

# REPORT

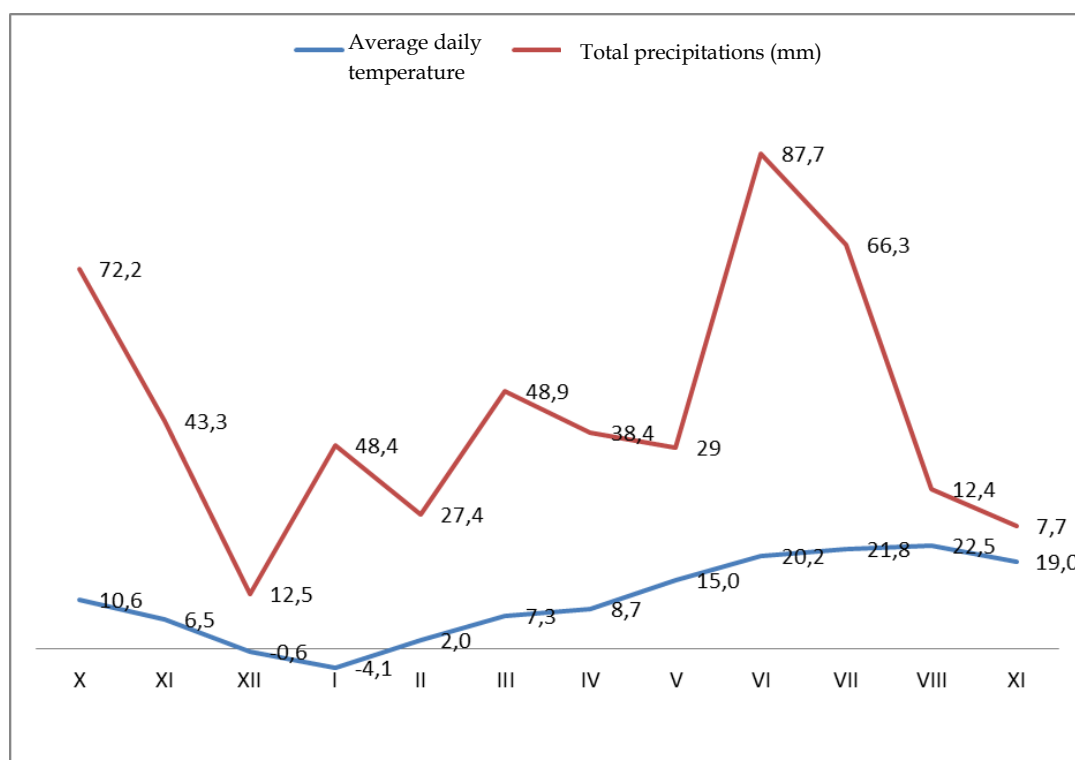
for execution of contract, dated 27.03.2017

Between Dobrudzha Agriculture Institute - General Toshevo and company DZZD „Panamin CO“

**Purpose of the test:** study of the efficiency of foliar fertilizer PANAMIN for ordinary winter wheat, sunflower and corn.

## METEOROLOGICAL CHARACTERISTICS

The average daily temperatures and the total precipitation for the period from October 2016 to September 2017 are presented in Figure 1. The total precipitation for the reported period is 494 mm. The rainfall in 2017 was greatest in June - 87.7 mm and smallest in October and September, 7.7 and 12.4 mm respectively.



**Figure 1.** Average daily temperature and total precipitation in DAI - General Toshevo for the period October 2016 - September 2017

## ORDINARY WINTER WHEAT

### *Test conditions.*

The test was carried out with the variety Enola. The sowing of the variety was carried out outside the optimum sowing time for the area, namely on November 11, 2016, with a trial area of 10 decares, respectively for the Panamin group and the control group. Due to the unfavorable conditions, the crop tillered in the spring,

which influenced strongly its condition. The first treatment of the crop with the foliar fertilizer was carried out on April 26, 2017 with dose of 150 g/dca together with incorporation of herbicide, with a half dose of PPP. In the control group, the full dose of the herbicide was applied. The second treatment with Panamin was carried out 14 days after the first treatment with dose of 150 g/dca. The harvest was carried out on July 20, 2017.

During the growth, the weeds infestation of the crop, the date of heading and the disease attacks were monitored.

### ***Results.***

The late sowing prevented the autumn tillering of the Enola variety and therefore the tillering phase occurred in the spring. Seven days after the first treatment the plants in the treated group showed a significant growth and change of the intensity of the coloration of the crop compared to the plants in the control group (Figure 2). Perhaps because of this, the heading phase of the Panamin group occurred 4 days before the control group – May 17, 2017 and May 21, 2017 respectively for the treated and the control group.



**Figure 2.** Variety Enola crop seven days after the first treatment with Panamin with dose of 150 g/dca (left) and non-treated control group (right).

The decreasing of the dose of the herbicide in the treated group did not decrease its effect. During the growth, 20% powdery mildew attack was observed in both groups. At stage “flag leaf appearance”, a 5% attack of stripe rust was observed in the control group. Such was not observed in the treated group.

The yield in the Panamin group and the control group is presented in Table 1. In the Panamin group, the yield is 640 kg/dca and in the control group 600 kg/dca or 6.66% more in the treated group. Parallel to the higher yield in the treated group,

higher values were observed of hectoliter mass, grain protein content and wet gluten (WG) content.

