

# New Exportable “Tong Ifori” Variety of Strawberry for Greenhouse Cultivation

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**Abstract:** *The article presents the current state of importance of strawberry growing in the country, as one of the main requirements of creation of high-quality strawberry varieties that can produce yield the whole year is the correct selection and regionalization of varieties on a scientific basis. In order to propagate strawberry varieties and increase the volume of its exports, to provide the population with cheap strawberry fruit in winter, special attention is paid to the creation of high-yielding varieties of strawberries grown in greenhouses in winter. Furthermore, the data has been presented on the growth and development of newly developed remontant strawberry varieties, which are productive, transportable, with the similar sized and shaped fruits, disease-resistant, and intended for cultivation in greenhouses.*

**Keywords:** variety, breeding, hybrid, greenhouse, vegetation, productivity, mineral fertilizers, flowering, maturation

## 1. Introduction

The country is taking measures to increase the production and export of fruits and vegetables, increase the efficiency of land and water resources, and finally, to implement innovative technologies in agriculture.

At the same time, the real situation shows that there are still problems that hinder the full use of the potential of greenhouses in the cultivation of fruits and vegetables and their export to foreign countries.

In the decree of the President of the Republic of Uzbekistan dated November 20, 2018 numbered PD-4020 “About the measures for the creation of further opportunities for the development of greenhouse complexes”, several prior tasks have been set on placement of greenhouse complexes taking into account the specific characteristics of the area in which they are located, soil and climatic conditions, types of crops grown, related infrastructure and logistics facilities, the level of energy supply of the regions and other factors affecting the efficiency of greenhouses, as well as, in the 3.3rd section of Presidential order “About Actions Strategy on five priorities of the development of the Republic of Uzbekistan” dated February 7, 2017, the other tasks have been set on the creation and introduction of new high-yielding varieties of agricultural crops into production, that are resistant to diseases and pests, adapted to local soil-climatic and ecological conditions.

One of the main requirements for the creation and introduction of high-quality varieties of strawberries that can be harvested the whole year on a scientific basis, is the correct selection and placement of varieties by region. In order to propagate strawberry varieties and increase export volume, to provide the population with cheap strawberry fruit in winter, special attention is paid to the creation of high-yielding new varieties of strawberries grown in greenhouses in winter.

The introduction of advanced innovative technologies in this industry has improved and the prestige of this industry has

further increased. In particular, modern greenhouses built on the basis of Chinese and South Korean technologies allow to obtain high-quality and high yields of this type of agricultural crops.

At present, special attention is paid to the creation of local varieties of strawberries suitable for cultivation in greenhouses, the improvement of cultivation technology and their extensive introduction into production.

Strawberry varieties “Bauntiful”, “Zenga-Zengana”, “Cobra”, “Culver”, “Medvey”, “Muto”, “Redgountlet”, “Tashkentskaya”, “Uzbekistanskaya”, “Uzbekistan guzali” have been registered in State Register of Agricultural crops of the Republic of Uzbekistan. However, it is not enough number to provide people with strawberry products, moreover, these varieties are not suitable for greenhouse cultivation.

## 2. Materials and Methods

Selection-breeding work was carried out in the greenhouse experimental area of the Research Institute of Vegetable, melon crops and potato. The L-2005 hybrid, “Tong ifori” strawberry variety was created by crossbreeding of “Akihime” and “Redfall” varieties, selected from 13 foreign varieties.

“Tong ifori” strawberry variety was planted in the greenhouses in 90+20×25 cm/2 scheme [4].

Scientific and experimental work carried out on the basis of “Methods and programs for the study of varieties of fruits, berries and nuts” developed by Horticulture Research Institute named after I.V. Michurin (Michurin 1973) and “Selection and varietal variety breeding of fruit crops” by H. Buriev, K. Baymetov and R.Juraev [8].

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### 3. Results and Discussion

As a result of many years of breeding work carried out at the Research Institute of Vegetable, melon crops and potato, a new and promising variety “Tong ifori” was created by selection and hybridization from foreign varieties of strawberries in the greenhouse condition. This variety is suitable for growing in greenhouses and has a high yield. Therefore, one of the main tasks of today is to create new varieties of strawberries suitable to be grown in greenhouses with good fruit quality and high yield, transportable and suitable for domestic and foreign market demand [1, 2]. The following selection-breeding work was carried out to create this variety:

In 2005-2008, 13 sample varieties of strawberries were studied in the “Primary source nursery”. “Akihime” and “Redfall” varieties with large and transportable fruits were separated from other varieties. In 2009, “Akihime” and “Redfall” varieties were cross-bred and in result the hybrid L-2005 was created. In 2010-2012, more than 217 clones of the L-2005 hybrid were studied in the “Selection Nursery” and promising clones were selected by the method of individual selection. In 2013-2015, promising clones of the L-2005 hybrid were compared with a comparative variety in the “Selection test nursery”. According to the results of the experiment, the L-2005 hybrid showed uniformity in all its morphobiological traits and manifested a higher result than the comparative variety with traits such as high fruit quality and yield. In 2019, the hybrid L-2005 was submitted to the Intellectual Property Agency of the Republic of Uzbekistan under the name “Tong ifori”, and in 2020 a patent was obtained for this variety.



