



## Seed priming improves initial growth in maize cultivated on mine tailings

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Brazil suffered the most severe economic, social and environmental crisis when, on November 5, 2015, Samarco's Fundão dam broke down. More than 50 million m<sup>3</sup> of tailings were released and affected the Rio Doce watershed, covering the states of Minas Gerais, Espírito Santo and, nevertheless, the coast of Bahia and Rio de Janeiro. Analysis of soil samples from affected sites showed that some metals were in concentrations higher than allowed by guidelines, presenting a huge ecological and public health problem. Therefore, this study aimed to analyse the effects of seed priming with chitosan derivatives on the germination and initial growth of maize (*Zea mays* L.) cultivated in mine tailings, since this crop is one of the most important for Brazilian economy and is widely cultivated in the region of Quadrilátero Ferrífero-MG - where not only Mariana's disaster arose, but also that of Brumadinho. Thereby, seeds of DKB390 were submitted to priming with water, chitosan (300ppm) and chitosan derivatives (MCA+SUC, 300ppm), compared to the control - no priming. The experiment consisted of four treatments with five replicates of fifty seeds. The parameters analysed were: G% (percentage of germination), IVG (index velocity of germination), shoot height, root length, chlorophyll a fluorescence (Qy\_max, maximum quantum yield of PSII photochemistry; qP, photochemical quenching; qN, non-photochemical quenching) and content of dry biomass. Seed priming improved the germination of seeds cultivated in mine tailings, as well as the initial growth of the seedlings, but did not affect neither the root growth nor the fluorescence. It was also indicated that chitosan derivatives priming increased the dry biomass of maize seedlings subjected to the tailings. Therefore, it is concluded that the priming can improve the physiological performance of maize under the tailings from the Fundão dam.

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