INFLUENCE OF ENVIRONMENTAL FACTORS ON THE BIOECOLOGY OF APHID SPECIES DEVELOPMENT IN THE CONDITIONS OF KARAKALPAKSTAN

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It has been proven that the formation of insect species distributed in the biotopes of agricultural crops of the Republic of Karakalpakstan, the bioecology of their development, along with the types and phases of the plants they feed on, are directly related to environmental factors, including the processes of transformation of elements of abiotic factors. Identifying the elements of abiotic and biotic factors that positively and negatively affect these species, finding optimal criteria for their effective use in agriculture, today is the main law in carrying out measures to combat pests of agricultural crops. According to the systematics of insects distributed in the biotopes of the region, species belonging to the suborder Aphidinae of the order Homoptera of the class Insecta of arthropods (Arthropoda) are widespread pests, and it has been established that they multiply rapidly under favorable agro-climatic conditions and cause great damage to agricultural crops. To eliminate this damage, it is necessary to correctly determine the bioecology and dynamics of the development of aphids and to apply the recommended control measures in research and production processes.

During the study of the chain of connections of biological bodies in the composition of the biocenosis in existing biotopes under the conditions of the agrobiocenosis of Karakalpakstan, elements of abiotic factors from environmental factors and changes in recent years were taken into account. As a result, taking into account the increase in the maximum level of air temperature and the decrease in relative humidity from the elements of abiotic factors, it was taken into account that the processes negatively affect the bioecological properties of aphids developing in the field.

Analysis of the data obtained in the conditions of the northern regions of the republic showed that during the growing season of 2021, the number of days with

an average daily temperature rise of 30°C was observed for 45 days, the days with a maximum temperature rise of 40°C were observed for 25 days, the days with a decrease in relative humidity of 20% were taken into account for 81 days, and the indicators during 2022 were 20, 9, and 70 days, which proves the negative impact on the species of aphids distributed in the biotopes.

The occurrence of the considered unfavorable abiotic factors was due to the fact that with the beginning of the growing season, melon aphid (Aphis gossypii Glov.), alfalfa or acacia (Aphis (medicaginis) craccivora Koch.), large cotton aphid (Acyrthosiphon gossypii Mordv.), apricot-reed aphid (Hyalopterus pruni F.), peach aphid (Myzodes persicae Sulz.), large peach stem aphid (Pterochloroides persicae Chol.), and wheat aphid (Schizaphis graminum Rond.), the distribution areas of which have been expanding in recent years, appear annually from karamas and cause great damage to agricultural crops. As a result of observations, it was established that the type of melon aphid, in addition to melon plants, feeds on a large number of crops grown in the conditions of the region. It is known that the pest has a significant negative impact on crops sown from the seedling stage to late autumn. A characteristic feature of the pest's biological development is that it prepares for wintering in the autumn months, overwinters on weeds, mainly flowering plants, in larval and adult forms, and in April of the following year emerges from wintering and accumulates on the first weeds. In years with early spring, early emergence from wintering was observed, when the average air temperature was around +7+8°C, and the first generations accumulated and multiplied on weeds and earlier cultivated crops. The dynamics of subsequent developmental stages were taken into account, when winged generations developed in these areas, and then flew to the areas where melon seedlings appeared, quickly giving birth to live plants.

In recent years, in the bioecology of the development of wheat aphids, which appear in the wheat biotope and cause harm, one of the most harmful processes has emerged, the distribution areas have expanded, and the criterion of harm is increasing. Although the pest's development after overwintering is somewhat

slower, starting from the second decade of May, with the appearance of the ear, its number increases, and the damage caused by it decreases, and special observations were carried out to obtain accurate scientific results.

The result indicates that the appearance of wheat aphids with wheat heading causes significant damage. Because among grains in one spike (with an average of 45.7-67.9 grains per spike), when 5-7 pests appeared and fed, 35.6-42.8% of the harvest was lost, and when the number of pests reached 8-10 pests, the norm of damage was 56.8-61.4%. It was established that when the number of pests in a spike exceeded 17-20 pcs., the spikes of the plants turned yellow, and some of them dried up.

In the milk ripeness phase of wheat, a certain degree of damage is caused by the appearance of wheat aphids, that is, when 5-7 pests appeared and fed, 5.1-7.8% of the harvest was lost, when the number of pests reached 8-10 pests, the norm of damage was 11.4-14.5%, and with an increase of 15-20 pests, it was 22.5-26.3%. It was noted that with the appearance of wheat aphids in the phase of wheat ripeness, the damage is reduced to a certain extent. The reason is that the appearance of 5-7 pests on one spike did not affect the decrease in yield when feeding, while when the number of pests increased by 15-20 pests, the weight of spikes decreased by 1-2%.

It was established that the agro-climatic conditions of Karakalpakstan do not negatively affect the development of aphids, the reproduction of aphids during the growing season, and the complete emergence from wintering of elements of abiotic and biotic factors occurring in the biotope of agricultural crops. It was taken into account that among aphids, melon, large cotton aphids develop on cotton, vegetable and melon species, acacia, melon, apricot-reed aphids, and in fruit orchards, apricot-reed, peach, and peach large stem aphids develop and cause great damage. Taking into account the bioecology, dynamics, and harmfulness criteria of the development of these species, it is recommended to effectively use entomophages distributed in the biotope and those propagated in the biolaboratory, and to correctly increase their numbers. In fields where an increase in the number

of species has been observed, it is recommended to use approved chemical preparations mixed with tractor units at a rate of 200-300 liters per hectare.

