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## THE ROLE OF SWEET POTATOES IN ENSURING FOOD SECURITY

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**Abstract.** *The analysis of literature sources indicates the important place of sweet potatoes in solving food security problems in the modern realities of the global food crisis. The learning studies and publications testify to the distribution of sweet potatoes in the world, especially on the continents of Asia and Africa, which occupies a primary place in the nutrition of the population. Numerous studies testify to the prospects of growing this crop, thanks to its high tolerance to abiotic stresses, in particular, drought. Our goal was to analyze trends in the development of sweet potato crop production in the world. Used methods of analysis of primary sources and statistical data of the UN Food and Agricultural Organization, synthesising of a review of international scientific sources. Thus, the analysis of statistical data showed that at the global level, among the ten largest producers of sweet potatoes are countries located on the Asian and African continents, as well as the United States of America, which is the largest producer on the American continent. In Europe, the production of sweet potatoes has not yet been practiced on a large scale, but in recent years there has been an increased interest in this culture both among scientists and in the production sphere. Different trends in the development of sweet potato production on different continents have been established, which is probably related to the internal factors of each individual country and requires additional research.*

**Key words:** *sweet potato, food security, production, climate change.*

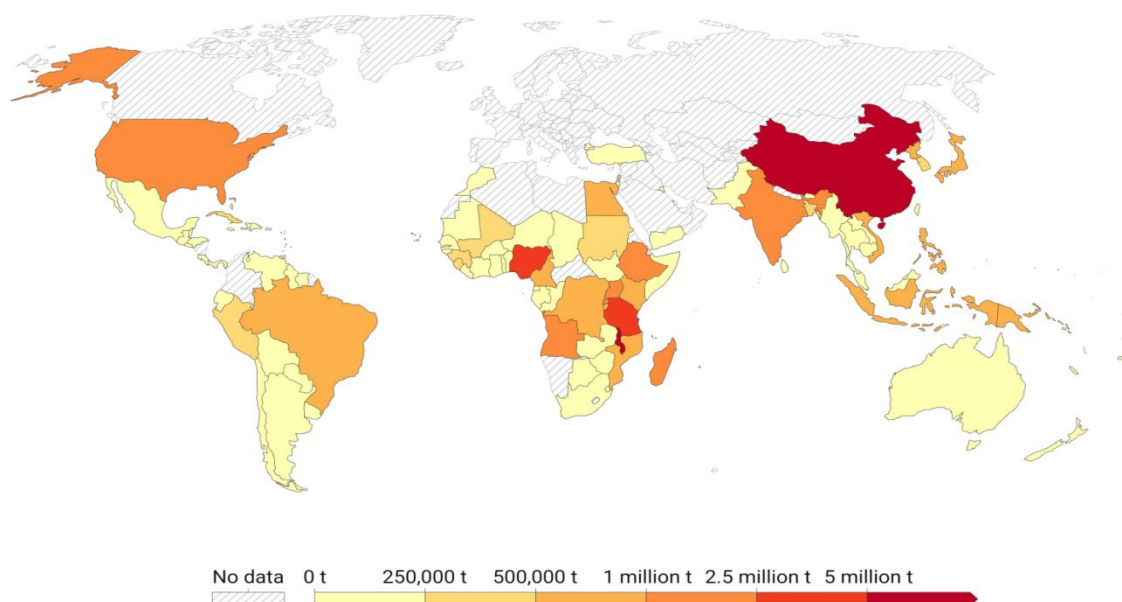
### Introduction

Providing the population with sufficient, high-quality and complete nutrition is the primary task of society and each state separately. Climate change and global warming pose serious threats to agriculture and its development, which largely depends on climatic factors. Therefore, today's need is the cultivation of agricultural crops capable of using natural resources most effectively for their growth and acquisition of productive qualities.

### Main text

Sweet potato (*Ipomoea batatas* L. Lam.) is a perennial herbaceous plant of the Birch family (Convolvulaceae), Solanales order. But in climatic zones with a moderate climate, it is grown as an annual. This culture originates from Central America. Widespread in the world due to its food and fodder characteristics (map 1),

the cultivation of which is of great food importance, in 2022 its production was more than 92 million tons [4]. Sweet potatoes are grown in countries with a temperate climate as an annual plant for obtaining root tubers for food [3; 6; 9; 10; 11]. Consumers of European Union countries are now beginning to show interest in sweet potatoes because they are endowed with dietary properties and organoleptic characteristics: taste, color and aroma [2].



**Map 1. Sweet potato production in world, ton. (2022)**

*Source: FAO (2023) [3]*

There are two types of sweet potato roots: absorbing and reserve. The absorptive roots are abundant and much branched, while the reserve or tuberous roots may be rounded, oblong, fusiform or elongated. The reserve root of the sweet potato is a food product with a significant energy value, about 120 kcal/100 g. Its main nutrient is carbohydrates (28 g/100 g), of which about 30% is sugar, and the remaining 15% is starch. There is practically no fat in it, and the percentage of cholesterol is zero. Although sweet potatoes are low in protein (1–3 g/100 g), they are very rich in fiber (2.7 g/100 g) [6; 11].

