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Experience Sharing and Evaluation Results of Adaptation Technologies Due to Global Climate Change in Water Shortage Irrigation Zone of Taiwan

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ABSTRACT

Global climate change has resulted in frequent and severe droughts, prompting many countries to develop corresponding adaptation technologies. In Taiwan, since there is uneven space-time distribution of rainfall, global climate change causing severe drought has raised more stringent challenges in irrigation water management. Therefore, the government officials and research institutions have worked together to develop new adaptation technologies to increase the abilities to adapt frequent drought events.

Because Yunlin and Changhua County belongs to the most serious water-shortage area in Taiwan, Council of Agriculture (COA) promote 8-year project to alleviate the problem of groundwater overdraft as well as water shortage condition within project zone as the demonstration area. Adaptation technologies includes renewal of irrigation canals, promotion of upland farming, development of high efficiency irrigation system, etc. Besides the evaluation results of water-saving quantities by official reports, the study utilizes the method developed by ICID to calculate irrigation efficiency, composed by conveyance efficiency, distribution efficiency and on-farm irrigation efficiency. The economic value of crop after irrigation is also evaluated each year by economic value of unit water volume. The results show the irrigation efficiencies of upland fields are higher than paddy fields. In addition to the production function, paddy fields are also beneficial for ecological and social aspects. In all, it is suggested to promote water-saving measures in long term to increase irrigation efficiency during drought period and reduce groundwater pumpage in all water-shortage zones in Taiwan.

KEY WORDS: Climate change, Irrigation efficiencies, Adaptation technologies