Available online www.jocpr.com

Journal of Chemical and Pharmaceutical Research, 2014, 6(6):2309-2312

Research Article

ISSN : 0975-7384
CODEN(USA) : JCPRC5

Study on construction technology of water saving irrigation and water conservancy engineering

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ABSTRACT

The water saving irrigation project construction technology than the traditional irrigation technology has obvious water saving effect, water saving irrigation is the use of efficient irrigation methods and irrigation water saving, water saving and high efficiency because of it, are in line with the national water-saving regulations, so water-saving irrigation technology is constantly developing, its efficiency is also rising. This paper mainly analyzes on water saving irrigation technology.

Keywords: Water Saving Irrigation Technology; Engineering; Technical Analysis

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INTRODUCTION

In recent years, the Party Central Committee and the State Council have put forward "water-saving irrigation" as "a revolutionary measure to grasp", urged all localities to greatly improve the utilization rate of water. Our country is deeply developing water-saving irrigation work, and striving to build water-saving agriculture and water-saving society. However, the water saving irrigation still has a different understanding to different people. Thus it affects the full play of water saving irrigation in the overall planning and its project benefit. Water-saving irrigation is irrigation techniques practiced to the traditional and extensive techniques in the past years. It is to reduce irrigation water use for irrigation area based on the regularity of water requirement and local meteorological and hydrological and soil conditions of crop by engineering, agronomy, biological and management measures. The water saving irrigation full and effectively utilizes the precipitation and soil water, crop yield. It cannot be simply understood that the water saving irrigation is to reduce irrigation water use, but essentially a combination of various technical measures, to raise utilization efficiency of rainfall and soil water, reduce crop transpiration and soil evaporation, lower useless water consumption, thus to reduce the amount of irrigation.

With the development of science and technology, water-saving irrigation technology are researched and promoted in China. Various techniques have the advantages and disadvantages, and different the suitable conditions. Some technology is the more mature and some are still being further study. Technology, water-saving irrigation techniques can be divided into of irrigation water method, water delivery method, irrigation system, and field assisted measures four categories.

THE SUMMARY OF WATER-SAVING IRRIGATION TECHNIQUE

Water saving irrigation is an irrigation method of field water distribution about how to distribute equably farm irrigation water to enter the crop root layer. According to the means of irrigation water to enter the root layer, irrigation methods can be divided into surface irrigation, sprinkler irrigation, micro irrigation and subsurface irrigation. Surface irrigation is the most traditional irrigation method; it is the starting point for the comparison water-saving. But the surface irrigation technique is continuously becoming development and perfection, so recently

many ways better water-saving than the traditional ground irrigation.

The element of water-saving irrigation technique
Irrigation technique factor refers to the ditch, furrow specification, inflow rate and inflow cutoff. This irrigation technology means elements of the rational combination and gets the effect of water saving. General experience suggests that the furrow irrigation and border irrigation can improve the irrigation uniformity and irrigation efficiency with small size.

The traditional furrow irrigation
The traditional furrow irrigation is from distribution channel opening drain into the furrows used artificial, and often cause filed losses due to drain leakage. The open channel water and gate hole pipe drain are used in abroad, effectively improving the field water utilization rate.

Technology of film hole irrigation
Irrigation of film is made of trench in the film where the water flows. It infiltrates into the land until the crops growing from the hole line, so that improves irrigation efficiency. In that condition, Technology of film hole irrigation not only save water but also does not require specialized facilities.

Drip irrigation method
Drip irrigation technology means the use of specialized equipment to produce natural water pressure. And the water pressure will be send into the field through the pressure pipe. Then the nozzle channel the air and become small de water evenly sprinkle on the farmland. For all the dry crop，such as irrigation, grain, vegetables, this method is suitable for the warm climate of plain and hill. Theoretical range equation and square nozzles spray application domain variable spraying nozzle, deduces the square wetted area variable nozzle flow and rotational speed of rotor angle equation. The results of this study for variable nozzle and the spray nozzle square design domain variables provide a theoretical basis. Variable nozzle under the irrigation needs to realize the spraying and spraying quantity controllable irrigation system, and improves the whole spraying uniformity and the block shape compatibility. But the variable nozzle also has its limitations; such as adding auxiliary device will lead to energy drain spray nozzle and prone to rate is low the wind.

