



## Research Article

# CITRUS VARIETIES FOR GROWING IN WIDE TRENCHES OF UZBEKISTAN

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## ABSTRACT

From the studied varieties of lemon, the variety Pervenets Uzbekistan stood out in all respects, from the varieties of orange, the variety Korolek Pear-shaped 20 centners per hectare stood out in terms of yield, and from the varieties of mandarin, the variety Okitsu Wase stood out.

## KEYWORDS

Citrus fruits, lemon, agronomic, biology, insecticides, ways of protection, efficiency.

## INTRODUCTION

The variety is a means of agricultural production, so it should be continuously improved and improved. At the present stage and in the future, the variety should have a complex of economically valuable traits to the maximum extent and have high economic efficiency in the areas of cultivation.

To improve the assortment of fruit species, increase the volume of fruit production (including citrus fruits), and better meet the growing needs of the population for food and industry in raw materials, it is necessary to identify and create new highly productive varieties. Replace low-yielding and low-value varieties with high-

yielding and high-quality ones in terms of ecological cleanliness, frost-resistant, drought-resistant, heat-resistant, salt-resistant, more disease-resistant, with a high content of biologically active substances.

The improvement of the variety is mainly solved by selection and variety study. The task of research work on the selection of fruit and berry crops is to accelerate the breeding process, the creation of new varieties in the shortest possible time. For this purpose, more effective selection and genetic methods will be used, accelerating and improving the selection process.

For this purpose, for crossing, domestic, best local and introduced varieties are used as initial parental forms, possessing both a complex of economically valuable traits and as donors for one or another trait.

At the Research Institute of Horticulture, Viticulture and Winemaking. acad. M. Mirzaev conducted research on selection and variety study of citrus crops to create and select high-yielding, high-quality varieties resistant to diseases, pests, adverse weather conditions.

However, given the long-term nature of research on selection and variety study of citrus crops. The research was carried out in 2020-2021. Every year, during the growing season in the trenches, observations were made of the growth of development and fruiting of 2 varieties of lemon, 5 varieties of orange and 3 varieties of mandarin. In winter, in December and January, the soil was dug to a depth of 30-35 cm. Phosphorus fertilizer was applied at a rate of 90-120 c/ha.

During the growing season, to maintain soil moisture at the level of 70-75% of the LPV, 26 vegetation irrigations were carried out along the furrows. After

every third irrigation, irrigation furrows were loosened to preserve soil moisture.

In spring, in May, nitrogen fertilizers were applied at the rate of 120-150 kg of pure nitrogen per hectare. Pinched young shoots. In winter, during frost-free times, the trenches were regularly ventilated; in the spring, frames and films were removed [2, 3].

The experiments were carried out in wide trenches, the trenches were planted in 3 rows with a distance between plants of 3 m, row spacing of 2 m from the wall of 1 m.

The following varieties of citrus crops were studied in the trenches: lemon - Meyer, Firstborn of Uzbekistan, orange - Washington Navel, Pear-shaped Kinglet and hybrid No. 29221, Mandarin Kowan Wase, Ponkan, Okatsu Wase.

In the experiments, phenological observations were carried out for the following phases of development: the beginning of shoot growth; the appearance of buds; growth (normal, weak, absent); leaf color; damage by pests and diseases; general condition of plants; determination of air humidity and temperature, as well as accounting for the crop: the number and weight of fruits from each tree, determining the average weight of the fruit by variety.

In 2015, despite the fact that the trenches were covered from above with a single polyethylene film, the air temperature inside the trench dropped to  $-1^{\circ}\text{C}$ . Especially where there was no snow on the films (which melted under the rays of the sun), the frost on March 30-31 damaged new young shoots, both in lemon and in orange and tangerine. The beginning of growth in the varieties of lemon Meyer and Pervenets Uzbekistan was noted in the first ten days of March (5/III). The beginning of the appearance of buds was



noted on April 11. Two periods of growth were noted on lemon varieties: the first period began on March 5, the second on April 4, the end was marked on June 29. The length of growth averaged from 31 to 60 cm, the number of shoots from one tree averaged 28-32 pieces. when measuring the height of the trees of the Meyer lemon, the height of the trees was 210 cm, the crown diameter was 180 cm, the stem circumference was 48 cm,

Due to the past frost at the end of March  $-9.5^{\circ}\text{C}$ , the lemon flowers were damaged as a result of the harvest was not. In summer, young leaves and annual growths were severely damaged by moths, scale insects and suckers. Abamacz 0.5% was sprayed against them. On the varieties studied orange, bud break occurred from March 10 to March 15th. The beginning of the appearance of flower buds was noted from March 13 (Pear-shaped Kinglet) to March 20 (No. 29221) [1, 2, 3].

