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学 位 論 文 題 目	Control of UV-B radiation and root-zone temperature for production of high-quality baby leaf <i>Amaranthus tricolor</i> L. アマランサスベビーリーフの高品質生産のための UV-B 放射と根圏温度の制御		
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論 文 内 容 の 要 旨

Amaranth (*Amaranthus tricolor* L.) is a nutritious baby-leaf vegetable containing many bioactive compounds. Although baby-leaf amaranth product has been established in the market, short-term application of abiotic stress for enhancing a quality especially bioactive compounds, without causing an abnormal appearance has not been revealed yet. To establish treatments for achieving the research aim, the series of experiments were conducted. The preliminary study was conducted for establishing a quality index, outline for forthcoming studies (Chapter 2). Two abiotic stress treatments were demonstrated: UV-B irradiation (Chapter 3) and cooling root-zone temperature (RZT; Chapter 4). The thesis is composed of five chapters, and the contents of each chapter are as follows:

In chapter 1, the overview of baby-leaf amaranth and abiotic stresses are described.

In chapter 2, the preliminary study and the establishment of quality index are demonstrated.

In chapter 3, the application of UV-B irradiation for enhancing baby-leaf amaranth bioactive compounds is established.

In chapter 4, the cooling root-zone temperature for enhancing baby-leaf amaranth bioactive compounds is established.

In chapter 5, the research output and suggestions for further study is described.

In conclusion, both treatments, two days of UV-B treatment and three days of cooling RZT treatment showed a significant characteristic in these studies, producing high-quality green and red baby-leaves, respectively. The study's objectives were achieved, and the findings could be used for the advancement of the baby-leaf industry.