



Trawczyński, C. (2024)

‘Analysis of the stability of nutritional and antinutritional components
in organically grown potato tubers’,*Journal of Elementology*, 29(4), ,available: <https://doi.org/10.5601/jelem.2024.29.3.3400>

RECEIVED: 20 August 2024

ACCEPTED: 9 November 2024

ORIGINAL PAPER

Analysis of the stability of nutritional and antinutritional components in organically grown potato tubers*

Cezary Trawczyński**Department of Potato Agronomy
Plant Breeding and Acclimatization Institute –
National Research Institute Radzików, Jadwisin Division, Poland**

Abstract

In the years 2021–2023, field experiments were conducted to assess and select the most stable potato varieties for cultivation in an organic production system in terms of a specific component content. The experiments were conducted in six locations (Jadwisin, Krzyżewo, Lućmierz, Osiny, Tarnów, Węgrzce) on ten edible potato varieties (very early: Pogoria, Surmia, Tonacja, early: Arizona, Lilly, and medium early: Connect, Irmina, Mariola, Red Lady, Soraya). The content of basic components, starch, vitamin C, nitrates (V), glycoalkaloids and dry matter, was determined in the tubers after harvest. The results were analyzed using the AMMI model for variance analysis. The significance of the studied factors and their contribution to variability were assessed. Then, the stability of the analyzed features of the tubers of the studied varieties was determined based on three measures: feature superiority measure – P_i , the Eskridge's feature reliability measure – R_i , the Kang's stability measure – YS_i . It was determined that the environmental factor has the greatest impact on the content of vitamin C, nitrates(V) and glycoalkaloids, and the variety factor has the greatest impact on the level of starch and dry matter in tubers. The highest degree of broad adaptation of the analyzed measures in relation to the content of dry matter and starch was obtained by the Mariola variety, vitamin C by the Lilly variety, nitrates(V) by the Tonacja variety and glycoalkaloids by the Red Lady variety.

Keywords: component, location, potato, variety, year.

Cezary Trawczyński, Ph.D., Department of Potato Agronomy, Plant Breeding and Acclimatization Institute, Jadwisin Division, Poland, phone: +48 22 782 66 20, e-mail: c.trawczynski@ihar.edu.pl

* The source of funding: Targeted Grant from the Ministry of Agriculture and Rural Development for Plant Breeding and Acclimatization Institute-National Research Institute for 2024 year (Area 6, Task 6.1).