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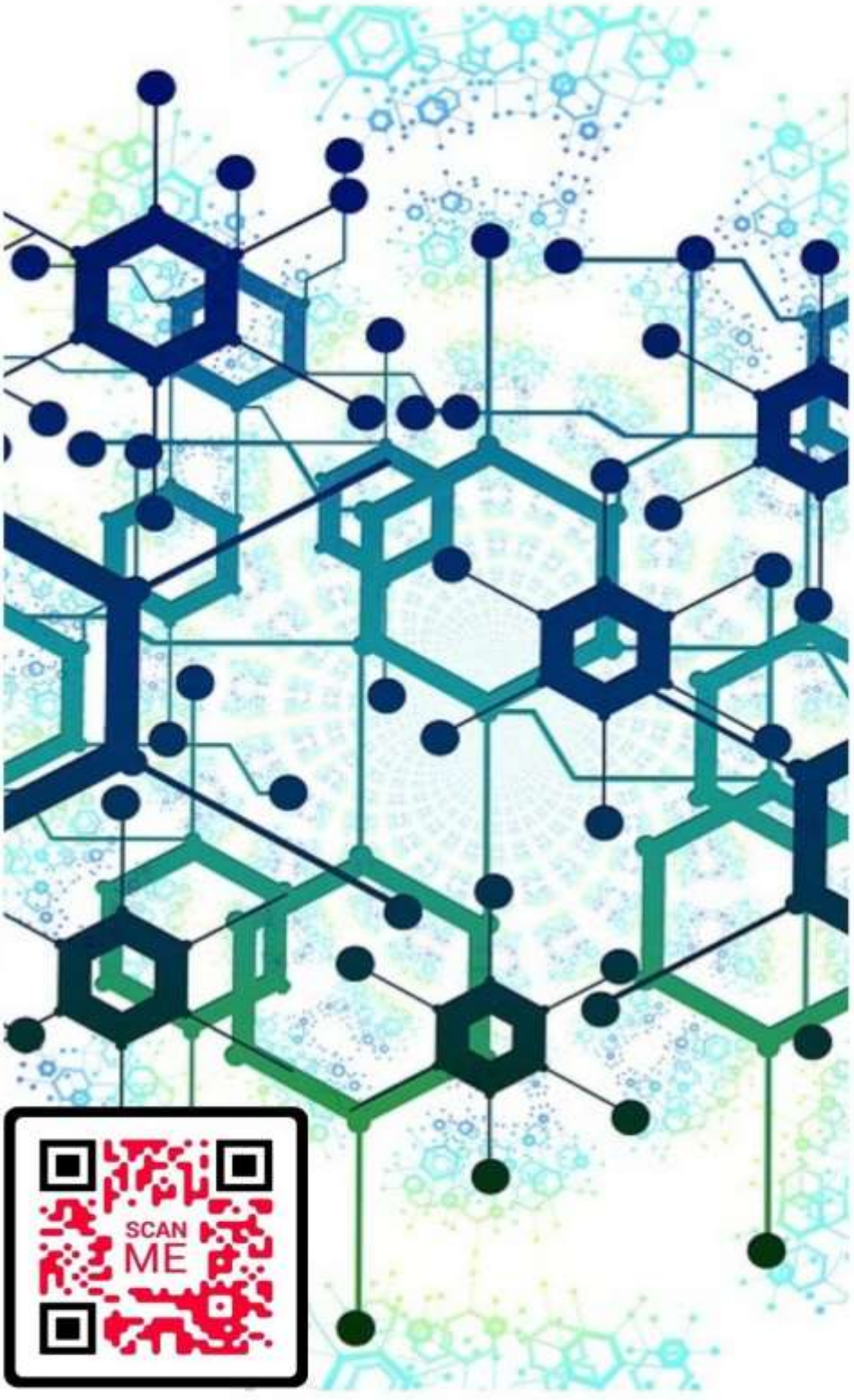

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Ecological Significance of Laser Leveling of Lands.

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Abstract: The economic efficiency of laser leveling of lands is that in Uzbekistan the cultivation of agricultural crops is based on irrigated agriculture, where 90-95% of the crop is grown. Caring and cultivation of crops is carried out by applying several agro-technical measures, the most important of which is land leveling. In agriculture, the main purpose of land leveling is to carry out irrigation and mechanized agro-technical measures while maintaining the slope of the field.

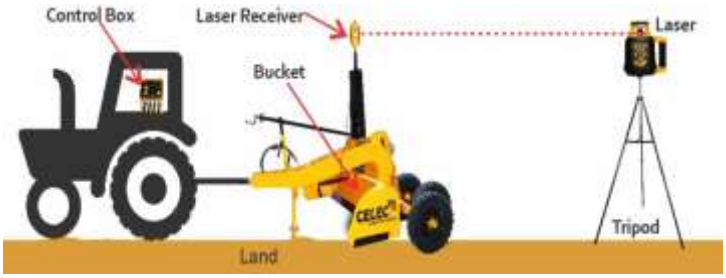
Keywords: Land, efficiency, resource, ownership, land market, land fund, land resources, land areas, relief, farmer. Topographic survey, geodesy, plan, drowning.

