Understanding of water and nitrogen cycle in an irrigated Mediterranean area in southern Turkey (part 1)


1. INTRODUCTION

The water quality is determined by a number of factors such as chemical conductivity, pH, amount of total dissolved ions, levels of contaminations, acidity, heavy metals, polluted waters, and other factors. These factors can lead to the problems of salinity, irrigation-induced alkalinity, which are often present in many Mediterranean countries (Table 1). In the Mediterranean, climatic conditions are conducive to the environmental impact of nitrogen due to agricultural and industrial activities. The nitrate leaching (NO3−) is an effluent of inorganic fertilizers, which are applied regularly in the Mediterranean countries, especially within the coastal regions, which are well known also for their high agricultural production. In the Mediterranean countries, the production of food and feed is generally based on the application of inorganic fertilizers (Table 1).

The aim of this study was to improve understanding of the effects of bypass flows due to irrigation on the calibration of SWAT model, b) irrigation return flow (IRF) and c) N leaching. The study was conducted in the Akarsu irrigation district, which is located in the southeastern part of Mediterranean region in Turkey. The Akarsu irrigation district is the second largest irrigation district in Turkey, and it is mainly used to supply domestic water to the city of Adana and its surrounding areas. The district is located in the Mediterranean region of Turkey, and it is characterized by a mild Mediterranean climate with warm and dry summers and mild and wet winters. The average annual temperature is about 16°C, and the average annual precipitation is about 600 mm. The irrigation system of the district is based on the use of surface water from the Seyhan Dam, which is located about 20 km upstream of the district. The irrigation system consists of a network of canals and laterals, which are used to distribute the water to the fields. The irrigation system is managed by the local authorities, and it is operated by the local farmers. The irrigation system is designed to meet the needs of the various crops grown in the district, and it is able to meet the needs of the district's growing population.

The study area is defined as the area of the irrigation district that is irrigated by the irrigation system. The irrigation area is characterized by a high rate of crop production and a high rate of nitrogen leaching. The study area is located in the southeastern part of Mediterranean region in Turkey, and it is characterized by a mild Mediterranean climate with warm and dry summers and mild and wet winters. The average annual temperature is about 16°C, and the average annual precipitation is about 600 mm. The irrigation system of the district is based on the use of surface water from the Seyhan Dam, which is located about 20 km upstream of the district. The irrigation system consists of a network of canals and laterals, which are used to distribute the water to the fields. The irrigation system is managed by the local authorities, and it is operated by the local farmers. The irrigation system is designed to meet the needs of the various crops grown in the district, and it is able to meet the needs of the district's growing population.

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