Journal of Content Validation

article

ISSN Number: ST00-ST00, www.cvsgm.org

Examining Different Potato Varieties Worldwide: A Comparative Analysis

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Received: 01 January 2025 **Accepted:** 15 March 2025

Revision: 26 February 2025 **Published:** 20 March 2025. **Vol**-1, **Issue**-1

Cite as: Ahmadul, A., Sikdar, L. (2025). Examining Different Potato Varieties Worldwide: A Comparative Analysis. *Journal of Content Validation, 1*(1), 118-126.

ABSTRACT*:* The potato is the most important non-cereal food crop in the world. In Albania, there is no official data on the introduction of the potato, but, according to specialists in the field, it began to be cultivated after 1850. Today, in Albania, potato production is estimated at around 245,000 tons per year. Compared to the region, Albania leaves behind Macedonia, Kosovo, and Montenegro. Foreign cultivars are cultivated in Albania; there are no farmer's cultivars here. The Albanian Genetic Bank has the task of preserving and advising farmers to cultivate the best cultivars that give high yields and quality products for use in the kitchen. This study also serves this purpose, through which 13 potato cultivars were studied, which showed variation for all morphological characteristics and for quantitative characteristics. Perhaps the historical event related to the tomato poisoning of some Italian nobles has influenced the prejudice that the potato is poisonous. A nickname for the fruit was "*poison apple*" because it was thought that aristocrats got sick and died after eating tomatoes, but the truth was that wealthy Europeans used tin plates, which had a high lead content. Since tomatoes are high in acidity

Keywords: *potato, Solanum tuberosum, genotype, accession, descriptor, variation.*

Introduction

The potato (*Solanum tuberosum* L.) is a tuber-forming plant with high starch content and belongs to the Solanaceae family. It is the most important non-cereal food crop in the world, ranking 3rd in terms of total production, with over 365 million tons per year (FAOSTAT, 2013) which ranks after rice such as vitamins A, D, H, K, etc. Compared to cereals, tubers are inherently more productive. If the fruit of wheat (wheat spike) or rice (panicles) plant grows too large, the plant will topple over, with fatal results. Growing underground, the tubers are not limited by the rest of the plant. In 2008, a Lebanese farmer produced a potato weighing about 11.34 kg. It was bigger than his head [8]. potato species, native to present-day Peru, can be found throughout the Americas, from Canada to southern Chile. It was originally believed that the potato was domesticated by Native

Americans independently in many places, but later genetic testing of the wide variation of cultivars and wild species found a single origin for the potato, in the area of present-day southern Peru and Bolivia extreme northwest and that has been domesticated by pre-Columbian farmers, around Lake Titicaca [8]. Potatoes were domesticated approximately 7,000–10,000 years ago there, from a species in the *Solanum brevicaule* complex. In the Andean region of South America, where the species is indigenous, several close relatives of the potato are cultivated [7, 8].

Potato is cultivated in about 150 countries in both regions, in temperate and tropical climates, and at altitudes from sea level to 4,000 m (Paul et al. 2012). More than half of potato production is produced in developing countries, including India, and over a billion people have potatoes as their staple diet. It has spread steadily worldwide, with a 35% increase in total production since 1960. Production growth is even higher in the developing countries of Asia and Africa, reflecting its growing importance as a resource basic food [4]. The spread of the potato in the world has its own history, which was influenced by prejudices related to the fact that the nutritional values and benefits were not known; its poisonous properties were suspected. If we take into account the periods of spread of the potato and the lack of scientific studies, the attitude towards the potato was justified. Prejudice about the potato is related to botanical knowledge and historical events of the time.

Potatoes contain toxic compounds known as *glycoalkaloids*, the most common of which are *solanine* and *chakonine*. These compounds, which protect the potato plant from its predators, are generally concentrated in its leaves, flowers, shoots and fruits (as opposed to tubers). In a review of several studies, glycoalkaloid content was highest in flowers and shoots and lowest in tuber pulp. Exposure to light, physical damage and age increase the content of glycoalkaloids in tubers. Cooking at high temperatures, above 170°C, partially destroys these ingredients. The concentration of glycoalkaloids in wild potatoes is sufficient to produce toxic effects in humans. However, poisoning from cultivated potato varieties is very rare.

The potato was introduced to Europe from America in the second half of the 16th century by the Spanish. Today they are a staple food in many parts of the world and an integral part of most of the world's food supply. As of 2014, potatoes were the fourth largest food crop in the world after maize (maize), wheat and rice. After millennia of genetic improvement, there are now over 5,000 different types of potatoes. Over 99% of potatoes currently cultivated worldwide are descended from varieties that originated in the lowlands of south-central Chile. The importance of the potato as a food source and as a culinary ingredient varies by region. It remains an important crop in Europe, especially in Northern and Eastern Europe, where per capita production is still the highest in the world, while the most rapid expansion of production in recent decades has occurred in South and East Asia, with China and India lead the world in total production as of 2018 [8].

Perhaps the historical event related to the tomato poisoning of some Italian nobles has influenced the prejudice that the potato is poisonous. A nickname for the fruit was "*poison apple*" because it was thought that aristocrats got sick and died after eating tomatoes, but the truth was that wealthy Europeans used tin plates, which had a high lead content. Since tomatoes are high in acidity.

Conclusion

Some conclusions emerge from the study data, among which the first conclusion is that the 13 potato cultivars included in the study showed distinct variation for all morphological characteristics and quantitative traits. Expressed variation means that we have different genotypes and the opportunity is created for choosing the best cultivars to meet the demands of the farmer and the consumer. Among the many conclusions we can list some for which there is more interest.

Funding: The research did not receive financial assistance from any funding entity.

Conflicts of Interest: The author has no conflicts of interest to disclose concerning this study.

Declarations: The manuscript has not been submitted/presented for consideration to any other journal or conference.

Data Availability: The author holds all the data employed in this study and is open to sharing it upon reasonable request.

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