On all studied varieties, two periods of growth were noted, the beginning of growth was noted from March 10 (Gamlin), the second growth began from May 15. (Washington Navel), the end of the second growth was marked on July 19. The growth length of the shoots ranged from 38 cm (Smooth-skinned) to 64 cm (Pear-shaped Kinglet). The number of shoots per tree ranged from 24 pieces (Pear-shaped Kinglet) to 37 pieces (Smooth-skinned). The height of the trees on the orange varieties was 270 cm for the Gamlin variety, the crown diameter was 290 cm, the trunk circumference was 26 cm, for the Washington Navel variety it was 300 cm, the crown diameter was 220 cm, the trunk circumference was 29 cm. cm, crown diameter - 240 cm, trunk circumference - 30 cm, hybrid No. 29221 height - 290 cm, crown diameter - 210 cm, trunk circumference - 27 cm.

On mandarin varieties, the beginning of vegetation was noted from March 20 (Kawano Wase) and, at the

latest, was noted in Okitsu Wase on March 26. The beginning of the appearance of flower buds was noted from March 24 in the Pankan variety, in the Kawano Rase variety from March 26, and in the Okitsu Wase variety from March 28.

On mandarin varieties, two periods of shoot growth were noted. The length of the annual shoot is 31-68 cm, the number of shoots per tree is 24-30 on average. The height of the trees was 240 cm for the Kawano Wase variety, the crown diameter was 230 cm, the trunk circumference was 45 cm, for the Ponkan variety, the height was 220 cm, the crown diameter was 220 cm, the stem circumference was 37 cm, for the Miagawa Wase variety, the total height was 140 cm, crown diameter - 210 cm, trunk circumference - 20 cm.

In 2020, the beginning of the growth of shoots of all varieties of lemon was noted in the third decade of February, on February 22 for the Pervenets Uzbekistan variety, for the Meyer variety from February 24. The beginning of the appearance of buds was noted from February 29, and the beginning of flowering was noted in the second decade of March (March 11-13). The end of flowering was noted from April 22 (Meyer variety) to April 25 Firstborn of Uzbekistan. The duration of flowering was 41-44 days. The number of flowers per tree was 398-1200 pcs.

Three periods of growth were noted on lemon varieties, the first period began on February 22, the second on April 14 and the third on July 9. The length of increments averaged 58-61 cm, the number of increments on one tree averaged 86-90 pieces. The shedding of ovaries in lemon varieties was 20-30%.

The ripening of lemon varieties began on October 17 (Meyer), the full ripening of the fruit was noted on November 24. The duration of maturation in the Meyer variety was 39 days.



On varieties of orange, bud break was noted from February 26, buds began to appear from March 1. The beginning is noted from March 14 (Gamlin), the end of flowering is noted from April 15 to April 17. The duration of flowering was 33-34 days.

The number of flowers on one tree was from 622 pcs. (No. 29221) up to 830 pcs. (Korolek pear-shaped). The shedding of ovaries in orange varieties ranged from 20 to 30%.

On varieties of orange, three periods of shoot growth were noted, the first growth was noted from February 26, the second from April 8 and the third growth from June 19. The shoot growth length ranged from 46 cm (Washington Navel) to 72 cm (Gamlin). The number of shoots per tree averaged from 73 pcs. up to 95 pcs. The ripening of orange varieties began from November 30 to December 14. The duration of maturation for varieties ranged from 21 to 42 days.

On mandarin varieties, the beginning of vegetation was noted from March 1 (Kowane Wase) to March 7 (Okitsu Wase). The beginning of the appearance of flower buds was noted in the third decade of March (26/III) in the Kowane Wase variety, in other varieties on March 28-29 Pankan and Okitsu Wase.

