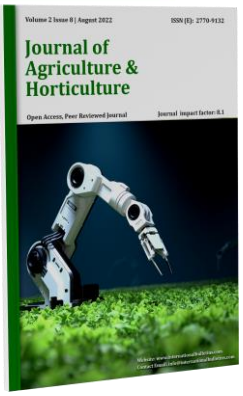

FRUIT AND SEED MORPHOLOGY OF JAPANESE LIGUSTRUM (LIGUSTRUM JAPONICUM) AND CHINESE LIGUSTRUM (LIGUSTRUM SINENSE)

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Abstract: By studying the morphology of the fruits and seeds of Ligustrum species, we can gain information about these species. We also determined key characteristics of ligustrum fruits and seeds, such as size, shape, and texture, which will help us understand their classification and ecological role. These studies revealed that besides the aesthetic value of plants, fruits and seeds are also very valuable. The aim of this study was to study the fruit and seed morphology of Chinese ligustrum (*Ligustrum sinense* Lour.) and Japanese ligustrum (*Ligustrum japonicum* Thunb). The study involved examining the fruits and seeds of several Chinese ligustrum and Japanese ligustrum plants and analyzing them using various morphological methods. In addition, studying the morphology of fruits and seeds of ligustrum species can provide important information for botanists, ecologists, and landscape designers interested in understanding the diversity and ecological impact of these plants.

Keywords: ligustrum, tree, shrub, landscaping, fruit, seed, scale, sercule.

Introduction

Studying the fruits and seeds of ligustrum species is important for several reasons. First, Ligustrum species are known from many parts of the world, and understanding their reproductive biology can provide important information about their ability to spread and colonize new areas. Second, Ligustrum species produce large quantities of fruit and seeds, making them an important food source for birds and other wildlife. By studying the fruits and seeds of ligustrum species, we can better understand the ecological relationships between these plants and the animals that feed on them. In addition, the study of fruits and seeds of Ligustrum species can help develop strategies to control their spread and reduce their impact on local ecosystems. In general, the study of fruits and seeds of Ligustrum species is an important aspect of understanding these plants and their ecological consequences. The study of fruit and seed morphology helps in the identification of different plant species and helps in the development of plant breeding programs for agriculture. In addition, understanding fruit and seed morphology can aid in the conservation and restoration of natural habitats and the management of evergreen species.

Research object and methods

The main researches were carried out on the Japanese ligustrum grown on the territory of the Tashkent Botanical Garden named after Akademik Rusanov under the Academy of Sciences of Uzbekistan and Flowers Garden enterprise. Japanese ligustrum (*Ligustrum japonicum* Thunb) according to L.Kh.Yoziyev [1], the fruits of this shrub remain on

the plant without losing their color during the winter, and the plant begins to bloom from the age of 3. The height of the plant is up to 2-5 m, rarely it grows up to 6 m. The main difference of our plant from other plants is that it is an evergreen ornamental shrub or small tree. Basically, the stem of the plant is covered with smooth, light gray-brown bark. [3]. The leaves of the plant are hard and the upper part of the bark is smooth and shiny. Japanese privet is an ornamental shrub that grows widely and is evergreen. Another characteristic feature of our plant when it is in bloom is the abundance of honey. The fruits of the plant are mostly dark in color and are not suitable for consumption.This increases its decorative properties. Japanese ligustrum begins to bloom in May, and the length of its fruits is 8-10 mm. Japanese ligustrum fruit ripens in October-November. It flowers and bears fruit every year. Widespread in East Asia, Korea, Japan and China [4]. It can also grow well in partial shade. Likes moisture. A plant resistant to severe frosts is a plant that has the ability to re-sprout from the root neck when it is damaged by cold.

Chinese ligustrum (*Ligustrum sinense* Lour.) is a type of evergreen shrub belonging to the family of olives (*Oleaceae*). The plant is widely distributed and naturalized mainly in the islands of China, Taiwan, and Vietnam. Occupies a large part of the eastern and southern regions of the USA. Compared to other plants, the plant is distinguished by its many flowering and fruiting properties, namely, its small leaves. It is a shrub or small tree, usually from 2 to 4 m in height, sometimes up to 7 m. The leaves of the plant are opposite, usually 2-7 cm long and 1-3 cm wide. As for the flowers of the plant, the color of the flowers is white, the length of the flower is 3.5-5.5 mm. Chinese ligustrum begins to bloom mainly in July and is light-loving and grows well in fertilized and moist soil. The fruit is dark in color and is not suitable for consumption. The fruit of the plant remains on the plant throughout the winter without losing its color. The length of the fruits is 4-8 mm, the diameter is 5-8 mm, the color of the seeds is from green to dark [5].

You can use a small kitchen scale or an accurate scale to weigh Japanese privet and Chinese privet fruits and seeds. Considering this, the weighing method was used. This involves using a scale to measure the weight of the fruit or seed. Based on the information of the "Seed Identification Guide" seed measurement organization, measurement work was carried out. Biometric dimensions of fruits and seeds are 0.01 mm using a barbell circle. accuracy, weight 0.01 g on VLKT-500 and "Pocket Scale" electronic scales. accurately measured.

Japanese ligustrum and Chinese ligustrum fruits and seeds weight of 100 pieces of fruit, 1 kg of fruit and seed yield, seed yield, weight of 1000 seeds GOST 13056.4–67 (UzDSt 322.15.04.2009) "**Методы определения массы 1000 семян**" determined based on the requirements [2].

