

Remote Sensing Monitoring and Its Development Exploration of Soil and Water Conservation in Construction Projects for Production Purpose

Fu Wang*

Xinjiang Lvjiangyuan Ecological Engineering Co., Ltd., Urumqi, Xinjiang, 830000, China.

*Correspondence to: Fu Wang, Xinjiang Lvjiangyuan Ecological Engineering Co., Ltd., Urumqi, Xinjiang, 830000, China; Email: 446839109@qq.com.

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Abstract: With the rapid development of economy, the demand for land resources in construction projects for production purpose is increasing, resulting in increasingly serious waste of soil and water problems. As an emerging monitoring method, remote sensing monitoring technology has the advantages of high efficiency, swiftness and real-time etc., and has been widely employed in the field of soil and water conservation. This paper mainly discusses the significance and its application of remote sensing monitoring technology for soil and water conservation in construction projects for production purpose. Firstly, the significance of remote sensing monitoring tech of soil and water conservation in construction projects for production purpose is analyzed in this article. And then, the application of remote sensing monitoring technology for soil and water conservation in construction projects for production purpose is introduced. Finally, the development trend of remote sensing monitoring technology for soil and water conservation in construction projects for production purpose is envisioned. The scientific basis is thus presented for the water and soil conservation in construction projects for production purpose.

Keywords: Construction projects for production purpose; Water and soil conservation; Remote sensing monitoring; Exploration of development

Introduction

Remote sensing monitoring technology for soil and water conservation in the construction projects for production purpose is an emerging monitoring method, which is to obtain information such as type of landform, utilization/change of its

proportion through satellite remote sensing technology, and then interpret and analyze it to obtain the status quo of run-off of the water and soil. This method has the advantages of high efficiency, swiftness and accuracy, and can monitor and evaluate the current status of the water and soil conservation in construction projects



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for production purpose in real time, which provides scientific basis for the water and soil conservation cause in construction projects for production purpose.

1. The Significance of Remote Sensing Monitoring of Soil and Water Conservation in Construction Projects for Production Purpose

With the rapid development of the economy, the number and scale in construction projects for production purpose have been expanding, which has brought great pressure to the natural environment. Water and soil conservation is a very important link in construction projects for production purpose, which is related to the protection and sustainable development of the ecological environment. Therefore, remote sensing monitoring of soil and water conservation for construction projects for production purpose is of great practical significance. First, remote sensing monitoring of soil and water conservation in construction projects for production purpose can help to detect potential soil erosion problems in time. Through remote sensing technology, real-time and comprehensive monitoring of land surface changes and soil erosion conditions in construction projects for production purpose and surrounding areas can be provided to provide timely and accurate information for decision-makers, help to timely discover potential soil erosion problems, and provide scientific basis for the planning, design and management in construction projects for production purpose in the construction process and later stage. Secondly, remote sensing monitoring of soil and water conservation in construction projects for production purpose is helpful to assess the impact of projects on the region and the surrounding ecological environment. By analyzing the remote sensing data around the production and construction project, the impact of project construction on land cover, water resources, soil quality and other aspects can be evaluated, which can provide an important basis for the evaluation of soil erosion of later construction projects. At the same time, remote sensing monitoring can also provide technical support for the dynamic management of soil erosion in the project, and help the project team take effective measures to reduce the negative impact on local ecological damage. Third, remote sensing monitoring of soil and water conservation in

construction projects for production purpose is helpful to improve the management level of anthropogenic soil erosion. Through remote sensing monitoring, the management of soil erosion in construction projects for production purpose can be discovered in real time, providing scientific basis for government departments and enterprises, and helping to improve the level of local ecological environment management. In addition, remote sensing monitoring can also provide technical support for soil and water conservation law enforcement, improving the efficiency and accuracy of law enforcement^[1]. Finally, remote sensing monitoring of soil and water conservation in construction projects for production purpose can help improve the sustainability of the project. Soil and water conservation is a very important part in construction projects for production purpose, and through remote sensing monitoring, soil erosion problems that may occur during the construction of the project can be found in time, and provide a basis for the project to take effective measures to prevent soil erosion. At the same time, remote sensing monitoring can also provide data support for the comprehensive evaluation of soil erosion of the project, which can help the project team summarize lessons learned and improve the sustainability of the project. In short, remote sensing monitoring of soil and water conservation in construction projects for production purpose is of great practical significance. It can not only provide timely and accurate information for decision-makers, but also help to detect potential soil erosion problems in a timely manner; It can also provide scientific basis for areas with severe soil erosion in the project; At the same time, it also helps to improve the sustainable ecological development management level of the project. Therefore, strengthening the remote sensing monitoring of soil and water conservation in construction projects for production purpose is of great significance to protect the ecological environment and promote sustainable development.

