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THE PHOTOSYNTHESIS ACTIVITY OF SPRING HARD WHEAT ACCORDING TO FERTILIZATION

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The effect of mineral fertilizers application under spring wheat was researched. There was determined influence of mineral fertilization on photosynthetic potential formation. Fertilizers application under spring wheat influenced on plant growth and plant development and caused maximal photosynthetic activity of spring wheat.

Spring wheat, fertilizer, sorts, photosynthetic potential, effective productivity.

Photosynthesis is variable process unusually. It depends from environmental factors and inside factors. But only stable indexes of photosynthesis are used for yield prognosis and estimation of producer process. The photosynthesis potential is one of them. The sun energy is used productively when plants will form optimal leave surface and longtime of it using. A. Nychyporovych [3] said for high crop yield the big leave surface is insufficiently. The time of leave surface activity is more important than it area.

The photosynthesis potential correlates to crop yield and is reflected leave productivity of the crops [1]. The fertilizers application supplies long time activity of the leave [4].

The goal of the investigation was determination of optimal indexes of photosynthesis activity of spring hard wheat.

The methods of investigation. The field trials were located in the experiment of department of plant growing in the agronomic scientific organization of National University of Life and Environmental Sciences of Ukraine in 2009-2011. The experiment researched three factors. There were sorts (Izolda and Bukypia) and fertilization and side-dressing.

The scheme of investigation foresees fertilizers application in different rates according to research sorts. Mineral fertilizers were applied according to scheme (table 1).

Scheme of the fertilizers application under spring hard wheat, kg per ha active compound

Variant	Factor B			Factor C		
	Basic application of fertilizers			Side-dressing byN		
	P_2O_5	K_2O	N application presowing	Stage of plant growth		
				II	IV	X
1	Control	-	-	-	-	-
2	60	60	-	-	-	-
3	-	-	-	30	30	-
4	30	30	30	-	-	-
5	30	30	30	-	30	-
6	60	60	-	30	-	30
7	60	60	-	30	30	-
8	60	60	60	-	-	-
9	60	60	60	-	30	-
10	90	90	90	-	-	-
11	90	90	90	-	30	-
12	120	120	120	-	-	-
13	120	120	120	-	30	-

OSP and MOP were applied in basic application. NA was applied before crop sowing and was used in side-dressing during plant vegetation. Spring rape was preceding crop. The area of seed plot (variant) was 80 m^2. The register area was 50 m^2. The experiment was arranged in four replications.

The results of investigation. The photosynthesis potential of spring hard wheat was changed under different fertilization (figure 1).

Maximal photosynthesis potential of spring wheat was 3.2 million m^2 per ha for Izolda sort and 2.9 million m^2 per ha in variant with fertilizer application in rate $N_{120}P_{120}K_{120} + N_{30IV}$. This index was 1.3 million m^2 per ha and 1.1 million m^2 per ha in control.

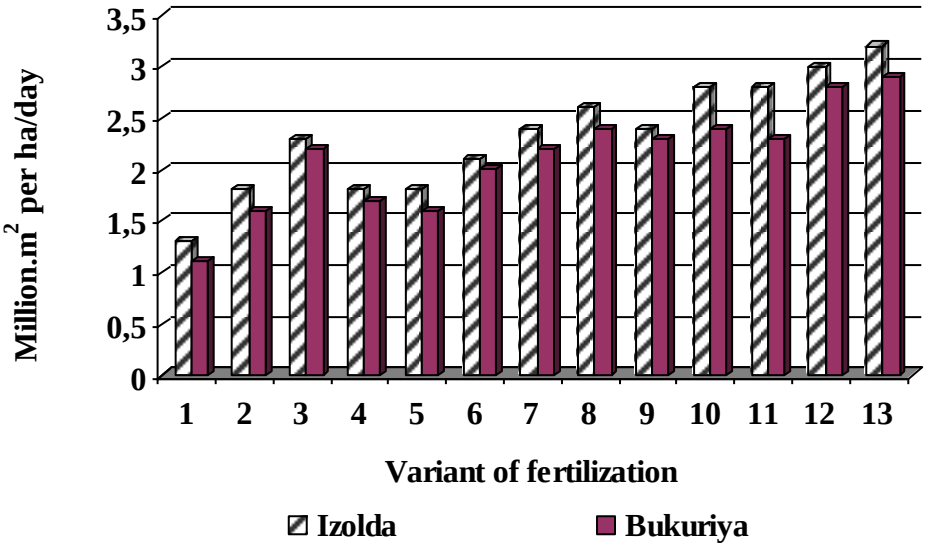

Figure 1. Photosynthesis potential of spring hard wheat during vegetation, 2009-2011, million m^2 per ha

Photosynthesis productivity is very important parameter in productive agrobiosystem. Friendly productivity of photosynthesis describes leave activity and is determined by organic matter per surface per hour [2. 3].

