

INNOVATIVE TECHNOLOGIES IN AGRICULTURE

ADVANTAGES OF APPLICATION

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Annotation: Advantages of innovative technologies used in land leveling in agriculture.

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We all know that the development of agriculture, increasing the productivity of eroded soils, the use of modern innovative technologies to improve the melerotic condition of soils is one of the main tasks facing our country. Irrigation of the topsoil leads to a decrease in crop yields and soil fertility. Therefore, in order to restore soil fertility in such farms, it is necessary to use intensive farming systems and new modern innovative technologies. Based on the above, it is necessary to study the field experience using effective innovative methods in order to restore the fertility of irrigated eroded soils and increase cotton yield. Today, the world's population is growing rapidly, which in turn is leading to an increase in the daily demand for agricultural products. This means that Uzbekistan, like all countries in the world, needs to use the available land and water resources to get more produce from agricultural crops. Given the lack of additional water resources and the impossibility of expanding agricultural land, we will need to make more efficient use of available water resources. In this regard, improving the efficiency of irrigated lands is one of the most pressing issues facing the agricultural sector. The land fund of Uzbekistan is 44.4 million hectares, and the area used for agricultural production is more than 25 million hectares. At first glance, this amount may seem like a lot, but in fact, the most intensively used lands in agriculture are mainly irrigated areas. Irrigated area is 4.19 million hectares, which is more than 9% of the total land fund. Nevertheless, it accounts for more than 9 percent of the total land fund.

However, more than 95% of the gross agricultural output is grown in these areas. In the current context of global economic development, one of the most modern, innovative technological ways to increase the productivity of irrigated lands is the popularization of laser leveling in agriculture. In irrigated agriculture, the flat surface of the field is one of the key factors in ensuring the efficient use of land, water, fertilizers and energy resources, high crop yields and economic stability. Laser leveling means that the difference between the lowest and highest points on the field surface is 3 cm. the method of leveling using specially equipped, laser leveling devices at a level not exceeding. This technology, which is used in agriculture in the country, is not yet widespread.

Therefore, this technology requires in-depth study, testing, development and wider application in practice. In particular, according to research by experts from around the world, there are several advantages of laser leveling, which include the fact that more than 95% of agricultural products are grown in these areas. One of the most modern, innovative technological ways to increase the productivity of irrigated lands in the current context of global economic development is the popularization of laser leveling in agriculture. In irrigated agriculture, the flatness of the field surface is one of the main factors ensuring the efficient use of land, water, fertilizers and energy resources, high crop yields and economic stability. Laser leveling means that the difference between the lowest and highest points on the field surface is 3 cm. the method of leveling using specially equipped, laser leveling devices at a level not exceeding. This technology, which is used in agriculture in the country, is not yet widespread. Therefore, this technology requires in-depth study, testing, development and wider application in practice. In particular, according to the results of research by experts from around the world, there are several advantages of laser leveling, which include:

1. Irrigation water consumption is saved by 20-25%;
2. Water use efficiency increases by 30-40%;
3. Excess salt is prevented by irrigation water;
4. Irrigation saves time, labor and energy;
5. Field crops have a flat growth;
6. Crops are provided with the same amount of nutrients and moisture;
7. Weeds are reduced by 10-15%;
8. In agriculture, an additional yield of 5-7 quintals per 1 hectare is achieved;

9. The additional yield leads to an additional source of economic income for the farm;

10. Of course, the export potential of the product will increase due to the additional harvest;

11. Most importantly, if the land is cultivated properly, the field will be leveled again in 3-5 years.

When leveling an uneven field, the position of the leveling machine body changes, so to reduce the unevenness, it is necessary to control the working body, ie the bucket manually. This requires a great deal of experience on the part of the tractor driver to reduce the unevenness of the field and to pass the leveling equipment several times in the field to achieve the expected flatness of the surface. The method of leveling the ground using laser levels is an automated processing system that reduces the level of unevenness of the field surface to 3 cm. Laser leveling technology is widely used in construction, laying of major highways, agriculture, laying of collector and drainage systems. Due to the fact that the average irrigated area in Uzbekistan is 4-10 hectares, laser beams with a diameter of up to 300 meters are convenient. As a safety precaution, when working with laser beams, never look at the laser light source, do not direct it at the eyes, and avoid direct contact with the laser beam, as laser beams can damage the eyes. To avoid this, you need to wear special glasses. Laser leveling of lands is used in the current leveling of irrigated areas after the initial work: plowing, soil loosening, simple leveling with a long base. The laser straightener consists of the following parts: a trailer frame, a bucket, a mast for the laser receiver, a hydraulic cylinder, a wheel frame and wheels. The laser leveling junction consists of a back wall with a cutting blade and two side walls attached to the middle frame. During the laser leveling operation, the soil is cut from the high point of the field relief, fills the bucket and empties the bucket at the low point of the field. Due to the automatic operation of the scraper bucket, the field area is leveled. The width of the scraper can vary. The excavation capacity of the scraper is as follows: a scraper with a width of 2.4 m is 1 m³, a scraper with a width of 2.7 m is 1.3 m³. This leveling scraper is installed on tractors with a tractor traction class of 1.4 and above. Experiments show that laser leveling technology is also highly cost-effective when applied to cotton. In particular, the application of this technology in the cotton fields in the first year will reduce labor costs by 11%, irrigation costs by 21% and water consumption by 20%. In the second year, mechanization costs will be reduced by 11 percent. At the same time, productivity will increase by 10 percent, which will increase

the level of profitability from 10 percent to 15 percent in the first year, and up to 25 percent in the second and subsequent years.

References:

1. National report on the state of land resources of the Republic of Uzbekistan. - T.:2016.
2. X.M. Maxsudov, L.A. G'afurova. Erosion studies. - T .: "Uzbekistan is national Encyclopedia State Scientific Publishing House, 2012.
3. Tractors and cars. Part 1 A.I. Kamilov, Q.A. Sharipov, N.T. Umirov, Z.Y. Yusupov. Tashkent-2011
4. Tractors and cars. T.S. Khudoyberdiyev. Tashkent-2018.