

## ABSTRACT

The opportunistic cultivation of barley for use as feed for livestock is common in the Badia region of Jordan, especially in the more productive areas such as the marabs and wadis. Soils in this area are low in available nutrients such as nitrogen and phosphorus, and the vegetation often suffers from the effects of drought due to the annual rainfall being less than 300 mm. As well as this, the current practice of barley production is poorly managed with poor soil cultivation, untimely seeding, the use of low quality seed and lack of nutrient application. This results in minimal amounts of barley being produced. This study aimed to investigate the effects of water and nutrient supply on three varieties of barley: an improved variety, a local variety and feed barley, when grown in soil from two areas of the Badia.

The improved and local varieties both responded similarly to the irrigation and fertilizer treatments. However, germination and emergence of feed barley was very poor, so that these plants were at a different physiological age than the other two varieties, making comparisons between them very hard. Plant growth was higher in the plants grown in soil from Marab Shubeika as a result of its better soil properties compared to that of Marab Suway'id. Not many differences in plant growth were observed between the irrigated and water stress treatments, as the amount of water supplied to the irrigated plants was not enough to compensate for the high rates of evapotranspiration. Consequently, the plants response to the fertilizer treatment was also limited.