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Study on Water-saving Irrigation for High Standard Farmland Construction

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Abstract: *It is an important measure to implement the rural revitalization strategy and an effective way to consolidate the foundation of modern agricultural development and guarantee the national food security to construct high-standard farmland and improve the farmland yield rate and agricultural comprehensive productivity. In this paper, the construction of high-standard farmland and high-efficiency water-saving irrigation are analyzed for reference.*

Keywords: *high standard, Farmland construction, Water saving irrigation*

1. Preface

With the advent of epoch-making information, agricultural technology has also been reformed and innovated in different fields. In terms of farmland water-saving irrigation, information tools have also been used to innovate the automation technology of farmland high-efficiency water-saving irrigation, which not only reduces the labor cost but also improves the irrigation efficiency. At the same time, the problem of irrigation water is also an important factor that troubles irrigation projects. Therefore, the government can guide the reform of water right price, so as to not only improve the enthusiasm of local agricultural production, but also solve the problem of irrigation water.

2. Role of high-standard farmland construction

We will make scientific coordination of the planning for the construction of high-standard farmland at the municipal and municipal levels, promote the construction of high-standard farmland as a whole, and ensure coordinated planning, complete planning, and zero adjustment of project plans. Work out the list of responsibilities of the town, compaction the responsibility of the town level to clear obstacles, remove miscellaneous items, coordinate contradictions, and prepare soil for the construction of subgrade. We will promote the integration of resources and increase input. We will adjust and improve the structure of government spending and increase financial support for the development of high-grade farmland. In 2020, it plans to build 65,000 mu of high-standard farmland, 17,000 mu more than in 2019, with an estimated investment of 160 million yuan, of which more than 50 million yuan will be invested by local governments. We will vigorously promote the development of 20,000 mu of high-grade farmland in the Yangtze River Ecological Corridor Development Zone, build it first and then repair it, and strive to create examples of high-grade farmland development. We will promote the construction of high-standard farmland by means of centralized investment, contiguous management and large-scale development, and promote cropland suitable for mechanization, so as to combine small cropland with large cropland [1-2].

3. Basic principles of efficient water-saving irrigation project

3.1 Unified planning and step-by-step implementation

In the construction of efficient water-saving irrigation project, the relevant departments need to its high standard farmland into construction standards, and countries in the understanding of water resources supply and demand status quo, on the basis of the present situation of the ecological environment and

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development, in county farmland efficient water conservation planning, clear points annual development goals and farmland will be highly effective water-saving tasks into villages and land, continually expand the scale of efficient water-saving agriculture development [3].

3.2 Lifting technology, combination of point and area

Related departments need according to the actual situation in different regions and crops, formulate corresponding fertigation system, furrow irrigation technical parameters and main mode, combine furrow irrigation technology and tube filling technology, targeted demonstrated and membrane under drip irrigation, fertilization integration technology, increasing the experimental research on crop water requirement and fertilizer, enhance the level of drip irrigation technology and realize the integrate point and sphere, the whole advancement, improve the comprehensive benefit of project construction.

4. Technical requirements for construction

(1) Construction water from nearby qing water, if not can be used to pull water from the nearby water wheel, should meet the needs of domestic water and construction water. (2) Diesel generators shall be used to generate electricity for construction. (3) Take a small amount of multi-point stacked, as far as possible to occupy less farmland. (4) When the section does not meet the requirements of water transmission, earthwork should be excavated, and the excavated soil should be stacked at the side of the channel. The earthwork should not be piled too high and meet the requirements of stability. After the lining of the channel, the excavated soil material should be used for backfilling on both sides of the channel, and the backfilling of earthwork is basically balanced after review. (5) The concrete should be mixed with efficient and reliable fixed mixing equipment. Before mixing, raw materials should be sampled and tested. If the mixture meets the requirements, it can be mixed, and the mixture should also be sampled and tested. (6) The formwork is made of flat steel formwork. The height is low and there is no need to erect scaffolding. The formwork should not be staggered, and the allowable deviation should meet the specification requirements. (7) In the process of construction, 1 permanent joint should be set every 15m, and the joint should be filled with bituminous fir board.