**Table 1.** Results of the trial with foliar fertilizer Panamin for ordinary winter wheat, Enola variety.

Indicators	Panamin	Control group	% compared to the control group
Date of sowing	November 11, 2016		
Sowing norm	600	600	
Date of the 1 <sup>st</sup> treatment	April 26, 2017		
Date of the 2 <sup>nd</sup> treatment	May 10, 2017		
Harvest date	July 20, 2017		
Yield, kg/dca	640	600	6,66
Hectoliter	82	79	
Moisture, %	11,8	12,4	
Protein content, %	14,4	12,2	
WG	29	23	

## OIL SUNFLOWER

### *Test conditions.*

The tested product was applied to a crop of hybrid P64LE25. The sowing of the hybrid was carried out on April 05, 2017, with a trial area of 10 decare, respectively for the treated group and the control group. The sowing norm is 5500 plants per decare. The first treatment of the crop was carried out on May 07, 2017 (2<sup>nd</sup> leaf pair) with dose of 150 g/dca together with incorporation of herbicide, with a half dose of PPP. In the control group, the full dose of the herbicide was applied. The second treatment with Panamin was carried out 14 days after the first treatment with dose of 150 g/dca. The harvest was carried out on September 07, 2017.

### *Results.*

The results of the testing of the foliar fertilizer Panamin on the sunflower hybrid P64LE25 are presented in Table 2. The decreasing of the herbicide dose in the treated group had no effect on its herbicidal effect. The observations in the control group during the growth show a 20% attack of alternaria on the foliage. In the treated group the attack was 10%.

The average yield in the treated group is 342 kg/dca compared to 290 kg/dca in the control group. The yield in the Panamin is by 17.93 % higher than that in the control group. At the same time, higher hectoliter mass and lower seed humidity was observed in the treated group. The oil content in the Panamin group is 48.6 % and the oil content in the control group is 43.4%.

**Table 2.** Results of the trial with foliar fertilizer Panamin for oil sunflower, hybrid P64LE25.

Indicators	Panamin	Control group	% compared to the control group
Date of sowing	April 05, 2017		
Sowing norm	5500		5500
Date of the 1 <sup>st</sup> treatment	May 07, 2017		
Date of the 2 <sup>nd</sup> treatment	May 21, 2017		
Harvest date	September 07, 2017		
Yield, kg/dca	342	290	17,93
Hectoliter	34	32	
Moisture, %	7	8,8	
Oil content, %	48,6	43,4	

## CORN

### *Test conditions.*

The trial was carried out with corn hybrid P1114 from the early ripening group FAO 590. The sowing was carried out on April 10, 2017 on an area of 10 dca, for the treated and the control group, respectively. The sowing norm is 6000 plants per decare. The first treatment of the crop with the foliar fertilizer Panamin was carried out on May 15, 2017 (stage 2-3 leaf) with dose of 150 g/dca together with incorporation of half dose of herbicide. In the control group, the full dose of the herbicide was applied. The second treatment was carried out on May 29, 2017 with the same dose of the foliar fertilizer.

**Table 3.** Results of the trial with foliar fertilizer Panamin for corn, hybrid P1114 in 2017

Indicators	Panamin	Control group	% compared to the control group
Date of sowing	April 10, 2017		
Sowing norm	6000		
Date of the 1 <sup>st</sup> treatment	May 15, 2017		
Date of the 2 <sup>nd</sup> treatment	May 29, 2017		
Harvest date	September 29, 2017		
Yield, kg/dca	1250	930	34,41
Hectoliter	75	72	
Moisture, %	16,4	18,5	

### **Results.**

The decreasing of the dose of the herbicide in the Panamin group did not decrease its effect. The average yield after two treatments of the crop with the foliar fertilizer Panamin reached 1250 kg/dca with hectoliter mass 75 and grain moisture

16.4%. The yield in the control group is 960 kg/dca with hectoliter mass 72 and grain moisture 18.5%.

#### CONCLUSION.

- The two treatments of variety Enola with the foliar fertilizer Panamin with dose of 300 g/dca increased the yield by 6.66% compared to the control group. At the same time, higher hectoliter mass, higher protein content and were observed. The single treatment with foliar fertilizer significantly improves the overall condition of the crop at the end of the tillering stage in late crops tillering in the spring.
- The two treatments of sunflower hybrid P64LE25 with the foliar fertilizer Panamin with dose of 300 g/dca increased the yield by 17.93% compared to the control group. At the same time, higher hectoliter mass, lower seed moisture and increased oil content of the seeds by 5.2% were observed.
- The two treatments of corn hybrid P1114 with the foliar fertilizer Panamin with dose of 300 g/dca increased the yield by 34.41% compared to the control group. At the same time, higher hectoliter mass and lower seed moisture by 2.1% was observed.
- The decreasing of the dose of the herbicide applied together with the foliar fertilizer Panamin did not decrease its effect.

Prepared by:

/Professor, DSc Ivan Kiryakov/

Director:

/Associate Professor, DSc, Engineer Iliya Iliev/

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*I, the undersigned Djeylian Mancheva certify herewith the fidelity of the performed translation from Bulgarian into English of the attached document (Report). The translation consists of 6 (six) pages.*

Translator: \_\_\_\_\_  
*Djeylian Ahmed Mancheva*