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ADVANCED NUMERICAL MODELING USING MIKE 11 TO DETERMINE THE WATER VOLUME ACCUMULATION IN A DRAINAGE CHANNEL FOR IRRIGATION USE

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Abstract

Currently, Romanian agriculture depends on the weather in most of the cultivated areas. The dependence on weather has made it difficult for Romania to overcome the phenomenon of pedological drought in 2020. In this context, it is becoming increasingly difficult to ensure food security, maintain land properties in rural settlements protected by land improvements, and protect the livelihoods and well-being of the inhabitants because, unlike air and water, the land (area) has many owners whose existence depends on the agricultural production that can be achieved. Using Mike11 software for hydraulic modelling of flows in open channels having as a case study the CPE (Main drainage channel) channel, it is predicted the variation of the water level in time depending on the hydrograph of the input flows in various hypotheses of using the channels for drainage or irrigation purposes; the evolution in time of the deposition/ erosion in the channels for different assumptions of their use; the hydraulic modelling of the water accumulation capacity in the open channel drainage them open for various exploitation hypotheses and calculation of the area possible to irrigate from the volume of water accumulated in the storage basin. The Mike 11 software module used is Mike Zero, which allows the calculation of the elements necessary to highlight the volume of precipitation water that can be used for irrigation, assuming its accumulation in a reservoir adjacent to the drainage channel, especially during the winter and spring when there is a higher water input from precipitation.

Key words: irrigation, numerical modeling, open channel drainage

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