

Current trends in metabolic engineering and synthetic biology for sustainable agriculture

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ABSTRACT

Metabolic engineering and synthetic biology are very fast growing emerging area of science which have predominantly emphasized on human health related issues. However, metabolic engineering and synthetic biology needs to deliver major concern towards sustainable agriculture. With increase in global population agricultural sector has been facing several burning challenges to combat malnutrition, fulfil current food supplies and nutritional demands. These issues are becoming more alarming due to elevated rate of global population and decrease in agricultural soil fertility which unable to support global food demands. To this end, a major paradigm shift requires in the field of agricultural section through the proper implementation of metabolic engineering and synthetic biology towards ameliorations of soil fertility and crop productivities. Metabolic engineering and synthetic biology has enormous potential to engineer soil biosensors, plant engineering, value added crop based biomolecule generations through improving soil fertility and food productivities. Thus, metabolic engineering and synthetic biology promises to provide diverse ranges of benefits to attain sustainable agricultural industries. Based on the current global scenario, present study demonstrates an accelerated proposal for theoretical and applicative aspects of metabolic engineering and synthetic biology to establish sustainable agriculture in near future.

Keywords: Metabolic engineering, synthetic biology, soil fertility, crop productivity, sustainable agriculture.

