

Biomorphology Characteristics Of Pineapple Plant.

¹Yulchiyeva Sayyora Abduqaxxorovna., ²Melanova Nazira Rashidovna.

¹ Namangan State University independent researcher

² Associate Professor of Namangan Institute of Engineering Technology
melanova@mail.ru

Abstract: Pineapple is a plant with a soft body, about 1-2 meters in height and width. A pineapple flower is an inflorescence that usually develops from an apical meristem. Produces 50 to 200 individual flowers during flowering. The flower is spiral-shaped and covered with a crown of about 150 short petals. . Pineapple fruit is rich in vitamins A, B1, B6 and C, copper, manganese and potassium.

Key words: Pineapple, plant, fruit, vitamin, toxin, enzyme

Pineapple is a soft-bodied plant with a height and width of about 1-2 meters. Due to the arrangement of the leaves, the plant has a spiral morphology. The stem is a distinct central cylinder, erect and ball-shaped, about 25-50 cm long, 2-5 cm at the base, 5-8 cm at the top, and contains nodes and internodes [1].

A fully grown pineapple plant has many (about 68-82) leaves that are dense and compact. Old leaves are located at the base of the plant, and new ones are in the center. The leaves are usually sword-shaped (except for the tip leaves) and taper towards the tip (about 5-20 cm long). They may or may not have spines on the edges. (Smooth Cayenne variety has thorns at the end of the stem). The upper and lower surface of the leaf is covered with hairs, it is more visible on the lower surface. Leaves surround the stem up to two-thirds of its circumference, widening at the base to form a sheath around the stem. Due to the tendency to collect water at the base, the leaves are semi-hard. This feature can also provide water and nutrients to aerial roots [3]. The plant can bloom after producing 70-80 leaves. The root system is branched and under optimal conditions, the taproot can spread up to 1-2 meters and the main root can spread to a depth of 0.85 m. It produces 50 to 200 individual flowers. The flower is covered with a crown of about 150 short petals. It is called "red heart" due to its red color. composed of stamens and pistils. Individual flowers consist of three petals and stamens, six stamens (about half the length of the petals) and one pistil.



1 . General view of the pineapple plant

The petals are white at the base, purple-blue at the tip and tongue-shaped. The pollen-producing part of the flower is double-layered and contains many pollen grains, which are sticky, spherical in shape, bilaterally symmetrical, and contain two pores [2]. There are big differences in size. Pineapple flowers are not cut; the flower develops parthenocarpically and turns into a berry. The fruit of the pineapple is a seedless syncarp and polygonal in shape. The fruit can be about 2.3 kg or more. Ripe fruit has a yellow peel and a pleasant smell. The color is light yellow to golden yellow, sweet and juicy. Seeds are rarely formed and appear flat and curved on one side and pointed on the other. They are about 3-5 mm long and 1-2 mm wide, covered with a hard seed coat. The fruit usually contains a bunch of small leaves that can be used for vegetative propagation [4].



2 : Flower appearance and fruit formation of the plant.

Research Methodology: There are no toxins in the pineapple plant. However, when eaten raw and in large quantities, pineapple can cause a burning sensation on the lips and mouth and can also cause stomatitis. That is, it causes inflammation of the mucous membrane of the mouth, cheeks, gums, lips, tongue and mouth. Eating too much pineapple can cause illness in the digestive tract. Pineapple contains no harmful phytochemicals [5]. The presence of proteolytic enzymes such as bromelain in pineapple juice was discovered in 1891. Its highest concentration, that is, bromelain, is found in the pulp and stems of ripe pineapples. Bromelain is widely used in food production, pharmaceutical industry and diagnostics and laboratories. The main production centers of bromelain are located in Japan and Taiwan. Bromelain consists mainly of cysteine proteases, with minor amounts of other proteases including peroxidase, acid phosphatase, amylase, and cellulase. Cysteine Among the proteases found in pineapple stems are Ananain, Comosain, and Stem bromelain, the cysteine protease found in pineapple fruit is called fruit bromelain. Bromelain has the property of increasing immunity, increasing the activation of T lymphocyte cells [4]. Bromelain, found in pineapple fruit, is a non-toxic inhibitor of cell signaling and cytokine production that helps block IL-2. In production, but does not affect cell proliferation. These properties are useful in the therapeutic treatment of inflammation, trauma and hypersensitivity diseases. Bromelain also has anti-inflammatory and analgesic properties and can be used as a safe alternative treatment in osteoarthritis. In addition, in reducing the clinical and histological severity of the colon, anti-inflammatory in inflammatory bowel diseases, respiratory helps in the treatment of allergic diseases of the airways and impaired development of altered lymphocytes. It can also be used with similar effects in the treatment of asthma and hypersensitivity diseases in humans. The edible portion of pineapple fruit (60% of fresh fruit) is 85% water, 0.4% protein, 14% sugar, 0.1% fat, and 0.5% starch. The amount of sugar varies significantly during the ripening process, which mainly depends on the variety. Pineapple fruit is rich in vitamins A, B1, B6 and C, copper, manganese and potassium.

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