

EVALUATION OF MORPHOLOGICAL AND BIOMETRIC INDICATORS OF SWEET POTATO CULTIVARS (*Ipomea batatas* Poir)

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Abstract

The evaluation of morphological and biometric indicators of sweet potato cultivars (*Ipomea batatas* Poir) is one of the most important field experimental studies because they create the basis for yield and other production indicators in sweet potato cultivars. The experiment was set up with five variants and four repetitions, during the period May - September 2025 in Sulzotaj, Divjakë. Five sweet potato cultivars were included in the experiment, namely Beauregard, Pepita, Convingation, O'Henry, and Georgia Jet. During the vegetative period, assessments were made for flower color, leaf color, pulp color, skin color, and biometric measurements for shoot length, length of the longest shoot, and the shortest shoot.

Keywords: Cultivar, leaves, shoots, flowers, pulp, skin.

Introduction

Sweet potato is one of the field plants that is being studied and is spreading more and more every year in many countries around the world. This is due to its chemical composition and nutritional values. In Albania, it is unknown and not widespread.

Materials and methods

The study of potato cultivars with the aim of determining the best cultivar for the agroecological and soil conditions of Lushnja was conducted in Divjaka.

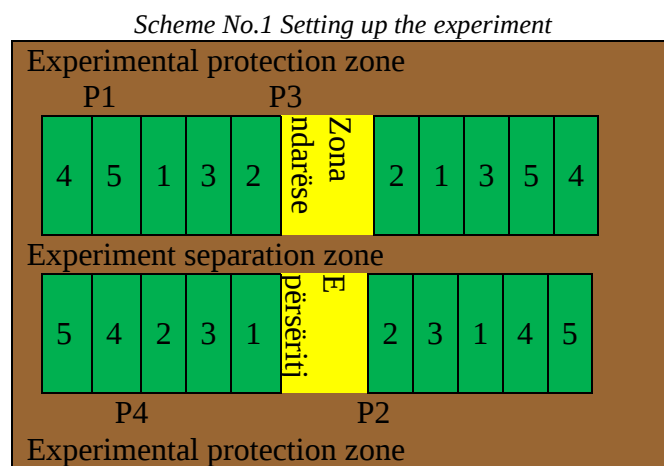
Objectives:

1. To evaluate the morphological and biometric indicators of sweet potato cultivars.
2. To evaluate the production indicators of sweet potato cultivars.
3. To evaluate and compare sweet potato cultivars for yield as the main indicator of economic and production evaluation.
4. Conduct chemical analyses for the main chemical indicators for all cultivars and compare them.

To achieve the goal and objectives of this scientific study, an experiment was set up with five sweet potato cultivars: 1. Beauregard, 2. Pepita, 3. Convingation, 4. O'henry, 5. Georgia jet.

The experiment was set up with three variants and four repetitions. The variant was designed with dimensions 7 m x 2.4 = 16.8 m². The soil was worked to a depth of 31 - 35 cm. It was fertilized with organic fertilizer 300 kv/ha, 2 kv/ha potassium sulfate, and 80 kg/ha urea. The previous crop was carrot. During the vegetation, several treatments were carried out: Supplementary fertilization with ammonium nitrate twice with 70 kg/ha, five irrigations were carried out with drip tubes, and were accompanied by liquid fertilizers.

It was not affected by various diseases (early blight and late blight). It was treated only with gastrotax because snails appeared with and without shells.



The field experiment was carried out during the period May-September 2025, in Sulzotaj, Divjakë municipality: Five sweet potato cultivars were included in the study, namely; Beauregard, Pepita, Convingaton, O'henry and Georgia jet . The harvest was carried out on September 28, 2025.

2.3. Morphological indicators: 1. Number of shoots/plant, 2. Length of shoots/plant (sum), 3. Longest shoot, 4. Shortest shoot, 5. Number of leaves/plant, 6. Leaf color, 7. Flower color, 8. Leaf shape, 9. Tuber shape, 10. Tuber skin color, 11. Tuber pulp color, 12. Bud placement on the tuber.

Results and their interpretation

3.1. *Morphological indicators:* Descriptions and measurements of indicators were made according to scientific methodology.

3.1.1. Leaf color

Leaf color

Table No. 1

No.	Cultivars	Leaf color
1	Beauregard	Green
2	Pepita	Light green
3	Convingation	Green with purple veins
4	O'henry	Dark green
5	Georgia jet	Green

The leaf color is different among the cultivars studied. The two cultivars, Beauregard and Georgia Jet, are green, while Pepita is light green and O'Henry is dark green. The Convingation cultivar is unique, with green leaves but purple veins that make it very distinct from the others.

3.1.2. Flower color

Table No.2. Flower color

No.	Cultivars	Flower color
1	Beauregard	Light purple with white crown
2	Pepita	Light purple
3	Convingation	Dark purple
4	O'henry	Light purple
5	Georgia jet	Light purple

Flower color shows less variation between cultivars. The Beauregard cultivar has much more distinctive flowers because the flower is light purple and the corolla is white, while other cultivars have monochromatic flowers in light or dark purple.

