The American Journal of Engineering and Technology
(ISSN – 2689-0984
Published: March 30, 2021 | **Pages:** 70-75
Doi: https://doi.org/10.37547/tajet/Volume03Issue03-11

IMPACT FACTOR
2021: 5. 705
OCLC - 1121105677

Characteristics Of Catalpa Plant As Raw Material For Oil Extraction

R.A. Makhmudov
Bukhara Engineering-Technological Institute, Bukhara City, Republic Of Uzbekistan

K.Kh. Majidov
Bukhara Engineering-Technological Institute, Bukhara City, Republic Of Uzbekistan

M.M. Usmanova
Bukhara Engineering-Technological Institute, Bukhara City, Republic Of Uzbekistan

Sh.M. Ulashov
Bukhara Engineering-Technological Institute, Bukhara City, Republic Of Uzbekistan

S.A.Niyozov
Bukhara Engineering-Technological Institute, Bukhara City, Republic Of Uzbekistan

ABSTRACT

Based on the analysis of information sources, the characteristics and characteristics of the catalpa plant are estimated. The features of their cultivation are established. The directions of using catalpa seeds for the needs of food and pharmaceutical production are determined.

KEYWORDS

Catalpa plants, variety, characteristics of the composition of the substance, methods of cultivation, use.

INTRODUCTION

Lately in food and pharmaceutical industries, special attention has been paid to the study of unconventional plants. In this direction, a special role belongs to the catalpa plant [1, 2].

In Uzbekistan, different types of catalpa are cultivated [3]. However, they are not used for their intended purpose. In this regard, the study of the characteristics of catalpa plants in local regions has the practical interest.

The American Journal of Engineering and Technology
(ISSN – 2689-0984
Published: March 30, 2021 | **Pages:** 70-75
Doi: https://doi.org/10.37547/tajet/Volume03Issue03-11

IMPACT FACTOR
2021: 5. 705
OCLC - 1121105677

METHODS OF RESEARCH

Complete characterization of catalpa plants is given based on available information sources. Considering the features of their chemical composition, the directions of using catalpa plants for the needs of food production are determined

RESULTS AND THEIR DISCUSSION

Composition of catalpa as oil-containing raw materials is not studied well. Bark of the catalpa plant has tanning elements and special dammars in its composition, and they give it useful qualities [4, 5]. Specialists found the presence of glycosides in the leaves [7]. Seeds also contain about 30% oil rich in eleostearic acid [6]. All these substances make the composition of the crop rather valuable.

There is oil in the seeds of a plant crop, which dries quickly enough. In this regard, it is used for the manufacture of paint-and-lacquer coatings [8, 9]. The bark of this tree in infusion or broth is a useful medicine for digestion [10].

Tree planting is carried out on site that has good lighting and is protected from the wind. The ground under the tree should be covered with a thick leafy layer. Like any other plant crop, catalpa is not devoid of diseases and wrecking by bark beetles and other microorganisms [11]. The tree generally is resistant to diseases, it is just necessary to control the general condition of the soil. The ground should be loose and pervious. Besides, key requirement is the easy passing of water.

In natural conditions tree grows up to 30 m. It blooms a month, beginning in mid-June [12]. Each inflorescence has up to 50 snow-white or cream color flowers with aroma similar to aroma of apple trees [13]. The flowers themselves are somewhat similar to digitalis bells. Flowers can be covered inside with brown-purple or raspberry dots and yellowish stripes. Leaves do not turn yellow in autumn, but remain green almost until frost, and then simply fall off. Fruits are thin and long pods with seeds up to 40 cm long [14]. The seeds fly apart when the pods open. The roots mainly grow to a depth of 0.5-1 m.

Fig.1.

Fig.2.

The American Journal of Engineering and Technology
(ISSN – 2689-0984
Published: March 30, 2021 | **Pages:** 70-75
Doi: https://doi.org/10.37547/tajet/Volume03Issue03-11

IMPACT FACTOR
2021: 5. 705
OCLC - 1121105677

Golden catalpa (Fig. 1 and 2) has velvet bright yellow leaves, under natural conditions its height reaches 10 m, but when planted in gardens it grows up to 2 m [15, 16]. "Kene" variety has yellow leaves with a greenish spot in the center and bright green streaks. Low "Nana" variety is brachytic tree, and are the most winter-hardy. Catalpa needs places that are well lit by the sun, but not blown by the winds, because it has very delicate leaves that are damaged by the wind [17]. She prefers moist, well-drained, loamy soil with the addition of organic fertilizers.

