

[P1] Field Crop Production

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 1 (Poster) (Field Crop Production)

12:15 PM - 1:00 PM

[P1-03]Root-Elongated Seeds Can Extend the First Leaf Quickly in Direct-Seeded Rice

*Nominated for Presentation Awards

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In direct seeding of rice, rapid elongation of the coleoptile and the first leaf (incomplete leaf) is crucial for seedling establishment. It is reported that root-elongated seeds can grow faster and achieve higher establishment rate than conventionally used pre-germinated seeds because of the fast elongation of the coleoptile. Roots elongate when soaked seeds were put under the warm aerobic condition. To investigate whether this treatment has good effects on the first leaf as well as on the coleoptile, we conducted two experiments. Root-elongated seeds, root-cut seeds and pre-germinated seeds were sown in the pots filled with puddled soil and 1.5cm depth of water at 15° C. The time required for the emergence of the first leaf after the coleoptile had emerged was shorter in the former two seed treatments than in the latter. The same seeds were sown in the submerged agarose medium at 18° C. Until the leaf age of 1.5, leaves of root-elongated seeds and root-cut seeds elongated faster than those of pre-germinated seeds. After then, the speed of the leaf elongation was the same between the all seed treatments. The results show that seed germination under aerobic condition promotes the elongation of the first leaf, and that this is not due to the function of the root. These findings and previous reports suggest that the moderate humidity and oxygen supply during the seed pre-germination promotes the development of the plumule in the embryo, enables the rapid elongation of the coleoptile and the first leaf beneath the flooded soil surface, and improves the seedling establishment.