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HEALING PROPERTIES OF YUCCA GLORIOSA AND ITS CULTIVATION PERSPECTIVES IN AGRO-ECOLOGICAL ENVIRONMENT OF IMERETI

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ABSTRACT

Yucca Gloriosa species belong to a very interesting group of plants, their consumption is diverse. As biochemical studies reveal, some types of Yucca leaves contain tigogenin and stereogenic sapogenin, which is the source of syntheses of steroidal hormonal medicine. Yucca as a raw material is a valuable set for the pharmaco-chemical industry. Yucca was introduced in Georgia in the 19th century.

Yucca has a great ability to be adapted to the different ecological environment. Among 11 introduced species in Transcaucasia, Yucca Gloriosa L. is distinguished with its relatively high content of healing substances. Yucca gloriosa L. blooms well in climatic conditions of Georgia, although, they don't provide seeds. The plant easily vegetates by dividing into 10-20cm length parts that later are introduced in the soil. Propagation is also processed by rooting of the 1-year young rosette. It is noteworthy that the Yucca stem does not lose its ability to take root even after a few days in air-dry conditions.

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Introduction. There is a great set of synthetic samples in modern medicine, but the demand for natural, healing raw materials and the medicine prepared by them is growing daily. Therefore it is applicable to study not only the healing/treating/curing properties of wild flora but also of introduced species, to observe the bio-ecology process and determine the possibility of cultivation in diverse agro-ecological environments. Yucca Gloriosa species arise great interest, they have been used multi-functionally. Initially, it was considered as a plant that provides decorative and technical fiber, but later, biochemical studies of some species of Yucca revealed that their leaves (Mostly old leaves) contain tigogenin and stereogenic sapogenin, which is the source of syntheses of steroidal hormonal medicine.

Yucca as a raw material is a valuable source for the pharmaco-chemical industry.

Yucca originates from the Southern part of Northern America and Central America. Naturally, it is mainly distributed in semi-desert and desert zone.

Yucca was first introduced to Europe by the British in the second half of the 16th century. In the next century, Yucca is found in many European countries, but most of the current species have been distributed in Europe since the 1800s.

Yucca was introduced in Georgia in the second half of the 19th century and it is quite widespread. It was mainly used in green construction - decorating gardens, and squares. *Yucca* is still considered to be one of the essential elements of green areas.

Research methods and results.

11 species of *Yucca* have been introduced in the Transcaucasia. *Yucca gloriosa* L. is distinguished from these species by its relatively high content of healing substances.

Yucca gloriosa L. belongs to Liliaceae Familiae, Dracaenoideae Engl, it is an evergreen plant, that is characterized by a short, ramified large stem, which ends in a tightly spaced rosette of bound leaves.

Some of *Y.gloriosa* reach up to 5 meters in height. The leaves are erect, thick, leathery, and dark green. The leaf edges are bordered by a yellowish-brown ridge. The leaf length average is 70cm. The area is 150-160cm. The leaves are narrow in shape at the base, gradually they are widening and the base becomes 2/3 length, then it gets narrow again and ends with a large and sharp thorn.

The *Yucca* flower is an upright ovate or sometimes broad pyramidal up to 1-2 meters long. The arrowhead of the flower stem emerges from the middle of the leaf rosette and develops a large number of 200-400 bell-shaped, inverted flowers. The perianth consists of two rows of the three-top leaf. The color of the perianth is white or beige and sometimes purple or yellow.

The bio-ecological properties of the *Yucca* were formed phylogenetically in desert and semi-desert conditions, but it is one of the rarest plants. Its plasticity in terms of adaptation is indeterminable by exposure to the different ecological environments. This is vivid by the example of *Y.gloriosa*.

Yucca gloriosa L. is characterized by a wide range of adaptability to different soils. They are found on almost all types of soils in Imereti, starting from clay loam soils to light mechanical soils.

The soil surface/cover of the Imereti region is characterized as diverse. Subtropical humid climate has a great influence on the soil formation process in Imereti, therefore, Imereti is represented by yellow, loamy, humus-carbonate, red earth, and alluvial soil types, together with the soil sub-types.

Yellow soil is loamy, medium, and thick, with deep humus and heavy loamy soil.

Loamy, acidic, large and with medium thickness, slightly humus light clay, medium loamy soil.

Humus-carbonate, limestone, large and medium thickness, small humus soil.

Red soils are medium-thick, high content humus, light clay, and loam soils develop on zebra clay.

Alluvial soils are developed in riverside valleys and on the lower terraces of the rivers. Which are periodically covered with water. This process produces specific signs of alluvial soil structure. Alluvial soils are characterized by the accumulation of river sediments - alluvium.

Yellow, podzol soils are developed in humid subtropical climates on river terraces. It is one of the most common soil types. It has a large thick profile, insufficiency of the bases in the absorbed complex, neutral, and weakly acidic reaction. Yellow, podzol soils are found on slopes as well as on plain terrain. From the morphological description, it can be seen that the soil has a large thickness of the profile and does not contain carbonic acid lime.

The data of mechanical analysis showed that the soil is loamy, rich with humus, nitrogen corresponds to humus (0.219%). The soil is depleted cause of soluble phosphorus and mobile potassium. The sum of absorbed stems is not high. Its rate is 9, 23 -16.25 million equivalent. There is observed the presence of hydrogen ions in the absorbed complex and its advantage over the absorbed bases (Ca + Mg). The soil area reaction is acid the pH in the water equation is equal to 4.1-5.0.

The humus layer in the upper arable (Aп) layer is small: 1,08-3, not exceeding 62%. At depth, its content decreases sharply. It is deficient in nutrients. The exception is the area of tea plantations, where the content of soluble phosphorus is big (47.25-50.0 mg per 100 g of soil).

Fertilizers are very important in increasing the fertility of yellow, podzol soils. The preference is given to organic fertilizer because in cultivating *Yucca* the focus is on its raw healing material and in this respect, organic fertilizer does not change the structure of the plant.

Yucca is propagated by seeds as well as vegetatively. In conditions of Georgia, *Y.gloriosa* does not develop seeds, its reproduction is mainly vegetative.

From the other ways of vegetative propagation, the highest rate of propagation is marked by cutting the stem base, which is divided into 4 segments. The plant easily vegetates by dividing into 10-20cm length parts and placing them in the soil. Propagation is done also by rooting young 1-year rosette. 2/3 of the leaves of the rosette should be pruned for rooting. The stay of *Yucca* stem in air-dry conditions during several decades does not lose the ability to get roots, although, in this case, the duration of rooting is significantly increased.

Due to its height, the stem of *Yucca Gloriosa* develops many eruptions in the form of rosettes, which significantly increases the number of raw materials got for medical purposes.

Conclusions. *Yucca* is quite adaptable to adverse environmental conditions, though, while cultivation it must be considered that it requires bright insolation conditions for further development. Its seedlings somehow wither and grow poorly in semi-shady or shady conditions. The nutrition area must be well determined for having optimal crop/harvest, cause the vegetative part of *Yucca* (leaves) is bred as a healing raw material. The best feeding area for cultivating *Yucca* is considered to be 3.0m between rows and 1.5-2.0 m. among plants in agro-ecological conditions of the Imereti region.

The proposed layout of plants is optimal for further development, herewith, it ensures the normal procedures for various agricultural activities.

Thus, vegetative propagation of *Yucca* is preferred over *yucca* propagation methods. This produces a seedling suitable for planting in a relatively short time and costs less than sowing. *Yucca* do not suffer from pests and diseases and are not demanding on climatic conditions, which makes them easier to grow.