

## **ANALYSIS OF TASKS AND METHODS OF EXAMINATION OF GRAIN PRODUCTS**

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### **Annotation**

In this article, the object of activity of food product examination is characterized mainly by four main indicators: assortment, quantity, quality and price indicators. The first three of these indicators satisfy specific human needs (physiological, sociological, psychological, etc.). Only through these classifications is information provided about the usefulness of the product for certain segments of consumers and its transformation into a commodity. The description of the product range includes information about the functional or social purpose of the product, based on a set of distinctive signs and types of groups.

## **АНАЛИЗ ЗАДАЧ И МЕТОДЫ ЭКСПЕРТИЗЫ ЗЕРНОВОЙ ПРОДУКЦИИ**

### **Аннотация**

В данной статье объект деятельности экспертизы пищевой продукции характеризуется преимущественно четырьмя основными показателями: ассортиментным, количественным, качественным и ценовым показателями. Первые три из этих показателей удовлетворяют конкретные потребности человека (физиологические, социологические, психологические и т. д.). Только посредством этих классификаций дается информация о полезности продукции для определенных слоев потребителей и превращении ее в товар. Описание ассортимента товара включает информацию о функциональном или социальном назначении товара, основанную на наборе отличительных знаков и типов групп.

**Key words:** expertise, assortment, quantitative, qualitative, physiological, sociological, psychological, microorganism, stem, rotten.

**Ключевые слова:** экспертиза, ассортимент, количественный, качественный, физиологический, социологический, психологический, микроорганизм, стебель, гниль.

### **Introduction**

Grain products include grain and its processing products (flour, semolina and semolina concentrates, bread, buckwheat and pasta products). Cereal products play an important role in the concept of healthy nutrition. This is a favorable chemical composition of cereal products (cereals contain in one or another amount all 400 nutrients necessary for the human body), as well as many components of cereal products (gluten, pectin substances, vitamins E and B, macro- and microelements ) is based on the performance of corrective, protective and preventive functions in the human body. From the point of view of the energy structure of a person's daily diet, cereal products should make up 35% (according to some researchers, up to 80%). Cereal products (bread, cereals, pasta) are important for daily consumption due to their high nutritional properties. Their use in nutrition gives a person the opportunity to satisfy a complex of physiological needs. Consumption of grain products plays an important role in meeting the need for protein and essential amino acids. Cereal products, especially bread, contain on average 7...8% proteins. Cereal products are also an important source of meeting the need for carbohydrates. They contain digestible (sugars, starch, dextrins, glycogen) and non-digestible (inulin, cellulose, hemicellulose, gummy substances and glues) carbohydrates. In this way, the need for starch and dextrins is satisfied by 41%, the need for dietary fibers by 57.2%, and the need for mono- and disaccharides by 17.4...40% [1].

**The only way to ensure the high quality** of grain and grain products is the proper organization of product examination services. Expertise is a study conducted in order to provide a conclusion based on the solution of issues requiring special knowledge. In the process of expertise, checks are carried out related to the characteristics and quality of products. The main goal of teaching the science of "Examination of grain and grain products" is to teach future experts the importance, essence, objects, subjects, grouping and assortment of grain products, the uniqueness of their consumption characteristics, their storage and the process of storage. is to provide knowledge about the changes that will occur. The subject

"Grain and grain products expertise" is studied in interaction with "Physics", "Mathematics", "General and organic chemistry" and specialized subjects[2].

Objects of examination of grain and grain products. Object (from the Latin object - subject) is an object or event aimed at a certain activity. Cereals and grain products are the objects of expertise, and are various vegetable grains, cereals prepared on their basis, and food products. The object of activity of food product expertise is mainly characterized by four main indicators: assortment, quantity, quality and price indicators. The first three of these indicators satisfy specific human needs (physiological, sociological, psychological, etc.). It is only through these classifications that products provide utility for certain segments of consumers and become a commodity. The description of the product range includes the functional and (or) social goals of the product, based on a set of distinguishing features, group types. These include descriptive group, sub-group, type, variety, name, and express that one product is fundamentally different from another product[3].

**Taking a sample.** Grain quality means a set of biological, physical-chemical, technological and consumer properties and signs that determine its suitability for seed, food, fodder or technical purposes.



**Figure 1:** Sampling scheme for grain moisture determination

Grains of different plants have many similar characteristics, which makes it possible to use general methods for determining their quality. To determine the quality of grain, a small part of the grain is taken for research. Taking a grain sample is the first and most important step in determining grain quality. A grain sample is a certain amount of grain taken from a grain group to determine its quality (GOST 13586.3-83). The standards specify methods of grain acceptance and sampling. For this purpose, an average grain sample

prepared in advance from each grain group is checked. Average sampling starts with point sampling. Samplers are used for point sampling. The sum of the point samples is called the pooled sample, and then an average sample with a mass of  $2.07 \pm 0.1$  kg is taken. If the mass of the combined sample does not exceed 2.0 kg, it is also considered an average sample[4]. Average sampling from the combined sample is carried out using a BIS-1 grain distributor or by hand. In manual sampling, the pooled sample is poured onto a smooth surface table and mixed three times in a square pattern. Then the grain is flattened again in the form of a square and divided into four triangles along the diagonals. Grain is removed from two opposite triangles. The remaining two are mixed again and the division is continued until the mass of the two triangles is equal to 2 kg. To determine individual grain quality indicators, a measurement is taken from the average sample. The mass of the measurement should not be less than 25 g.

