**Fertilizer "Agrolinija-S" effect on corn yield and its quality**

 **REPORT 2019**

1. Testers and location:

**Alexander Stulginsky University**

2. Fertilizer: Organic fertilizer-biostimulant - **Agrolinija-S**

3. Culture under study: Corn, hybrid Talisman

4. Soil

4.1. type: loam;

4.2. mechanical composition: loose sand:

4.3. humus content: 1.58%;

4.4. Acidity: pH 5.40;

4.5. availability of macro- and microelements: P2O5 - 410 mg / kg, K2O - 180 mg / kg. The content of mobile forms of copper (1.0 M HCl) - 2.0 mg / kg, zinc (Zn) (1.0 M HCl) - 3.3 mg / kg, manganese exchange (1.0 M KCl) - 2.6 mg / kg, water-soluble boron - 0.65 mg / kg.

5. Agrotechnical test conditions:

5.1. precursor of the plant on which the tests are carried out: spring barley;

5.2. tillage: plowing to a depth of 25 cm (17.10.2018), tillage to a depth of 12 cm (10.04.2019);

5.3. Application of fertilizers: mineral fertilizers (long-term): basic - phosphorus - 60 kg / ha, potassium - 150 kg / ha (2018-10-17), nitrogen - 140 kg / ha (2019-04-10);

organics: cattle manure 60 t / ha (2018-10-17);

5.4. Sowing date: 2019-04-12;

5.5. sowing rate: 100 thousand/ μl. seeds / ha;

5.6. the name and time of the activity of crop care (planting): treatment with the herbicide Meister Power - 1.5 l / ha (2016-10-05);

6. Agrometeorological test conditions (general characteristic):

Precipitation in mm during the growing season: long-term average - 311 mm, in the test year - 232 mm. Air temperature during the growing season: the average long-term value of the sum of active temperatures above 10 ° C is 2134 ° C, in the test year - 2432 ° C.

In general, meteorological conditions during the corn growing season were arid, since during that period the air temperature was above the long-term average values, and the amount of precipitation was below the long-term average values.

7. Type of study: field.

8. Size (m2) and plot allocation: total plot area 56 m2, accounting area of the plot 37.8 m2, distribution of the plot at random;

number of repetitions of the experiment: 4 times.

9. **Test scheme:**

9.1. plot variant: **N140Р60К150 +60 t / ha of cattle manure –Background;**

9.2. **Background + test fertilizer: Agroline-S - norm -2.0 l / ha.**

10. Duration of fertilizer application: vegetation of plants

Dates: 06/04/2019, 06/06/2019

11. Fertilizer spraying method: **spraying through the leaves**

12.During the application of fertilizers in the phase of plant development: **1 - 5-6 leaves, 2 - 8-10 leaves.**

13. Information on the compatibility of tested fertilizers with other fertilizers, plant protection products and other substances: not studied.

14. Identified side effects: not observed.

15. Information on the effect of fertilisers on biochemical product quality indicators:

**The use of fertilizers Agrolinia-S, in comparison with the background variant, significantly increased the nitrogen content in corn grains (0.12%) and, accordingly, green and digestible proteins. The levels of phosphorus (0.03-0.04%) and Potassium (0.03%) also increased.** (Table 1)

Table 1. The effect of "Agrolinija-S" fertilizers on the quality indicators of corn grains

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Options** | **Crude protein,%** | **digestible proteins,%** | **N,% in dry mass** | **P2O5,% in dry mass** | **K2O,% in dry mass** |
| N140P60K150 + 60 t / ha cattle manure-Background  | 7,91 | 6,41 | 1,33 | 0,28 | 0,4 |
| Background + Agrolinija-S | 8,63 | 7,00 | 1,45 | 0,32 | 0,43 |

16. Assessment of the economic efficiency of fertilizers (with the indication of the minimum significant difference):

**In the course of research, it was found that spraying through the leaves, fertilizer Agrolinia-S, increased the yield of corn grains by 1.7 t / ha compared to the background version** (Table 2).

Table 2. The effect of Agrolinija-S fertilizers on the yield of corn grains.

|  |  |  |  |
| --- | --- | --- | --- |
| **Options** | Yield t /ha, | Additive in comparison with the background, t/ha | Additive in comparison with the background, % |
| N140P60K150 + 60 t / ha cattle manure-Background  | 16,8 |  |  |
| Background + Agrolinija-S | 18,5 | 1,700 | 10,2 |

When carrying out two sprayings with Agrolinia-S fertilizers, there was a tendency to increase the mass of one cob, grain from one cob , as well as 1000 grains (Table 3).

Table 3. The effect of Agrolinija-S fertilizers on the structure of corn crops

|  |  |
| --- | --- |
| **Options** |  **mass, g** |
| **single cob, g** | **grain from the cob, g** | **1000 Grain, g** |
| N140P60K150 + 60 t / ha cattle manure-Background  | 226 | 159 | 305,9 |
| Background + Agrolinija-S | 245 | 173 | 315,3 |

**17. Conclusion:**

**Fertilizer "Agrolinia-S" additional application when fertilizing through the leaves to background fertilizing for corn crops, at the stages of 5-6 and 8-10 leaves, increased the grain yield by -1.7 t / ha. or 10.2%.**