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ABSTRACT

Nahed Hassan El-Sayed Hassan Eissa. Seed Sprout Production as Affected by CO_2 and Biofertilizers. Unpublished Ph.D. Thesis, Department of Horticulture, Faculty of Agriculture, Ain Shams University, 2018.

Microgreen pea (*pisum sativum* L.) as salad shoots consumption within two weeks of seedling emergency is a new ready to eat baby leaf vegetable in Egypt. Green barley grass is the young leaves of barley (*Hordeum vulagre*), can take as juice powder and tablets. The internal quality change of microgreen pea shoots and barley green grass is greatly affected by surrounding environmental conditions. Especially increased elevation of carbon dioxide concentration in the air. This work was focused on the impacts of predicted climate changes conditions on the internal quality changes of 14 days old microgreen pea shoots and green barley grass using carbon dioxide concentrations (600 ppm and 800 ppm) compared with ambient air, growing in interaction with three microbial inoculants and their combinations, in tray sprouting method in semi-automated growth chambers. Obtained results showed largest numerical yield of microgreen pea and green barley grass per unit area in 800 ppm CO_2 concentration with increasing about 20% and 37.8% respectively more than ambient air followed by 600 ppm with increasing about 9.2% and 24.2 respectively than ambient air.

Moreover, CO_2 at 800 ppm increased microgreen pea and green barley grass crude protein content 37.8% and 81.9%, lipid 46.9% and 74.3% and energy 19.5 and 35.8% respectively per unit area compared with ambient air while decreased carbohydrate content in microgreen pea by 5.3% and increased in green barley grass by 20.3%. study finding suggested that microgreen pea shoots and green barley grass growing in higher CO_2 concentration maintain optimal internal quality with pronouncing for green barley grass.

Key words: Microgreen Pea, green barley grass, rice straw, CO_2, microbial inoculants, proximate analysis.