5. Development strategy of efficient water-saving irrigation project in farmland water conservancy project

5.1 Introduce advanced water-saving irrigation technology

At this stage, the entire film, film with drip irrigation and other agricultural water-saving technology has been effectively applied, its application in the "da" project, for regional planning major projects, construction demonstration area, the promotion of agricultural water-saving new technology provides a great opportunity, area of the peasants by changing the traditional concept, vigorously promote efficient water-saving irrigation technology, and has carried on the adjustment of agricultural structure, increase the water-saving planting crop varieties [4-5]. At the same time, in order to realize the agricultural water price comprehensive reform pilot project construction, the relevant departments on the basis of the comprehensive agricultural development project construction platform, will be efficient water-saving projects as the carrier, the innovation and optimization of the related mechanism, grasp the opportunity of agricultural water price reform, make a lot of social capital to participate in irrigation and water conservancy project construction, operation and management.

5.2 Innovate and optimize the agricultural development model

First of all, explore the reform mode of three rights of farmers' water cooperative. As in some county in efficient water saving construction project area, the establishment of professional cooperatives, with water by the share subscription financing investment project enterprises participate in project construction, management and operation in the whole process, in order to get more profits, on the basis of the cooperative, explore the reform of "separation" mode, the project area the initial water rights allocation to the village water, households and farmers cooperatives, members can share subscription to the cooperatives equity, with the lowest 4.95% profits, involved in water conservancy engineering property right system reform. Secondly, implement the transformation and upgrading mode of agricultural industry. Water conservancy engineering construction departments vigorously implement high-efficiency water-saving irrigation projects, optimize the traditional agricultural irrigation mode,

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realize the full use of water resources, improve the multiple cropping index and yield of crops, realize the land circulation in the project area, and effectively adjust the agricultural industrial structure.

6. Construction and management measures of farmland efficient water-saving irrigation project

6.1 Make use of the coercive mechanism of water right and water price reform

In rural areas, farmers need to buy water at their own expense, especially in areas where water resources are relatively scarce, the irrigation water purchasing system can effectively control the amount of water resources. However, some rural land users do not want to buy water at their own expense because they think this method is unreasonable or that they can rely on independent water collection for irrigation. This phenomenon is not conducive to the development of local economy, but also reduces the efficiency of water-saving irrigation of local farmland. Then, the local government could improve the situation by introducing a water right pricing mechanism in the rural areas. First, the price of rural water needs to be reformed in rural areas. In terms of the applicable types of rural land, some farmers use greenhouses for planting, while others still use traditional manual labor for planting. However, there are differences in the amount of irrigation water required by these two ways. Then, for farmers using greenhouses, the local government can reduce the water charges for surface water and groundwater by 25% and 50%, respectively, within the reasonable water distribution quota per mu, while exempting the water charges. For farmers who still use traditional manual labor, local governments can raise water charges for surface and groundwater by 25 percent and 20 percent, respectively, within a reasonable quota of water distribution per mu. At the same time, the local government is also supporting the use of excess water charging system. Thus, through this kind of water right of water reversed transmission mechanism, on the whole is in the lead local farmers use greenhouses planting agricultural production technology, because of the utilization of water resources in greenhouses is superior to the traditional cultivation, which means farmland water-saving irrigation turnover rate is lower than traditional farming land, so as to improve the efficiency of farmland water-saving. Moreover, greenhouses generally adopt sprinkler irrigation and dropper technology, and the farmland water-saving irrigation projects of these efficient water-saving facilities are easy to check and manage, so this mechanism can also improve the management efficiency of farmland water-saving irrigation projects [6].

6.2 Strengthen supervision and performance evaluation

On the basis of guaranteeing capital input and strengthening standardized management, it is very important to mobilize the enthusiasm of all parties to participate in high-standard farmland construction and strengthen supervision and evaluation. First, strengthen farmland construction supervision and evaluation. National high standard farmland incentive evaluation, including the comprehensive evaluation of the last year's high standard farmland construction and the evaluation of the current year's high standard farmland construction progress. The provincial level will improve the supervision and evaluation system in accordance with national requirements, and comprehensively carry out annual assessment and evaluation of high-standard farmland construction and efficient water-saving irrigation construction. Local governments should, in accordance with the requirements, intensify work scheduling, strengthen the daily supervision and tracking of projects, and timely carry out self-assessment of the completion of farmland construction tasks. Second, strengthen the project completion acceptance management. Timely completion acceptance is conducive to forcing the implementation of the project and ensuring the completion of the task on schedule. We should attach great importance to the acceptance work of the project completion, and further improve the acceptance work of the project in accordance with the relevant requirements of the national and provincial farmland construction management. The county level should do a solid job in the acceptance of single project and project contract, the municipal level should do a good job in the comprehensive acceptance work of the project on the basis of the acceptance preparation at the county level, and the provincial level should do a good job in the guidance and spot check work. Third, we will strengthen project performance management. Performance management is a national financial fund management regulation, is an important means to improve the level of project management, but also the international common practice of project management. It is necessary to continuously improve the management of farmland construction projects by evaluating the whole process of project establishment, declaration, implementation and completion, and exploring various evaluation methods such as entrusting third parties and organizing experts.

