FORMATION OF PROCESSES OF INTENSIFICATION OF CROP GROWTH FOR THE FORMATION OF BUSINESS STRUCTURES

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ABSTRACT

Aim of the study: The inclusion of products based on sprouted grain in the diet is a unique opportunity for a person to use a complete living organism for food, which has all natural biological properties and is in the phase of maximum vital activity. Sprouted grain is rich in enzymes necessary for digestion and assimilation of food, easily digestible monosaccharides, provides the human body with active energy in the form of ATP (adenosine triphosphate), since it is during the germination period that it is most actively synthesized and used.

Methodology: During germination, the amount of vitamins increases significantly (2-4 times), and the rich mineral composition is preserved. Germination of grains increases the concentration of biologically active substances in them. The use of products from sprouted triikale grain is recommended for the prevention of diseases of the cardiovascular system, gastrointestinal tract, atherosclerosis, and has a positive effect on the vitality of people who lead an active lifestyle. The main mechanism of preventive action of functional foods is their positive impact on such processes as increasing physical endurance, immunity, improving the function of digestion and regulating appetite, in particular, its reduction.

Conclusion: At this stage, the goal of our work is to germinate triticale and the effect of different temperatures on the process of germinating triticale. It is noted how the temperature affects the germination of triticale, while the largest amount of protein is contained at 400C with a time delay of 0.5 minutes, which is the main indicators of its protein-proteinase complex.

Keywords: Entrepreneurship, Sprouted Triticale, Extruded Grain Products, Extruded Products.

INTRODUCTION

One of the most important tasks facing the food industry is to provide the population with safe food of high biological value. The deterioration of the environmental situation (harmful emissions of industrial enterprises, the appearance of radiation zones, the use of pesticides, etc.) leads to contamination of food raw materials. The current situation requires the creation of a new generation of food products that meet the opportunities and realities of today (Baumol, 2010).

Currently, much attention is paid to products with a balanced composition, low calorie content, low sugar and fat content and high content of healthy ingredients, with a long shelf life, fast cooking and safe for humans. Food entering the human body must not only meet its needs

for basic nutrients and energy, but also perform preventive and therapeutic functions. One of these products is sprouted grain (Academic entrepreneurship, 2004).

If you properly organize the process of germination of grain, the proteins, fats and carbohydrates contained in it under the action of enzymes will be broken down to simple substances: polypeptides, amino acids, dextrins, glucose, maltose, etc., and due to the formation of the germ and the synthesis of substances, the number of vitamins and trace elements will increase (Bonnet, 2012). When using this sprouted grain in food, the human body receives substances already processed by enzymes. Many nutrition experts consider wheat sprouts, for example, to be a complete protein food, especially necessary for those who want to reduce their consumption of animal proteins (Butler-Bowdon, 2017).

In agriculture, the features of entrepreneurial activity are determined by the specifics of the production process in this industry (Entrepreneurship, 2004). Results in this industry depend on constantly changing conditions, so it is necessary not only to create reserve funds, but also to constantly provide support from the state in all cases, and not only in extreme conditions. State support for new forms of production organization and the necessary legal framework can activate entrepreneurial activity in agriculture. Among other features of agriculture, the most significant is the use of land as the main means of production (Chiste, 1996). The entire success of economic activity depends on its correct use. That is why, with the right attitude to the land, it is necessary to carefully use and prevent changes in agricultural turnover, constantly increase soil fertility, and comply with environmental requirements (Geipele, 2010). These measures will help to get a high yield for a long time, thereby ensuring maximum profit for the company. An important feature is the high dependence on climate conditions. Having considered the first feature, we determined that the main thing in agriculture is land, which is why we should take into account weather conditions (Grupe, 2005). There is a huge risk on the part of entrepreneurs who are forced to use part of their money for insurance, since it is impossible to foresee changes in weather conditions associated with drought, flooding, hurricanes, crop diseases, and others (Hulsink, 2008). Dependence on the natural environment (such as soil, microorganisms, etc.) is an unavoidable feature in agriculture, but the agricultural producer can slightly adjust their adverse effects by using scientific and technological progress. A significant feature of agriculture is also the seasonality of production and use of labor (Kingma, 2011). This is mainly due to the discrepancy between the production time required to produce the product and the working period, which is shorter in duration and represents the time of human impact on the subject of labor (namely, plowing, processing, harvesting). Seasonality cannot be eliminated in any way due to the cyclical development of plant and animal organisms (Li, 2011). The next feature for agriculture is the perishable nature of products and the concentration of production in space. This causes transport costs, increases the cost of production, and makes it difficult to sell. In order to reduce these negative consequences, it is necessary to constantly invest financial resources in the agricultural sector (Phan, 2016).

METHODOLOGY

Triticale of the "*Taza*" variety was used as research objects.

When performing the work, we used standard, generally accepted physical and chemical research methods (Semenyutina, 2018).

To assess the quality of raw materials, standard methods for determining organoleptic, physical and chemical quality indicators were used.