Branches of the tree often freeze in winter, so it is necessary to cut off those branches that have dried and damaged. The tree tolerates pruning perfectly. Catalpa is quite resistant to diseases and pests. Seeds and cuttings that cut in the summer propagate trees. Oil is extracted from the seeds of the tree, which dries very quickly in the light and becomes hard. The oil contains isomers of eleostearic acid; it is used in the paint and varnish industry, and is part of composition of paints and varnishes [18]. Plant extract is added to serums, creams, gels, emulsions. Tree bark contain dammars and tannins in it, and leaves contain monoterpene glycosides [19].

In folk medicine it is recommended to drink decoctions from the bark of a tree to get rid of helminths, since the bark contains bitter glycosides [20]. The leaves of the tree contain volatile, they are used in the treatment of struma, carbuncles, abscesses, scabs, and decoction of the leaves is used to wash the eyes when the cornea is clouded [21]. Catalpa is unpretentious, resistant to various weather conditions, diseases and pests.

In folk medicine it is recommended to drink decoctions from the bark of a tree to get rid of helminths, since the bark contains bitter glycosides [20]. The leaves of the tree contain volatile, they are used in the treatment of struma, carbuncles, abscesses, scabs, and decoction of the leaves is used to wash the eyes when the cornea is clouded [21]. Catalpa is unpretentious, resistant to various weather conditions, diseases and pests.

Fig.3.

Fig.4.

The American Journal of Engineering and Technology
(ISSN – 2689-0984
Published: March 30, 2021 | **Pages:** 70-75
Doi: https://doi.org/10.37547/tajet/Volume03Issue03-11

IMPACT FACTOR
2021: 5. 705
OCLC - 1121105677

Catalpa does not exceed 12 meters in our natural conditions,. There are white and cream patterned flowers, some of which can be covered with small dots. The tree begins to bloom in June or July, and this process lasts for a long 4 weeks. You can enjoy the flowering of bells only 5 years after planting the catalpa. The fruits of this tree are pods (Figs. 3 and 4) containing many seeds, somewhat reminiscent of dandelion. Pods with seeds can sometimes even reach 50 cm in length, and their width is about 1.5 cm. With the onset of cold weather, catalpa gets rid of green foliage. The tree was able to win the love of the catapult surrounding it thanks to flowering, which begins not in spring, like other trees, but in summer, when you can no longer see a flowering tree.

Flowering lasts about 1.5 months. Four varieties of this species were bred [22, 23], which differ from each other by their unusual foliage. The first variety is the aurea. Its other name is catalpa bignoniform gold. This is a sample, which at the beginning of the growing season is endowed with golden yellow foliage. Often grown as a stem corp. It turns yellow at the time of its rapening. Catalpa "Nana" is variety of tree that has a crown in the form of a ball, the circumference of which can reach 2.4 m. This variety is more suitable than others are in the middle lane. It is frost resistant. The variety called "Kene" will not leave you unconcerned, as its foliage has unusual yellow color with a rich green middle and also a small streak. "Purpurea" has reddish brown foliage. It relates to brachytic type, not exceeding two meters in height, with a crown in the form of a ball. Often, this decorative tree is called orchid-like, as its inflorescences are quite similar to orchids. It has a crown in the form of a ball and foliage lowered to the ground. If the temperature drops sharply, then the catalpa drops its foliage. It has straight stems with chic elephant leaves. In general catalpa blooms for 3 weeks. The seeds are enclosed in chocolate pods. Both November and spring period are suitable for collecting seed samples. The tree needs fertile and well-moistened soil in order to develop well and grow.

Thus, research and analysis of the characteristics of the catalpa plant allows determining the possibilities of rational and effective use of this tree in various industries

CONCLUSION

Defined characteristics of catalpa plant determine possibilities of use of this plant in food and pharmaceutical industries

REFERENCES

1. Н.И Шарапов. Маслинные растения и маслообразовательный процесс.Изд.АнСССР, 1959,стр.353.
2. Н.Т.Ульченко, Н.П.Беккер,А.И.Глушенкова Химия природ. соедин. 456 (2000).
3. Масло Семян Catalpa Bignonioides Махмудов Р.А., Кулиев Н.Ш. Сборник трудов Республиканской научно-технической конференции «Технологии переработки местного сырья и продуктов» Ташкент 294 (2008).
4. Быстровысыхающие сырья из местных сортов катальпы catalpa bignonioides. Ш.Улашов., Р.А.Махмудов. Сборник трудов

The American Journal of Engineering and Technology
(ISSN – 2689-0984
Published: March 30, 2021 | **Pages:** 70-75
Doi: https://doi.org/10.37547/tajet/Volume03Issue03-11

IMPACT FACTOR
2021: 5. 705
OCLC - 1121105677

Казакстанской международной конференции . Казакстан 2018 372 с..