**Figure 1:** “Tong ifori” variety planted area



**Figure 2:** “Tong ifori” variety fruits

The “Tong ifori” variety of strawberry is medium-ripe and the fruit has a medium hardness. Its shape is a little crooked. The weight of one fruit is 20-22 g. The color is light red, pink. The productivity of one bush of this variety is 0,5 kg. Yield is up to 220 quintals per hectare. The vegetation period of “Tong ifori” strawberry variety is 173 days, the first fruits ripen in 105-107 days after planting. The duration of the harvest period is 86 days [5, 6].

“Tong ifori”, “Redgountlet” varieties of strawberries were planted in the greenhouse on August 10, and the growth of the flower band in “Tong ifori” variety was 10% in 50 days, 75% in 60 days, while in “Redgountlet” variety it was 10% in 55 days, and 75% in 72 days. Flowering was 10% in 60 days in “Tong ifori” variety, 75% in 71 days, while in “Redgountlet” variety 10% in 66 days, and 75% in 89 days. The fructification in “Tong ifori” variety was 10 % in 71 days, 75 % in 84 days, in “Redgountlet” variety it was 10 % in 78 days, and 75 % in 96 days. Fruit ripening was 10 % in “Tong ifori” variety in 121 days, 75 % in 150 days, while in “Redgountlet” variety 10 % in 134 days, and 75 % in 180 days.

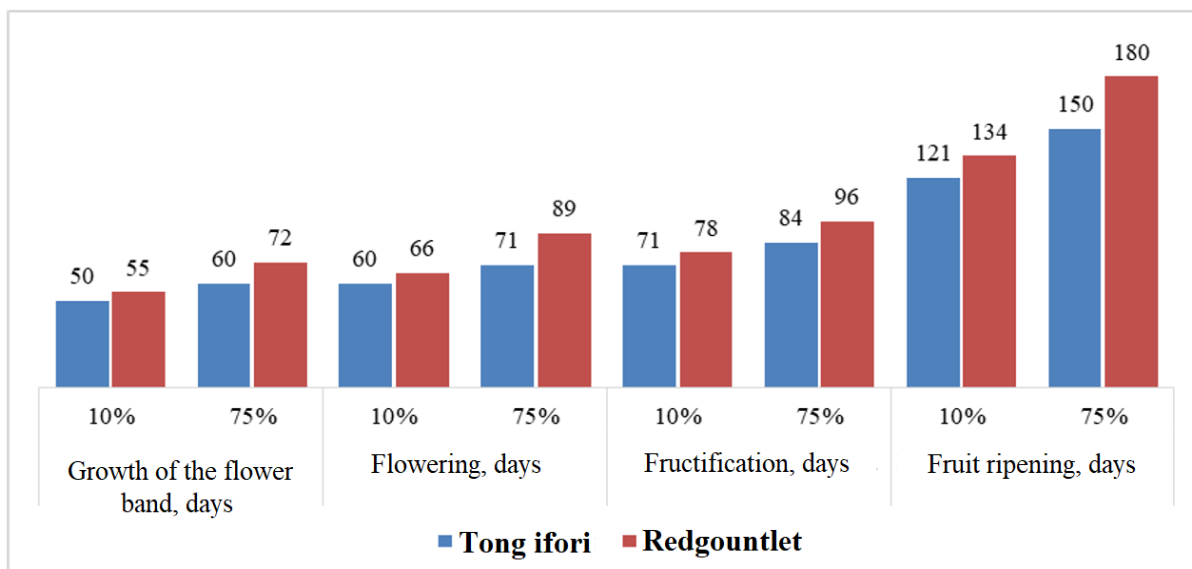


Figure 3: Phenological phases occurrence in strawberry varieties

When the yields of strawberry varieties were observed, “Tong ifori” variety yielded 220 quintals per hectare, while “Redgountlet” variety 180 quintals per hectare, “Solhyang” variety produced 210 quintals yield per hectare and “Minhyang” variety 195 quintals per hectare. If we speak only about the variety “Tong ifor”, the net profit obtained from it, made one hundred and thirty million soums per hectare. The costs per hectare was 97,8 million soums. The rate of profitability was 574% [3, 7].

It can be said that in all regions of the Republic of Uzbekistan there is a high potential for growing strawberries in greenhouses with unsalted soil. In the last two or three years, the interest and demand of strawberry farms for these varieties is growing, and its area is growing from year to year. In 2019-2020, strawberry was planted in 17 hectares in the country, the bulk of which fell on the Tashkent region.

#### 4. Conclusion

For fruit ripening, the greenhouse temperature should be a constant 20 + 25 °C. Plants cannot survive long at a cold temperature of 10-15 °C and may die completely at -20 °C. Therefore, it is recommended to equip the greenhouse with an automatic heating system that keeps the temperature at 20-25 °C.

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