

**The response of Arbuscular Mycorrhizal Fungi (AMF) to boron supply using hydroponic culture system of cucumber (*Cucumis sativars L.*)**

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**Objective**

The aim of this study was to investigate the effects of boron application on arbuscular mycorrhizal plant using hydroponic culture system.

**Materials and Methods**

○ Materials

- Inoculum : *Glomus intraradices* (BEG 110)
- Host plant : Cucumber (*Cucumis sativars L.*)

○ Methods

- Pre-colonization : Cucumber seeds were sterilized with 10% H<sub>2</sub>O<sub>2</sub> and planted in perlite with 15% inoculum (AM plants) and without inoculum (NAM plants). Plants were grown for 4 weeks and thereafter transplanted in hydroponic containers.
- Hydroponic culture system : The nutrient solutions was circulated and changed with fresh one every three days.
  - Nutrient media - Macronutrients (mM) : Ca(NO<sub>3</sub>)<sub>2</sub>(2), KH<sub>2</sub>PO<sub>4</sub>(0.0752), K<sub>2</sub>HPO<sub>4</sub> (0.0048), K<sub>2</sub>SO<sub>4</sub> (0.7), KCl (0.1), MgSO<sub>4</sub> (0.5)
  - Micronutrients (uM) : MnSO<sub>4</sub> (3), ZnSO<sub>4</sub> (0.5), CuSO<sub>4</sub> (0.2), (NH<sub>4</sub>)<sub>6</sub>Mo<sub>7</sub>O<sub>24</sub> (0.01), FeEDTA (10)
  - Boron supply : 0, 10 uM H<sub>3</sub>BO<sub>3</sub>
  - A pH of 6.0 was maintained by 0.15mM MES-KOH.
  - After 6 weeks, the percentage of colonized root and the fresh weight were determined.

**Results**

The root colonization was remained highly in hydroponic culture system. The shoot and root dry weights of plants with boron were usually greater than those of without boron. However, the mycorrhizal colonization did not result in significant increase in plant dry weight. The difference of nutrients concentrations by AMF colonization will be discussed in our presentation.

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Table 1. Root colonization of mycorrhizal cucumber plants with B supply and without B supply. Values are means  $\pm$  SE.

B supply (uM)	0	10
(%)	33.8 $\pm$ 1.0	58.3 $\pm$ 2.0

Table 2. Dry weights of mycorrhizal (AM) and non-mycorrhizal (NAM) cucumber plants grown in the hydroponic culture system with B supply and without B supply. Values are means  $\pm$  SE.

Treatments	Shoot dry weight (g 4 plants <sup>-1</sup> )	Root dry weight (g 4 plants <sup>-1</sup> )	Root/Shoot Ratio (%)
AM +B	22.55 $\pm$ 0.78	2.15 $\pm$ 0.09	9.5
NAM +B	21.14 $\pm$ 0.93	2.27 $\pm$ 0.09	10.7
AM - B	10.42 $\pm$ 0.92	0.69 $\pm$ 0.05	6.6
NAM - B	9.11 $\pm$ 0.81	0.64 $\pm$ 0.07	7.0

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