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Studies on mineral transporter and its regulation mechanisms in plants

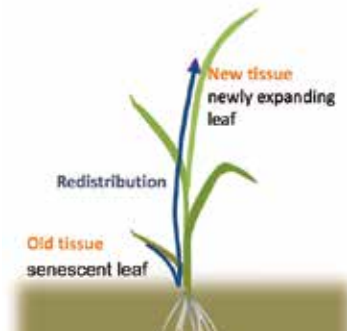
Plants are important for us, having been utilized as indispensable materials for, food, clothing and housing since ancient times. Therefore we couldn't live without plants. I'm focusing on mineral transporters for healthy and high nutrient-efficient crop production.

>Molecular mechanisms of Si transport

Silicon (Si) is a beneficial element for plant growth, which can alleviate many stresses by accumulation in their shoots. However, Si content of the plants varies greatly with species, and only those plants that are capable of accumulating the element can receive benefit from it. Rice is one of major Si accumulating plants. I am focusing on the study about molecular mechanisms of Si uptake and accumulation in rice for applying the beneficial effects of this element in many other plants.



Wild-type rice and a low silicon accumulation mutant. Growth and yields in the mutant are extremely poor



>Identification of mineral redistribution transporters

Plants require 14 mineral elements for their growth. These elements are taken up by the roots, translocated from the roots to shoots, followed by distribution/redistribution to different organs. A number of transporters for uptake and translocation of mineral elements have been identified, however, most transporters involved in mineral distribution/redistribution remain to be identified. I am working on mineral redistribution systems in rice for efficient use of mineral elements.