

## 几种主要CO<sub>2</sub>施肥肥源性能的比较与评价

### Comparison and Appraisal of Four Different Methods for CO<sub>2</sub> Enrichment

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英文关键词: CO<sub>2</sub> sources; chemical reaction; briquet combustion; granular CO<sub>2</sub> fertilizer; liquid CO<sub>2</sub>

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中文摘要:

在空闲拱棚和黄瓜日光温室内, 分别研究了化学反应法(H<sub>2</sub>SO<sub>4</sub>+NH<sub>4</sub>HCO<sub>3</sub>)、煤球燃烧法和颗粒CO<sub>2</sub>气肥3种肥源的性能, 并与液体CO<sub>2</sub>进行成本比较, 结果表明: 化学反应法产气迅速, 设备折旧成本较低; 煤球燃烧法产气速度中等, 原料成本最低; 颗粒CO<sub>2</sub>气肥产气速度较慢且不易调控, 原料成本最高。考虑化学反应产物的再利用因素, 化学反应法、煤球燃烧法和液体CO<sub>2</sub> 3种肥源总成本接近, 但从生态、节能、成本和效果等方面综合评价, 煤球燃烧法原料丰富、成本低廉, 较符合我国目前的设施、经济、资源和技术条件。

英文摘要:

Three methods for CO<sub>2</sub> enrichment—chemical reaction(H<sub>2</sub>SO<sub>4</sub>+NH<sub>4</sub>HCO<sub>3</sub>), briquet combustion, granular CO<sub>2</sub> fertilizer were comparatively studied in free tunnels and solar greenhouses for cucumber cultivation, and the yearly total cost of different methods(including pure liquid CO<sub>2</sub>) were compared. Chemical reaction had higher CO<sub>2</sub> releasing velocity and relatively lower equipment depreciation charge; honeycomb briquet combustion produced CO<sub>2</sub> at moderate rate, and the raw material cost was the least; granular CO<sub>2</sub> fertilizer having highest raw material cost released CO<sub>2</sub> slowest. When the re-use of by-product of chemical reaction was concerned, annual cost of chemical reaction was similar with that of briquet combustion and liquid CO<sub>2</sub>. Comprehensively evaluated from viewpoints of ecology, energy-saving, cost and effect, briquet combustion was in more accordance with the present situations in China including facility type, economic situation, resource condition and technique level, and so on.

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