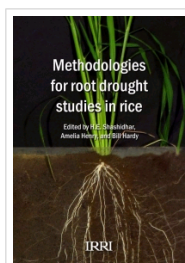


Methodologies for Root Drought Studies in Rice

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H.E. Shashidhar, Amelia Henry, and Bill Hardy

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Root biology is at the forefront of progressing fields to improve agricultural productivity in low-input systems. Although there is a strong case for the role of roots in plant performance under drought stress, appropriate methods for evaluating them in relation to performance under drought (particularly in rice) are less clear-cut. There is also a strong need for advances in phenotyping to match the rapid progress in genotyping and breeding of rice. Since rice research has historically emphasized irrigated environments, and because of the difficulties associated with studying roots, large gaps exist in our knowledge about root traits for drought-resistant rice. The research community needs a better understanding of the genetic variation in rice for drought response and root traits- as well as practical methods for studying them.

The focus of this manual is the description of relatively high-throughput, low-cost, and precise root phenotyping techniques, adopted by researchers across the world, that have been developed for drought studies on rice. Field phenotyping protocols for root studies in precise drought-stress treatments, as well as a range of root phenotyping systems, are described. Protocols to associate root traits with other plant traits and productivity are also included.

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