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ANALYSIS OF THE LEVEL OF USE OF INTENSIVE TECHNOLOGIES IN THE GROWING OF CITRUS FRUITS

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ABOUT ARTICLE

Key words: Greenhouse, lemon growing, lemon seedlings, trenches, semi-trench, simple two-layer film of light construction, citrus, subtropical, tropical plant.

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Abstract: In this paper has been investigated development of the lemon growing industry, the technology of growing citrus fruits in trenches, the duration of the growing season and the amount of heat during this period in the dry subtropical regions of Central Asia, Azerbaijan, Crimea and Krasnodar Territory are related to the growth and cultivation of citrus fruits, different types of greenhouses for growing lemons in the Republic weight of the area, distribution of different types of greenhouses growing lemons by region, problems of construction costs of a greenhouse designed for growing lemons with a trench, semi-trench and simple two-layer film technology on 1 hectare area are highlighted.

INTRODUCTION

The changes taking place in the world economy today, in all its aspects, primarily depend on the formation and development of market relations. The development of the lemon industry is directly related to the characteristics of agricultural production, such as seasonal production of lemon products, problems in its cultivation, harvesting, storage, and delivery. In solving these problems, the importance of deepening the production processes of marketable products in lemon cultivation is increasing.

By 2020, in order to further develop the lemon growing industry in the republic, expand the scope of scientific research, increase the production of high-quality industrial and exportable lemons based on the use of advanced and modern resource-saving technologies, and widely introduce state support mechanisms by the decision PQ-4610 of February "On additional measures for the further development of the lemon industry", the name of the "Lemon growers and exporters" association was changed to

"Citrus, subtropical and tropical plant growers and exporters" association, and the main goals and tasks are clear. [1]

Technology of growing citrus fruits in trenches. In the dry subtropical regions of Central Asia, Azerbaijan, Crimea and Krasnodar Territory, the length of the growing season and the amount of heat during this period are sufficient for the growth and ripening of citrus fruits. However, winter is severe in these lands. Air temperature in some years

It can drop to -20:-30°C and the soil can freeze up to 20-30 cm. In these regions, a method of growing citrus crops in trenches has been developed. Cultivation of citrus in trenches is based on the use of heat released from the soil and the ability of plants to tolerate full shade or weak light for a long time under certain temperature conditions. The depth of the trenches depends on the climatic conditions of the place. In this case, the necessary temperature for plants should be maintained due to the heat released from the hot soil in the trenches. Trenches can be from 0.6 meters to 1.7-1.8 meters deep. Shallow trenches with a depth of 0.6-0.8 meters are dug in regions where the cold does not drop below -15-16°C and the soil does not freeze deeply (Gelenzhik, Crimea). In such trenches, the royal family of plants is grown in a land-giving way. It is precisely in these places (Crimea, Azerbaijan) that surface trenches were established.[2]

METHODS

Technology of growing lemons in lemon groves and palaces. The southern subtropical regions of our republic also have great prospects for growing citrus in lemon groves and palaces. Lemon groves and palaces are also established in regions that produce good results, such as ditches.

ANALYSIS AND RESULTS

Limonarium is also similar to trenches in many ways. But it is much wider than trenches. The depth of lemonariums is 0.75 meters, the length is 25-30 meters, the width is 8 meters, the height to the beam is 3.5-4 meters, and from the wall to the roof is 1.5-1.8 meters.[3]

In the course of the research, the amount of existing greenhouse areas of different types, which are active in lemon cultivation today, was analyzed. In particular, 82.8 percent of the total 1,655.5 hectares of greenhouses are of light construction, that is, with a simple film method, 6.4 percent are glazed, 9.6 percent are Chinese (trench method), 1.2 percent are operating on the basis of modern technologies, and in Table 1 we can see.

Table-1

The area and weight of different types of lemon growing greenhouses in the Republic in 2022

Indicators	Total greenhouses	Types of greenhouses			
		Foil (in the usual way)	Playful	Chinese technology (trench method)	Modern technology
Area of greenhouses,	1655,5	1371,1	105,6	159,3	19,5
Weight relative to the total, %	100,0	82,8	6,4	9,6	1,2

The results of the analysis and the data in the table show that the main share of greenhouses growing lemons corresponds to greenhouses of the simple method with a film. Based on the above analysis, it should also be noted that, taking into account the development trends of lemon cultivation, the average growth rate of greenhouses built on the basis of modern technologies can be observed at a very low level.[4]

Also, greenhouses in the most economically optimal construction of the Chinese technology (trench method) introduced in our republic in the next 10-15 years have a share of 9.6 percent compared to the total. It can be observed that this technology is widely used mainly in Fergana Valley (Kashkadarya 18.4%, Namangan 16.6%, Fergana 15.7%) and Kashkadarya provinces (17.8%). Table 2 shows the regional distribution of different types of lemon growing greenhouses in our Republic as of 2022.

