

## 2023 NCERA-101 Station Report---University of Hawaii

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### 1. New Facilities and Equipment

- Miniature grow tent
- DLI meter with ePAR sensor
- Chlorophyll concentration meter
- Temp/RH/CO<sub>2</sub> hand-held meter

### 2. Unique Plant Responses

- ‘UH Manoa’ lettuce had significant differences in stem+roots dry weight and SPAD readings. Stem+roots dry weight and SPAD readings greater with the fluorescent light treatment. There were no significant differences in plant height, leaf dry weight, total plant dry weight, dry weight partitioning to the leaves, and dry weight partitioning to the stem+roots. For the ‘Hirayama’ kai choy, there were significant differences in plant height, leaf dry weight, stem+roots dry weight, total plant dry weight, dry weight partitioning to the leaves, dry weight partitioning to the stem+roots, and SPAD readings. The fluorescent light treatment resulted in greater leaf dry weight, stem+roots dry weight, total plant dry weight, dry weight partitioning to the stem+roots, and SPAD readings. The LED light treatment resulted in greater plant height and dry weight partitioning to the leaves. In conclusion, 50% red:50% blue LED lighting could be used to supply artificial lighting for ‘Hirayama’ kai choy plants, but were not effective for ‘UH Manoa’ lettuce plants.

### 3. Accomplishment Summaries

- A 50% red : 50% blue LED lighting could be used to supply artificial lighting for ‘Hirayama’ kai choy plants, but were not effective for ‘UH Manoa’ lettuce plants.

### 4. Impact Statements

- ‘UH Manoa’ lettuce and ‘Hirayama’ kai choy, commonly grown in the field or in greenhouses, could be grown indoors under LED lighting.

## **5. Published Written Works**

### *Poster Presentations*

Kobayashi, K.D. and B. Nelson. 2023. LED and fluorescent lighting effects on hydroponically grown 'UH Manoa' lettuce and 'Hirayama' kai choy. To be presented at the 2023 ASHS Conference, Orlando, FL. July 31-August 4, 2023.

### *Popular Articles*

Nelson, B. 2023. Farming on the final frontier: Space farming with Martian soil simulants. Horizons (in press).