

MODERN DRIP IRRIGATION METHOD IS GUARANTEED PLENTY OF HARVEST

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Abstract: this article analyzes the characteristics and advantages, international practices of the modern waterproofing drip irrigation system, and the importance of using this method. When using drip irrigation, the yield is higher than that of the agricultural crops, but not by the crop field, but by saving up to 20-60% of water resources, depending on the type of crop. At the same time, because the water is always fed directly to the root, the root effectively develops in the fertile layer of soil. Mineral fertilizer dissolved in irrigation water with the use of nitrogen fertilizers identified given the opportunity to save 44-57%. In the case of a droplet, the water to the rootstock of the plant falls into the soil layer. It is worth noting that in the Republic of Uzbekistan irrigation of drip irrigation is planned for 20,000 in 2019-2021, 50,000 in 2025 and 30,000 hectares of irrigated land by 2030.

Keywords: water saving technologies, irrigation, water resources, drip irrigation, cotton crop, yield, fertilizer, root.

ЗАЛОГ ОБИЛЬНОГО УРОЖАЯ СОВРЕМЕННЫХ МЕТОДОВ КАПЕЛЬНОГО ОРОЩЕНИЯ

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Аннотация: в этой статье ведутся мысли о характеристике и преимуществах современных водосберегающих методов капельного орошения, использования методов и всемирных опытов. При использовании капельного орошения урожайность выше, но не по полям, а за счет экономии до 20-60% водных ресурсов, в зависимости от типа урожая. В то же время, поскольку вода всегда подается непосредственно к корню, корень эффективно развивается в плодородном слое почвы. Минеральные удобрения растворяются в поливной воде с использованием выявленных азотных удобрений, что дает возможность сэкономить 44-57%. В случае капли вода в подвое растения попадает в слой почвы. Стоит отметить, что в Республике Узбекистан орошение капельного орошения запланировано на 20 000 в 2019-2021 годах, 50 000 в 2025 году и 30 000 га орошаемых земель к 2030 году.

Ключевые слова: водосберегающие технологии, орошение, водные ресурсы, капельное орошение, хлопчатник, урожайность, удобрение, корень.

The economy of water resources and their rational use are a requirement of the time. More than 90% of the annual water resources used in Uzbekistan are used for irrigation. About 75% of these are used for irrigation of agricultural crops during the growing season. In addition to off vegetation, i.e. during the non-vegetative period, it is used for additional moistening of winter crops and for saline soils. But even with such a large amount of water, productivity is not giving us the desired result. This, first of all, raises issues that are difficult for us to resolve. At the present time, one of the challenges facing our country is to increase the productivity of the irrigation water without maximizing excessive waste, maximizing the use of modern technologies. In the third priority direction of the STRATEGY of the five priorities of development of the Republic of Uzbekistan for

2017-2021, that is, "Priority direction of economic development and liberalization" further improvement of reclamation status of irrigated lands in modernization and accelerated development of agriculture, development of a network of reclamation and irrigation facilities, introduction of intensive methods of agricultural production, first of all, savvy agriculture and resource saving technologies, the use of high-performance agricultural machinery established as a priority [1].

The first experimental drip irrigation started in 1918. By 1985, 450,000 hectares of irrigated land were drip irrigation, but now the Earth's 1,082 million hectares are irrigated in this way [2].

The drip irrigation method, when the developed countries account for 1897 thousand hectares (5%) of irrigated land in Spain, in India, 2180 thousand (6%), in the USA 1640 thousand (7.3%), China 5270 thousand (9.7%), Saudi Arabia 731 thousand (17%), Turkey 340 thousand (17%), Israel 140.6 thousand (75%) hectares in Uzbekistan, it amounts to 43,000 hectares, i.e. only 1% of irrigated lands [3].

Drip irrigation – moistening by means of special filters is to dripping into the soil through drip trays and localizing the root of the root system of the plant. Irrigation water is pumped under pressure through pipelines to each plant or plant, providing the plant with water in the vegetation period.

In this method, the mineral fertilizers can be melt-watered with water. At the same time, because the water is always fed directly to the root, the root effectively develops in the fertile layer of soil (picture 1). Because of the high level of aerated state of fertilizers in this layer, it is possible to notice that the root crop is fully developed.

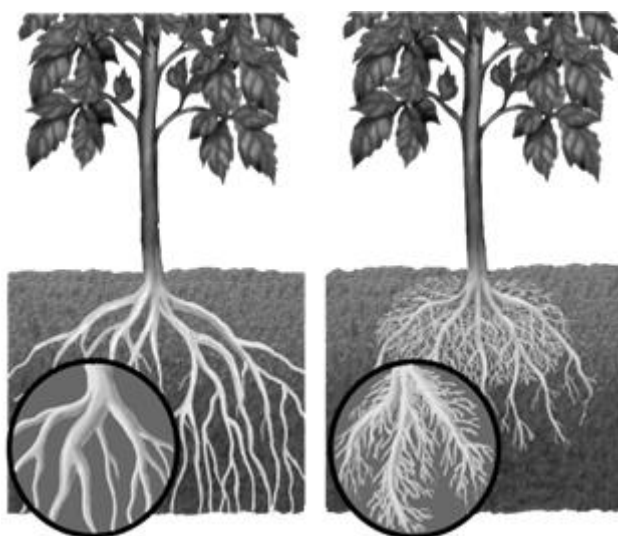


Fig. 1. crop's roots under using drip irrigation technology

Mineral fertilizer dissolved in irrigation water with the use of nitrogen fertilizers identified given the opportunity to save 44-57%. In the case of a droplet, the water to the rootstock of the plant falls into the soil layer.

