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GRAIN QUALITY OF WINTER WHEAT WHEN FED FROM LEAVES IN IRRIGATED GRAY SOILS

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ABSTRACT

The problem of improving the quality of winter wheat grain is relevant and, at the same time, relatively intractable. In many farms of the republic, in recent years, the yield of winter wheat grain on irrigated lands is 50 c / ha and more. However, the quality of the grain remains low, the protein content in the grain ranges from 10-12%, and the amount of crude gluten in it is in the range of 19-25%. This protein content in winter wheat grain is significantly below the established standard.

With foliar feeding, the effectiveness of mineral fertilizers increases sharply. Increases plant resistance to sucking pests. The technological properties of grain sharply improve, i.e. the protein content increases by 1.5-2.1%, gluten by 3.1-4.9%. Vitreousness, flour strength and bread volume increase.

KEYWORDS

Wheat, grain, quality, protein, gluten, bread volume, technological properties of flour, fertilizer, foliar feeding, yield, nitrogen, phosphorus, urea, spraying.

INTRODUCTION

In most cases, with an increase in grain yield, there is a tendency for product quality to decrease. This is explained by the fact that during crop formation there is a lack of nutrients, including nitrogen. It is difficult to

fertilize the soil during this period due to the continuous grass stand.

One of the most effective ways to solve this problem is foliar feeding. The importance of foliar feeding of

winter wheat in different years was studied by V.N. Remeslo, N.S. Avdonin, S.I. Lebedev and others. [1;8-b] Most of the studies in these areas were conducted in Russia, Ukraine and other countries. In connection with this, we conducted field experiments to study foliar nutrition of winter wheat.

Research methodology. The research was carried out on the experimental fields of Tash State Agrarian University. The soil of the experimental plot is irrigated typical gray soil. The purpose of the work was to study the effectiveness of foliar feeding in improving the technological qualities of winter wheat grain. Urea was used as nitrogen fertilizers, superphosphate was used as phosphate fertilizers, and potassium chloride was used as potassium fertilizers. Foliar feeding was carried out in three periods, during the period of booting, heading, flowering and grain filling. Different concentrations of mineral fertilizers have been studied. Field experiments were carried out according to the method of Yu.V. Budyonny 1975 [4;22-b] The area of one plot is 100 m², of which 50 m² is accountable. The experiments were carried out in four repetitions.

The beak content was determined by the Kjeldel method, gluten by the leaching method, fertilizer analyzes were determined by the method of V.G. Mineev [5;4-b] (1989), the digestibility of mineral fertilizers by the method. In the experiment, urea was used in three different rates 15, 21. 30 kg/ha, i.e. three 5%, 7% and 10% concentrations.

Results. Foliar feeding of winter wheat with nitrogen increases the content of protein, gluten, increases the volume of bread and other technological properties of wheat. Foliar feeding is of great importance during the formation of generative organs in plants. Grain filling and fruit formation are associated with the use of

nutrients. It is known that grain contains more nitrogen, phosphorus and other elements than straw.

The best form of nitrogen fertilizer for foliar feeding of wheat is urea.

Synthetic urea (urea) serves as a source of nitrogen for plants, as well as a reserve compound for the formation of ureide forms of nitrogen compounds, which are biologically active substances and have a positive effect on the synthesis of amino acids and proteins.

When urea amide nitrogen enters the plant, it participates in nitrogen metabolism processes similar to asparagine and glutamine without first converting urea into ammonia. Ammonia formed in the leaf as a result of the reduction of nitrates, hydrolysis of urea or directly absorbed by the leaf, as well as ammonia formed as a result of the breakdown of proteins, is quickly used for the synthesis of amino acids and amides. The intensity of urea hydrolysis in plant tissues is associated with urease activity. It is the activity of this enzyme that determines the resistance of plants against the appearance of burns when applying a urea solution to the leaves.

Plants with more active urease suffer more from burns. Therefore, older leaves with less active urease suffer less from burns than young leaves. In addition, burns can occur when using a working solution of high concentration (more than 20% of the nutrient), when the leaf surface and root system are insufficiently developed. When spraying plants at a relatively young age (before the formation of two or three internodes), uneven spraying of the distribution of the working solution, and spraying in conditions of low relative humidity (below 30%) and daytime hours (10-16) in sunny weather. To prevent wheat burns, which negatively affect the yield, it is best to spray plants at a

nutrient concentration of the working solution in the initial phases of development (tillering, corpeing) of 5-7%, during heading up to 10%, during grain filling up to 15 %. Doses of urea for foliar feeding are set depending on spraying.

This is mainly due to an increase in the vegetative mass of winter wheat. Azizov.B.M. 2008 [2;24-b] When a large amount is formed, increased doses of urea must be used, normally 30 kg/ha. With a smaller vegetative mass, a dose of urea at the rate of 15 kg/ha is more

effective. The effectiveness of urea also depends on weather conditions. When, after spraying, there is a sharp and prolonged increase in air temperature and its relative humidity decreases, the best doses of urea are 15-30 kg/ha.

The effectiveness of foliar feeding of winter wheat largely depends on the degree of spraying of the solution and weather conditions. Data on the effect of foliar feeding on the yield and grain quality of winter wheat are given in the table.

Table - 1

The influence of foliar subcortex on the yield and grain quality of winter wheat

| Phases of development | Top dressing | Grain harvest s/ga | Vitreousness, % | The power of flour | Content in grain % | |
|-----------------------|---------------------------|--------------------|-----------------|--------------------|--------------------|---------|
| | | | | | protein | Glu-ten |
| - | N200,P140,K90 (FON) | 64 | 80 | 210 | 11.6 | 26.8 |
| piping | FON- 5% urea suspension | 66 | 86 | 235 | 12.6 | 27.6 |
| | FON - 10% urea suspension | 67 | 87 | 250 | 12.9 | 28.2 |
| | FON -15% suspension | 69 | 89 | 253 | 13.1 | 29.5 |
| Earing | FON - 5% suspension | 68 | 87 | 257 | 12.7 | 28.0 |
| | FON -10% suspension | 69 | 90 | 288 | 13.0 | 29.1 |
| | FON -15% suspension | 71 | 91 | 292 | 13.3 | 31.4 |

| | | | | | | |
|---------------|---------------------|----|----|-----|------|------|
| Blooms | FON -5% suspension | 65 | 88 | 289 | 12.8 | 27.9 |
| | FON-10% suspension | 67 | 90 | 305 | 13.2 | 29.9 |
| | FON -15% suspension | 69 | 92 | 309 | 13.6 | 31.7 |

Consequently, fertilizing with urea increases the protein content not only due to the nitrogen of the fertilizer, but also by enhancing the reutilization of nitrogen reserves in the vegetative mass.

In the experiment, relatively high results in grain quality were obtained with foliar nutrition of winter wheat during the flowering period with a 15% urea concentration, in this option the protein content in the grain was 13.6%. crude protein 31.7%. In the control variant, these figures were 11.6 and 26.8%, respectively.

Выводы:

- with foliar feeding, the growth and development of winter wheat is significantly accelerated;
- with foliar feeding, the weight of 1000 pieces of grain increases by 0.6-1.0 g and the amount of grain on one ear increases by 2-3 pieces;
- with foliar feeding, the technological properties of the grain increase, the protein content increases by 1.0-2.0%, gluten by 1.8-4.9%.
- the grain yield of winter wheat increases by 2-7 c/ha.

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