2. Application of Remote Sensing Monitoring of Soil and Water Conservation in Construction Projects for Production Purpose

With the rapid development of the economy, the number and scale in construction projects for production purpose have been expanding, which has

brought serious pressure to China's resources and ecological environment. Soil and water conservation is an important part in construction projects for production purpose, aiming to protect water resources, reduce soil erosion and maintain ecological balance. As a modern means of obtaining geographic information, remote sensing monitoring technology provides effective technical support for water and soil conservation in construction projects for production purpose.

2.1 The Application of Remote Sensing Monitoring Technology in the Planning and Design Stage of Soil and Water Conservation in Construction Projects for Production Purpose

Remote sensing monitoring technology is the product of the development of modern science and technology, which uses satellites, drones and other remote sensing platforms to obtain image information on the earth's surface, and then processes and analyzes this information through computer technology to obtain various geographical, environmental, ecological and other information. This technology has important application value in the planning and design stage of soil and water conservation in construction projects for production purpose. First of all, remote sensing monitoring technology can help us obtain information such as topography, landform, and soil type in the project area. This information has important reference value for the development of soil and water conservation measures of the project. For example, through hyper-spectral remote sensing technology, we can obtain the vegetation cover of the project area, which has important guiding significance for the greening design of the project. By understanding the vegetation cover in the project area, we can determine the types and quantities of plants that need to be planted, as well as the time and method of planting, so as to effectively protect and improve the water and soil environment in the project area^[2]. Secondly, remote sensing monitoring technology can also help us detect geological hazards in the project area. For example, through radar remote sensing technology, we can detect whether there are hidden dangers of geological disasters such as landslides and debris flows in the project area. This information plays an important role in supporting the safe management of the project. By discovering and dealing with geological hazards in a timely manner,

we can effectively prevent disasters and ensure the safe conduct of projects. In addition, remote sensing monitoring technology can also be used for soil erosion and ecological construction of projects. For example, through remote sensing monitoring technology, we can obtain the information of the amount of soil erosion in the project area, such as erosion thickness, ground slope, erosion intensity under different soils and vegetation, etc., which is an important reference value for the monitoring and analysis of the project to help us formulate soil and water conservation measures. By understanding the erosion status in the project area, we can develop scientific and reasonable soil and water conservation measures to protect and improve soil erosion in the project area.

2.2 The Application of Remote Sensing Monitoring Technology in the Construction Stage of Soil and Water Conservation in Construction Projects for Production Purpose

Remote sensing monitoring technology plays a crucial role in the construction phase of soil and water conservation in construction projects for production purpose. By collecting and analyzing remote sensing images of the earth's surface, this technology can monitor the soil erosion status in the project area in real time, and provide timely and accurate guidance for the construction team. This not only helps to improve the efficiency of soil erosion prevention and control during construction, but also reduces ecological damage and direct economic losses caused by soil erosion. During the construction process, remote sensing monitoring technology can help the construction unit better understand the soil erosion status in the project area. For example, through optical remote sensing technology, information such as the area of bare land and the degree of soil erosion in the project area can be detected. These information has important guiding significance for construction units to formulate measures such as vegetation restoration and drainage engineering. Through the analysis of these data, the construction unit can reasonably plan the vegetation planting area, select the appropriate vegetation type and adjust the drainage system, so as to effectively reduce soil erosion. In addition, hyper-spectral remote sensing technology also plays an important role in the construction phase of soil and water conservation.

Hyper-spectral remote sensing technology can provide detailed information on vegetation growth in the project area, such as vegetation cover, biodiversity, etc. These data are of great significance for the vegetation restoration effect of the construction unit. Through the analysis of these data, the construction unit can understand whether the effect of vegetation restoration has reached the expected goal, so as to adjust and optimize the vegetation restoration work. Remote sensing monitoring technology can also help construction units predict future soil erosion risks. Through the mining and analysis of historical remote sensing data, some laws and trends related to soil erosion can be found. This helps the construction unit to take measures in advance to prevent potential soil erosion problems, thereby reducing the safety hazards and social costs caused by soil erosion^[3].

