PROJECT TITLE

Root phenotyping for better growth and Fe nutrition in soybean (Glycine max L.)

CONSORTIUM

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SUMMARY OF THE REPORT

The FERRARI project has been implemented according to the proposal with slight modifications. Two novel Fe chelators instead of only one (Fe(3,4-hydroxy-2-methyl-piridinone)$_3$, [Fe(mpp)$_3$], Fe(3,4-hydroxy-1,2-dimethyl-piridinone)$_3$, [Fe(dmpp)$_3$]) and the use of the commercial fertilizer FeEDDHA as positive control. Fifty-one genotypes (a total of 990 plants) have been assessed for Fe deficiency symptoms and their response to a foliar Fe treatment with the different novel Fe chelators, showing an expected behavior and statistically significant differences among Fe treatments and varieties. These results will be further confirmed by the use of molecular biology markers, metabolomics profiling and metal quantification in leaves and roots tissues.

The use of the aeroponic facility allowed the acquisition of pictures of the roots to assess further differences in plant phenotype, frequently limited to the aerial part of the plants. Image analysis will allow to determine differences in root number, length, effective area, growth rate, etc, and thus improving our knowledge in morpho-physiological responses of plants when facing Fe deficiency and the effects of commercial and novel fertilizers.