The change of Friendly productivity of photosynthesis of spring wheat depends from fertilization during plant vegetation (figures 2. 3). This index was 2.2 g per m^2 per day in control variant and 4.9 g per m^2 per day in variant of fertilizers application in rate $N_{120}P_{120}K_{120} + N_{30IV}$ during tiller density and stem elongation in every year of investigation. Phosphate fertilizers application and potassium fertilizers application in rate $P_{60}K_{60}$increased this index on 1.2 % to control. It was

3.4 g per m^2 per day. Nitrogen application in rate 60 kg per ha in addition increased this index on 2-3 %.

The mineral fertilization in rate $N_{90}P_{90}K_{90}+N_{301V}$ increased photosynthesis productivity of wheat to 4.4 g per m^2 per day or on 2.7 % to control.

This index was decreased to 1.1-1.9 g per m^2 per day during stem elongation and preheading.

Bukuria sort has same tendency. But, dimensions were less.

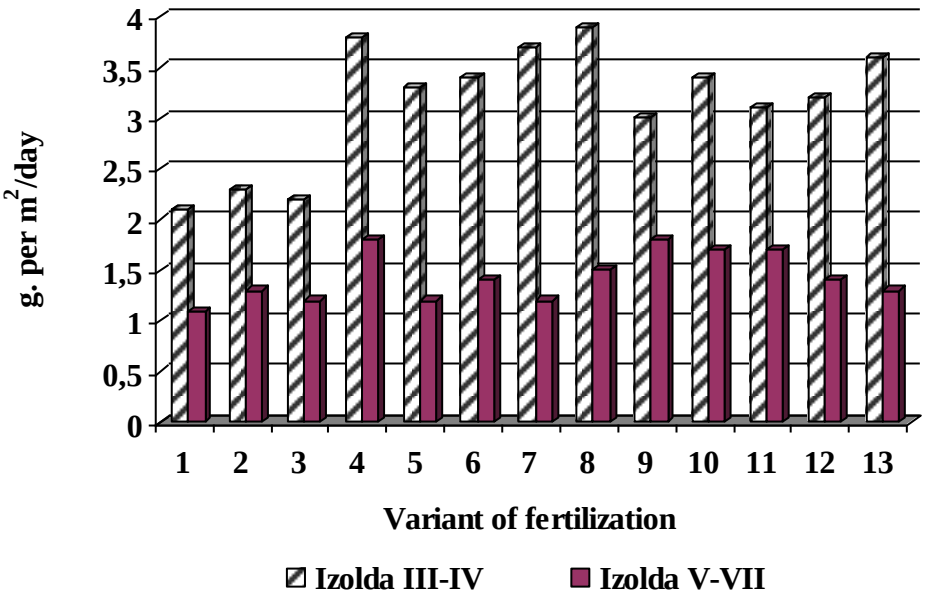

Figure 2. The effect of fertilization on friendly productivity of photosynthesis of spring hard wheat (Izolda sort), 2009-2011, g per m^2 per day

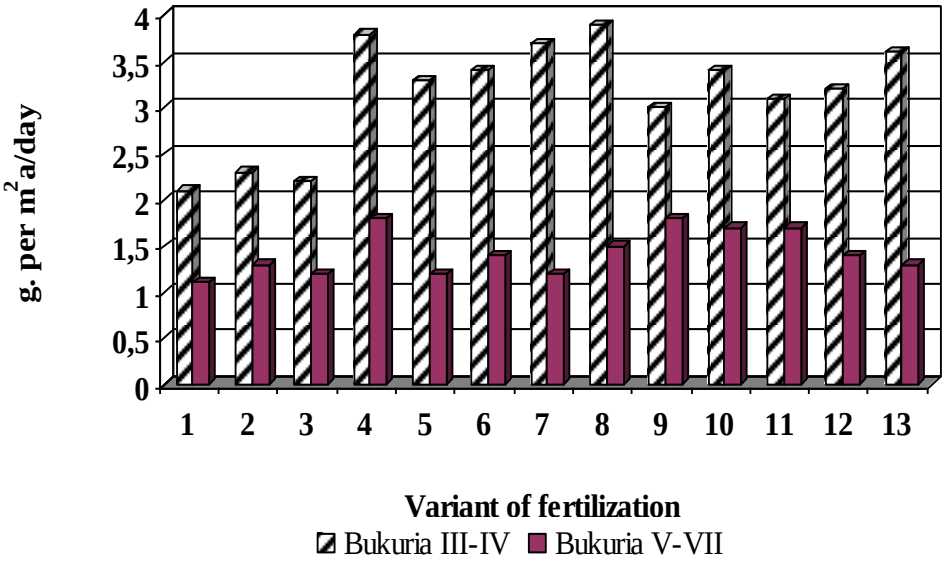

Figure 2. The effect of fertilization on friendly productivity of photosynthesis of spring hard wheat (Bukuria sort), 2009-2011, g per m^2 per day

Conclusions. The optimization of plant nutrition is important factor for influence on development of leave surface of plants of spring hard wheat and on grain yield and on grain quality. The fertilizers application increases friendly productivity of photosynthesis. Maximal index was 4.2 g per m^2 per day in variant with fertilizers application in rate $N_{90}P_{90}K_{90}$.