References

1. Адашкеевич Б.П. Биологическая защита крестоцветных овощных культур от вредных насекомых.-Ташкент “ФАН”,1983. -188 с.
2. Доспехов Б.А. Методика полевого опыта.-М.: Колос, 1986.- 415 с.
3. Танский В.И. Биологическая основа вредоносности насекомых. - М.. «Агропромиздат», 1988.-С 182-198.
4. Тореніязов Е.Ш., Хўжаев Ш.Т., Холмуродов Э.А. Ўсимликларни ҳимоя қилиш. –Тошкент: «Наврўз», 2018. -876 с.
5. Ходжаев Ш.Т. ва б. Инсектицид, акарицид, биологик фаол моддалар ва фунгицидларни синаш бўйича услубий кўрсатмалар. - Тошкент, 2004. - Б. 104.
6. Ahmatovich R. A. et al. In biocenosis the degree of appearing entomophagous types of vermins which suck tomatoey sowings //Austrian Journal of Technical and Natural Sciences. – 2018. – №. 9-10. – С. 3-5.
7. Сулаймонов Б. А. и др. Фитофаги и виды энтомофагов, встречающиеся в лесном биоценозе //Актуальные проблемы современной науки. – 2021. – №. 1. – С. 64-69.
8. Кимсанбаев Х. Х., Жумаев Р. А. К вопросу размножения Trichograma evanescens для биологической защиты растений //Международна научна школа" Парадигма". Лято-2015. – 2015. – С. 34-41.
9. Жумаев Р. А. Биолабораторияда трихограммани in vitro усулида ўстириш технологияси. Трихограммани сунъий озиқада ўстириш курси (1)(Hymenoptera: Trichogrammatidae). – 2016.
10. Sulaymonov B. A. et al. Effectiveness of Application of Parasitic Entomophages against Plant Bits in Vegetable Agrobiotensenosis //Solid State Technology. – 2020. – Т. 63. – №. 4. – С. 355-363.
11. Kimsanbaev X. X., Jumaev R. A., Abduvosiqova L. A. Determination Of Effective Parasite-Entomofag Species In The Management Of The Number

Of Family Representatives In Pieridae //The American Journal of Agriculture and Biomedical Engineering. – 2021. – Т. 3. – №. 06. – С. 135-143.

12. Jumaev R. Invitro rearing of parasitoids //E3S Web of Conferences. – EDP Sciences, 2023. – Т. 371.
13. Кимсанбаев Х. Х. и др. Биоценозда ўсимлик зараркунандалари паразит энтомофагларини ривожланиши.« //O'zbekiston» НМИУ,–Тошкент. – 2016.
14. Сулаймонов Б. А. и др. Ўрмон биоценозида фитофаг турлари ва улар миқдорини бошқариш //O'zbekiston» НМИУ,–Тошкент. – 2018.
15. Jumaev R., Rakhimova A. Analysis of scientific research on reproduction of species of Trichograms in Biolaboratory //The American Journal of Agriculture and Biomedical Engineering. – 2020. – Т. 2. – №. 08. – С. 148-152.
16. Axmatovich J. R. In vitro rearing of trichogramma (Hymenoptera: Trichogrammatidae) //European science review. – 2016. – №. 9-10. – С. 11-13.
17. Jumaev R. A. et al. The technology of rearing Braconidae in vitro in biolaboratory //European Science Review. – 2017. – №. 3-4. – С. 3-5.
18. Жумаев Р. А. Массовое размножение трихограммы на яйцах хлопковой совки в условиях биолаборатории и ее применение в агробиоценозах //Халқаро илмий-амалий конфренция "Ўзбекистон мева-сабзавот маҳсулотларининг устунлиги" мақолалар тўплами. Тошкент. – 2016. – С. 193-196.
19. Жумаев Р. А. Значение представителей семейства BRACONIDAE в регулировании численности совок в агробиоценозах //ЎзМУ Хабарлари. – 2017. – Т. 3. – №. 1.
20. Жумаев Р. А. РАЗМНОЖЕНИЯ ИН ВИТРО BACON HABETOR SAY И BRACON GREENI ASHMEAD //Актуальные проблемы современной науки. – 2017. – №. 3. – С. 215-218.

21. Axmatovich J. R. In Vitro Rearing of Parasitoids (Hymenoptera: Trichogrammatidae and Braconidae) //Texas Journal of Agriculture and Biological Sciences. – 2022. – T. 4. – C. 33-37.
22. Suleymanov B. A., Jumaev R. A., Abduvosiqova L. A. Lepidoptera Found In Cabbage Agrobiocenosis The Dominant Types Of Representatives Of The Category Are Bioecology //The American Journal of Agriculture and Biomedical Engineering. – 2021. – T. 3. – №. 06. – C. 125-134.