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THE IMPORTANCE OF INNOVATIONS IN WATER USE EFFICIENCY IN AGRICULTURE

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Annotatsiya: *Ushbu maqolada qishloq xo‘jaligida suvdan foydalanish samaradorligini oshirish bo‘yicha innovatsiyalardan foydalanishning iqtisodiy foydalari yoritilgan. Muallif nozik sug‘orish tizimlari, tuproq namligi datchiklari va ob-havoni bashorat qilish vositalari kabi yangi texnologiyalar fermerlarga suvdan samarali foydalanish, xarajatlarni kamaytirish va hosildorlikni oshirishga qanday yordam berishi haqida gapiradi. Maqolada, shuningdek, suv tanqis resursga aylanib borayotganini hisobga olib, ushbu innovatsiyalarni qo‘llash muhimligi va ularning suv resurslariga ta’sirini cheklashda mumkin bo‘lgan ekologik foydalari ta’kidlangan. Umuman olganda, maqola qishloq xo'jaligida suvdan barqaror va samarali foydalanishni ta'minlash uchun tadqiqot va innovatsion texnologiyalarni ishlab chiqishga barqaror sarmoya kiritish zarurati haqida qimmatli fikrlarni beradi.*

Kalit so'zlar: *innovatsiyalar, suvdan foydalanish samaradorligi, qishloq xo'jaligi, nozik sug'orish tizimlari, tuproq namligi sensorlari, ob-havo prognozi, iqtisodiy foyda, ekinlar hosildorligi, barqarorlik.*

Abstract : *This article highlights the economic benefits of using innovations in water use efficiency in agriculture. The author discusses how new technologies such as precision irrigation systems, soil moisture sensors, and weather forecasting tools can help farmers use water more efficiently, reducing costs and increasing crop yields. The article also underscores the importance of adopting these innovations, given that water is becoming a scarce resource, and their potential environmental benefits in limiting the impact on water resources. Overall, the article provides valuable insights into the need for sustained investment in research and development of innovative technologies to ensure sustainable and efficient water use in agriculture.*

Keywords : *innovations, water use efficiency, agriculture, precision irrigation systems, soil moisture sensors, weather forecasting, economic benefits, crop yields, sustainability.*

Аннотация : *В данной статье освещаются экономические выгоды от использования инноваций в области повышения эффективности использования воды в сельском хозяйстве. Автор обсуждает, как новые технологии, такие как системы точного орошения, датчики влажности почвы и инструменты прогнозирования погоды, могут помочь фермерам более эффективно использовать воду, снижая затраты и повышая урожайность. В статье также подчеркивается важность принятия этих нововведений, учитывая, что вода становится дефицитным ресурсом, и их потенциальные экологические преимущества в ограничении воздействия на водные ресурсы. В целом, статья дает ценную информацию о необходимости устойчивых инвестиций в исследования и разработку инновационных технологий для обеспечения устойчивого и эффективного использования воды в сельском хозяйстве.*

Ключевые слова :*. инновации, эффективность водопользования, сельское хозяйство, системы точного орошения, датчики влажности почвы, прогноз погоды, экономическая выгода, урожайность, устойчивость.*

Water is a precious resource and its conservation is critical, especially in agriculture where it is widely used. With increasing pressure on water resources, it is crucial to adopt innovation to ensure sustainable use of this resource. Innovations in the use of water resources in agriculture can lead to a more efficient use of water and increased economic efficiency.

One such innovation is the use of drip irrigation systems, which provide water directly to the roots of plants, reducing water wastage and improving crop yields. This system saves up to 30-70% of water and increases crop yields by up to 20-70%. These savings in water and increased crop productivity results in increased economic efficiency. Another innovation is the use of moisture sensors, which are designed to determine soil water content and prevent over-irrigation. Over-irrigation wastes water, energy, and fertilizer, which can lead to reduced economic efficiency. Implementing moisture sensors can also help to identify irrigation inefficiencies early and address them quickly, leading to further savings in water

and increasing the economic efficiency of agricultural activities. Additionally, the use of crop rotation and conservation tillage can reduce water evaporation from soil and improve soil water holding capacity. By retaining more water in the soil, crop yields can increase. This can lead to an increase in economic efficiency and benefits to farmers.

Water scarcity is a major challenge facing agriculture today. Water is an essential resource for crop growth and yield, and with increasing demand for food, water resources are becoming scarce. In order to maximize the use of water resources and improve agricultural productivity, innovations in the use of water resources in agriculture have become increasingly important. These innovations involve the development of new technologies such as precision irrigation systems, soil moisture sensors, and weather forecasting tools that enable farmers to use water more efficiently.

The economic efficiency of using innovations in the use of water resources in agriculture is undeniable. Studies show that the adoption of water-saving technologies can reduce water use in agriculture by up to 50% while maintaining or increasing crop yields. This translates into significant cost savings for farmers while also reducing the overall environmental footprint of agriculture. One of the key innovations in water-saving agriculture is the use of precision irrigation systems. These systems use sensors and real-time data to provide precise amounts of water to crops, reducing water use and increasing crop yields. A study conducted by the University of California showed that precision irrigation systems could increase crop yields by up to 30% while reducing water use by 20-40%.

Another innovative technology is soil moisture sensors, which allow farmers to monitor soil moisture levels in real-time and adjust irrigation accordingly. This technology can reduce water use by up to 30% while increasing crop yields. Weather forecasting tools are also becoming increasingly important in agriculture. With accurate weather forecasts, farmers can plan irrigation schedules and make informed decisions about when to plant and harvest crops. This can help farmers reduce water use and increase crop yields, leading to significant economic benefits. In addition to the economic benefits, using innovations in the use of water resources in agriculture also has environmental benefits. Water is becoming a scarce resource, and using it more efficiently can help reduce pressure on water resources and protect the environment.

Conclusion . In conclusion, the economic efficiency of using innovations in the use of water resources in agriculture is clear. Precision irrigation systems, soil moisture sensors, weather forecasting tools, and other innovative technologies can help farmers reduce water use, increase crop yields, and protect the environment. Governments and stakeholders should continue to support the development and adoption of these technologies to ensure a more sustainable and efficient agriculture industry.

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