Triticale quality indicators were determined in accordance with the methods set out in the following regulatory documents (Shmeleva, 2016):

1. Determination of the mass fraction of triticale moisture according to GOST 9404-88;
2. Determination of triticale ash content on the Infrascan device;
3. Determination of the quantity and quality of raw gluten on the Infrascan device;
4. Determination of the protein content on the Infrascan device;
5. Determination of triticale acidity according to GOST 27493-87;

RESULTS AND DISCUSSION

Agriculture is a special sphere of material production, which is on a par with other industries and is part of the economy. Agriculture is an important branch of the national economy, as it is the main source of food, and is also the most important source of raw materials for many industries, supplying them with the main products (Szopa, 2013). During the transition to a market economy, active business activity was revived in Russia, thus requiring participants to develop more, namely, to obtain new professions and knowledge. Therefore, the main role in solving these problems is assigned to the principles and laws of the organization of agricultural production at the enterprises of the agro-industrial complex. Any entrepreneur who starts his activity in agriculture must clearly understand the need for future material and financial resources, sources of their receipt, and clearly define the process of the enterprise (Technonet Asia, 1987).

When germinating grains, the influence of different temperatures and holding time when immersed in water on the characteristics of the sprouting triticale grain was studied. The properties of the grain mass were evaluated by the number of sprouted grains (%) and the length of the sprouts (Tereshkin, 2018).

The authors sprouted triticale of the "*Taza*" variety in laboratory conditions in a device for sprouting grain crops. To activate the triticale enzymes, the grains were kept in water at a temperature of 40,50,60 and 700C for a duration of 0.5; 1.0 and 1.5 minutes and then placed on a device for germinating crops, where they were sprayed with water and blown with air, and disinfected with ozone (United Nations, 2012).

Since enzymes are biochemical catalysts consisting mainly of protein, they are sensitive to temperature. Temperature is one of the most important environmental factors that changes the reaction rate regardless of the equilibrium state. On average, the catalytic activity increases to 50°C, while the amount of inactivated enzyme gradually increases due to the denaturation of its protein part. At a temperature above 50°C, the denaturation of the enzyme protein increases sharply and the activity of the enzyme decreases. Higher temperatures lead to rapid degradation of the enzyme, followed by an irreversible decline in activity. As a control, the grain was sprouted without immersion in water, disinfected with ozone during germination. Indicators for germination of triticale grains at different temperatures and the duration of the holding time in water. The appearance of triticale crushed (Wang, 2016).

Further, to activate the triticale enzymes, the grains were kept in water at a temperature of 50.60 and 700C for duration of 0.5; 1.0 and 1.5 minutes and then placed on a device for germinating crops, where water is sprayed and air is blown.

Research data indicate that in the control variant, at a temperature of 40°C without immersion in water, the length of the sprouts reaches 4-10 mm, within 24-48 hours. The protein content was 9.88%. Also, at a temperature of 40°C and with a duration of up to 1.5 minutes of

keeping the grains in water, the length of the sprouts reached from 3 to 10 mm in height (Wong, 2011).

When the water temperature rises to 50°C, the germination of grain sprouts significantly slows down and worsens, reaching a height of 2-9 mm. Accordingly, at a temperature of 60°C, the sprouts appear less often and the length of the sprouts was from 1 to 8 mm for 24-48 hours, and at the same water temperature with a dip of 1.5 minutes for 36 hours, the sprouts did not appear, and only after 48 hours, the length of the sprouts reached 5 mm, a sour smell appeared (Wright, 2007). Therefore, when kept at 70°C in water, sprouts in the grains do not appear at all.

CONCLUSION

It was found that the largest amount of protein (9.98%) is contained at 400C with a time delay of 0.5 min, which is the main indicators of its protein-proteinase complex. The highest protein content in flour has a beneficial effect on the strength of the flour and the stability of the rheological properties of the dough from it. Activation of proteolytic and amylolytic enzymes occurs with an increase in the degree of moisture content in sprouted grains. The optimal research option is a grain mass of triticale sprouted when immersed in water at a temperature of 400C at an exposure of 0.5 min, with a germination duration of up to 48 hours, as a result of which the length of the sprouts reaches 9-10 mm. the Dynamics of increasing humidity and acidity is also observed when sprouting triticale. Water during germination penetrates into the grain mainly through microcapillary holes located in the places of the embryo. Part of it gets inside the grain and through the shell over the entire surface, with an increase in the time of germination of the grain, therefore, the moisture content of the grain increases (46-49%). The process of moisture absorption by the grain also contributes to an increase in the acidity of sprouted grains, since it contains active α - amylase along with β-amylase. With the combined action of these amylases, the main amylase on starch provides its saccharification, which causes the activity of its own hydrolytic enzymes in it and the accumulation of acidity (1,6-2,6 deg). Further, the dried sprouted triticale was used as an extrudate (a mixture with wheat germ and corn) for extrusion.

Thus, the influence of temperature on the germination of triticale is considered, in which it is revealed that the largest amount of protein is contained at 400C with a time delay of 0.5 minutes, which is the main indicators of its protein-proteinase complex.

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