3.1.3. Leaf shape

Table No.3. Leaf shape

No.	Cultivars	Leaf shape
1	Beauregard	Heart
2	Pepita	Heart
3	Convingation	Elongated and larger heart
4	O'henry	Heart
5	Georgia jet	Heart

The leaf shape is heart-shaped in four cultivars, while the Convingation cultivar has an elongated and larger heart shape.

3.1.4. Tuber shape

Table No.4. Tuber shape

No.	Cultivars	Tuber shape
1	Beauregard	Elliptical
2	Pepita	Elliptical
3	Convingation	Narrow conical
4	O'henry	Cylindrical – conical
5	Georgia jet	Irregular cylindrical

First, we should mention that all cultivars included in the study are of the hard-pulp type, a type that is more tolerant to storage and has a longer shelf life on the market. The tuber shape is regular and specifically: the Beauregard and Pepita cultivars have an elliptical shape, the Convingation cultivar has a truncated-conical shape, while the O'Henry cultivar has a cylindrical-conical shape. The Georgia Jet cultivar is special, which has an irregular cylindrical shape.

3.1.5. Color of tuber skin

Table No.5 Color of tuber skin

No.	Cultivars	Color of tuber skin
1	Beauregard	Light purple
2	Pepita	Light brown
3	Convingation	Strong purple
4	O'henry	White on yellow
5	Georgia jet	Light brown

The color of the tuber is different and makes the cultivars clearly and precisely distinguishable by the color of the tuber skin. Specifically: The Beauregard cultivar is light purple, the Pepita cultivar is light brown, the Convingation cultivar is a deep purple, the O'henry cultivar is white to yellow, and the Georgia Jet cultivar is light brown.

3.1.6. Color of the tuber pulp

Table No.6 Color of the tuber pulp

No.	Cultivars	Color of the tuber pulp
1	Beauregard	Beige
2	Pepita	Beige
3	Convingation	Bold purple
4	O'henry	White
5	Georgia jet	Beige

The color of the tuber pulp shows less variation between cultivars. The Beauregard, Pepita, and Georgia Jet cultivars have beige pulp, the Convingation cultivar has a bold purple pulp, and the O'Henry cultivar has white pulp.

3.1.7. Placing buds on the tuber

Table No.7 Placing buds on the tuber

No.	Cultivars	Placing buds on the tuber
1	Beauregard	Superficial
2	Pepita	Superficial
3	Convingation	Superficial
4	O'henry	Superficial
5	Georgia jet	Superficial

The placement of the buds on the tuber is the same in all cultivars. The buds are placed superficially, facilitating the peeling mechanism and ensuring a very high pulp utilization rate.

3.1.8. Length of shoots (m)

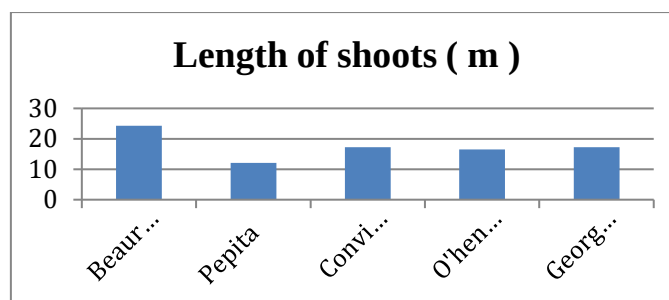


Chart No. 1 Length of shoots of a plant (m)

The length of the shoots varies. The Beauregard cultivar has the longest shoots at approximately 25 m. Three cultivars: Convingation, O'henry and Georgia jet have similar shoot lengths. The Pepita cultivar has the shortest shoots.

3.1.9. The longest shoot (m)

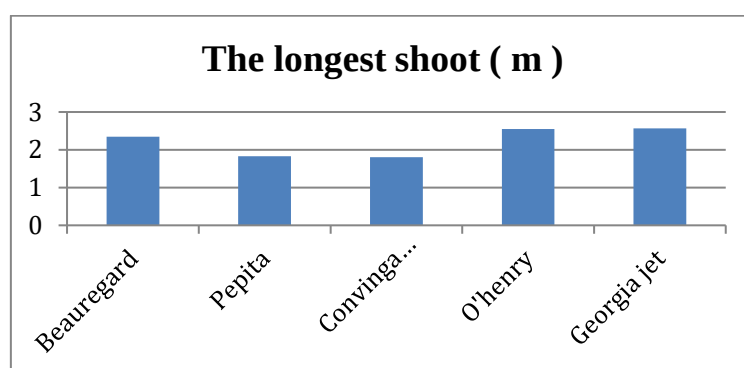


Chart No. 2 The longest shoot (m)

The longest shoots are found in three cultivars: O'henry, Georgia Jet, and Beauregard, while the other two cultivars, Pepita and Convingation, have shorter shoots.

