

Endophytic Microbiome-Assisted Drought Tolerance in Plants

10

Chandra Obul Reddy Puli, Chandra Sekhar Akila, Suresh Raju Kandi, Preetham Naik Korra Thimma Naik, Nagarathnamma Yammanuri, Krishna Kumar Guduru, Sravani Kunduru, Siva Bolupalli, Pallaval Veera Bramhachari, and Ramachandra Reddy Pamuru

Abstract

Agricultural productivity is constantly influenced by several factors such as urbanization, less availability of cultivable land, lack of sufficient automation, and abiotic and biotic stresses. Global climatic conditions significantly influenced the annual precipitation. Thus, decreased rainfalls, increased dry spells, soil salinity, and high temperature considerably affect agriculture productivity. On the other hand, the ever-burgeoning human population demands more food from the limited resources, putting much pressure on agricultural productivity. Drought stress causes several morphological, structural, biochemical, and molecular changes in plants. Plants to endure drought stress synthesize several secondary metabolites, reactive oxygen species, and module hormone production and induce several drought resistance genes. However, not all plants respond to the drought stress in the same magnitude. Most of the cultivable crops are drought-sensitive. Thus, the scientific community adopted several methods to improve drought tolerance in crop plants. Due to the constraints of agronomical practices,

C. O. R. Puli (✉) · S. R. Kandi · P. N. Korra Thimma Naik · N. Yammanuri · K. K. Guduru · S. Kunduru · S. Bolupalli
Plant Molecular Biology Laboratory, Department of Botany, Yogi Vemana University, Kadapa, Andhra Pradesh, India
e-mail: coreddy@yogivemanauniversity.ac.in

C. S. Akila
Molecular Genetics and Functional Genomics Laboratory, Department of Biotechnology, Yogi Vemana University, Kadapa, Andhra Pradesh, India

P. V. Bramhachari
Department of Biotechnology, Krishna University, Machilipatnam, Andhra Pradesh, India

R. R. Pamuru
Department of Biochemistry, Yogi Vemana University, Kadapa, Andhra Pradesh, India