Introduction

It is known that the cultivation of agricultural crops in Uzbekistan is based on irrigated agriculture, and 90-95% of the harvest is grown on such areas. Caring and cultivation of crops is carried out by applying several agro-technical measures, the most important of which is land leveling. In agriculture, the main purpose of land leveling is to carry out irrigation and mechanized agro-technical measures while maintaining the slope of the field.

Figure 1 Laser leveling of lands

At the same time, the flatness of the field is one of the factors contributing to efficient land use, uniform soil moisture, improved soil reclamation, high yields and increased economic efficiency. In addition, these measures will help to simplify mechanization work, save energy and increase labor productivity. Land leveling with the help of laser levels is carried out with the help of a tractor and a special leveling mechanism. Flattening the ground with laser levels is a method of leveling the ground surface by no more than 1-3 cm using a special laser leveling device.(Figure 1)The main function of the laser light receiver is to transmit the laser signal received from the transmitter to the data control device. The signal transmitted from the transmitter is reflected in the various photocell light indicators on the receiver, indicating the low and high points of the horizontal plane of the field. The receiver is attached to the mast on the scraper bucket. Laser transmitter - This device emits laser light in a 360-degree horizontal circle.(Figure 2)



In the world market, this device is manufactured by various companies. Their laser light transmission length ranges from a few hundred meters to kilometers. As a safety precaution, laser light should be avoided or special goggles should be worn when working with a laser transmitter. The data control (block) device receives the signal from the receiver (receiver) and transmits it to the electrohydraulic valve. The height of the horizontal plane of the field is reflected in the photocell lights of the control unit. The data control device is mounted on the tractor cab and operates by automatic or manual control.

Analyzes. How to field laser levels should i take it to the square

1.Laser leveling to the capabilities of farmers depending on the area of 10 hectares;

2.Smoothing field leveling on laser levels is excessive all except high marshy or rocky soils in soils.

Preparatory preparation works on laser levels.

-No high soil moisture;

-The field is cleared of plant debris;

-The field is deeply plowed and leveled;

- The directions of sowing and irrigation of crops are determined.

Work to be done in laser levels.

1. Inspection of laser levels and additional working devices;
2. Measure the length of the sides of the field;
3. Determining the topographic position of the field;
4. Carrying out leveling works (slope 1-5% or absolute 0%);
5. Re-topographic the field after leveling check

Topographic view of the field.

0	20	40	60	80	100	120	140	160	180	200	0-200м average
20	278	275	279	280	283	280	279	277	276	278	279
40	276	278	277	281	284	285	278	276	275	280	279
60	279	278	278	282	287	287	280	267	275	285	280
80	278	265	279	283	288	288	281	268	276	286	279
100	277	265	276	284	289	290	281	267	277	290	280
120	276	266	274	285	290	291	282	265	276	291	280
140	274	267	279	286	291	290	285	268	278	292	281
160	278	269	277	287	290	290	286	267	278	290	281
180	279	272	278	288	290	288	290	269	276	290	282

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200	278	270	278	289	289	288	290	271	278	289	282
Average area											280см

Every Square Square Movement Cartography									
-2см (9м^3)	-5см (21м^3)	-1см (5м^3)	0 см	3см (11м^3)	0 см	-1см (5м^3)	-3см (13м^3)	-4см (17м^3)	-2см (9м^3)
-4см (17м^3)	-2см (9м^3)	-3см (13м^3)	1см (3м^3)	4см (15м^3)	5см (19м^3)	-2см (9м^3)	-4см (17м^3)	0 см	0 см
-1см (5м^3)	-2см (9м^3)	-2см (9м^3)	2см (7м^3)	7см (27м^3)	7см (27м^3)	0 см	-13 (53м^3)	0 см	5см (19м^3)
-2см (9м^3)	-15см (61м^3)	-1см (5м^3)	3см (11м^3)	8см (31м^3)	8см (31м^3)	1см (3м^3)	-12см (49м^3)	-4см (17м^3)	6см (23м^3)
-3см (13м^3)	-15см (61м^3)	-4см (17м^3)	4см (15м^3)	9см (35м^3)	10см (39м^3)	1см (3м^3)	-13см (53м^3)	-3см (13м^3)	10см (39м^3)
-6см (25м^3)	-13см (53м^3)	-1см (5м^3)	6см (23м^3)	11см (43м^3)	10см (39м^3)	5см (19м^3)	-12см (49м^3)	-2см (9м^3)	12см (47м^3)
-2см (9м^3)	-11см (45м^3)	-3см (13м^3)	7см (27м^3)	10см (39м^3)	10см (39м^3)	6см (23м^3)	-13см (53м^3)	-2см (9м^3)	10см (39м^3)
-1см (5м^3)	-8см (33м^3)	-2см (9м^3)	8см (31м^3)	10см (39м^3)	8см (31м^3)	10смм (39м^3)	-11см (45м^3)	-4см (17м^3)	10см (39м^3)
-2см (9м^3	-10см (41м^3)	-2см (9м^3)	9см (35м^3	9см (35м^3)	8см (34м^3)	10см (39м^3	-9см (37м^3)	-2см (9м^3)	9см (35м^3)
	Hill up to 5 sm			The height is 5	9 cm		Cutting up to 5sm		
	Hill up to 10 sm			Cutting 5cm			+ -project registration		

In recent years, water in the cultivation of agricultural crops special attention is paid to the introduction of energy-saving technologies. This issue is also supported by the state. However, the growing shortage of water and the growing demand for water resources require a sharp increase in water use efficiency in agriculture.

