BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg

BG PULSE JOURNAL

THE SPECIES COMPOSITION AND BIOECOLOGICAL DEVELOPMENT OF MAJOR PESTS AFFECTING LICORICE (*GLYCYRRHIZA GLABRA*) IN KARAKALPAKSTAN

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Doi: https://doi.org/10.5281/zenodo.21391935

Annotation: The article presents data on the species composition and bioecological characteristics of the main pests of licorice (*Glycyrrhiza glabra-L.*).

Key words: pests, species, composition, data, eggs, larva, plants.

Introduction. More than 4,500 plants on the territory of our republic including raw materials for industry and medicinal products (750 species) among plants, licorice is the most important is a plant. The establishment of the "Scientific and Production Center for the Cultivation and Processing of Medicinal Plants" in accordance with Presidential Decree No. PP-4670 dated April 10, 2020, and Presidential Decree No. PP-4670 dated November 26, 2020, gave impetus to the further development of the industry. Resolutions of the President of the Republic of Uzbekistan "On increasing the cultivation and industrial processing of licorice in the Republic of Uzbekistan" (No. PP-2970 dated May 16, 2017) [11], "On increasing the production of licorice and other medicinal plants in the Republic of Uzbekistan" on measures for the further development of cultivation and industrial processing" (No. 63 dated January 27, 2018) [12], the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On measures for the further development of cultivation and industrial processing of licorice and other medicinal on additional measures for the effective organization of plant cultivation and industrial processing" (No. 138 dated February 15, 2019) [13]. These documents define tasks for the development of licorice production in our country.

Licorice (Glycyrrhiza glabra-L.) is a perennial herbaceous plant of the Fabaceae family. The distribution area of licorice is very extensive and is distributed in the European part of the former Soviet Union, Crimea, the Caucasus, Siberia, Asia Minor, Iran, Afghanistan, and North Africa. Since 1960, scientists [1,2,3,4,5,6,7,8,9, 10] began a comprehensive and extensive scientific study of licorice.

Products obtained from this plant are widely used in medicine, food, cosmetics, light industry, and agriculture. Despite the increase in demand, the existing natural fata decrease in grain is being observed.

Material and Methods. Our research was conducted in 2024-2025 at licorice plantations in the Nukus district of the Republic of Karakalpakstan. General entomology methods were used during the research process. As a result of the conducted research, the following results were obtained during the growth and development period of licorice (*Glycyrrhiza glabra*):is a habitat for pests.

Results and Discussion. Pests of the generative organs of licorice. Pests of licorice seeds are divided into two groups. The first specialized pest is the seed-eating *bruchophagus (Bruchophagus mutabilis Nik.)*, the grain-eating *bruchidius (Bruchidius glycyrrhizae Fohr., B. tuberculicauda Luk.*

et T..-M., tixius longbill - Tychius rufirostris Gyll. (T.glycyrrhiza Beck). The second is the omnivorous *alfalfa beetle - Adelphocoris lineolatus Goeze, A. seticornis F., Carpocoris fuscispinus Boh., Dolycoris penicillatus Horv., Cellobius abdominalis Jak., Aphis craccivora., Oxytyrea cinctella Schaum.* Seed pests The seed-eating *bruchophagus (Bruchophagus mutabilis Nik.)* is one of the serious pests. It causes damage to licorice seeds by up to 30%. The egg-eater overwinters in the larval phase inside seeds scattered in fields. In nature, it leaves wintering in late March or early April. When the average air temperature is 9-12°C, the larvae turn into pupae. Imagoes fly out in the first decade of May. The emergence of imagos coincides with the period of mass flowering of licorice. From the moment of flight feeds on flower nectars and succulent leaves.

Females of the first generation lay their eggs in licorice pods during the milk ripening phase. In early June, the wintering generation dies, and in the second quarter, the second generation flies out. The flight of this generation lasts until the end of August. The incubation period of the egg is 5–6 days, the larvae are 8–10, and the pupa develops in 6–7 days. Imago phase from egg interval to lasts 19-23 days. Seedling fertility reaches 25-30 eggs.

The larvae feed on seeds. Only the surface of the seeds is healthy, and the inside is grained. During the feeding period the larva does not transfer from one seed to another To fly out, the adult insect gnaws through the seed. This bruchophagus parasitizes the seed-eating pest during the larval stage, reducing the pest's population. There are also natural enemies. Freeloader active from mid-May to late July.

Bruchidius glycyrrhizae (Fohr., B. tuberculicauda Luk.et T.-M.) is one of the dangerous pests of licorice seeds. Larvae of various ages overwinter inside the seed. Grain eaters appear in licorice fields that is, exit from hibernation is observed in early April when the air temperature is 8-10°C and continues until mid-May. The formation of eggs, the emergence of larvae, the transformation into pupae, and the appearance of the next generation are diverse. 50-65% of females reach sexual maturity two ready to lay eggs in days. In the second generation, 80% of females reach sexual maturity immediately after birth. Wintering females to male individuals it will be 2 times more compared to, in the first generation, males and females are equal in number. In August and September, the number of male individuals reaches 65-70%. Fertility reaches 25-30 eggs.

The harmful stage of cereal beetles is considered the larval stage. During the growth period of licorice, the development of larvae occurs only in a single seed. During the seed storage period, during the winter months in warehouses, at optimal temperatures, larvae can pass from one seed to another. Field grain harvestless than grain in warehouses. There are also natural enemies of cereal larvae. They begin to attack during the period of mass appearance of grain-eating larvae. They hibernate inside licorice seeds in the imago state. The effectiveness of destroying grain-eating larvae reaches 5-12%.

Conclusions. Our research conducted in 2024-2025 was primarily conducted in the Nukus district. The main pests of licorice have been identified. At the same time, the main types of pests affecting the development of this plant were identified. The methods and timing of their infection were monitored during the study. Due to the use of licorice in the preparation of medicinal and fodder products in the territory of Karakalpakstan, when studying the species composition and bioecology of the development of pests that cause them harm, it was found that it causes significant damage to the main vegetative and generative parts of the plant, and recommendations were made to its users.

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