The beginning of flowering was noted in the first decade of April (4/IV). The end of flowering was noted from May 2 in the Pankan variety with a duration of 27 days. The latest end of flowering was noted in Okitsu Wase (10/V) with a duration of 36 days.

On mandarin varieties, two periods of shoot growth were noted. The length of the annual shoot is 33-64 cm, the number of shoots per tree was 69-98 on average. Ripening began on October 10 (Kovano Wase), late ripening was noted in the Pankan variety on November 19. Full ripening of fruits was noted from November 15 to December 24. The average number of fruits from one tree was 28 pieces for Okitsu Wase, Ponkan 9 pieces, Kowane Wase 8.4 pieces.

In 2021, the beginning of growth in the Meyer and Firstborn of Uzbekistan lemon varieties was noted in the second decade of March (12-14/III). The beginning of the appearance of buds (20/VI) in the variety Meyer and Pervenets Uzbekistan. The beginning of flowering was noted (9/V) in the Pervenets Uzbekistan variety, with a duration of (21-24) days. The second period of growth was noted on lemon varieties: (1/VI-29/V) Meyer lemon and Firstborn of Uzbekistan (Table 1.).

Table 1.

Passage of interphase periods of citrus plants in wide trenches

Varieties	Beginning of bud break	The beginning of the appearance of	Bloom			Number of flowers, pcs.	Beginning of the 2nd growth	End of 2nd increment	Growth length	Number of increments
			Start	the end	duration					
Lemon Meyer	14/III	20/IV	14/V	4/VI	22	6829	1/VI	20/V	35	74
Firstborn of Uzbekistan	12/III	20/IV	9/V	2/VI	25	7330	29/V	16/VI	52	89



Orange Gamlin	6/III	17/III	28/III	30/IV	33	3708	30/IV	15/VI	62	74
Washington Navel	9/III	21/III	6/IV	8/V	33	4222	29/V	14/VI	39	67
Kinglet Pear-shaped	8/III	20/III	30/IV	18/V	19	7309	1/IV	25/V	60	74
smooth-skinned	6/III	19/III	1/IV	10/V	40	4321	25/V	15/VI	56	82
No. 29221	9/III	17/III	28/III	20/IV	24	3221	30/IV	14/VI	43	56
Mandarin Kovano Wase	18/III	14/IV	7/V	20/V	fourteen	1420	24/V	16/VI	29	72
Ponkan	17/III	29/IV	11/V	2/VI	23	201	26/V	13/VI	44	54
Okitsu Wase	20/III	9/IV	8/V	1/VI	25	924	17/V	7/VI	36	62

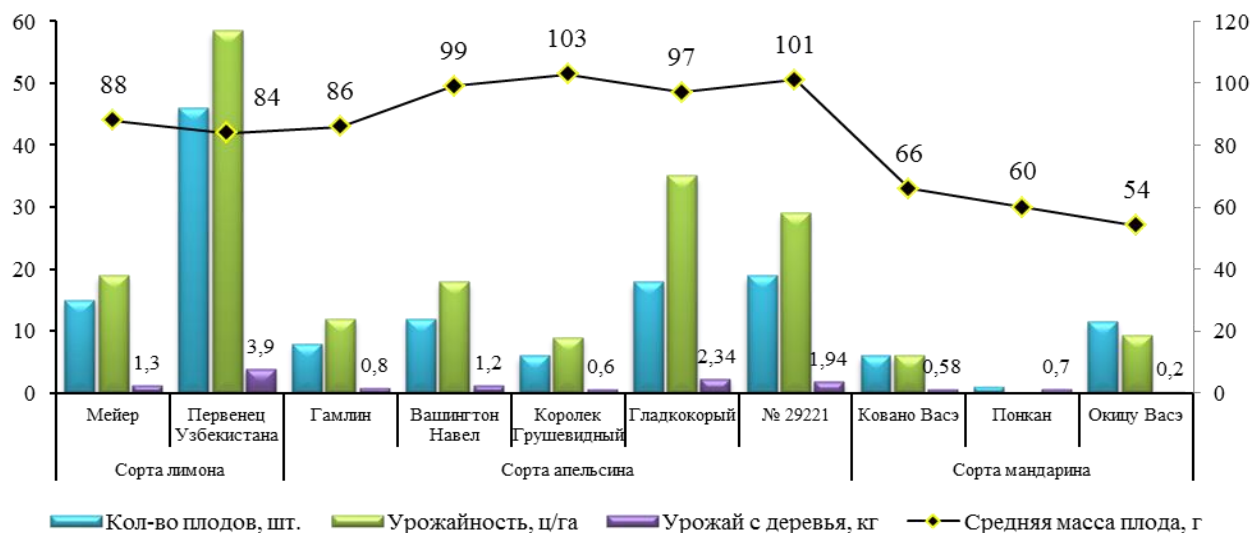
The average growth length is from 35 to 52 cm, the number of shoots from a tree is on average 74-89 pieces. To obtain new hybrids, the Meyer lemon was crossed with the real Misinsky lemon. The variety Meyer lemon x Misinskaya lemon 34 flowers was crossed. Variety Misinsky x Meyer lemon - 22 flowers. On the variety, 5 pieces of fruit began. The Misinskaya ovary variety did not work out.

