



RESEARCH ARTICLE

STUDY ON THE EFFECTS OF AMINOBEST AND BIOBEST ORGANIC FERTILIZERS ON THE PRODUCTIVE LAYERING CAPACITY AND GRAIN YIELD IN WINTER COMMON WHEAT (*TRITICUM AESTIVUM L.*)

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ABSTRACT

The study took place during the period 2013 – 2015 at the experimental field of IASS "Obraztsov chiflik" – Rousse. A field experiment was conducted with Aminobest and Biobest organic fertilizers in Venka 1 winter common wheat on soil type of strongly leached chernozem, after the block method in 4 replications, experimental plot being 10 m². The sowing was carried out during the first week of October with sowing norm of 500 germ.s/m² after legume predecessor. The first treatments with Aminobest and Biobest organic fertilizers were in stage of layering, at a dose of 0.250 ml/da. The following treatments were at ear formation and filling the grain. The following important conclusions could be made of the study: The treatments with Aminobest and Biobest organic fertilizers increase the productive layering capacity of wheat and increase significantly grain yield. The treatments with Aminobest and Biobest organic fertilizers during the spring vegetation of wheat in years of air drought cause difficulties in its feeding. Aminobest organic fertilizer stronger influences positively on the productive layering capacity and grain yield compared to Biobest organic fertilizer.

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INTRODUCTION

The technology of organic production of wheat is widely used in many countries (Coppola, Haugaard-Nielsen *et al.*, 2008; Fahong, Zhonghu He *et al.*, 2009; Fontaine, Rolland *et al.*, 2008). The improvement of yield sustainability and quality traits of wheat are main trends of the studies. Some authors define the use of biological agents as one of the perspective directions for increase of yield and quality of crop production (Ivanova, 2012; Todorov *et al.*, 2010; Vlahova, 2013; Suleymenova *et al.*, 2013, Mincheva, *et al.*, 2015; Petrova *et al.*, 2009, Raykov *et al.*, 2009). Bulgarian and foreign foliar fertilizers of organic origin are subjects of extensive research in recent years on yield and quality of the agricultural production, (Popov *et al.*, 2010; Angelov, 2007; Georgieva *et al.*, 2010). Aminos and Biobest organic fertilizers are two of them.

According to some authors the treatments with microbiological preparations lead to yield increasing (Pachev, 2014; Vlahova, 2012; Abstract of dissertation of Vlahova, 2013) and accelerate the growth and development of plants (Stoyanova *et al.*, 2014, Raykov *et al.*, 2011).

MATERIALS AND METHODS

The study took place during the period 2013 – 2015 at the experimental field of IASS "Obraztsov chiflik" – Rousse. A field experiment was conducted with Aminobest and Biobest organic fertilizers in Venka 1 winter common wheat on soil type of strongly leached chernozem, after the block method in 4 replications, experimental plot being 10 m². The sowing was carried out during the first week of October with sowing norm of 500 germ.s/m² after legume predecessor. The first treatments with Aminobest and Biobest organic fertilizers were in stage of layering, at a dose of 0.250 ml/da. The following treatments were at ear formation and filling the grain.

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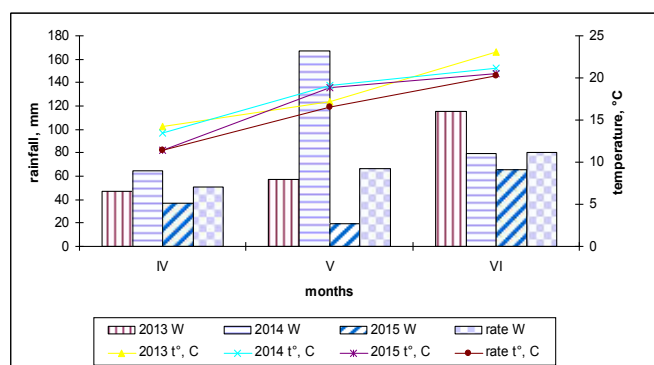


Fig. 1. Precipitation and air temperatures during the spring vegetation of wheat, 2013 - 2015

Table 1. Number of productive suckers per square meter and grain yield of Venka 1

Variants	Number of suckers/m ²	Yield, kg/da
Control	607	519
Aminobest	790	599***
Biobest	690	544**
GD5%	17 kg/da	
GD1%	24 kg/da	
GD0.1%	33 kg/da	

RESULTS AND DISCUSSION

The autumn-winter period (X - III) of 2012 - 2013 was characterized with an early frost occurred without extreme low temperatures. The amount of precipitation was little above the norm, which ensured good moisture providing (table 1). The precipitation in June and early July helped for the filling and feeding of grain. In the autumn-winter period of 2013 - 2014, extremely low temperatures were not observed, and precipitation was little above the norm for the region. Spring was characterized with precipitation and temperatures about the norm. The precipitation in May was exception - 100 mm above the norm. The precipitation in June and July were about the norm but were distributed in 17 and 13 days, respectively. That influenced negatively on yield and quality of grain, because of attacks by fungal diseases and rust. The moisture providing during the autumn-winter period of 2014 - 2015 was very good. The meteorological conditions in autumn favored in time and simultaneous wheat emergence.

Drought occurred in April, May and mid June and considerably higher temperature sum of air in May, did not affect significantly on growth and development of wheat. The precipitation in late June and air temperature about the norm for the region, helped for the good feeding of grain. The low amount of precipitation in July enabled timely and quality harvest. During the study of the organic fertilizers significant differences in growth and development of plants were not observed. During the first two years of the experiment, the treated plants formed a large number of suckers, and grain yield was higher, compared to the control (Table 1). Over the past year, as a result of the drought occurred, during the stage stem extension - ear formation and flowering, grain yield of the treated plots was almost equal to that of the control. Treated plants formed more suckers, but due to the drought, some of

the suckers were killed and gave small and not well-fed grains. Treatments with organic fertilizers suppressed the feeding of ears. Average for the period of study, more productive suckers were formed and higher yield obtained, compared to the control without fertilization. The effects of fertilization with Aminobest were greater, compared to Biobest.

Conclusion

1. The treatments with Aminobest and Biobest organic fertilizers increase the productive layering capacity of wheat and increase significantly grain yield.
2. The treatments with Aminobest and Biobest organic fertilizers during the spring vegetation of wheat in years of air drought cause difficulties in its feeding.
3. Aminobest organic fertilizer stronger influences positively on the productive layering capacity and grain yield compared to Biobest organic fertilizer.

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