3.1.10. The shortest shoot (m).

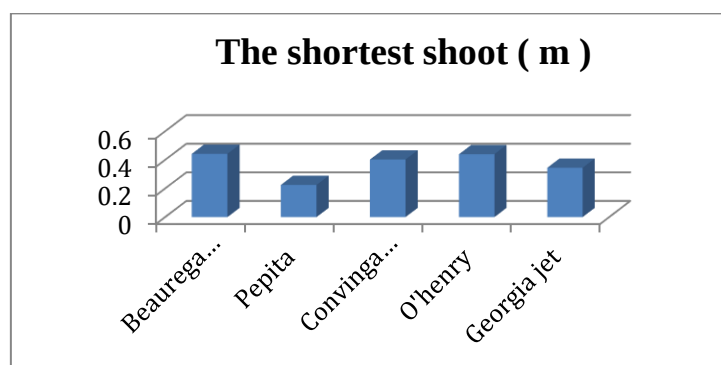


Chart No. 3 The shortest shoot (m)

The shortest shoot is in the Pepita cultivar, while the other four cultivars have smaller differences.

3.1.10. Number of leaves per plant

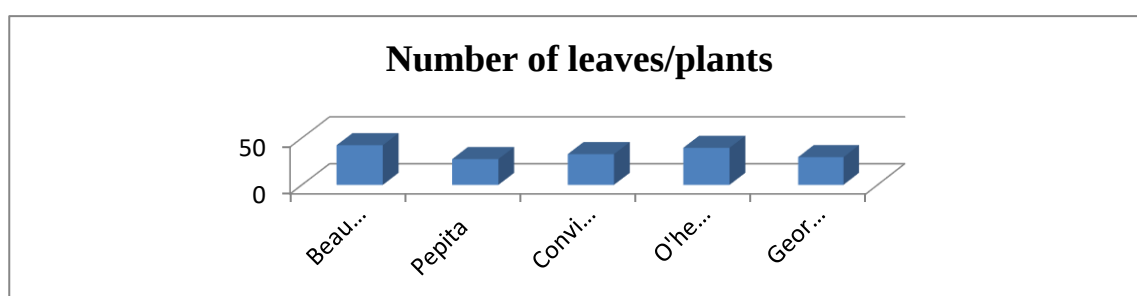


Chart No. 4 Number of leaves per plant

The number of leaves per plant varies, and the ranking of cultivars by number of leaves per plant is as follows: Beauregard, O'Henry, Convingation, Georgia Jet, and Pepita. The number of leaves is distinguished in the field because cultivars with a greater number of leaves completely cover the soil surface, preventing the growth of weeds.

3.1.11. Number of shoots per plant

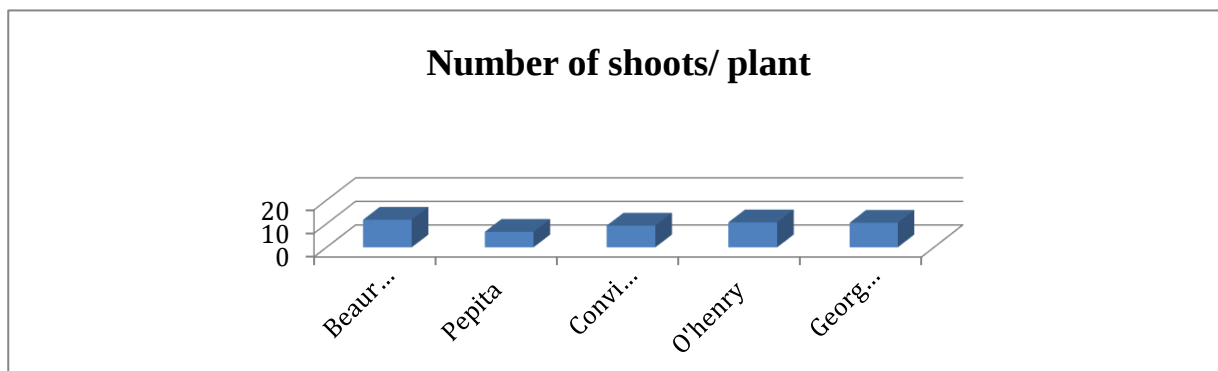


Chart No. 5 Number of shoots per plant

The number of shoots per plant varies; the cultivar with the highest number of shoots is Beauregard, and the cultivar with the lowest number of shoots is Pepita. Two cultivars, O'henry and Georgia jet, have the same number of shoots, while the Convingation cultivar has a lower number of shoots than the two cultivars, O'henry and Georgia jet.

Conclusions and recommendations

From the analysis of morphological and production indicators as well as adaptation to climate and soil, we can draw several conclusions, among which we will mention:

A. Conclusions

Among the conclusions we present, the most important:

1. The color of the leaf varies slightly between cultivars. It is green with dark or light shades. They are cultivars of the same group and very similar.
2. Sweet potatoes have two leaf shapes: lanceolate and palmate (like fig leaves). The lanceolate form is more resistant to blight. All five cultivars have lanceolate leaf shapes.
3. The shapes of the tubers are different, with the narrow conical shape prevailing.
4. The color of the skin and pulp varies from white, purple, and brown.
5. The placement of the buds is on all surfaces, which is more preferable.

B. Recommendations

The evaluation of morphological indicators is of interest in the selection of suitable cultivars according to the zones. We recommend cultivars with heart-shaped leaves that are more resistant to diseases and with superficial bud placement.

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