Table 2

Distribution of different types of greenhouses growing lemons in the Republic by regions as of 2022

Name of territories	Total		Types of greenhouses (weight relative to the total, %)			
	area	of total%	Foil (in the usual way)	Playful	Chinese technology (trench method)	Modern technology
Karakalpakstan Republic	10	0,6	84,2	9,7	3,6	2,4
Kashkadarya	157,2	9,5	76,4	5,2	18,4	-
Bukhara	52,8	3,2	83,8	5,2	9,5	1,5
Jizzakh	101,2	6,1	89,3	7,5	3,2	-

Kashkadarya	171,7	10,4	77,5	4,2	17,8	0,5
Navoi	24	1,4	82,6	7,3	5,6	4,5
Namangan	228,1	13,8	78,3	5,1	16,6	-
Samarkand	178,9	10,8	83,3	6,8	7,8	2,1
Surkhandarya	293	17,7	84,0	6,4	9,6	-
Syr Darya	152,2	9,2	89,9	3,3	6,8	-
Tashkent	89,1	5,4	82,1	9,2	5,2	3,5
Ferghana	185,6	11,2	75,5	8,8	15,7	-
Khorezm	11,7	0,7	86,0	5,5	7,3	1,2
Total	1655,5	100,0	82,8	6,4	9,6	1,2

Lemon greenhouses built in a modern type often cover industrially developed areas.[5]

Results

According to the obtained results, it was possible to choose greenhouses of the most economically acceptable construction based on the development trends of lemon cultivation.

There are three tried and tested methods of maintaining lemon plants without heating in winter, they are trench, semi-trench, and a greenhouse (thermos) method consisting of a simple two-layer film with a light construction. It is an effective and low-cost way to organize lemon cultivation in a trench, semi-trench and a simple light construction two-layer film (thermos) technology. It is presented in Table 3.

Table 3

Costs of construction of a trench, semi-trench and simple two-layer film technology greenhouse for growing lemons on 1 square meter (thousand soums)

№	Work to be done and supplies needed	Trench	Half a ditch	Double layer film (thermos) with simple light construction
1	Digging a 3x33 meter trench at a depth of 2 meters (100 m²)	1800	x	X
2	The frame is made of ordinary wood (1 piece of 4 meters of 30 diameter, 35 pieces in total)	350	x	X
3	3 mm wire (30 kg)	600	x	X
4	100 micron polyethylene film (10 kg)	250	x	X
5	2 young lemon seedlings (16 pieces)	480	x	X
6	Heating costs (gas, electricity)	-	x	X
7	Fertilization and chemical treatment	220	x	X
8	Other expenses	100	x	X
Total costs		**3800**	**x**	**X**
1	Digging a 6x17 meter trench at a depth of 1 meter (100 m²)	x	1800	X

№	Work to be done and supplies needed	Trench	Half a ditch	Double layer film (thermos) with simple light construction
2	The frame is made of ordinary wood (1 piece of 4 meters of 30 diameter, 70 pieces in total)	x	700	X
3	3 mm wire (40 kg)	x	800	X
4	100 micron polyethylene film (15 kg)	x	375	X
5	Raw clay bricks (510 pieces)	x	51	X
6	2 young lemon seedlings (16 pieces)	x	480	X
7	Heating costs (gas, electricity)	x	-	X
8	Fertilization and chemical treatment	x	220	X
9	Other expenses	x	100	X
Total costs		**x**	**4476**	X
1	Making iron structures	x	x	4700
	columns (angle 50 mm), 90 meters	x	x	2250
	frame and truss (rebar 14 mm), 120 meters	x	x	1620
	labor costs	x	x	800
2	The frame is made of ordinary wood (1 piece of 4 meters of 30 diameter, 70 pieces in total)	x	x	700
3	3 mm wire (40 kg)	x	x	800
4	1.5 liter container (100 pieces)	x	x	-
5	100 micron polyethylene film (40 kg)	x	x	1000
6	Heating costs (gas, electricity)	x	x	-
7	Heating costs (gas, electricity	x	x	870
8	Fertilization and chemical treatment	x	x	220
9	Other expenses	x	x	100
Total costs		x	x	**8360**

The costs incurred for the establishment of 1 hectare of lemon grove can be further reduced, taking into account the internal capabilities of the farmer.

Increasing the productivity of lemons mainly consists of the correct selection of the variety, the correct organization of agrotechnical activities and the protection of trees from frost in the winter season. Caring for lemons in trenches completely solves the problem of keeping them from the cold.

It is known that greenhouses cannot be implemented all at once. Therefore, it is necessary to carry out step by step the territorial location of the greenhouse and their specialization according to the technology of the construction that is the most economically acceptable.

CONCLUSIONS

In conclusion, we can say that in order to ensure the sustainable development of the lemon growing industry, it is appropriate to select greenhouses of the most economically optimal construction based on the development trends of lemon growing. This, in turn, increases the level of use of intensive

technologies of lemon cultivation, increases the income of the rural population, uses the land effectively, and as a result, increases the standard of living of the country's population.

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