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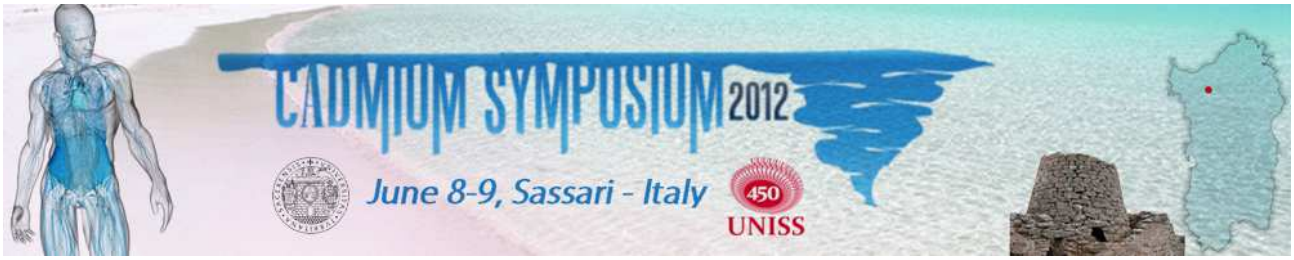

| Abstract Book |

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THE ROLE OF IRRIGATION TECHNIQUES IN Cd BIOACCUMULATION IN RICE *(Oryza sativa L.)*

Antonino Spanu[1], Gavino Sanna[2]

[1]Department of Agronomy [1]University of Sassari, Italy.
[2]Department of Chemistry and Pharmacy, University of Sassari, Italy

The bioaccumulation of toxic elements in rice is of great concern worldwide because rice is the staple food for billions of people. The uptake of toxic elements (like As, Cd and Pb) in rice comes mainly from their interaction with system soil/water, and the reducing conditions typical of paddy fields play often a decisive role in the mobilization of specific chemical forms of these elements. Recently we have demonstrated that the use of sprinkler irrigation produces rice kernels with a concentration of total arsenic about fifty times lower when compared to rice grown under continuous flooding irrigation. On the other hand, recent studies suggests that the adoption of "aerobic irrigation forms" in pot experiments may be associated with an increase of the concentration of cadmium in rice. In order to verify this hypothesis, we have cultivated 26 different genotypes of rice in our experimental farm near Oristano, Sardinia. The chosen experimental design followed a randomized block design with four replications for each genotype, that has been cultivated in the same soil/water system using three different irrigation forms: sprinkling, continuous flooding and saturation. The determination of total Cd in rice kernels has been performed using a validated GFAAS method. Data obtained allowed us to conclude that the average amount of total Cd in rice cultivated by sprinkling irrigation is roughly halved in comparison to the average Cd amount found in rice obtained by flooding irrigation. On the other hand, it is surprising to note that rice irrigated with saturation contains an average concentration of total Cd seven times higher than that measured in the rice samples grown in a traditional paddy. In addition, an evident effect of genotype in Cd bioaccumulation in rice grains has been clearly observed. Our results confirm that sprinkling irrigation may be an alternative and promising method in order to produce rice containing low amounts of toxic elements in kernels.