



Effects of Drought on Optimizing Nitrogen Use of Winter Wheat in Southeastern Anatolia Region of Turkey

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Wheat is the most important world crop grown on more of the world's acreage than any other crop in terms of feeding of human. Water and nitrogen (N) are the main limiting factors affecting agricultural production in arid and semiarid regions. Drought originates from deficiency of precipitation which effecting wide areas for temporary periods. However, it is not defined as only water scarcity but also other climate factors such as high temperature and low relative humidity. Effects of drought depend on the phenological stage of the wheat plants. Recently, severe drought has occurred in 2007 in Turkey. This natural event affected agricultural production and hydrological flow. While the wheat production, a basic crop of Turkey, was 21.5 million tons in the year of 2005, it was 17.3 million tons in 2007 and 17.78 million tons in 2008. According to a study carried out in this area, the rates of 70 kg N/ha under nonirrigation conditions and 150-170 kg N/ha under irrigated conditions are need as the economic maximum fertilizer nitrogen. However, in case of drought occurrence, the rate of 120-130 kg N/ha should be used under irrigated conditions. When there is adequate water throughout grain filling, applied nitrogen boosts yield. However, when a drought occurs, then extra N may diminish yield. Management of nitrogen is, thus, part of a balanced fertility program. This can lead to increased efficiency and profitability for the growers. Economically amount of nitrogen could be determined using a regression equation showing grain-yield and nitrogen fertilizer relationships under the different climatic conditions. In this article, it is discussed on water and nitrogen relationships, effects of drought under both irrigated and rainfall conditions and the equations showing economically amount of nitrogen for wheat in Southeastern Anatolia Region of Turkey.

Key words: Drought, nitrogen, wheat, climatic, Turkey