

# Advantages of Using Innovative Technologies in Agriculture

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**Abstract:** *On the advantages, methods and benefits of innovative technologies used in land leveling in agriculture.*

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## INTRODUCTION

We all know that the development of agriculture, increasing the fertility of eroded soils, the use of modern innovative technologies to improve the melerotic state of soils is one of the main tasks facing our state. The main irrigated areas of the country are located on the foothills, and they are more prone to irrigation erosion. Erosion of the topsoil as a result of irrigation leads to a decrease in crop yields and soil fertility. Therefore, it is necessary to use intensive farming systems and new modern innovative technologies to restore soil fertility on such farms. 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 rapid growth of the world's population, in turn, leads to an increase in daily demand for agricultural products. This requires that Uzbekistan, like all countries in the world, use the available land and water resources to produce more agricultural products. Given the lack of additional water resources and the impossibility of expanding agricultural crop areas, 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 tasks facing the agricultural sector. The land fund of Uzbekistan is 44.4 million soums. The area of land used for agricultural production is 25 million hectares. It corresponds to more than a hectare. At first glance, this amount may seem like a lot, but in fact it is in agriculture intensively used lands are mainly irrigated areas. Irrigated area is 4.19 million hectares, which is more than 9% 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 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 areas 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:

- Irrigation water consumption is saved by 20-25%;
- Water use efficiency increases by 30-40%;
- Excess salt is prevented by irrigation water;
- It saves time, labor and energy for irrigation;
- Field crops will have a flat growth;
- Crops are provided with the same amount of nutrients and moisture;
- The amount of weeds is reduced by 10-15%;
- In agriculture, an additional 5-7 quintals are harvested from 1 hectare;
- The additional yield leads to an additional source of economic income of the farm;
- Of course, the export potential of the product will increase due to the additional harvest;
- Most importantly, if the land is cultivated properly, the field will be leveled in 3-5 years.

## MATERIALS AND METHODS

When leveling an uneven field, the condition of the leveling machine body changes, so the working body, i.e. the bucket, must be manually operated to reduce the unevenness. This requires a great deal of experience from the tractor driver to reduce the

field unevenness and to pass the leveling equipment several times in the field to achieve the expected flatness of the field 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 beam devices with a diameter of up to 300 meters are convenient. As a safety precaution, it is important to never look at the laser light source when working with the laser beam, do not direct it at the eye, and keep the laser beam out of the eye because laser beams can damage the eye. To avoid this, the use of special glasses is required. Laser leveling of lands is used in the current leveling after the initial works in irrigated areas: plowing, soil loosening, simple leveling works with a long base. The laser straightener consists of the following parts: trailer frame, bucket, mast for laser light receiver (receiver), hydraulic cylinder, wheeled frame and wheels. The cavity of the laser leveler consists of a back wall with a cutting blade and two side walls attached to the middle frame. The laser leveler fills the bucket by cutting the soil from the high point of the field relief during the work 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 volume of soil extraction of the scraper is as follows: a scraper with a width of 2.4 m is 1 m<sup>3</sup>, a scraper with a width of 2.7 m is 1.3 m<sup>3</sup>. This leveling scraper is installed on tractors with a tractor traction class of 1.4 and above.

## **CONCLUSION**

Experiments show that laser leveling technology is also highly cost-effective when applied to cotton. As a result of the application of this technology, especially in the cotton fields, in the first year labor costs will be reduced by 11%, irrigation costs by 21%, 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.

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