Determinable quality indicators of grain and grain products. Determinable quality indicators of grain products are divided into organoleptic and physical-chemical indicators. Organoleptic indicators include indicators determined by human senses, such as smell, taste, appearance, and crunch when chewing. The color and appearance of the specimen are determined by inspection to determine the type, type and condition of the specimen. Fresh, ripe grain, harvested and stored under favorable conditions, has a clearly visible color characteristic of the type and variety of the plant. The color and appearance are determined by comparing the examined sample with a standard sample typical of this plant grain in daylight. The smell of grain depends on the volatile substances contained in it. In normal grain, their amount is very small, and the smell of the grain is not noticeable[5].

**Quality control** section covers all stages of complex work on filling cargo into containers, in particular, sampling during entry inspections, batch control during unloading from the warehouse, and mandatory quality control when sending goods for export. The quality control department has a complete set of modern equipment. This allows you to quickly determine all the necessary quality and technical parameters of crops from suppliers. The complex processes grain, leguminous, oil and essential oil crops, as well as agricultural products processing products.



**Figure 2:** Scheme of grain analysis in the laboratory

The main indicators that must be determined during the reception of goods are: moisture content (standard method), grain contamination and contamination (set of sieves for each crop), grain unit (grain unit scale), gluten content and its quality . (Glutamic or manual method in accordance with the requirements of regulatory documents, a device for determining the quality of gluten (gluten deformation meter), reduction number (reducing number meter PChP), protein content (express analysis) and fat content (express analysis) The department determines fatness and its composition using modern express analyzers, FOSS Infratec 1241 and INFRASKAN-105. calibrated on the following crops: wheat, corn, barley, soybeans, canola, flax, sunflower and soybean oil and oil cake[6].

The quality control department has the ability to qualitatively and quantitatively (by express method) determine the composition of rapeseed and soybeans. For this purpose, we use test strips. In addition to AgraStrip test strips, our AgraStrip laboratory is used overseas to quantify data. It is an easy-to-use quantitative data processing tool.

When preparing a batch of goods, it is mandatory to control the temperature of agricultural products using thermoprobes.

All the work of the Laboratory and Quality Control Department staff is focused on rapid data processing and product quality determination for rapid vehicle unloading and providing relevant reports to customers[7].

The odors that are not characteristic of whole grains include: malt odor, which occurs as a result of self-heating and drying of grain; musty smell, which is formed as a result of spoilage and decomposition of grain or when storing grain in poorly ventilated rooms; the

smell of mold, which is formed as a result of grain mold; rotten smell that accompanies the breakdown of grain proteins and the release of decomposition products; foreign odors adsorbed from the environment enter the grain. It is not allowed to have foreign odors in the grain. To determine the smell, a small amount of grain is heated with breath. If you put 5...10 g of grain in a glass, pour hot (60...70 C) water, keep it closed for 2...3 minutes and drain the water, the smell will be more noticeable. The taste of grain in Meyor is less noticeable. The taste of the grain is sweet, sometimes it has a taste specific to the type of grain. The taste of the grain is determined by chewing about 2 g of pre-ground grain. The sour taste indicates the deterioration of the grain during storage, that is, the tarnishing of the fats contained in it and the mixing of kakra grains in the grain. A sour taste indicates the presence of various microorganisms that cause spoilage and the formation of one or another type of organic acids. The sweet taste is characteristic of mature and unripe grain. Off-flavors can also be the result of adsorption from foreign substances, contamination by pests, etc[8].

**Analytical indicators.** Analytical parameters characterizing grain mass include grain moisture, contamination, damage by pests and volumetric mass (nature). Moisture is one of the main quality indicators and is determined by the mass of free and bound water and is expressed as a percentage of the initial grain mass. The amount of moisture in grain varies widely (9...25%) and depends on grain maturity, harvesting, drying and storage conditions. The moisture content of grain during milk and wax (dumbul) ripening is high. Grain is a hygroscopic product, its moisture content varies depending on the humidity and temperature in the warehouse. According to the amount of moisture, it is divided into four groups: dry, moderately dry, wet and wet. For example, dry wheat, rye, barley and buckwheat grains have moisture content up to 14%, average dry grains up to 15.5%, wet grains up to 17% and wet grains more than 17%. The nature of grain or volumetric mass of grain is the mass of 1 liter of grain expressed in grams. Natura is determined on special scales - sprays. The volumetric mass of the grain depends on the type, structure, shape, impurities and moisture content of the grain.

**Dirty compounds.** All compounds that do not have value in a certain group of plant grains are called impure compounds. They include powdery mixtures; mineral mixtures (soil, sand, stones); organic compounds (stalks, spikes and husks); grains of foreign and other cultivated plants; includes damaged (rotten, moldy) grains. Harmful compounds have dangerous and toxic properties. They include blackberry spores, poisonous alien plants -

cakra, blueberry, mastak, blackberry seeds. The amount of harmful compounds in all grains and grain products is strictly limited.

In conclusion, the protein content of grain indicates its nutritional value. The amount of proteins in wheat grain is related to the amount and quality of gluten, and it is one of the important indicators of grain's floury and non-wheat properties. The amount and quality of wheat gluten is one of the main quality indicators of grain. Wheat gluten is an elastic and stringy mass that is separated from starch and bran by washing with water. In the same way, specific expert opinions are given to products and goods.

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