

## 园艺—应用研究

### 低温对花芽分化期辣椒生产性状及其生理生化效应的影响

田平<sup>1</sup>, 杜尧东<sup>2</sup>, 陈新光<sup>2</sup>, 李健陵<sup>2</sup>, 胡飞<sup>2,2</sup>

1. 华南农业大学

2.

#### 摘要:

研究花芽分化期低温对辣椒生产性状及叶绿素相对含量、相对电导率、保护酶活性等生理生化指标的影响, 揭示低温胁迫与辣椒花芽分化及相关生理生化指标之间的关系, 为确定辣椒的寒害温度提供参考。以广州地区的3个辣椒生产品种为实验材料, 在花芽分化期利用梯度降温 and 两段降温两种方式对辣椒进行低温处理。与对照相比低温胁迫使辣椒始花节位降低, 始花花期缩短, 结果数、单果重、单株产量减少, 结果数下降幅度最大; SPAD值降低, 且上位叶的SPAD值降低比较显著; 相对电导率升高, Pro含量、MDA含量、可溶性糖浓度增加, SOD活性和POD活性降低。处理的温度越低, 对辣椒的影响越明显。其中‘中椒4号’的耐低温能力最强, ‘红龙’的抗寒能力最弱。相同低温时两段比梯度处理方式对辣椒的影响显著。在13℃/3℃梯度低温时, 供试3个品种辣椒均没有完全停止生长, 与一般认为的辣椒在5℃时就完全停止生长不一致, 因此建议调低辣椒的生长极限温度。

**关键词:** 生产性状

### Effects of Low Temperature Stress on Production Traits and Physiological Characters of *Capsicum annuum* L. in Flower Bud Differentiation Stage

#### Abstract:

It was studied that the effects of low temperature stress on production traits and associated physiological characters of three cultivars of peppers (*Capsicum annuum* L.). The aims were to reveal the relationship between flower bud differentiation and cold tolerance of three cultivars. The experiment was conducted in three production variety of *Capsicum* in Guangzhou, under low temperature treatment by gradient cooling in the stage of flower bud differentiation stage. The results showed that low temperature stress could cause the first flowering node downward, the duration of flower narrowed, and the number of fruit setting of plant and the single fruit weight and single plant yield decreased. Decreasing the number of fruit setting of plant was a key factor that induced the decrease of single plant yield. The physiological index such as Chlorophyll relative content as well as the activities of SOD and POD decreased, however the relative conductivity, the Pro, the contents of MDA and soluble sugar concentration increased. The growth and development with associated physiological characters of pepper were affected seriously with low temperature treatments during flower and fruit stage. The lower temperature treated, the more serious stress showed on pepper yield during flower and fruit stage, however, different varieties of pepper responded differently to low temperature. ‘Zhongjiaosihao’ (sweet pepper) showed the most tolerant ability. Hence, ‘Honglong’ revealed most sensitive to low temperature among 3 tested varieties. Pepper didn’t stop growing even under 13℃/3℃ during flower and fruit stage, this result was different with reported references, and more detailed researches should be conducted to discover the lowest temperature pepper could tolerance in the future.

**Keywords:** productive traits

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通讯作者: 田平

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