



Agronomic Practices for Moisture Stress Management

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Abstract

Moisture stress/ water stress is one of the most commonly observed stress in crop fields. Water stress (drought stress) may be due to various factors such as inadequate and/or untimely rainfall, salinity, failure of irrigation, very high or low temperature etc. As water is very essential for the plant metabolism and physiological activity, hence moisture stress largely affect crop growth and development and ultimately, crop yield. The water scarcity is expected to rise in coming years owing to various factors such as rise in population, increased sectoral competition (agriculture vs other sectors) for fresh water, changing climate condition etc. Under such condition, agronomic practices need to be developed/modified to counter the water stress to minimize yield loss and improving water use efficiency.

Keywords: Agronomic, Drought, Moisture Stress

Water serves as one of the most important input for any production system. Water sustains agriculture and thus our food chain. Rising population, changing climate, increasing inter-sectoral competition for fresh water supply etc. is expected to affect the water supply to agricultural sector. Climate change will likely increase water demand for agriculture, primarily for irrigation, due to prolonged dry periods and severe drought (Morrison *et al.*, 2009). High temperature due to global warming is also expected to increase the crop water requirement due to higher evapotranspiration requirement Under such condition, the crops are expected to face moisture stress more frequently in future.

Moisture stress affects crop growth and development and thus reduces crop yield. Moisture stress reduces photosynthesis due to stomatal closure as stomatal closure reduces carbon dioxide availability (Schapendonk *et al.*, 1989; Osakabe *et al.*, 2014). Moisture stress affects the plant physiology negatively resulting in crop yield reduction. Reduced leaf area,

decrease in number of leaves, reduced chlorophyll content etc. also results in lowered photosynthesis in plants, ultimately affecting crop productivity (Zingaretti *et al.*, 2013). Moisture stress also affects the timeliness of agricultural operations. As timeliness of agricultural operations are very important for attaining higher system productivity, hence moisture stress may affect the system productivity negatively. Moreover, the use of inputs such as fertilizer are also dependent on the availability of soil moisture. Hence deficit soil moisture will also affect the use efficiency of such inputs.

As the events of moisture stress are expected to be more frequent due to global warming and climate change, hence crop production activities need to be modified to face such challenging condition. To ensure food and nutritional security for the ever-

How to cite this Article: Subhashisa Praharaj, 2020, Agronomic Practices for Moisture Stress Management, 8(Special Issue) : p 7–10.

Source of Support: None; **Conflict of Interest:** None