

Title The physico-chemical properties of lettuce (*Lactuca Sativa* cv. Grand Rapid) grown under different planting methods

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Abstract

A study was conducted to investigate the effect of different planting methods on the postharvest quality of lettuce. The Lettuces (*Lactuca sativa* cv. Grand Rapid) were planted by using three different methods which were hydroponic, aquaponic and soil (conventional) planting methods. The growing period takes about 6 to 8 weeks before the lettuce can be harvested. The growth yield and physico-chemical parameters of weight/plant, texture, colour, chlorophylls and carotenoid contents, moisture, ash and fibre content of the lettuce samples were determined and analyses were done on the day of harvested. The sensory evaluation was also carried out for the acceptability of lettuces from different planting methods. The results showed that lettuce from hydroponic planting method had higher and better postharvest quality compared to lettuces from soil and aquaponic planting methods. The crispness values of lettuce were also higher in hydroponic planting methods. Lettuce from soil planting method had higher moisture and ash contents whilst lettuce from aquaponic was rich in fiber. However there was no significant different ($p>0.05$) among all the different planting methods for color, chlorophylls and carotenoid contents. Sensory evaluation conducted showed that the hydroponics lettuce had good scores in all the attributes of appearance, taste, texture, odour and overall acceptability. Mean while there was no significant different ($p>0.05$) obtained between lettuce from soil and aquaponic planting methods for sensory evaluation. Therefore, hydroponic was found to be the best planting method to obtain higher yield and better quality lettuces. Even though, lettuce grown under aquaponic planting method also has the advantages of two commodities harvested at the same time which are lettuce and fish.