

# 不同發育溫度之萵苣種子發芽時 Endo- $\beta$ -mannanase 及內生乙烯生成之研究

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關鍵字: 種子發育溫度、萵苣種子、Endo- $\beta$ -mannanase、乙烯

**摘要:** 'Dark Green Boston' 與 'Everglade' 30/20°C 發育的種子較 20/10°C 發育者分別於發芽限溫 27°C 或 33°C 之發芽率較高，兩品種於 30/20°C 發育種子於高溫下酵素活性均高於 20°C 時表現，萵苣種子珠孔區胚乳或側邊胚乳於 30/20°C 或 20/10°C 發育者，所含 endo- $\beta$ -mannanase 活性與發芽率成正相關，胚根突出後此酵素活性大量產生。內生乙烯生成隨發芽率增加而增加，'Dark Green Boston' 與 'Everglade' 之 30/20°C 發育種子於高溫時乙烯生成量較 20/10°C 者多。

## Study on Endo- $\beta$ -mannanase and Ethylene in Lettuce (*Lactuca sativa* L.) Seed Germination Matured under Different Temperature

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Key words: Seed matured temperature, Lettuce seed, Endo- $\beta$ -mannanase, Ethylene

### Summary

The germination of 'Dark Green Boston' and 'Everglade' seeds matured at 30/20°C was higher than the seeds matured at 20/10°C. The germination of 'Dark Green Boston' and 'Everglade' seeds matured at 30/20°C was 97.8% and 52.2% at 27°C or 33°C, respectively. The mean germination time of seeds matured at 30/20°C were shortened compared to the seeds matured at 20/10°C. A gel-diffusion assay was used to measure endo- $\beta$ -mannanase activity during the germination of lettuce seed. At 27°C or 33°C before radicle protrusion, endo- $\beta$ -mannanase activity at micropylar region of 'Dark Green Boston' and 'Everglade' matured at 30/20°C seeds were higher than those matured at 20/10°C. The evolution of ethylene from 'Dark Green Boston' and 'Everglade' matured at 30/20°C seeds were higher than those matured at 20/10°C. As the germination percentage increased, ethylene production from seeds was increased. The amount of ethylene produced from seeds germinated at 27°C was more than that at 20°C. The role of the ethylene production and endo- $\beta$ -mannanase activity before radicle protrusion when the seed germination at high temperature was confirmed in this study.