2.3 The Application of Remote Sensing Monitoring Technology in the Operation and Management Stage of Soil and Water Conservation in Construction Projects for Production Purpose

Remote sensing monitoring technology plays an crucial role in the operation and management of soil and water conservation in construction projects for production purpose. This technology applies remote sensing equipment such as satellites or aircraft to observation of the land surface periodically or real-time, obtain a large amount of geographic information data, and provide scientific basis and decision-making support for the water and soil conservation management of the project. During the operation of the project, remote sensing monitoring technology can help us better understand the water and soil conservation effect in the project area in real time. In addition, through hyper-spectral remote sensing technology, we can obtain information such as vegetation growth status and soil erosion degree in the project area. These information are critical for assessing the effectiveness of a project's soil and water conservation. For example, if the project has proper soil and water conservation practices, then vegetation should grow well and soil erosion should be low. Conversely, if the project has poor soil and water conservation practices, then vegetation growth may be poor, and soil erosion may be high. By monitoring these information regularly, we can identify problems in a timely manner, adjust soil and water conservation strategies, and improve the effectiveness of soil and

water conservation projects.

3. The Development Trend of Remote Sensing Monitoring of Soil and Water Conservation in Construction Projects for Production Purpose

With the rapid development of the global economy, the amount and scale in construction projects for production purpose have been expanding constantly, which has put immerse pressure on the ecology where human survive. As one of the most serious ecological problems in the process of construction projects for production purpose, soil erosion has already attracted widespread attention. In order to protect the ecological environment and promote sustainable development, remote sensing monitoring technology for soil and water conservation in construction projects for production purpose came into being, which has become an primary means to solve the problem of soil erosion. First of all, technological innovation will become the main driving force for remote sensing monitoring of soil and water conservation in construction projects for production purpose. With the continuous development of remote sensing technology, the gathering and application of new remote sensing data such as one of high resolution, hyper-spectrum, multiple bands of wave and multiple points in time will be more extensive. The development of these technologies will make remote sensing monitoring data more accurate and comprehensive, helping to improve the effectiveness of soil and water conservation monitoring. In addition, the application of emerging technologies such as artificial intelligence, big data, and cloud computing will also bring more possibilities for remote sensing monitoring of soil and water conservation in construction projects for production purpose, such as intelligent identification, data analysis, model prediction, etc., so as to improve the efficiency and accuracy of monitoring. Moreover, remote sensing monitoring of soil and water conservation in construction projects for production purpose will develop in the direction of refinement and intelligence. At present, the remote sensing monitoring of soil and water conservation in construction projects for production purpose mainly relies on the collection and analysis of a massive quantity of basic data, which lacks pertinence and refinement. In the near future, through the information of soil physical and chemical

characteristics, topography and geomorphology, vegetation cover and others in the area of research project, combined with data from remote sensing monitoring, the refined monitoring of water and soil conservation in construction projects for production purpose will be realized. At the same time, the utilization of artificial intelligence technology can achieve the intelligent analysis of monitoring data and provide more scientific and reasonable suggestions for decision-makers. Last but not least, remote sensing monitoring of soil and water conservation in construction projects for production purpose will pay more attention to interdisciplinary and cross-field cooperation and exchanges. The problem of soil and water conservation involves many disciplines such as geography, ecology, meteorology, hydrology, etc., and requires multidisciplinary comprehensive analysis and research. Down the line, remote sensing monitoring of soil and water conservation in construction projects for production purpose will pay more attention to cooperation with other disciplines, such as cross-research with ecology, soil science, hydrology and other disciplines, in order to improve the theoretical level and practical effect of soil and water conservation monitoring on a multidisciplinary basis^[4]. Finally, remote sensing monitoring of soil and water conservation in construction projects for production purpose will be more widely adopted worldwide. With the increasingly serious global ecological problems, governments propose higher and higher requirements for water and soil conservation in construction projects for production purpose. As an efficient and convenient monitoring method, remote sensing monitoring technology will play an increasingly important role in soil and water conservation in construction projects for production purpose. At the same time, with the popularization and development of remote sensing technology, developing countries will gradually master and apply this technology, and contribute to the cause of soil and water conservation of global construction projects for production purpose. In short, the remote sensing monitoring technology of soil and water conservation in construction projects for production purpose will be developed faster in the future, and technological innovation, refinement, intelligence, interdisciplinary cooperation and the expansion of application scope will become its main development

trend. This will help to better protect the ecological environment and promote sustainable development.

Conclusion

In this paper, the significance of remote sensing monitoring for water and soil conservation monitoring in linear and its application in practice were thoroughly discussed. We have found that by using remote sensing technology, we can effectively monitor and manage the environmental impact caused by construction for production purpose, thereby conserving our natural resources and ecosystem. We recognize that in order to achieve sustainable development, we need to not only continuously innovate but also improve our technologies and methods. In a nutshell, we reckon that remote sensing monitoring is an crucial tool for soil and water conservation in construction for production purpose, and thus should we make full use of this technology to protect our environment and promote social and economic development for the welfare of our society.

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