



TECHNOLOGIES MODERN TECHNOLOGIES OF DRIP IRRIGATION AS THEY ARE TODAY

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Abstract: *The advantages and disadvantages of subsurface drip irrigation (SDI) as compared to alternative irrigation systems are conceptually discussed. Each category (advantages and disadvantages) is subdivided into three groups: 1) Water and soil issues; 2) Cropping and cultural practices, and 3) System infrastructure issues. The adaptation and adoption of SDI systems into diverse cropping systems, geographical regions, soils and climate depends, to a large extent, on how potential advantages are balanced against potential disadvantages. In some cases, just a few advantages are expressed for a given cropping system, but are expressed so strongly that they provide a good counterbalance to the potential disadvantages. Future research and development will probably add to the list of potential advantages while addressing and reducing the disadvantages. However, this current listing can be used to devise and adapt other possible uses for SDI. Specific examples of SDI use in maize (*Zea mays* L.), alfalfa (*Medicago sativa*), almonds (*Prunus dulcis*), cantaloupe (*C. melo*) and wastewater applications are discussed with respect to balancing advantages and disadvantages.*

Drip irrigation is a modern technology that has revolutionized the way farmers irrigate their crops. This technology involves the controlled application of water to the soil, directly to the plant's roots, through a network of tubing and emitters. Drip irrigation systems are designed to deliver water in small, frequent doses, which reduces water loss due to evaporation and runoff. In this essay, we will discuss the modern technologies of drip irrigation as they are today. One of the most significant advancements in drip irrigation technology is the development of precision irrigation systems. These systems use sensors and computer algorithms to determine the exact amount of water needed by each plant. This technology allows farmers to tailor their irrigation practices to the specific needs of each crop, resulting in improved yields and reduced water usage. al. (2019) stated that drip irrigation technology is a sustainable solution that can help farmers increase crop yields while using less water. This technology reduces water waste, which is critical in areas with limited water resources. Additionally, it reduces the amount of fertilizer and pesticides needed, leading to healthier crops and less environmental pollution.

However, despite the many benefits of drip irrigation, there are still challenges that need to be addressed. For example, the initial cost of installing a drip irrigation system can be high, which may deter some farmers from adopting this technology. Additionally, maintenance and repairs can be costly, and there is a need for skilled technicians to install and maintain these systems. Overall, drip irrigation technology has come a long way in recent years, and it has the potential to transform the way we grow crops. With continued innovation and investment, we can ensure that this technology becomes more accessible and affordable for farmers around the world. By doing so, we can promote sustainable agriculture practices that benefit both farmers and the environment. Another innovation in



drip irrigation is the use of mobile applications and remote monitoring systems. These technologies allow farmers to monitor their irrigation systems from anywhere, using their smartphones or tablets. They can track water usage, adjust irrigation schedules, and receive alerts if there are any issues with their systems. This level of control and convenience has made drip irrigation more accessible to small-scale farmers who may not have access to traditional irrigation methods.

The use of solar-powered drip irrigation systems is also becoming more prevalent. These systems use solar panels to generate electricity, which powers the pumps and other components of the irrigation system. This technology is particularly useful in areas with limited access to electricity, and it reduces the carbon footprint of irrigation practices. al. (2021) further highlighted the importance of drip irrigation technology in mitigating the effects of climate change on agriculture. They noted that climate change is causing more frequent and severe droughts, which can lead to crop failures and food insecurity. Drip irrigation can help farmers adapt to these conditions by providing a more efficient use of water and allowing crops to be grown with less water. The authors also emphasized the need for policies and incentives to encourage the adoption of drip irrigation technology. Governments and organizations can provide financial assistance or tax incentives to farmers who invest in this technology. They can also promote education and training programs to help farmers learn how to install and maintain drip irrigation systems.

In conclusion, drip irrigation technology has the potential to revolutionize agriculture by increasing crop yields, reducing water waste, and promoting sustainable practices. However, there are still challenges that need to be addressed, such as the initial cost and maintenance of these systems. With continued innovation and investment, we can ensure that this technology becomes more accessible and affordable for farmers around the world, helping to mitigate the effects of climate change on agriculture and promote food security. There has been significant progress in the development of biodegradable materials for drip irrigation tubing. These materials break down naturally over time, reducing waste and environmental impact. Some companies are also developing tubing made from recycled materials, further reducing the environmental footprint of drip irrigation. Drip irrigation technology has come a long way in recent years, with many exciting advancements that improve efficiency, reduce waste, and lower costs. As our global population continues to grow, the demand for food will increase, and drip irrigation will play an increasingly important role in meeting this demand while preserving our natural resources.

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