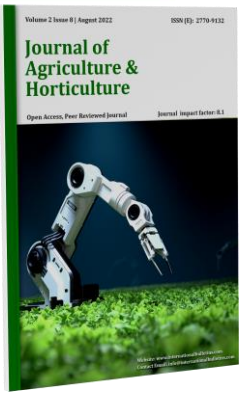

DOMINANT PEST LOCUSTS IN CENTRAL UZBEKISTAN AND CONTROL OF THEM

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Annotation. The Moroccan locust belongs to mesophilic insects which are identified as dominating among pest locusts, in the foothills of Central Uzbekistan. In the plains, where xerophytic plant associations are growing, the species Calliptamus Italicus, C.turanicus, and C.Barbarus are widespread. Dericorys albidula is an olygophagus of haloxylon spp. found in different types of desert areas.
Keywords: Central Uzbekistan, pest locusts, Moroccan locust, Calliptamus Italicus, Calliptamus turanicus, Calliptamus Barbarus, Dericorys albidula, bioecology.

INTRODUCTION

On the territory of the Republic of Uzbekistan, the Moroccan locust (Dociostaurus maroccanus Thunb), the Asian locust (Locusta migratoria migratoria L.), and the Italian locust (Calliptamus italicus L.) are widespread. The Turan locust (Calliptamus turanicus Serg, Tarb) and the desert prus (Calliptamus barbarus cephalotes F.-W) are two species of locust that do not form swarms and are found practically everywhere. Dericorys albidula Aud.-Serv. Is widespread in haloxylon forests of Bukhara and Karshkadarya regions and Karakalpakstan Rcpublic. It is important to study biological and ecological features of this species to minimalize the economical damage and development of ecologically friendly methods of control.

MATERIALS AND METHODS

During the last century, it has been providing researches for study ecologic and biologic features of pest locusts widespread at the terrytory of Uzbekistan. (Uvarov, 1927; Bey-Bienko, Mistchenko, 1951; Safarov, 1963; Syplenkov, 1970; Shamuratov, 1980; Gapparov, 1988). The studies of many entomologists have played important role in the research of the biology and ecology of locusts and in the development of control measures (Siyozov, 1912, 1913; Plotnikov, 1912; Uvarov, 1911, 1912, 1914 ect.). Experienced experts have paid great attention to the study of the biology and ecology of the most dangerous species of locusts (Zimin, 1931; Lepeshkin, 1934; Dyukov, 1936; Ivanov, 1936 ect.). In connection with the cultivation and irrigation of the Karshi desert, the composition of locusts living in it was studied with more interest (Ergashev, 1971; Alimjonov va Ergashev, 1972, 1974; Gapparov, 2002). In recent years, a number of research studies have been conducted to study the species composition of harmful locusts and their biological and ecological characteristics (Gapparov, 2014, 2018; Xaitmuratov, 1998, 2018; Tufliev, 2012, 2019). Analyzing the results of the conducted research, showed that a number of problems regarding to the study of these species in the regions of our republic are awaiting their solution.

Scientific research work was carried out in the region of the central regions of Uzbekistan during 2014-2021. Observation and experimental work was carried out in desert, hilly, foothill areas and other agricultural landscapes of Bukhara, Nurota, Jizzakh, Samarkand regions, where locusts are spread naturally. Locust samples were collected from cotton, garden, vineyard, vineyard, wheat, corn, sorghum, vegetables, leguminous crops and alfalfa, mixed crop fields in order to determine the composition of dominant species of locusts distributed in agrocenoses. Analysis of insect samples was carried out according to Bey-Bienko (1953), with some general entomological modifications, and Pravdin (1978). In the conducted laboratory and field experiments, the study of biological and ecological characteristics of locusts was carried out in areas where they are widespread, according to traditional methodological guidelines Tsyplenkov (1979), Gapparov (2014).

RESULTS AND DISCUSSION

As a result of the conducted research, it was found that Moroccan locusts, Italian, Turanian, desert prus and Dericorys albidula are the dominant species of harmful locusts in the central regions of Uzbekistan.

One of the centers of historical development of the Moroccan locust is located in the territory of three regions: between Lake Aydarkol and the Nurota ridge, which belongs to the Navoi region (Khatirchi and Nurota districts). In the north-western part of Jizzakh region (Forish, Gallaorol districts) at the foothills of Nurotov, Oktau, Karatov ridges and, in Pakhtachi, Kushrabot, Jonboy and Bulung'ur districts of Samarkand region. This is the northwestern focus of the Moroccan locust in Jizzakh region, and in years of mass reproduction, its distribution area expands and covers the flat area between the ridges. Between Nurota Ridge and Aydarkol Lake, there are pastures for cattle breeding, their area is about 4 million hectares. In the years of mass reproduction, the Moroccan grasshopper flying from the pasture to the lake lays eggs directly on the shore of the lake (Lachininsky, Gapparov, 2010). Chemical treatment against Moroccan locusts in Navoi region is carried out in four districts: Kiziltepa, Navbahor, Khatirchi and Nurota districts. The main, largest locus of the Moroccan locust is located in the Nurota district of the Navoi region. This area is 80% of the cultivated area. In early spring, the emergence of the Moroccan locust occurs in late March, early April, depending on the terrain and climatic conditions. In the south of the Jizzakh region, there is the Zomin hotbed (the beginning of the Turkestan range), which was once one of the largest and most dangerous hotbeds of the Moroccan locust in Central Asia. In years of mass reproduction, this pest spreads to the plains and lays eggs in Dostlik and Pakhtakor districts. In the south of Samarkand region, depending on the climatic conditions, the Moroccan grasshopper hatches from the third ten days of March to April.

