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The Distribution And Systematic Position Of The Pistia Plant, A High Water Plant In Nature

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Annotation. In the article, the distribution and systematic place of the tall aquatic plant Pistia in nature is determined. The role of the pistachio plant in the treatment of wastewater from poultry factories, piggery complexes and hemp processing plants is very high**.**

Key words: wastewater, pistia, biomass, nutrient medium, endosperm, vegetative period.

The characteristics of high water plants are similar to each other. They multiply by themselves vegetatively. It is resistant to cold and acts as a biofilter in the biological treatment of wastewater. (Boriev et al. 2009) showed that these aquatic plants can also be used in sewage treatment. Pistia, (water cabbage), is a perennial freshwater plant belonging to the Pistia stratiotes family, which floats on water. and the water forms the vineyard. Pistia is one of the oldest plants. Its remains have been found in the south of France and in North America. Currently, the range of pistia includes Asia, Africa, Australia and Europe.

The fruit of the pistachio is a dry, single-celled capsule with several seeds. The skin of the fruit bag is thick and green in color. Ripe fruit, the skin of the fruit sac becomes thinner and turns light brown in color. When the fruit is ripe, the fruit sac ruptures and the seeds come out of the fruit sac. Some of it falls to the bottom of the pond, and some of it sticks to the roots of the pistia. Ripe seeds are brown, unripe ones are green, oblong-cylindrical, 1.5-3 mm in size. The mass of one thousand seeds is 2.2 g. The dormant period of pistachio seeds is very short under introduced conditions, just like under natural conditions. When there are favorable conditions (water temperature 25-26°C and sufficient light), the seed starts to grow after 14 days after leaving the bag. Light is one of the decisive factors in the germination of pistachio seeds, because even if the temperature is sufficient, the seeds will not germinate in the dark. Pistachio seeds are resistant to long-term (up to 60 days) cold temperatures (3-5°C) and germinate after 14-16 days. In laboratory conditions (distilled water, temperature 26-28°C and light is a must) seed germination is 72 percent. In botanical gardens, pistia is cultivated as an ornamental and aquarium plant.

In addition, pistachio biomass is used as feed for pigs. As a nutrient medium for growing pistachios, manure from various animals (cattle, cattle, pigs, horses) from hemp processing plants, mineral fertilizer production enterprises, biochemical plants, hairdressing factories, meat processing plants, wastewater from urban household service enterprises, mineral organic feed can be used in environmental conditions. According to scientists, the growth of floating plants depends not only on the specific composition of nutrient media and the type of plant, but also on the initial density of planted seedlings.

The primary seedling density of pistachios is 1-3 kg, in some cases 5 kg/m of wet biomass per 1 m2 of water surface, depending on the concentration of nutrients and wastewater. Pistia grows well in the wastewater of piggery complexes and poultry factories. Its yield produces up to 1400 grams of wet biomass per 1 m2 of water per day. Below is a view of Pistia telerhizovid algae.

Fig. 1. Pistia (Pistia stratiotes) is a tall aquatic plant

The role of the pistachio plant in wastewater treatment of poultry factories, piggery complexes and hemp processing plants has been studied by a number of researchers [101, 37-41 b;].

Sh. It is given in the works of R. Shoyakubov (1993).

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Pistia is an algae that grows floating on the surface of fresh waters, partially mineralized and rich in organic matter, and forms extensive aquatic meadows in water bodies (riverbanks, lakes and reservoirs) in most tropical and subtropical regions of the globe. In our country, pistia is propagated as an ornamental plant in botanical gardens and in aquariums by hobby fishermen.

It is known that the growth of floating plants depends not only on the characteristics, composition and type of the nutrient media, but also on the initial density of the planted seedling. For example, the primary planting density of pistia is often 1 kg, in some cases 5 kg of dry biomass per 1 m2 of water mass (where a water depth of 0.51 m is desirable), depending on the concentration of forage and effluent. Pistia grows well in the sewage of piggery complexes and poultry factories (when the sewage is mixed with 50 percent tap or ditch water). In this case, it is possible to obtain up to 1400 g of wet biomass from 1 m2 of water surface in a few days.

