

Sustainable use of agricultural water resources in coastal areas affected by soil salinity

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The salinity of the soil affects 10% of the land and due to both natural processes to human activities. The increase in irrigated areas associated with the use of water of poor quality has led to a significant reduction in agricultural product major factor limiting agricultural productivity. The Mediterranean basin is affected by problems of soil salinization, especially in coastal areas where they are very common phenomena ingressions of sea water that adversely affect the quality of irrigation water. One of the areas most affected by this problem is the Volturno Plain in Campania region, Southern Italy where our study is monitoring irrigation water of about 30.000 ha starting from the mid 80's until today. The water quality showed that electrical conductivity values were between 1.10 and 2.27 dS/m-1 and therefore according to the book 29 of the FAO are classified as slightly saline. In 5 of the 26 cultivated farms electrical conductivity values, have exceeded the limit of 4.5 dS/m-1 threshold that makes this such waters unsuitable for agricultural use. The more prevalent class water in percentage was identified as C3 considered water with medium agronomic risk and their use could be evaluated carefully in relation of type of soil. Even for the cultivation of strawberry and tomato that have present in about 10% of the area of study, the values of electrical conductivity of the irrigation water were at the limit of their agronomic sustainability with values of 1.10 dS/m-1 for the first and 2.0 dS/m-1 for the second crop. The data of water quality repeated at the beginning of 2000 and confirmed more recently (2008) have confirmed an increase in the processes of soil salinization due to a deterioration in the quality of irrigation water with about 20% of Volturno Plain surface affected by a probably desertification processes. Therefore, based on progressive desertification that applies this coastal plain is necessary to provide for periodic, constant monitoring for limited periods such as five years, taking into account especially the rainfall and the increase of human activities. In conclusion, the assessment of the quantity and quality of available water resources in agriculture in this area shall be the object of special attention from public and private research institutions for the protection of the soil resource and future sustainability of use of these waters in agriculture.