



# EFFECT OF WATER QUALITY AND THE ADDED NUTRIENT SOLUTION'S CONCENTRATION ON BARLEY SPROUT *HORDEUM VULGARE* L PRODUCTION

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## Abstract:

A laboratory experiment was carried out in the Hydroponics Laboratory of the Department of Field Crops, College of Agriculture, University of Basrah for the 2018-2019 year to know effect of water quality and the concentration of the nutrient solution added on the production of cultured barley. The study included two factors; the first factor uses two types of water (R.O) and its symbol W1, (Tap water) its symbol W2, and the second factor is a plant nutrient NPK with a concentration of 30% N, 12% P, 8% K, where four concentrations of the nutrient were used in the following quantities: 0, 5, 10, 15 g l, which symbolized by the symbols (T1, T2, T3, T4) on the relay. The experiment used a completely randomized design (CRD) with three replications. The following characteristics (plant height, total wet weight, total dry weight, total green forage yield) were studied. The experiment results showed that the (R.O) water treatment was superior in all the studied characteristics, and the concentration of 10 g l of nutrient solution gave the highest average in a characteristic of plant height reaching 21.68 cm and total dry weight (0.38) g. Dish-1, as for the interaction between the quality of added water and the concentrations of nutrient solution, did not show any significant effect in all characteristics.

**Keywords:** water quality; nutrient solution; barley sprout; *Hordeum vulgare* L

## INTRODUCTION

Hydroponics, barley cultivation, or landless cultivation, with different names, is an old technology that is renewed in a modern way in order to obtain fresh green fodder with good nutritional value at any time of year and under any environmental conditions and without any restrictions with the optimal utilization of spaces and the optimal use of water in a healthy environment. It is free from chemicals and pesticides; the culture technique has been used for centuries, especially in East Asian countries, to improve the food fodder of barley, wheat, oats, and other grains (Muela et al., 2005). The Animal Feed Advisory Center, based in Texas, USA, stated that barley is the fifth largest grain crop in the world and the most nutritious. More than half of the barley production grown today is used to feed livestock; this fits the historical use of barley. The barley cultivar is characterized by its higher protein content than dry barley. It may reach a ratio of 25%, and the high protein in cultured barley means providing suitable fodder for cows and sheep, with nutritional value throughout the world, as well as containing vitamins and minerals that have a role in animal health (Mahmoud, 2015).

The cultivation of barley is considered a good alternative not only when feed prices rise but also contributes to facilitating digestion, increasing the fertility rate of animals and their immunity (Grigas. et al., 2019). This technology is considered a scientific solution to confront the high global grain prices and increased food needs with the population explosion. (Muhammad, 2014), it was shown that adding nutrient solutions has a significant role in providing the plant with the nutrients it needs, the characteristics of the culture medium, and Abdel Wahed (2014) explained that the water quality has an important role in improving the characteristics of the barley sprout.

The experiment aims to determine the quality of the water, the amount of nutrients added to cultured barley, and which is more efficient and important.

## MATERIALS AND METHODS

A laboratory experiment was carried out in the Hydroponics Laboratory of the Department of Field Crops, College of Agriculture, University of Basrah for the 2018-2019 year to know effect of water quality and the concentration of the nutrient solution added on the production of cultured barley. The study included two factors; the first factor uses two