In some countries of Asia and Africa, this culture has long occupied an important place in the diet of the local population [1; 8]. Sweet potatoes are the object of numerous scientific studies conducted at the international level and testify that the culture is promising, looking at its resistance to drought [5; 8; 9; 10, 14; 15].

Also, studies indicate a number of advantages of sweet potatoes over other economically important crops, especially when solving food crisis issues, especially in developing countries [1; 6; 8; 12; 13].

Our goal was to investigate the place of sweet potatoes and the development of their production in the world. Primary sources and statistical data of the Food and Agricultural Organization of the United Nations, a synthesis of international scientific sources were used for the analysis.

The continents of Asia and Africa and then America are among the largest producers of sweet potatoes. According to FAO statistics, in 2022 the ten largest producing countries in the world were: on the continent of Asia: China, India, Indonesia and Vietnam; on the African continent: Malawi, Nigeria, Tanzania, Uganda and Rwanda, while the United States of America led in production on the American continent (Table 1).

If compared with other regions of the world, the production of sweet potatoes on the European continent is not very developed, although in recent years there has been a tendency to increase the cultivated area and encourage producers to grow it. Spain, Portugal, Italy and Greece are considered the main producing countries in Europe [3; 6; 9].

**Table 1. Sweet potato largest producers countries in the world, (1961 – 2022)**

| Continents/<br>countries | Yield, t             |            |                      |            | Absolute<br>change, t  | Relative<br>change, % |
|--------------------------|----------------------|------------|----------------------|------------|------------------------|-----------------------|
|                          | 1961                 | %          | 2022                 | %          |                        |                       |
| <b>Asia</b>              | <b>91 071 060,00</b> | <b>100</b> | <b>52 711 464,00</b> | <b>100</b> | <b>- 38 359 596,00</b> | <b>- 42</b>           |
| China                    | 74 020 000,00        | 81,3       | 46 604 010,00        | 88,4       | - 27 415 990,00        | - 37                  |
| India                    | 1 261 000,00         | 1,4        | 1 184 000,00         | 2,2        | - 77 000,00            | - 6                   |
| Indonesia                | 2 463 700,00         | 2,7        | 875 000,00           | 1,7        | - 1 588 700,00         | - 64                  |
| Viet Nam                 | 1 226 000,00         | 1,3        | 976 122,25           | 1,9        | - 249 877,75           | - 20                  |
| <b>Africa</b>            | <b>3 280 871,00</b>  | <b>100</b> | <b>29 530 154,00</b> | <b>100</b> | <b>+ 26 249 283,00</b> | <b>+ 800</b>          |
| Malawi                   | 4 209 699,00*        | -          | 8 051 118,00         | 27,3       | + 3 841 419,00         | + 91                  |
| Nigeria                  | 149 000,00           | 4,5        | 4 011 035,00         | 13,6       | + 3 862 035,00         | + 2 592               |
| URTanzania               | 215 000,00           | 6,6        | 4 259 619,50         | 14,4       | + 4 044 619,50         | + 1 881               |
| Uganda                   | 495 000,00           | 15,1       | 1 337 511,80         | 2,5        | + 842 511,80           | + 170                 |
| Rwanda                   | 452 000,00           | 13,8       | 1 372 745,20         | 2,6        | + 920 745,20           | + 204                 |
| <b>Americas</b>          | <b>3 285 438,00</b>  | <b>100</b> | <b>3 239 922,00</b>  | <b>100</b> | <b>- 45 516,00</b>     | <b>- 1</b>            |
| USA                      | 654 483,00           | 19,9       | 1 176 483,00         | 36,0       | + 522 000,00           | + 80                  |

Source: Prepared by the authors based on [3]

\* - Production refers to 2014

As shown in the table, the area of sweet potatoes in Asia has a tendency to decrease, to the greatest extent this is observed in the countries of Indonesia (64%) and China (37%) and to a lesser extent in Vietnam (20%) and India (6%). Researchers explain this by shifting areas to other crops that are more profitable due to market support. A decrease in the area under sweet potatoes may be a result of breeding more productive varieties [8]. Because research in these countries is focused on the selection of varieties resistant to abiotic factors [7; 8; 13; 14; 15].

On the African continent, there has been a steady increase in sweet potato production for four decades. This is facilitated by cooperation with international public organizations and the International Potato Center (CIP), which carries out its research activities in more than 20 countries in Africa, Asia and Latin America.

### **Summary and conclusions.**

Analyzing the data of research conducted in different countries, we state that the production of sweet potatoes in the world is increasing at an with a tendency towards prospective expansion. This culture does not require many resources and can provide relatively high yields. The introduction of sweet potatoes into production is an attractive prospect for agricultural producers, especially those with an insufficient material and resource base, who are searching for profitable crops to grow.

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