



***Sicyos angulatus* L. new Alien Species in Southern Colkhetti Flora (Adjara, Georgia)**

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ABSTRACT: In the end of 20th century and the beginning of 21st century synanthropy of flora and plants occupied the whole world including Georgia. Its change is completely impossible. We clearly see the strengthening of advent-foreign origin plants colonization. Unlike other parts of Georgia the invasion of foreign plants continues more intensely in the southern Colkhetti in Adjara floristic region. In this research there is given the literary survey of non-local flora spread in southern Colkhetti (Adjara, Georgia) and biological characteristic features of a new invasive species *Sicyos angulatus* L. It is an annual plant that spreads mainly by reseeding itself. Seeds are produced in large numbers and the enclosing fruit is disseminated by animals, which may catch the prickly fruit in their fur.

Sicyos angulatus is spread on the river banks and nearby territories, mainly in the swampy and moist soils. It is widely spread on the agricultural grounds and represents as a serious weed for farmers.

Key words: Georgia, Adjara, Invasive, Alien, Flora, *Sicyos angulatus*.

INTRODUCTION

Floristic region of Adjara is situated in the south-west part of Georgia between 41° 33' of South latitude and 42° 35' of East longitude. Geographically Adjara is divided into parts- seaside Adjara and mountainous Adjara. According to relief the area is divided into 4 main parts: plains, hilly zone, mountain gorges and highland. Lowlands lay along the sea coast as a narrow line and is broken with Tsikhisziri and Gren Cape high points. The height ranges between 100-1000m and 2500-2700m.

Seaside Adjara is characterized with humid subtropical climate and the inner mountainous Adjara has less humid mountainous climate. All this creates good conditions for invasion-spread of advent –foreign species (Javakhishvili, 1926; Nizharadze and Djibuti, 1978; Mandjavidze, 1982).

MATERIALS AND METHODS

Route method of the research territory (Adjara floristic region) was used for plant description on different

habitats: railway, highways and stations and habitats of nearby areas; sea port territory; nurseries, abandoned green units, botanic gardens and other collection spots; ruderal areas, water channels; seaside grassy sandy areas; Where taking the plants, making and identification of the herbariums took place. Internet was used for recognition of plants.

To obtain images of main morphological features with the help of digital camera and graphic sketches; Descriptions and marking of plant distribution on the research territory was continued with application of GPS (*Global Positioning System*) technology.

RESULTS AND DISCUSSION

The appearance of foreign plants in Adjara is related to the introduction of cultural plants. Since the end of the previous century many researches and works have been done to study non-local flora in Adjara (Kolakovsky & Sachxhokia, 1946; Davitadze, 1974, 2001; Kikodze *et al.*, 2010; Davitadze *et al.*, 2014).

According to literary references and herbarium materials at the end of the XIX century there were 134 advent species in Adjara Flora. In the 1920ies 168, in the forties 281, since 1950 the number of advents grow

by 30-40 species in every 10 years, which reached to 450 species in 2000-2010. In 2010–2014 many new advent species were described by us. Consequently the overall number for today is about 500, Fig. 1.

