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# **EUROPEAN SCIENTIFIC DISCUSSIONS**



**ABSTRACTS OF IV INTERNATIONAL  
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## QUINOA IS A NEW DIRECTION IN GLUTEN-FREE DIET

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**Abstract.** A culture cultivated by the Aztecs 6,000 years ago. Later it became one of the three main foods for the Inca civilization, which respectfully called it "the mother of all grains." Moreover, this is not surprising, because this culture combines eggs, potatoes, bread and milk, which fit on one stem. In addition, this culture is calling "golden grain" or "golden buckwheat". What kind of plant is this, the first seeds of which, according to legend, were planting by the Inca emperor himself, using golden tools and the harvest was considering a sacred gift of the gods.

**Key words:** distribution, origin, quinoa, fruit, pseudo grain.

**Introduction.** This is quinoa, which also has such names as quinoa, quinoa, quinoa and rice quinoa. Scientists refer to this plant as pseudo grain, but from the point of view of botany, quinoa is not a grain at all, but the seeds of the quince



family. In fact, it is a fruit! Europe was just beginning to discover this miracle product, although ironically, the Spanish conquistadors forced the Aborigines to plant wheat instead of quinoa during the conquest of the Inca Empire in an attempt to plant European traditions. Nowadays, scientists have discovered the incredibly beneficial

properties of this cereal. Quinoa has more protein than wheat, rice and oats, and people with wheat allergies can eat it because the seeds of this crop do not contain gluten [1].

Rich in vitamins and minerals, this cereal will be very useful for the diet of people with diabetes, weight problems, and cardiovascular disease. No wonder quinoa is also a "space" product in terms of its impact on the human body, because NASA called it the ideal food for astronauts. The fact is that quinoa is a very valuable source of easily digestible vegetable protein.

In some varieties of grains, its content exceeds 20%, while the protein has a great balance of amino acid composition and properties similar to milk proteins, and the phosphorus content of the plant is not inferior to sturgeon species. No wonder quinoa is also calling vegetable caviar [2, 4].

This culture once "came down" from the Himalayas. Now cereals are quite popular in the Caribbean, the United States, and at home - in Venezuela, Chile, Ecuador, Colombia and Bolivia. The main supplier of this product today is Peru. However, Bolivia used to be such a supplier. At one time, a whole trade war broke out between Peru and Bolivia over quinoa. Relations between countries have worsened through a single plant.

Nevertheless, despite this, Bolivian quinoa is valued more because it is fully organic. It is manual labor and the absence of chemical treatments that allow Bolivia to successfully its product to lovers of natural and safe food. Unlike the Bolivians, Peruvians grow quinoa on conventional farms with a full range of pesticides, so they cannot call their product organic and are forcing to reduce the price by almost half [3].



In Europe, the "golden" plant is very popular, so it is natural that European farmers are also interested in growing quinoa. Farmers in western Canada are already doing this successfully. For 4 years, quinoa has been an agronomic bonus in the crop rotation of Canadian producers, it is easily cultivated and the crop yields

quickly. The culture is practically ill, has shown itself to be very resistant to such a disease as blackleg.

The largest supplier is Northern Quinoa. However, another Canadian company, Prairie Quinoa's, is doing breeding research on this plant. Specialists have already tested about 25 varieties, among which have identified about four suitable for cultivation in the region. On the recommendation of Canadian experts, quinoa likes narrow intervals between rows, and the depth of sowing is similar to rapeseed. Moreover, the size of quinoa seeds is similar to the size of rapeseed, so you do not need special sowing equipment or harvesting equipment.

In Latvia, quinoa is not grow yet on an industrial scale, but some farmers are already successfully cultivating this crop. Farmers from the Vidzeme Upland buy seeds in Canada. First, the harvested grain is sifting through various sieves to remove excess. Then there is an intensive drying process, after which the grains are separating from the shell [1, 5].



The culture is also unique in that quinoa grains can be used to make flour, porridge and soups, and the leaves of the plant are consumed as spinach. In addition, with quinoa you can cook everyone's favorite sushi. Despite the fact that in local varieties the protein content is inferior to Bolivian or Peruvian samples, Denmark has chosen quinoa groats as one of the most promising crops for organic nutrition. Nevertheless, in the Netherlands successfully works the only European breeder of quinoa - Plant Research International. The Carmen variety developed here is grown in the Loire Valley in France. There are already some successes, because it was thanks to selection that the first large-scale harvest in Europe (from 700 to 3000 kg per hectare) was harvested [8].

In the south of Ukraine, this crop is not yet grown on an industrial scale, but Ukraine already has cultivation experience thanks to Sumy National Agrarian University and FAO experts. As an experiment, quinoa was growing for two years. The first harvest was harvested in 2016. The experiment will continue, because you need to try other varieties, of which there are many, in order to choose the appropriate one for the region [2, 7, 9].

According to experts, quinoa can grow in the south of Ukraine, but you need to choose varieties that adapt to soil and climatic conditions. There is an example when growing this plant and trying to adapt to the necessary conditions, farmers managed to get a new adapted variety [10].

So in 1987, farmers decided to plant quinoa on their farm in Colorado (USA). They hoped to be able to achieve identical plant growing conditions, while mimicking the conditions of natural origin of quinoa in the Andes. A few years after their experimental sowing, they found that the overall new variety of plant was taller than the traditional one, but with a deep purple color. Ordinary seeds crossed with North American and as a result, a new variety of cereals with unique properties appeared. Therefore, growing quinoa in the south of Ukraine can be an extraordinary experiment for scientists and a very profitable business for producers.

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