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## ***Azolla* compost as an alternative source of nitrogen for organic vegetable cultivation**

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### **Abstract**

The spread of organic farming in Asia has led to the need to find alternative sources of high quality organic fertiliser. *Azolla* is a genus of floating water ferns that is high in nitrogen and organic matter due to its rapid growth and symbiotic relationship with nitrogen-fixing bacteria (*Anabeana azollae*). It is grown as a green manure in rice fields in many Asian countries. However, little research has been done on the use of *Azolla* as an organic fertiliser for vegetable production. The objective of this study was to evaluate the effects of different levels of *Azolla* compost fertiliser on the growth and yield of Malabar spinach (*Basella alba*) - a popular vegetable crop in the tropics and subtropics - to improve the process of using *Azolla* as an organic fertiliser in vegetable production. The experiment included 6 treatments: Without application-as control (T1); 1 t ha<sup>-1</sup> soybean meal (T2); 16 t ha<sup>-1</sup> cow manure (T3); 12 t ha<sup>-1</sup> *Azolla* fertiliser (T4); 16 t ha<sup>-1</sup> *Azolla* fertiliser (T5); and 20 t ha<sup>-1</sup> *Azolla* fertiliser (T6). Our results showed that *Azolla* fertiliser application significantly increased shoot length, number of leaves, leaf size, dry matter, leaf area index (LAI) and SPAD of Malabar spinach compared to control or cow manure. Application of *Azolla* fertiliser at rates of 12, 16, and 20 t<sup>-1</sup> ha significantly increased the yield of Malabar spinach by 150, 192, and 205 %, respectively, compared to the control and by 37, 60, and 67 %, respectively, compared to the cow manure treatment. Our results suggest that *Azolla* fertiliser can be used as an alternative organic nitrogen source in organic vegetable production. However, genotype selection and rapid multiplication of *Azolla* are necessary to develop it as a nitrogen source that meets the requirements of fast-growing organic agriculture.

**Keywords:** *Azolla* fertiliser, *Basella alba*, manure, organic vegetable