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Root System Development of Rice in Different Soil Moisture Conditions in Uganda Field.

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[Abstract]

Approximately 80% of rice field in Africa conducts in rainfed (Nishimaki 2017). The rice is damaged by water stress because fields like rainfed lowland repeat drying and humidity of soil because of impossible water control. Then water stress is one of the major limiting factors for decreasing rice yield. So, in initial growth stage, quick and efficient root development is useful way to avoid drought stress by getting water from deeper soil layer with roots elongation as the hypothesis. Daniel et al (2016) reported that NERICA1 and NERICA4 show different patterns of root plasticity for drought stress. NERICA1 has greater development of lateral root in shallow soil layer, while NERICA4 has greater development in deep root elongation to underground. This study was aimed to evaluate the effect of root development in initial growth stage on growing NERICA1 and NERICA4 under different soil moisture condition in rainfed lowland rice field. They were grown in same water condition until 35 days after sowing (35DAS), and after that each varieties were separated in dry and wet condition. The rice plants were grown until 60DAS. The results of soil moisture, the root extension angle, shoot dry weight and bleeding ratio showed that NERICA4 can mitigate dry stress from surface soil compered to NERICA1.

Keyword: rice, drought stress, root extension angle

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