

# 《农业用水》

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## 前言

Water resource is one of the most important natural resources that mankind depends on for survival and development , and one of the controlling factors of the ecology and environment. Global water use has been growing at more than twice the rate of population growth in the last century. Moreover , the water scarcity situation is being exacerbated by climate change , especially in the driest areas of the world. Agriculture consumes about 70 percent of all freshwater withdrawn and up to 95 percent in several developing countries. To tackle water scarcity even as the demand for food increases , we must support initiatives to improve water conservation and delivery systems , protect the earths ecosystems , conserve rain-fed moisture and use water for food production more efficiently , or produce more food with proportionately less water. Coping with water scarcity requires addressing a range of issues , not all of them directly linked to agriculture. They range from protection of the environment and global warming to fair pricing of water services and equitable distribution of water .for irrigation , industry and household use. This is why not only the agriculture sector , but everyone , international organizations , governments and local communities must share the responsibility. As this situation , the international organization , company and Chinese government are dedicated to the exchange of recent advances in development of water-saving chemical materials , agricultural application technology and eco-environmental safety. The International Symposium on Water in Agriculture and Forestry : Challenges , Technological Solutions and Innovations aims to offer opportunities for participants to interact , present their most recent findings and to hold discussions with their colleagues from other countries , and provide a platform for potential future collaborations. The organizers of the International Symposium included Institute of Environment and Sustainable Development in Agriculture ( IEDA ) , Chinese Academy of Agricultural Science ( CAAS ) , Tottori

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## 内容概要

《农业用水:挑战、科技创新、技术措施(英文版)》围绕气候变化的大背景下,我国干旱缺水加剧,农业用水逐年减少,水资源严重不足的现状。论述和回顾了我国农业水资源开发、利用以及节水农业发展现状,引入化学节水的概念,结合国内外最新研究进展,从新型化学节水保水材料、制剂和产品的研发、农业节水应用技术和措施,以及新材料对土壤和作物,乃至整个环境的影响效应等多方面、多角度地阐述了化学节水材料农业领域应用的前沿动态和学术成果。

Water resource is one of the most important natural resources that mankind depends on for survival and development, and one of the controlling factors of the ecology and environment. Global water use has been growing at more than twice the rate of population growth in the last century. Moreover, the water scarcity situation is being exacerbated by climate change, especially in the driest areas of the world. Agriculture consumes about 70 percent of all freshwater withdrawn and up to 95 percent in several developing countries. To tackle water scarcity even as the demand for food increases, we must support initiatives to improve water conservation and delivery systems, protect the earth's ecosystems, conserve rain-fed moisture and use water for food production more efficiently, or produce more food with proportionately less water. Coping with water scarcity requires addressing a range of issues, not all of them directly linked to agriculture. They range from protection of the environment and global warming to fair pricing of water services and equitable distribution of water for irrigation, industry and household use. This is why not only the agriculture sector, but everyone, international organizations, governments and local communities must share the responsibility.

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With a rapidly growing economy and burgeoning populations , the countrys scarce water resources are seriously affected by pollution from the vast discharges of industrial and domestic wastewater , indiscriminate solid waste disposal , and runoff from an agricultural sector characterized by the excessive use of fertilizer and pesticides and by large-scale livestock breeding. Nowadays , most of the water bodies in China are polluted , and some are heavily polluted. Surface and groundwater pollution now represents a very large problem , both for public health and for the environment. The total wastewater discharges have steadily risen , being 53.7 billion tons in 2006 , with COD discharges and NH<sub>3</sub>-N discharges amounting to 14.28 million and 1.41 million tons , respectively ( MEP , 2007 ) . It was not until 2007 that the rising trend of water pollution discharges began to show signs of reversing , as the total 2007 COD discharges were reported to be 3.14% less than for 2006. In 2003 , 38.1% of Chinas river waters were considered to be polluted , up from 33% just one decade earlier. More than 75% of the water in the rivers flowing through Chinas urban areas is unsuitable for drinking or fishing. Only 6 of Chinas 27 largest cities have a drinking water supply that meets the State standards. Many urban river sections , and some large freshwater lakes , are so polluted that they cannot even be used for irrigation ( Economy , 2004 ) . According to The State Environmental Protection Administrations ( SEPA ) annual report ( EAI , 2003 ) , over 70% of the water in five of the seven major river systems , the Huai , Songhua , Hai , Yellow and Liao , was grade IV or worse , i. e. , it could not meet any designated beneficial uses. For the Hai and Huai rivers , this amount was 80. Even the majestic Yangtze river suffered a deep decline in water quality , more than doubling the percentage of its water that was not suitable for human contact to 48.5% in 2002 ( Economy , 2004 ) .

Over the past decade , the rapid growth in populations and industrial activities has also been accompanied by a rapid rise in the level of pollution in Chinas waterways. In terms of the source of water pollution , 50% of the water pollution is caused by industrial and municipal wastewater discharges and by the leaching of solid waste; the remaining 50% is caused by non-point sources ( in rural areas ) , including nutrient runoff , pesticides , and emissions from intensive livestock production.

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