The effect of the gravitational force is very low. Moisture is more effective under the capillary forces. When applying drip irrigation, there is a different moisture contour in soils with different mechanical properties (picture 2).

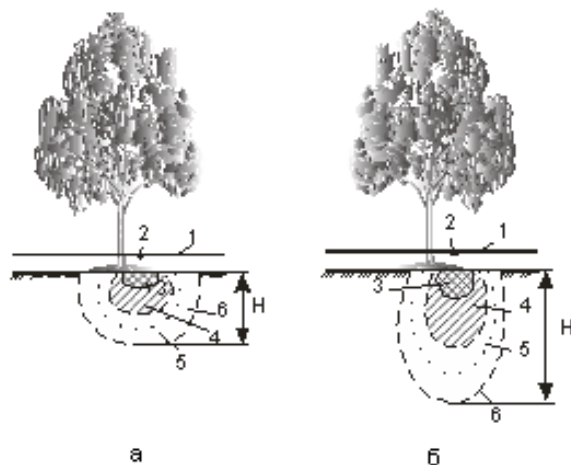


Fig. 2. Moistured contour under Drip irrigation technology (there in a-heavy, b-lightweight soil conditions)



Fig. 3. Using of drip irrigation technology in the field

If the area of 1 hectare of cotton is counted:

8.5 million soums are spent on agro-technical expenses in the ordinary way, and 6.5 million soums will be spent on drip irrigation.

If the water consumption is 6600 cbm/day, the drip irrigation rate is 3300 cbm/day. As you can see, the water is saved up to 50%.

If seeds are consumed in the usual way 55kg of cotton seeds, 27 kg of seeds are enough for drip irrigation.

As for fuel, it is estimated that the fuel is spent at the amount of 78 L while if it is consumed in the usual manner it will be spent 300 L of fuel. The mineral fertilizers are expended per 1 hectare is 750 kg, this indicator is only 450 kg in drip irrigation.

In general, it is anticipated that all costs will be reduced by half [2].

Additionally, the mineral extraction efficiency doubles as mineral fertilizers are added to the water [2].

Due to the short duration of drip irrigation, the natural need for water is fully satisfactorily compensated. At the same time, the most important is that the calculated productivity is 45-50 cents / ha [2].



Fig. 4. Cotton field under drip irrigation technology

The introduction of this process into the farming sector of the country has a number of factors, first of all in the interest of farmers, in which the cost of expenditures for the introduction of drip irrigation system at 1 cotton-8 million soums will be covered by our state. Our state will also compensate 10% interest rates for construction, reconstruction and purchase of drip irrigation systems. At the same time, the expenses will be considered for a case of not more than 20 million soums per 1 ha. Moreover, import contracts for technology imported from abroad for introduction of drip irrigation are not examined or recorded. The imported equipments are exempted from customs duties before January 1, 2021 [1].

Table 1. Single drip irrigation area, m²

| Mechanical composition of soils | Water drainage, l / hour | | | | |
|---------------------------------|--------------------------|-----|-----|-----|-----|
| | 2 | 4 | 6 | 8 | 10 |
| Sack | 0,2 | 0,4 | 0,6 | 0,8 | 1,2 |
| Sandy | 0,6 | 0,8 | 1,0 | 1,4 | 1,9 |
| Lightweight sandstone midsole | 0,8 | 1,2 | 1,6 | 2,0 | 2,4 |
| Medium and heavy lumber | 1,0 | 1,5 | 2,0 | 2,4 | 3,2 |
| Gil. | 1,2 | 1,8 | 2,4 | 3,2 | 4,0 |

The peculiarity of drip irrigation:

The roots grow in a puddle.

The plant does not send its roots to the pit.

Water and fertilizer delivery are easy.

It is easy for the plant to extract water and fertilizers from the soil.

In addition to the advantages of the drip irrigation system not only economic but also:

Active development of the root layer of the plant;

Improvement of air exchange in the soil;

Fast and intensive development of nutrients by the plant;

Preserving soil fertility as a result of non-smoke interval;

Band a sharp decline in costs of counterfeiting measures;

At least 50% or more of the productivity than traditional ones;

The root of the plant is placed in the humus layer in the soil;

Absence of secondary saline;

Complete automation of the problem and the lack of human handling;

-compliance of the mode of irrigation to the plant water consumption.

- water saving (40-50%);

- water filtration and evaporation, to prevent sewage;

- density of arteries, lack of irrigation erosion; - Possibility of application in complex rails;

- increase of productivity up to 50%, etc..

If we focus on the deficiencies in this method of irrigation:

The cost of introducing a new suction system;

Many labor force during the exploitation period; water droplets and foggy particles in the water droplets;

Damage to pipes by rodents;

Summing up, there is, Drip irrigation has some advantages and capabilities. When using drip irrigation, the yield is higher than that of the agricultural crops, but not by the crop field, but by saving up to 20-60% of water resources, depending on the type of crop. Implementation of this will enable not only economic growth, but also new lands at the expense of saved water resources, which, in turn, is one of the priority directions of creation of new agricultural product bases. In addition to this, provides cheap, high-quality and easy-to-use demand for agricultural products of the growing population of Uzbekistan. It is worth noting that in the Republic of Uzbekistan irrigation of drip irrigation is planned for 20,000 in 2019-2021, 50,000 in 2025 and 30,000 hectares of irrigated land by 2030.

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