



UNIwersytet PRZYRODniczy WE WROCLAWIU

WYDZIAŁ PRZYRODniczo-TECHNOLOGICZNY

INSTYTUT AGROEKOLOGII I PRODUKCJI ROŚLINNEJ

mgr inż. Małgorzata Cieciora - Olczyk

Kształtowanie plonowania i cech jakości odmian ziemniaka jadalnego i skrobiowego pod wpływem nawożenia

Shaping the yield and quality characteristics of edible and starch potatoes under the influence
of fertilization

Praca doktorska

wykonana pod kierunkiem

Promotor: prof. dr hab. Urszuli Prośby - Białczyk

w Instytucie Agroekologii i Produkcji Roślinnej

Promotor pomocniczy: dr inż. Cezary Trawczyński

Instytut Hodowli i Aklimatyzacji Roślin

Wrocław 2021

Abstract

Potato fertilization is one of the most important elements of the production technology, it shapes the yield and its quality. The aim of the study was to demonstrate the effect of organic fertilization with rape and white mustard catch crops, natural fertilization with manure and chicken droppings, and mineral fertilization with nitrogen in a full dose of $127 \text{ N kg}\cdot\text{ha}^{-1}$ and a nitrogen dose reduced to $42 \text{ N kg}\cdot\text{ha}^{-1}$ in combination with $25 \text{ g}\cdot\text{ha}^{-1}$ Rhizosum N preparation for the course of vegetation, yield and its quality in two varieties of the edible Tajfun and the starch Kuras. The three-factor experiment was carried out in 2017-2019 using the split-split-plot method, on soil class IIIa classified as good wheat complex. The three-year research results show that the course of vegetation and potato yielding, irrespective of fertilization methods and cultivar genotype, were modified by natural conditions, and primarily by the amount and distribution of rainfall. The applied types of fertilization significantly modified the tuber weight during vegetation, the yield and the content of macroelements, starch, dry matter and vitamin C. The tubers of plants fertilized with manure and chicken manure had the heaviest tuber during vegetation, the highest yield, content of macroelements and vitamin C, while tubers fertilized with intercrops of rape and white mustard had the highest content of starch and dry matter. Natural and organic fertilization depended on the genotype of cultivars. Heavier tuber and higher yield in the edible variety were developed by plants fertilized with white mustard catch crops and chicken droppings, and in the starch variety with rape intercrops and manure. The applied mineral nitrogen fertilization modified the growth of tuber mass during vegetation as well as the yield and its quality. The tubers of plants fertilized with a full dose of nitrogen were characterized by a heavier tuber, higher yield, and a higher dry matter and starch content of plants fertilized with a reduced dose in combination with Rhizosum N.

Keywords: potato, fertilization, catch crop, manure, chicken manure, nitrogen, Rhizosum N, yield, tuber quality