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### Effects of a Reduction in Soil Moisture from One Month before Flowering through Ripening on Dry Matter Production and Ecophysiological Characteristics of Wheat Plants

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**Abstract:** We found in the previous study that the wheat plants grown under relatively low soil moisture conditions (D plot) could attain heavier dry matter than the plants watered on the basis of average local precipitation (W plot). The aim of this study was to make a detail analysis of the ecophysiological characteristics that cause the difference in dry matter production between the plants in the W and D plots under different soil moisture conditions. Soil matric potential at a depth of 30 cm was kept at about -4 kPa in the W plot. It decreased gradually after watering at about one month before heading and at heading, reaching about -80 kPa at heading stage and at the mid-ripening stage respectively, in the D plot. The plants in the D plot produced heavier dry matter and a better developed root system than the plants in the W plot. The higher net assimilation rate and larger leaf area, which accounted for the higher crop growth rate of the D plot, were due both to avoiding suppression of the photosynthetic rate and leaf expansion owing to water stress, and to maintaining high rates of leaf photosynthesis and a large leaf area during leaf senescence. A larger amount of nitrogen was accumulated at the flowering stage and the nitrogen content of leaves remained higher during senescence in plants in the D plot than those in the W plot. The activity of cytokinins in the xylem sap was higher in plants in the D plot. These characteristics might have contributed to the delay in the decline in the rate of photosynthesis and in leaf area during leaf senescence and seemed to be supported by the enhanced development of the root system under moisture-restricted conditions.

**Keywords:** [Cytokinin](#), [Dry matter production](#), [Leaf nitrogen content](#), [Photosynthesis](#), [Root system](#), [Senescence](#), [Soil moisture](#), [Wheat](#)



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