Sprinkler irrigation technology
Drip irrigation uses small plastic tube irrigation water directly to the roots of crops near each plant. Water from the dripper slowly dropping, which is a fine irrigation method, only need to place water to irrigation, can truly only irrigation crops rather than irrigated land. This method is also used in many countries of the South and large area of land. This simple drip irrigation has the following advantages: one is that the water utilization rate is higher, which can reach 90%, than the irrigation water saving 50%-60%. Two is that the water storage project is simple, which only need to pressure head, can meet the irrigation needs of 0.5-1 meters. The reservoir can be built pool, also be pulled the train pot or bucket seepage inside covered with plastic sheeting. The three is less investment, high efficiency. By the 5 article of capillary calculation, each day can drip irrigation of 5 acres. Irrigation and convenient management, each is able to produce. Irrigation process, if local clogging found, can immediately solve this solution.

THE MODE OF WATER- SAVING IRRIGATION ENGINEERING TECHNOLOGY
For the large-scale development of water-saving irrigation technology, we should combine the local characteristics with different water saving irrigation conservancy making the perfect model to be better. We introduce several water-saving irrigation engineering mode as follow.

Facility agriculture cultivation
Facility agriculture, which is also called protected cultivation, uses sunlight greenhouse, plastic shed protection facilities, and artificially creates for crop growth and development of the environmental conditions. In order to achieve high quality, high yield, high efficiency, the object is the high additional value for city residents. The suburb is the most ideal region for the development of agriculture water saving engineering technology. The technology of water-saving drip irrigation is adopted in these areas. Water saving irrigation and water conservancy engineering technology and equipment should be developed rapidly in china. We need to import foreign advanced technology vigorously for the development of water saving irrigation equipment. In water saving irrigation equipment and facilities for agriculture, solve ordinary process materials, greenhouse micro irrigation equipment production and reduce price. To maximize the micro irrigation equipment in the development facilities in agricultural applications, we use water management departments should solve its outdated equipment, research and production.

Generation of pure well irrigation area and irrigation technology

Pure well irrigation areaoccurs declining groundwater levels and the deterioration of ecological environment problems. To determine the quantity of crop irrigation water in the irrigation area, exploitation of groundwater should be supplied according to the ecological requirements. In this paper, the majority which has not irrigated area can carry out the sufficient irrigation on irrigation area of all the crops. We can use to reduce irrigation area, in the rest of the irrigation area. Using the traditional method of the highest yield sufficient irrigation also can maintain the inherent irrigation area, taking the non-filling of crop irrigation. Sub irrigation method improves the water-saving irrigation technology, and the low pressure pipe irrigation is adopted for irrigation of crops.

Integrating irrigation canals with Wells

Continue to occur the shortage of irrigation water around the reservoir surrounding, irrigation area is relatively high level of agricultural production by self-pressure pipe. Canal irrigation engineering technology is an ideal mode. The key point is to solve the planning design and field water management questions. In addition, we need to promptly resolve some technical problems, such as the anti-deposition material selection, construction technology and pipe connection.

THE CONSTRUCTION OF SMALL WATER CONSERVANCY PROJECT – DEVELOPMENT OF WATER SAVING IRRIGATION PROJECT

Small water is the lifeline of agriculture; is improve agricultural production conditions and the basic life safeguard farmer. For decades, the construction of water conservancy projects has made a series of achievements in rural place, which provide powerful support and guarantee for the construction of socialist new countryside.

In recent years, the development of water-saving irrigation of rural small water conservancy project mainly has the following features: Firstly, water conservancy water saving irrigation engineering becomes important now rural infrastructure construction. The process continues to expand the scale; Secondly, China's water conservancy irrigation project funding continues to increase, guaranteeing engineering facilities utilization rate of the small water conservancy and water saving irrigation; Finally, the effective irrigation area in the industry is basically stable. And the process of city existing irrigation technology needs to develop more and more scientific.

CONCLUSION

In accordance with state regulations, we must strengthen the national ecological protection to improve the ecological environment, but not at the expense of the ecological environment. The main problem of China's ecological construction and environmental protection is to solve water resources. And China is a nation who is shortage of water resources. The water resources ecological system is weak. The exploitation of water resources at a time, destroy the ecological balance of the local natural conditions. In the raw area, the artificial ecological development state in the system consumes is a part of water resources, natural ecological original and change of river basin water resources. The natural distribution forms the contradiction of social and economic water use and ecological water consumption.

The main ecological problems in Northwest China are soil land degradation, including land desertification, soil erosion and salinization of soil. The climate characteristics of scarce rainfall, strong evaporation which determine the west natural leaching north area soil is very weak, widespread soil salinization threat. If reasonable irrigation design is not used in the construction of water conservancy project, it can directly cause the irrigation water, resulting in high salinity ground water rise, accelerated soil evaporation and salt accumulation. In some downstream area, for the lack of freshwater resources, unreasonable drilling reference saline ground sewage irrigation, resulting in increase of soil salinity. Through the transformation of water-saving irrigation area, irrigation and drainage conditions will be improved, it can effectively prevent treatment of soil salinization, improve our ecological environment.

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