Italian grasshopper. In Jizzakh, Samarkand and Navoi regions, mainly in the areas near Lake Aydarkol between the Nurota ridge, in other regions such as Tashkent and Syrdarya, abandoned fields due to lack of water, especially areas planted with grain, serve as areas for the mass accumulation and spread of Italian locusts after harvesting. Possible Emergence of nymphs and their further development occurred only when the soil temperature was 10 degrees at a depth of 10 cm and the average air temperature was 15 degrees. Locusts in the breeding areas reach a very large number in some years, if protective measures are not taken, there will be foci of mass breeding of pests and they will fly to agricultural lands. Such cases are observed especially in Jizzakh, Syrdarya and Tashkent regions. In this regard, attention has been paid to strengthening protective measures against this pest. Since the areas of

development of reserves of the Italian locust in the upper parts of the foothills are open areas with light sandy and loamy soils and sparse vegetation, tillage and pastures imitate the conditions of natural reserves, while agro-landscapes with dense irrigation networks become favorable places for their development. This allows Italian locusts to easily migrate into crops.

Turan grasshopper. The largest distribution area of this species in Uzbekistan corresponds to the coastal areas of the Nurota ridge. For example: Farish district of Jizzakh region, Jonboy district of Samarkand region, Nurota district of Navoi region are examples of this. In 2014, in Farish district of Jizzakh region, a large accumulation and spread of Turan grasshopper was noted. In Uzbekistan, the hatching of this species is recorded at the end of April. The duration of larval development is 30 days. We found out that the main habitats of Turan grasshoppers are located far from Lake Aydarkol in Forish District of Jizzakh Region. The closer to the lake, the rarer this species is. Desert locust. This species is mostly found mixed with Turan grasshopper. Its development is delayed by 5-6 days compared to Turan grasshopper. In 2014, between Lake Aydarkol and the Nurota Ridge, the rapid development of Italian, Turanian, and Desert Prussians was noted in the areas where adraspan, yantoq, and shrubs grow in the areas of the regions of Jizzakh, Samarkand, Navoi, and in the foothills of Kyzilkum. It is known that the above plants are very high-calorie feed for livestock, especially cattle. In 2014, 20,000 hectares of pastures with an average density of 10-12 locusts/m2 in the Kyzylkum pastures of the Navoi region were heavily damaged by the Prussians. A similar scene was observed in Forish of Jizzakh region and Jonboy district of Samarkand region. In connection with the emergency situation, chemical control works were carried out on 45 thousand hectares.

Dericorys albidula. The largest foci of development of this grasshopper species are located in saksovul forests of Karakol and Olat districts of Bukhara region. Nymphs hatch in early or mid-June. The duration of larval development is 44-50 days. During this period, the nymphs molt five times. Spawning begins in early July and continues until August. Eggs are laid in flat areas of soil and in compacted soil along sheep tracks. Dericorys albidula is a common species in desert scrub vegetation formations. This species of grasshopper feeds only on shrubby plants such as Richter's saltbush, black and white haloxylon. This species does not pose a great threat to agricultural crops, but it causes great damage as a result of feeding on the haloxylon. In Uzbekistan, a special anti-locust service was established in the Bukhara region to protect the haloxylon from pests. In the saxovull forests of the Republic of Uzbekistan, chemical control works against the saxovull locust are carried out on an area of 10,000 to 30,000 hectares every year. In years of mass reproduction, Dericorys albidula completely destroys shrub trees. In 2008, there was a mass breeding of this species in haloxylon forests, when the haloxylon was severely damaged.

CONCLUSION

Moroccan, Italian, Turanian, desert, and Dericorys albidula, which are the dominant species of harmful locusts, widespread in central Uzbekistan, and in some years when outbreaks, they cause great damage to pastures, agricultural crops, and haloxylon fields.

They are divided into three groups based on their biology and ecology, species distribution areas, development periods, and species composition of food plants. The Moroccan locust is a mesophilic species, which is mainly common in the foothills, the Italian, Turanian, desert locusts are found in the plains, mainly in the areas where the xerophytic plant association is

formed, and Dericorys albidula is an oligophagous species found in different types of desert areas..

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