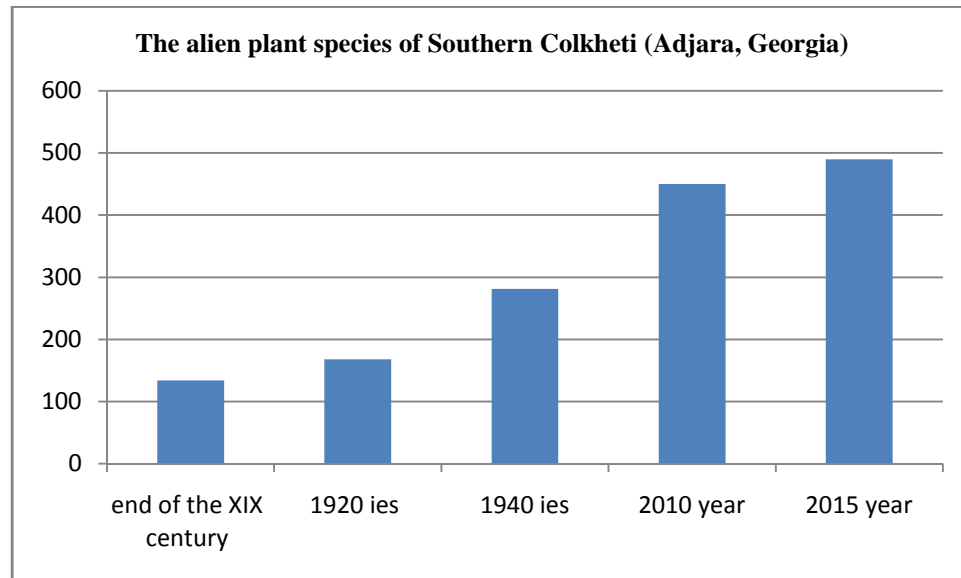


Fig. 1. Alien species growth by years.

In this research we have presented a new, foreign species for Adjara Flora *Sicyos angulatus* which was discovered by us and at the same time it contains threat from agricultural and biovariety point of view.

Sicyos angulatus is the north American plant of Cucurbitaceae family. It was first introduced to European ornamental, but has since escaped cultivation and become a weedy invasive species. It occupied European countries Czech republic, Italy, Romania, Yugoslavia, Germany, Spain, European part of Russia, Turkey and widely spread into eastern Asia. The name *Sicyos angulatus* Greek for “angular cucumber”, referring to its fruit. Common Names: Bur-cucumber, One-seeded Bur-cucumber, Star-cucumber (Fernald, 1950; www.vplants.org).

This plant is an annual vine, dying entirely in the coldest months of the year. Leaves are simple, palmately veined, and alternately arranged. They have denticulate margin and 3-5 shallow lobes with a cuneate tip. The leaf shape is orbicular-angular with a deep basal sinus, measuring about 8cm in length and width. The plant is pubescent on the stem and on the under side of the leaf along the petiole. The petiole is generally 5cm long. “The root system consists of a shallow branched taproot”.

Sicyos angulatus climbs with axillary tendrils bearing 3 or 4 branches. Branches of the tendril originate 2-5cm above the base of the tendril. When the tip of the tendril makes contact with a support, it wraps so hooks around the support, securing the tendril. Proximal to

the contact point, the tendril then begins to twist forming spirals. It has an unusual ability, known as perversion, to form spirals first in one direction and then in the other direction.

Flowers are monoecious with both staminate and pistillate flowers generally arising from the same axis on pubescent peduncles. The peduncles of the pistillate flowers are generally the same length as the pedicels, whereas the peduncles of the staminate flowers are several times longer than the pedicels. The calyx is green, five-toothed, and pubescent (Tzonev, 2005; Terzioglu & Ansin, 1999). The corollas of both sexes are white with green striations, and consist of five petals fused at the base into an open bowl, and free and spread at the tips. Staminate flowers form on either paniculate or racemose inflorescences. The anthers unite to form a central column. Pistillate flowers are borne on a compact cyme, in a globose cluster of 8-20 flowers. The pistil consists of a superior ovary, a slender style and 3 stigmas.

Flowering Time: In our condition *S. angulatus* blooms from mid-July to mid-October. Fruits are found clustered together, radiating from a central point and appearing as if it were one fruit with broad spikes. These clusters measure 2.5-3.7cm across. In reality, each ‘spike’ is a single fleshy fruit (a berry), that is dry and in dehiscence at maturity, with one seed in side and a single style at the tip. Each fruit is covered in sharp, white prickles and measures 1.1-1.7cm long. Each fruit contains a single, large seed.

The seed is brown, flat, and tape red at one end and is never fully released from the fruit. Thus what appears to be a seed at dispersal is a single mature vary with one seed inside. *S. angulatus* is an annual plant that spreads mainly by reseeding itself. Seeds are produced in large numbers and the enclosing fruit is disseminated by animals, which may catch the prickly fruit in their fur.

Sicyos angulatus in our conditions it is spread on the river banks and nearby territories, mainly in the swampy and moist soils. It is widely spread on the agricultural grounds and represents as a serious weed for farmers.

CONCLUSIONS

According to literary references and researches held by us the amount of non-local plant species on the territory of Southern Colkhети (Adjara, Georgia) is about 500. As for the harmfulness we put the invasive species *Sicyos angulatus* on the first place., its natural habitat is similar to the climatic conditions of south Colkhети soil and is characterized with wide range of spread.

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