Bud break in the studied orange varieties occurred in the first ten days of March (6/III) in the Gamlin and Gladkory varieties, the latest (9/III) in the Washington Navel variety. The beginning of the appearance of flower buds was noted (17/III) in the Gamlin and Gladkory varieties. The latest flowering is noted in the variety Washington Navel (21/III). The beginning of flowering was noted (28/III) in the Gamlin variety, with a duration of (33) days. The latest flowering was

noted in the variety Kinglet pear-shaped (30/IV), with a duration of 19 days.

On all studied varieties of the second period of growth, the third decade of May (25/V) was noted in the Glatkokorii variety, the growth length of shoots is from 39 cm (Washington Navel) to 62 cm (Gamlin). The number of shoots on a tree is from 67. (Washington Navel) to 82 pcs. (No. 29221). To obtain new hybrids, the following crosses were carried out: orange variety Gamlin x No. 29221 - 34 flowers.

The yield of the Meyer lemon variety on average from one tree was 15 pcs. or 1.3 kg/tree, converted to 1 hectare - 19 c/ha. In the variety Firstborn of Uzbekistan, 46 pieces were collected from the bush. or 3.9 kg, in terms of 1 ha - 58.5 kg / ha. The average fruit weight in the Meyer variety was 88 g, in the Pervenets Uzbekistan variety it was 84 g (Fig. 1.)



Rice. 1. Productivity of citrus varieties in wide trenches(2015-2017)

The harvest for orange varieties was from 7 pieces from one tree. (Gamlin) up to 18 pcs. (Smooth-skinned). The average weight of the fruit ranged from 87 to 103 g, or from one tree obtained from 0.616 kg to 1.14 kg/tree, or converted per hectare from 9.2 q to 17 q/ha.

The average yield per tree was 0.2 kg/tree for Okitsu Wase, 0.58 kg/tree for Kovane Wase, and 0.7 kg/tree for Ponkan.

## CONCLUSIONS

From the studied varieties of lemon, the variety Pervenets Uzbekistan stood out in all respects, from the varieties of orange, the variety Korolek Pear-shaped 20 centners per hectare stood out in terms of yield, and from the varieties of mandarin, the variety Okitsu Wase stood out.

## REFERENCES

1. Abdullaev R.M. Specific benefits of fruits and grapes grown in Uzbekistan. // I-Khalqaro-meva sabzavot fairasi doirasida “Uzbekiston meva-

sabzavot mahsulotlari ustunligi” Mavzusida halqaro ilmiy-amaliy conferencesidagi maruzashi. – Tashkent, 2016.

2. Abdullaev R.M., Agzamkhodzhaev Zh. - Tashkent, 2016. - No. 9. - 17 p.

3. Obidzhanov D., Mirzaev M. Growing a lemon in trenches and protecting against pests. //The American Journal of Agriculture and Boimedical Engineering. (ISSN – 2689-1018) Published: December 30, 2021| Pages: 15-18. Doi: <https://doi.org/10.37547/tajabe/Volume03Issue12-01>