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Instrumentation Neutron Activation Analysis & Proton Induced X-RAY Emission techniques supported with Machine learning analysis for rare earth/macro/micro elements correlation from O. Sativa Rice varieties in Senegal River valley

Wednesday, 15 November 2023 18:00 (15 minutes)

The accumulation of metal and their correlation with the rare earth elements (REE) namely Na, Cl, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Cu, Zn, As, Se, Br, Rb, Sb, Cs, Ba, and REE(La, Ce, Nd, Sm, Eu, Tb, Tm, Yb, Lu), Hf, Ta and Th in roots, leaves and grains in O. Sativa Rice are investigated by destructive Instrumental neutron activation analysis and Proton induced x-ray emission. Exploration of resulting experimental data using Machine Learning techniques shows that the iron is highly correlated with the amount of REE (Cs, Rb, Sr, Sb, Ba, La, Ce, Sm, Yb, Nd, Eu, Tb, Tm, and Lu) and Hf, Ta and Th accumulation. More importantly, we observe a decreasing iron concentration between root and stem in comparison with the increasing chlorine contents. We also remark that there are no accumulation effects for all root tissues of REE.

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