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6.3 Establish unified standard and high standard farmland informatization supervision standards

First of all, we should unify the construction standards, formulate high standard farmland construction standards and quotas for different regions and types in the province, improve the cultivated land quality monitoring and evaluation standards, and construct the farmland construction standard system. Second to perfect the construction of high standard farmland content, standardized construction, science and technology management requirements, such as after service and built considering agricultural rural development requirements, the change in the market price, timely adjust construction content and investment standards, to coordinate between city and city, county and county correlation between the departments of supervision technology base, technical equipment, technical means cohesion problems, thus to ministries and agencies to local high standard farmland information project supervision. In addition, the unified standard supervision system of high-standard farmland informatization can realize the multi-level and cross-department collaborative supervision of high-standard farmland informatization, which helps to improve the scientific and normative supervision of high-standard farmland informatization.

6.4 Improve business capability and build technical system

First, we need to improve our business capabilities. Farmland construction management involves a wide field of work, facing higher work requirements, managers' ideas, working methods, work ability should keep pace with The Times. Practical measures should be taken to strengthen business training and communication among managers, encourage them to participate in systematic and professional learning, and constantly improve the business skills of line managers. Second, we should speed up the construction of farmland construction technology system. As a branch industry and category in agricultural production, farmland construction technology system should be constructed as soon as possible. Strengthen the research, popularization and use of farmland construction technical standards and engineering quotas. Give full play to the technical support role of scientific research institutions and professional technical institutions, and form a strong technical support system as soon as possible. Third, we need to change our work style. We need to promote research and research, go to rural areas and the frontline of project construction, learn about the situation on the ground and listen to public opinion face to face, so as to make policy formulation and work planning more precise. We should fully respect the wishes of farmers and fully mobilize the enthusiasm of farmers to participate in project construction.

6.5 Omni-directional informatization supervision

On the basis of paying attention to network security construction, we will accelerate the realization of information sharing of high-standard farmland construction and supervision system, and realize all-round informatization supervision of high-standard farmland construction. Improve the evaluation system for high-standard farmland construction, strengthen the use and sharing of public information of evaluation results, rewards and punishments, carry out completion acceptance and evaluation of farmland construction projects in strict accordance with procedures, make unified public announcements to the society and accept supervision from the society and the masses. On the basis of establishing and strengthening the network security construction, according to the policy requirements and business work needs of promoting the local departments, the business information systems of the local departments shall be transferred to the national e-government Intranet or national e-government extranet, and connected to the local sharing platform, so as to realize the information sharing of land and resources management.

6.6 Increase publicity and improve villagers' understanding of project construction

Full use of newspapers, radio, television, WeChat public account and other media to carry out extensive publicity, the national construction of high-standard farmland related policies to the farmers, so that they fully understand the key points and difficulties of the project construction, support the project construction. Centralized organization, town, village cadres and the villagers' representatives to the new project area view, will live with plans to build the project area has been built in the project, let the people to feel the benefits of high standard farmland construction, an example is used to launch a peasant masses at the grass-roots level, make them aware of the high standard farmland construction project investment, the legal construction and the benefit main body in the project area, the crowd itself, is sufficient to improve the recognition of the masses to project construction, arouse the enthusiasm of their interests, qi participation. In light of regional conditions, we will further increase local government funding, give full

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play to the leverage of government funds, and guide and leverage financial capital and nongovernmental capital into the construction of high-standard farmland by integrating other funds and innovating investment and financing models.

7. Conclusion

Through the implementation of the irrigation channel project for the construction of high-standard farmland, the traditional furrow irrigation has been transformed into modern water-saving irrigation, and the canal system of farmland in the irrigated area has been realized freely, and the agricultural production in the irrigated area has been transformed from extensive agriculture to intensive and intensive agriculture.

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