Propagation of Ornamental Plants
Vol. 7, № 2, 2007: 89-96

# GROWTH AND PHOTOSYNTHESIS OF *DENDROBIUM CANDIDUM* WALL. EX LINDL. PLANTLETS CULTURED PHOTOAUTOTROPHICALLY

**Yulan Xiao[1,2]*, Yongtai Zhang[2], Kang Dang[2], and Dongshuang Wang[2]**

[1]College of Life Science, Capital Normal University, Beijing 100037, China,
*Fax: + 86-10-68902328, *E-mail: ylxiao@yahoo.com
[2]Yangtze Delta Region Institute of Tsinghua University, Jiashan, Zhejiang 314100, China

## REFERENCES

Aitken-Christie J., Kozai T., Takayama S. (1995). Automation in plant tissue culture. *In*: Aitken-Christie J., Kozai T., Smith M. A. L. (Eds.). Automation and environmental control in plant tissue culture. Kluwer Academic Publishers, Dordrecht, The Netherlands: 266-273.

Brainerd K. E., Fuchigami L. H. (1982). Stomatal functioning of *in vitro* and greenhouse apple leaves in darkness, mannitol, ABA and $CO_2$. Journal of Experimental Botany, 33: 388-392.

Desjardins Y., Hdider C., Rier J. (1995). Carbon nutrient *in vitro* regulation and manipulation of carbon assimilation in micropropagation system. *In:* Aitken- Christie J., Kozai T., Smith M. A. L. (Eds.). Automation and environmental control in plant tissue culture. Kluwer Academic Publishers, Dordrecht, The Netherlands: 441-465.

Fujiwara K., Kozai T. (1995). Physical microenvironment and its effects. *I*n: Aitken- Christie J., Kozai T., Smith M. A. L. (Eds.). Automation and Environmental Control in Plant Tissue Culture. Kluwer Academic Publishers, The Netherlands: 319-369.

Fujiwara K., Kozai T., Watanabe I. (1987). Measurements of carbon dioxide gas concentration in closed vessels containing tissue cultured plantlets and estimates of net photosynthetic rates of the plantlets. Journal of Agricultural Meteorology, 43: 21-30.

Fuchigami L. H., Cheng T. Y., Soeldner A. (1981). Abaxial transpiration and water loss in aseptically cultured plum. Journal of the American Society for Horticultural Science, 106: 519-522.

Grout B. W. (1978). Transplanting of cauliflower plants regenerated from meristem culture. II. Carbon dioxide fixation and the development of photosynthetic ability. Horticultural Research, 17: 65-71.

He J., Khoo G. H., Hew C. S. (1998). Susceptibility of CAM *Dendrobium* leaves and flowers to high light and high temperature under natural tropical conditions. Environmental and experimental Botany, 40: 255-264.

Heo J., Kozai T. (1999). Forced ventilation micropropagation system for enhancing photosynthesis, growth and development of sweet potato plantlets. Environment Control in Biology, 37 (1): 83-92.

Herppich W. B., Herppich M., Von-Willert D. J. (1992). The irreversible $C_3$ to CAM shift in well-watered and salt-stressed plants of *Mesembryanthemum crystallinum* is under strict ontogenetic control. Botanica Acta, 105: 34-40.

Kitaya Y., Ohmura Y., Kozai T., Kubota C. (1997). Visualization and analysis of air currents on plant tissue culture vessels. Environment Control in Biology, 35 (2): 139-141.

Kluge M., Ting I. P. (1978). Crassulacean Acid Metabolism: Analysis of an ecological adaptation. Springer-Verlag publishers, Berlin-Heidelberg- New York, 209 pp.

Kozai T. (1986). Fundamental studies on environments in plant tissue culture vessels (2) Effects of stoppers and vessels on gas exchange rates between inside and outside of vessels closed with stoppers. Journal of Agricultural Meteorology, 42: 119-127.

Kozai T. (1991). Photoautotrophic micropropagation. In Vitro Cellular and Developmental Biology-Plant, 27: 47-51.

Kozai T., Kubota C., Jeong B. R. (1997). Environmental control for the large-scale production of plant through *in vitro* techniques. Plant Cell, Tissue and Organ Culture 51: 49-56.

Kozai T., Zobayed S. M. A. (2000). Acclimatization: Encyclopedia of cell technology. *In*: Spiered R. (Ed.). John Wiley & Sons publishers, New York, USA: 1-12.

Kubota C., Kozai T. (2001). Growth and net photosynthetic rate of tomato plantlets during photoautotrophic and

photomixotrophic micropropagation. HortScience, 36 (1): 49-52.
Martin K. P., Madassery J. (2006). Rapid *in vitro* propagation of *Dendrobium* hybrids through direct shoot formation from foliar explants, and protocorm-like bodies. Scientia Horticulturae, 108: 95-99.
Moran R. (1982). Formulae for determination of chlorophyllous pigments extracted with N, N-dimethylformamide. Plant Physiology, 69: 1376-1381.
Nakayama M., Kozai T., Watanabe K. (1991). Effect of the presence/absence of sugar in the medium and natural /forced ventilation on the net photosynthetic rates of potato explants in vitro. Plant Tissue Culture Letters, 8: 105-109.
Nguyen Q. T., Kozai T., Heo J., Thai D. X. (2001). Photoautotrophic growth response of *in vitro* cultured coffee plantlets to ventilation methods and photosynthetic photon flux under carbon dioxide enriched condition. Plant Cell, Tissue and Organ Culture, 66: 217-225.
Niu G., Kozai T. (1997). Simulation of the growth of potato plantlets cultured photoautotrophically *in vitro*. Transactions of American Society of Agricultural and Biological Engineers, 40 (1): 255-260.
Pospíšilová J., Catskÿ J., Šesták Z. (1997). Photosynthesis in plants cultivated *in vitro*. *In*: Pessarakli M. (Ed.). Handbook of Photosynthesis. Marcel Dekker, Inc. Publishers, New York, USA: 525-540.
Preece J. E., Sutter E. G. (1991). Acclimatization of micropropagated plants to the greenhouse and field. Micropropagation Technology and Application. *In*: Debergh P., Zimmerman R. (Eds.). Kluwer Academic Publishers, The Netherlands: 71-93.
Winter K., Smith J. A. C. (1996). An introduction to crassulacean acid metabolism: biochemical principles and biological diversity. *In*: Winter K., Smith J. A. C. (Eds.). Crassulacean acid metabolism. Biochemistry, ecophysiology and evolution. Springer-Verlag publishers, Berlin, Germany: 1–13.
Xiao Y., Kozai T. (2006). *In vitro* multiplication of statice plantlets using sugar-free media. Scientia Horticulturae, 109: 71-77.
Xiao Y., Lok Y., Kozai T. (2003). Photoautotrophic growth of sugarcane *in vitro* as affected by photosynthetic photon flux and vessel air exchanges. In Vitro Cellular and Developmental Biology-Plant, 39: 186-192.
Zobayed S., Afreen-Zobayed F., Kubota C., Kozai T. (1999). Stomatal characteristics and leaf anatomy of potato plantlets cultured *in vitro* under photoautotrophic and photomixotrophic conditions. In Vitro Cellular and Developmental Biology-Plant, 35: 183-188.