



我が家におけるタマネギ栽培の最適化

Optimization of Onion Cultivation at Home

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Even a person who has never engaged in serious agriculture can grow vegetables by cultivation methods found in books on agriculture, comments on the Internet, and so on, but to acquire know-how quickly, here quality engineering was used to derive optimal conditions for cultivating onions. An experimental program was planned with such control factors as the fertilizer, environment, and planting methods. The plan was a long term one, including an L_{18} orthogonal array experiment in the first year and a confirmation experiment in the second year. Together with the confirmation experiment in the second year, to make further improvements, a further L_{18} orthogonal array experiment was carried out, adding factors requiring study to the basic optimum conditions determined in the first year. The results were evaluated by taking onion mass as a nominal-is-best characteristic. Optimum conditions were selected by giving priority to conditions that enlarged the size of the onions, and to making the work easier to perform. Onions nearly twice as large as commercially sold onions were achieved in the confirmation experiment in the second year. Starting in the second year, leaf and bulb growth data were evaluated. This made it possible to produce onions with masses up to 600 g, three times the size of commercial onions, in the subsequent confirmation experiment.

Key words : agriculture, quality engineering, fertilizer, growth curve, evaluation method, S/N ratio, sensitivity, Taguchi methods, orthogonal array L_{18} , parameter design

1. 研究の背景

日本の農業就業者人口が年々減少し、2010年では約260万人、平均年齢が65.8歳になってきており、自給率はカロリーベースで39%と、40%を切った¹⁾。そして、政府は経済戦略の1つであるTPP交渉に参加したことで、日本農業が危機に陥ると心

配されている。そのような状況の中で、著者自身も野菜作りに興味を持ち、家庭菜園に取り組むことにした。

野菜の栽培は、趣味の書籍などを読めば可能だが、家庭菜園では市場に出回っているような品質の良いものはなかなかできない。素人の栽培と専門家のそれには、次のような違いがあると考える。

(1) 素人が行う家庭菜園では、書籍を参考に栽培を行うため、条件を変えることも可能であり、

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