Decree of the President of the Republic of Uzbekistan dated December 1, 2020 "Village
Resolution No. PQ-4919 "On measures to accelerate the introduction of water-saving technologies in agriculture" provides for increasing the effectiveness of mechanisms to encourage the introduction of water-saving technologies in agriculture, achieving sustainable water supply to irrigated areas. One of the main factors of high yields in agriculture is the flatness of arable lands. One of the unconventional new methods of leveling agricultural land is to level these crop areas using a laser device. When leveling the ground with the help of laser devices, the lowest and highest parts of the field with a length of 200-250 m are leveled with an accuracy of 2-3 cm. Due to the uniform distribution of nutrients and water in the leveled field areas using a laser device, an opportunity is created for the good development of all crops, the yield increases by 5-10ts / ha.

The main results and economic efficiency of leveling lands with a laser leveling machine;

1. Irrigation water consumption is saved by 20-25%.
2. Water efficiency increases by 30-40%.

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3. Irrigation time, labor and energy are saved.
4. Due to the uniform distribution of water and other nutrients in the leveled field using a laser leveler, an opportunity is created for the good development of all types of crops.
5. Crops germinate and ripen at the same time.
6. Depending on the type of crop, an additional yield of 5-10 ts / ha is achieved.
7. The export potential of the product will further increase.

The flatness of the field allows to obtain high and quality yields from crops as a result of consumption of irrigation water in the cultivation of agricultural crops, efficient use of fertilizers, saving energy resources, reducing soil salinity. In the traditional method of leveling the lands, two equipments, a tractor and a leveling equipment, a scraper or a short long base leveling device are involved.

Recommendation The leveling of the surface in the traditional way is carried out by eye on the recommendation of a tractor driver or a farmer. . . As a result of traditional land leveling, the surface area of each hectare is leveled with a difference of 10-15 cm. Of course, in the traditional way, the land cannot be leveled more precisely. If we calculate the water consumption for irrigating the land, it will take 1000-1500 m3 of surplus water to irrigate 1 hectare, and 1000000-1500000 m3 of additional water for irrigating 100 hectares. If the field is irrigated with a pump, an additional 1000 soums will be spent for each m3 of water; 1000000 -1500000 m3 of water will cost 100 000000 -150 000000 soums. This figure is even higher if we take into account the irrigated area, the additional time and cost of irrigating in several sections. Most importantly, excess water can have a serious impact on land reclamation. For example, if the level of mineralization of water is very low or 0.5 g / l, the amount of salt supplied with excess water per hectare is 500-750 kg. In addition, excess water raises groundwater levels, which also leads to increased soil salinity. This dramatically reduces crop yields. Most importantly, excess water can have a serious impact on land reclamation. For example, if the level of mineralization of water is very low or 0.5 g / l, the amount of salt supplied with excess water per hectare is 500-750 kg. In addition, excess water raises groundwater levels, which also leads to increased soil salinity. This dramatically reduces crop yields. Especially in recent years, water shortages due to global climate change, as well as rapid population growth, which in turn has led to a further increase in daily demand for agricultural products, indicate more efficient and rational use of water resources. In this regard, one of the urgent tasks facing the agricultural workers of the country is the use of new innovative technologies that provide a very precise leveling of the field surface. This is the use of leveling irrigated lands with laser levels.

Conclusion: In conclusion, it should be noted that our country is geographically lower than its neighbors and our main water resources are of transboundary importance. It is natural that this situation causes various social and environmental problems related to water distribution in the country. The current climate change is exacerbating the situation. Various laws and regulations have been enacted to effectively address the problems and make efficient use of available water resources, and state control has been established to ensure their effective implementation. For centuries, due to the scarcity of man in nature, the lack of human development, the lack of agricultural development, the lack of industrialization, and the very small amount of waste, the water itself is balanced by natural purification processes. did not allow excessive pollution. Due to population growth, the development of industry and agriculture, and the sharp increase in the number of cities, the amount of waste and effluents discharged into the water has increased several hundred times, and the water has not had time to purify itself. Of course, it is important to establish strict state control. All efforts to ensure environmental sustainability, conservation of biodiversity and the well-being of the population are directly related to the efficient use of water. first and foremost, it is noteworthy that the focus is on improving the state of the environment. We believe that our economy will develop further in the future and will be formed in connection with nature.

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