5. Копейковский В.М. Данильчук С.И и др Технология производства растительных масел М. Легкая и пищевая промышленность, 1982 416 с.
6. Махмудов Р.А. Технология получения и использования масла из зародышевых хлопьев пшеницы Автореф.дис канд. техн. наук-Ташкент. ИХРВ АН Р.Уз. 1997-22 с.
7. Руководство по технологии получения и переработки растительных масел и жиров Т 1. – Л. ВНИИЖ.1975 г. 726 с.
8. Технологические инструкции масложировой промышленности – Л. ВНИИЖ вып.196. 1960 -126 с .
9. Руководство по методам исследования технохимическому контолю и учету производства в масложировой промышленности Л. ВНИИЖ.. 1967-585 с.
10. Шагапов Р.Ш., Шагалов Р.Р. Декоративные яблони в Оренбуржье и способы их размножения // Известия ОГАУ. 2009. № 3. С. 48-50.
11. Качалов А.А. Деревья и кустарники. М.: Лесная промышленность, 1969. 408 с.
12. Замятнин Б. Н. Сем. 8. Betulaceae C. A. Agardh. - Березовые // Деревья и кустарники СССР. Т. 2. , М., Л.: АН СССР, 1951. С. 264-390.
13. Коропачинский И. Ю., Встовская Т. Н. Древесные растения Азиатской России. Новосибирск: Академ. изд-во «Гео», 2012. 707 с.
14. Полетико О. М. Род 26. Боярышник - Crataegus L. // Деревья и кустарники СССР. Т. 3. М., Л.: Изд-во АН СССР, 1954. С. 514-577.
15. Связева О. А. Деревья, кустарники и лианы парка ботанического сада Ботанического института им. В.Л. Комарова (К истории введения в культуру). СПб.: Росток, 2005. 384 с.
16. Фёдоров Ал. А., Полетико О. М. Род 15. Яблоня - Malus Mill. // Деревья и кустарники СССР. Т. 3. , М., Л.: Изд-во АН СССР, 1954. С. 414-458.
17. Фирсов Г. А., Бялт А. В. Род Lonicera L. в Ботаническом саду Петра Великого // Hortus bot. 2017. Т. 12. 19 стр. , URL: http://hb.karelia.ru . DOI: 10.15393/j4.art.2017.3882
18. Ashburner K., McAllister H. A. The Genus Betula. A Taxonomic Revision of Birches. London, Kew Publishing, 2013. 431 p.
19. Фишер-фон-Вальдгейм А. А. Иллюстрированный путеводитель по Императорскому Ботаническому саду. С 8 таблицами, 2 планами, 1 картой и 59 рисунками в тексте. Составлен Членами Сада под общей редакцией А.А. Фишера-фон-Вальдгейма, Директора Императорскаго Ботаническаго Сада. СПб. Типография «Герольд» (Вознесенский пр., 3), 1905. 301 с.
20. Цвелёв Н. Н. Род 31. Яблоня - Malus Mill. // Флора Восточной Европы. Т. 10. , СПб.: Мир и Семья, 2001. С. 546-550.
21. Цвелёв Н. Н. Сем. 56. Betulaceae S.F. Gray - Березовые // Конспект флоры Восточной Европы. Т. 1. , М.; СПб.: Товарищество научных изданий КМК, 2012. С. 180-190.
22. Фирсов Г. А., Бялт В. В. Новые формы клёнов (Acer L., Aceraceae), культивируемые в Ботаническом саду Петра Великого в г. Санкт-Петербурге (Россия). // Hortus bot. 2015. Т. 10. 7 стр. ,

23. Gelderen D. M. van, de Jong P. C., Oterdoom H. J. Maples of The World. Timber Press. Portland, Oregon, 1994. 458 p.