

Title Effects of different CO₂ enrichment programs on cut roses (*Rosa hybrida*) production

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Abstract

The effects of CO₂ enrichment (1000±200 $\mu\text{L-L}^{-1}$) on cut flower production of *Rosa hybrida* cv. Escimo, Black Beauty and Dream grown in greenhouse were investigated in Beijing from October 2000 to February 2001 with an environment temperature of 17-25°C and an average daily photosynthetic active radiation of 114 $\mu\text{mol m}^{-2} \text{s}^{-1}$. Different CO₂ enrichment programs included the morning CO₂ enrichment from 8:00 to 12:00, the afternoon CO₂ enrichment from 13:00 to 17:00, and the day-long CO₂ enrichment from 8:00 to 17:00. The yield of cut flower of Escimo and Black Beauty grown under day-long CO₂ enrichment were the highest with increase of 77% and 44%, respectively, more than the plants grown without CO₂ enrichment; meanwhile, the increase of cut flower yield under the morning CO₂ enrichment and the afternoon CO₂ enrichment were 41.5% and 28.4% for Escimo and 18.2% and 19.5% for Black Beauty. The cut flower yield of Dream grown under morning CO₂ enrichment was the highest with an increase of 115.9%, more than plants grown without CO₂ enrichment and the average length of cut shoots was the longest. The results show that CO₂ enrichment improved cut rose production and quality by raising the flowering percentage of lateral shoots and the shoot length.