko‘p takrorlanganligini ko‘rish mumkin (8-rasm).



8-rasm. “PubMed” ma’lumotlar bazasida *Diaspidiotus* avlodining o‘rganilishida kalit so‘zlar tahlili.

Tahlil natijalari shuni ko‘rsatadiki, *Diaspidiotus* avlodi olimlar e’tiboridan chetda qolmagan. Har yili kamida bir-ikki maqola chop etilgan, ayrim yillarda esa bu son ancha oshgan. Eng ko‘p o‘rganilgan tur esa *Diaspidiotus perniciosus* bo‘lib, u mevali daraxtlarga zarar yetkazgani sababli ko‘pchilik tadqiqotlar aynan shu turga bag‘ishlangan.

Xulosa

Yevropa, Osiyo va Yangi Zelandiyadagi olimlar ushbu avlodga oid muammolarni turli yo‘nalishlarda yoritishgan: ba’zi olimlar ekologik ta’sirini o‘rgangan, boshqalar biologik nazorat usullarini taklif qilgan, ayrimlari esa molekulyar tahlillarga urg‘u bergan. Shuningdek, ba’zi maqolalarda bu hasharotlar farmakologik tajribalarda ham model sifatida ishlatilgani kuzatilgan. Eng faol olimlar orasida Vearing, Normark, Subramanian, Bacher, Pishek va Agusti bor. Ularning *Diaspidiotus* haqidagi ishlari jiddiy ilmiy asoslangan.

Diaspidiotus zararkunanda sifatida ko‘plab ilmiy ishlarda tilga olingan. Eng ko‘p e’tibor qaratilgan tur *D. perniciosus* bo‘lib, u mevali daraxtlar uchun xavfli hisoblanadi. Tahlillar shuni ko‘rsatadiki, bu avlod faqat entomologlar emas, balki ekologlar, fitopatologlar va molekulyar biologlar e’tiborida ham bo‘lgan. Kelgusida mazkur avlodga oid tadqiqotlar yangi usullar asosida yanada chuqurlashishi, ayniqsa, invazivlik, biologik kurash va genetik xususiyatlar yo‘nalishida rivojlanishi kutiladi.

Diaspidiotus avlodi faqat zararkunanda sifatida emas, balki ba’zi molekulyar-farmakologik tajribalarda ham o‘rganilmoqda. Tadqiqot shuni ko‘rsatadiki, *Diaspidiotus* avlodiga oid ilmiy izlanishlar entomologiya, ekologiya, qishloq xo‘jaligi va molekulyar biologiya yo‘nalishlarida tobora kengayib bormoqda. Tadqiqotlar zararkunandani chuqur o‘rganish va unga qarshi samarali kurash strategiyalarini ishlab chiqish uchun muhim manba bo‘lib xizmat qiladi.

BIBLIOMETRIC ANALYSIS OF SCIENTIFIC RESEARCH ON THE GENUS *DIASPIDIOTUS* BERLESE, 1896

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Key words: *Diaspidiotus, Diaspididae, Scopus, Web of Science, PubMed, VOSviewer, bibliometric analysis, scientific research.*

The genus Diaspidiotus Berlese, 1896 (Hemiptera: Diaspididae) includes economically important armored scale insects characterized by a wide host range, high invasive potential, and the ability to cause serious damage to woody plants in natural, agricultural, and urban ecosystems. In recent decades, globalization, climate warming, and intensified plant trade have facilitated the spread of several Diaspidiotus species beyond their native ranges, thereby increasing scientific interest in their taxonomy, ecology, biology, and management.

In recent years, numerous studies have focused on the biological characteristics, ecological status, geographical distribution, and invasive capacity of Diaspidiotus species across different regions of the world. These investigations address issues such as species identification, host plant relationships, life cycles, population dynamics, and responses to environmental factors. Importantly, scientific research on representatives of this genus has recently been initiated in Uzbekistan, highlighting growing regional attention to their potential impact on agriculture, forestry, and ornamental plantings.

The volume of scientific publications related to Diaspidiotus has increased steadily in major international databases, including Scopus, Web of Science, and PubMed. Despite this growth, a comprehensive bibliometric synthesis evaluating global research trends, key contributors, and thematic patterns related to this genus has been lacking. The present study aims to fill this gap by conducting a bibliometric analysis of scientific research on Diaspidiotus, focusing on publication dynamics, influential authors, and keyword-based research trends.

As of April 21, 2025, documents were retrieved from the Scopus, Web of Science, and PubMed databases by searching for the term “Diaspidiotus” in titles, abstracts, and keywords. The initial dataset comprised 30 documents from Scopus, 134 from Web of Science, and 17 from PubMed. Records were downloaded in .csv, .bib, and PubMed formats, respectively, and were carefully screened to remove duplicates and publications unrelated to the target genus.

Bibliometric analyses were performed using the Bibliometrix package (version 4.1.3) in the R environment and VOSviewer software (version 1.6.18). Network visualization and cluster analyses of author keyword co-occurrence were used to identify major research themes and their relationships. The resulting clusters revealed dominant research directions, including taxonomy and systematics, invasive species biology, pest management strategies, and host–insect interactions. The findings provide a structured overview of Diaspidiotus research and support future fundamental and applied studies.

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