

# Ecological Characteristics of Medonous Plants of the Southern Aral Sea Area

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**Abstract:** *The article presents the results of studies on the environmental assessment of honey plants in the South Aral region. Ecological characteristics are considered, the area of distribution of honey plants by ecological groups is analyzed. The melliferous flora of the region is highly endemic.*

**Keywords:** honey plants, Southern Aral Sea region, range, biodiversity, resources.

## 1. Introduction

Currently, in solving the problem of food security and sustainable development of agricultural production of any state, the rational use and reproduction of natural resources is of great importance. Plants all over the world are recognized as one of the vital parts of biological diversity and global environmental sustainability. They lie at the base of the trophic pyramid in all terrestrial ecosystems, on which all other animal species and humans inevitably depend [1]. It is known that the composition and productivity of honey resources depend on the climatic and geographical conditions [2].

The biodiversity of honey plants is the world heritage of present and future generations [1]. At the same time, the economic development of the territories leads to a decrease and disappearance of the species diversity of honey resources and the impoverishment of the honey base [9]. According to the predicted data, most species of plants in the world are threatened with extinction now [10]. The study of the biodiversity of honey plants in the desert zones of Central Asia are relevant and timely.

## 2. Material and Methods

Honey plants provide the most important bee products, and on the other, they receive an irreplaceable service - pollination - from a honey bee [3, 5]. Honey plants in the common sense of the word are such plants from which the bees take two products that are most important for the development and activity of the bee family: flower nectar and flower pollen. Not all such plants have the same meaning: some of them give bees only nectar, others only pollen, and others give both together. Actually honey plants can be called only plants that give nectar to bees, plants that give one pollen are called pollen cultivars [4].

Land areas occupied by honey plants are called honey lands [4]. In agricultural areas, the basis of the melliferous base is mainly cultivated melliferous plants, not only field meadows [10], but also meadow meadows - forbs, various fruit and berry crops [3, 7]. By the beginning of our research, the species composition and bioecological characteristics of honey resources in the study region were not studied, the main honey plants and their honey properties were not

identified, flowering forecast methods were not developed, the bioresource potential of honey lands and the possibilities of its implementation by bees were not studied, ways of rational use of honey collection and ways to improve it are not developed.

## 3. Results and Discussion

A detailed study of the food supply of bees in the territory of the South Aral Sea region has recently been still not enough. The melliferous flora of the studied region was not specifically studied, and only a general fragmentary study of the vegetation was carried out. For the proper organization and use of the feed base of beekeeping, determining the size of the apiary, environmental assessment of the area and resources of honey plants is crucial. Such an assessment is based on data on the species composition and areas of major honey plants, their nectar productivity and flowering time [5, 8]. According to experts, the best place for beekeeping is such a place in which there is a wide variety of natural and artificial lands used by humans, where honey plants grow [2, 4].

Consider some types of honey plants growing in the region of the South Aral Sea region.

***Ziziphoraclinopodioides:*** A perennial, strongly smelling plant up to 40 cm high with a thick lignified rhizome, the family of labiate. Distributed in Central Asia. Mauve flowers are collected at the top of the stem in a dense capitate inflorescence. It blooms in June and July. The daily gain of the control hive during flowering of the zizifora up to 15 kg.

***Halimodendronhalodendron:*** Thorny shrub of the legume family, up to 2 m high. Widely distributed in Kazakhstan and Uzbekistan. It blooms in May for 10-15 days, sometimes again at the end of summer. Honey production 194 kg per 1 ha. Daily gain of the control hive during flowering of *Halimodendronhalodendron* 3 kg. A strong bee family collects 10-15 kg of marketable honey with *Halimodendronhalodendron*.

***Alhagicamelorumfisch:*** Perennial plant of the legume family. Distributed in Uzbekistan, Kyrgyzstan, Turkmenistan, Kazakhstan and the southern regions of Azerbaijan. Shrub 60 cm high or more. It blooms all of June and half of July. A huge amount of nectar is formed in the

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flowers, therefore, in the areas where *Alhagicamelorum* is distributed, it is a plant of the main honey collection. The Bee Family can collect up to 50 kg of honey from it.

***Hibiscus cannabinus***: Technical culture of the family malvaceae. *Hibiscus cannabinus* is cultivated in Uzbekistan, Kyrgyzstan, Kazakhstan. The flowers are large, yellow, with a bright dark orange spot inside the corolla. Flowering begins with the lower flowers. It blooms in July, August, September. Flowering time 50 days. Honey production 40 kg per 1 ha. The daily gain of the control hive is 0.8-1 kg.

***Medigana sativa***. Perennial fodder culture of the legume family. *Medigana sativa* is cultivated mainly in cotton growing areas. A moth flower is lilac or purple. Flowering time June – July. On irrigated lands, the medical productivity of *Medigana sativa* is 270-300 kg per 1 ha of sowing. When sowing *Medigana sativa* on irrigated lands, the daily gain of the control hive during the honey harvest is 2-3 kg.

**Gourds:***Cucumisrneo*, *Citrullus vulgaris* Schrad. With large areas of cultivation, bees can be used as a supporting honey collection. Flowering lasts 5-6 weeks. Honey production is about 10-30 kg per 1 ha. In addition to nectar, bees also collect pollen from gourds.

Specialists noted that large areas of land in various regions of the world entered the succession stage, during which the volume of the feed supply of bees often increases, but then the available feed supply of bees slowly decreases and, accordingly, the potential production of honey decreases [2, 7, 8]. However, these changes occur over a rather long period of time, and their influence may be obvious from a historical perspective [2, 3]. The observed global trend of reducing the biological diversity of the resources of wild melliferous plants, which are the food base of honey bees and other pollinators, is also alarming. This trend is directly related to the growing food security problem [10]. In various countries of the CIS and far abroad, the economic development of territories also leads to a decrease in the species diversity of honey plants and the impoverishment of the honey base [6, 7].

The main reason for the disappearance of certain plant species is human activity: deforestation, reclamation, land reclamation, grazing, improper land use, alienation of land during the construction of facilities, industrial and transport emissions, as well as recreational pressure. As a result, the habitat of species is violated, which leads to their extinction [8, 9].

As a result of our research, we note that honey plants are unevenly distributed across the research region. The bulk of species (55%) is distributed throughout the territory, 14% - only in the northern part, 20% - in the southern, 4% - in the central, 5% - in the eastern, 2% - in the western part, which is obviously explained strong elongation of the territory from north to south. The melliferous flora of the region is endemic. Many endemic species are rare, endangered, or recognized as an integral (protected) part of the desert ecosystems of the South Aral Sea region.

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