

Production system and harvesting stage influence on nitrate content and quality of butterhead lettuce

ABSTRACT

Leafy vegetables such as lettuce grown under different production systems may accumulate different concentrations of nitrate which may reach to the levels potentially toxic to humans. Moreover, nitrate accumulation varies in various plant parts and physiological age of the plant. Therefore, to determine the effect of production system and harvesting stage on nitrate accumulation and quality of butterhead lettuce, a study was conducted considering two lettuce production systems namely hydroponic and organic, and four different harvesting stages such as 35, 38, 41 and 44 days after transplanting (DAT). The experimental design was complete randomized design (CRD) with four replications. Hydroponic and organic systems performed similar in terms of yield, quality and nitrate content of butterhead lettuce. Delaying harvesting can not only increase yield but also can minimize nitrate accumulation and health hazard risk as well. Delay in harvesting stage may result in quality deterioration of lettuce and increased production cost. Thus, a compromise is necessary to consider 41 DAT as the optimum stage to harvest butterhead lettuce with significantly higher reduction of nitrate content in both outer adult leaf blades and young leaves of hydroponic lettuce. Fresh weight, firmness and color of butterhead lettuce at this stage were still acceptable.

Keyword: Butterhead lettuce; Harvesting time; Hydroponic; Nitrate content; Organic