Research results and discussion

Various measurements were made on 100 seeds and fruits of the plant. For example, the weight of 100 freshly picked fruits of Chinese ligustrum is 12.15 grams, and the weight of 100 dry fruits is 7.4 grams. The weight of 100 seeds extracted from the freshly picked fruit of the plant was 10.45 grams, while the weight of 100 seeds stored dry was 5.85 grams. The following research showed that the lowest weight indicator of a freshly picked Chinese ligustrum fruit was 0.12 grams and the highest indicator was 0.2 grams. The average weight of one freshly picked fruit was 0.16±0.04 grams. When we measure the length of Chinese ligustrum fruits, the lowest length indicator of one fruit is 0.29 cm and the highest length

indicator is 0.55 cm. The results show that the average length of fruits is 0.42 It is equal to ±0.13 cm. The lowest length index of the width of one fruit of our plant is 0.21 cm and the highest width length index is 0.45 cm, which indicates that the average width indicators of plant fruits are 0.33±0.12 cm. The lowest indicator of the dry weight of a single fruit of our plant is 0.07 grams and the highest indicator is 0.14 grams, the average indicator is 0.105±0.035 grams.

The lowest weight indicator of one piece of seeds isolated from freshly picked fruits of our plant is 0.1 gram and the highest weight indicator is 0.12 grams. Average weight of freshly picked seeds the indicator shows that it is 0.11±0.01 grams. We measured the length of the Chinese ligustrum seeds and the results showed that the lowest length of the seed of our plant was 0.29 cm and the highest length of the seeds was 0.29 cm. indicated 0.42 cm and their average length was 0.36±0.07 cm. We found that the lowest length index of Chinese ligustrum seed width is 0.2 cm and the highest length index is 0.3 cm, and the average index of plant seeds is 0.25±0.05 cm through our experiments on plant seeds. Our studies on dry stored seeds of our research plant showed that the lowest seed weight was 0.05 grams and the highest seed weight was 0.15 grams. shows. The average weight indicator of one seed of the plant was found to be 0.1±0.05 grams.

We measured the weight of 100 freshly collected fruits of the Japanese ligustrum (*Ligustrum japonicum*) plant separately on a special pocket scale. The lowest indicator of the weight of the fruit of the plant at the time of fresh picking was 0.1 g, and the highest indicator of the fruit was 0.58 g. So, the results show that the average weight of freshly picked fruit is 0.34±0.24 grams. We measured the length of the fruit of the plant using a special barbell circle, and our research showed that. The lowest fruit length indicator of the plant is 0.61 cm and the highest fruit length indicator is 0.83 cm instead of additional information we can say that the average fruit height length is we found that the indicator is 0.72±0.11 cm. If we analyzed the length and width of the plant fruit, the results showed that. The lowest fruit width length index is 0.42 cm, the highest fruit width is 0.78 cm, and the average fruit width length index is 0.6±0.18 cm.

Table 1

				the lowest	the highest	average
Chinese ligustrum (*Ligustrum sinense* Lour.)	Fruit	Freshly picked fruit	weight, gr	0.12	0.2	0.16±0.04
			tall, sm	0,29	0,55	0,42±0,13
			width, sm	0,21	0,45	0,33±0,12
		Dry stored fruit weight, gr		0.07	0.14	0.105±0.035
	Seed	Freshly picked seed	weight, gr	0.1	0.12	0.11±0.01
			tall, sm	0,29	0,42	0,36±0.07
			width, sm	0.2	0,3	0,25±0.05
		Dry stored seed weight, gr		0.05	0.15	0.1±0.05
Japanese ligustrum (*Ligustrum japonicum* Thunb)	Fruit	Freshly picked fruit	weight, gr	0.1	0.58	0.34±0.24
			tall, sm	0,61	0,83	0,72±0,11
			width, sm	0,42	0,78	0,6±0,18
		Dry stored fruit weight, gr		0.1	0.34	0.22±0.12
	Seed	Freshly picked seed	weight, gr	0.1	0.18	0.14±0.04
			tall, sm	0,41	0,79	0,6±0,18

			width, sm	0,24	0,5	0,37±0,13
		Dry stored seed weight, gr		0.016	0.01	0.013±0.03

The lowest weight indicator of the dry stored fruit of the plant is 0.1 grams and the highest weight indicator of the dry stored fruit of the plant is 0.34 grams, we can also conclude that the average weight indicator of the dry stored fruit 0.22±0.12 grams was revealed as a result of research.

If we talk about the weight and length indicators of the newly collected seeds of the Japanese ligustrum plant. The lowest weight indicator of the seeds extracted from the freshly picked fruits of the plant is 0.1 grams the highest weight indicator of the seed of the plant showed 0.18 grams. The average weight indicator of freshly collected seeds of the plant was found to be 0.14±0.04 grams. When we measured the length and width of Japanese ligustrum seeds using a special barbell circle, research showed that the lowest length index of the plant's seed height was 0.41 cm and the highest length index of the seed was 0.41 cm. showed 0.79 cm. The average length of Japanese ligustrum seeds is 0.6±0.18 cm. The lowest indicator of the width of the length of the seeds of the plant was 0.24 cm, and the highest indicator of the length of the seed was 0.5 cm. The average length index of Japanese ligustrum seeds was found to be 0.37±0.13 cm. The lowest index of dry seeds of the plant was 0.016 grams and the highest index of weight was 0.01 grams. shows. We can conclude that the average weight of the dry seeds of the plant is 0.013±0.03 grams. You can study the above information in more detail in Table 1 below.

From the above information about the plant, it can be seen that the soil and climate conditions of Tashkent city are good for the growth and development of many ornamental plants compared to other regions. Based on the information obtained about the development of ligustrum bushes in these works, it is possible to further increase the service life and efficiency of the created compositions. The overall shape and size of the seeds is highly variable and can vary significantly depending on the parent tree and environmental conditions. The plant has been extensively studied for its biological and medicinal properties, and its beautiful flowers make it a popular ornamental plant species around the world.

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