The best nutrient medium is a nutrient medium with less than 5 grams of manure per 1 liter of water. In such a nutrient medium, pistachios (when the initial seedling density is 2 kg per 1 m2 of water surface) grew 590 g per night, and 450 grams in a nutrient medium with 3 g of poultry manure per 1 l of water. 330 and 320 grams were grown in wastewater from hemp processing plants, biochemical plants, more than 290 grams in nutrient medium with 5 grams of horse manure per 1 liter of water, and more than 240 grams in mineral nutrient medium. In this case, the temperature of the feed medium and wastewater was 20-280 C and pH 6.0-9.0.

Based on the results of the experiment, an organo-mineral nutrient medium consisting of pig manure, ammonium sulfate, magnesium sulfate, and iron chloride salts was recommended for pistachio reproduction.

When pistachios are propagated in laboratory conditions and in open ponds, some of its adult representatives reach a height of 20-40 cm. The root system is pubescent, with long, ciliated rhizomes. The root is a light, clear color and can be 0.5-0.6 m and even longer. The body is short, the leaves have a leaf-like appearance. The upper part of the leaf is velvety green, and the lower part is silvery green, consisting of 9-12 twisted veins. Due to the porous structure of the leaf, the leaf cell is filled with air, so the pistachio grows on the surface of the water.

Pistia can bloom in the open air from the second half of April to November, and in greenhouse conditions throughout the year. Pistia has the characteristic of rapid propagation by vegetative means and from seeds, but vegetative propagation prevails. Vegetative reproduction is mainly through the shoots (stolons) growing from the leaf axils. New pistils develop at the tips of the branches. This situation will continue throughout the summer and may be repeated several times until late autumn

Fig. 2. Morphological appearance of Pistia telerhizovid

As soon as the weather becomes favorable, the pistachio seedlings are taken out of the greenhouses into the open basins. At the end of April and May, pistia grows rapidly, reproductive organs begin to form in a circle from the point of growth towards the center. Up to 4/5 whorls can be formed on each plant during the growing season. Thus, the formation of leaves is from the center outwards, and the formation of reproductive organs, flowering, and ripening of seeds is from the outside toward the center. (link; Fig. 2. Fig.)

Pistachio seed propagation has several advantages over vegetative propagation. In this case, in the autumn-winter season, in small pots, it is possible to grow enough seedlings from pistachio seeds for planting in the spring. To prepare pistachio seeds, mature pistachios can be collected by shaking them on a cloth in September and October. Collected pistachio seeds should be placed in glass containers and filled with tap water or, if possible, distilled water. Daylights can be used so that the containers are not too large and deep

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and the light falls. Germinated seeds must have a chance to float to the surface of the water. The seed germinates well at a temperature of 25°C, a decrease in temperature slows down the germination of the seed. A pistachio sprouted from a seed should be illuminated for 7-8 hours. It is possible to use daytime lamps. After several roots appear in the sprouts that have sprouted from the seed, they float to the surface of the water. They go into independent formation not only from the seed endosperm, so it is necessary to replace distilled or tap water with tap water.

When using the pistachio plant in large quantities in the conditions of Uzbekistan, it is important to study the flowering of its seeds. As soon as there are favorable conditions for its growth, i.e. the end of April, it begins to develop rapidly at the beginning of May. From the point of growth towards the center, 4 leaves are formed in a circle and begin to grow. From each growing leaf axil, generative organs are formed. The resulting leaf and generative organs tend towards the center. Thus, the flowering of the flowers and the formation of fruits will be successful. Each cycle lasts 8-12 days. The flowering time of the pistachio plant depends on the weather temperature of 16-25 °C and light. Their abundant flowering begins 45-55 days after the first flower opens and lasts 60-75 days. It was found that 2 types of inflorescences are formed during the growth of pistachios, i.e. colorless and colored seed flowers. Inflorescences of both types have been determined to belong to seed flowers. In the following years, the number of domestic and utility industrial enterprises in the republic is increasing, and their development and operation are accelerating. Along with the development of production, the amount of waste and wastewater from enterprises is also increasing. Biotechnology for the biological treatment of waste water from domestic utility industries, that is, the acceleration of the purification processes using various algae and aquatic plants growing in the water, still requires development.

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