

# AGROSTEMIN<sup>®</sup>



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# THE REPORT ON THE INFLUENCE AND EFFECTS OF AGROSTEMIN<sup>®</sup> APPLICATION ON SUNFLOWER WITH STATISTIC DATA ANALYSIS

*(Helianthus annuus L.)*



In 2010 the experiment was set on Vale do Curu experimental estate owned by the Federal University of the State of Ceara, in the town of Pentecoste – CE.

CATISSOL 01 variety was used.

A part of sowed quantity of seed was previously treated with **AGROSTEMIN**<sup>®</sup> in the proportion of 30 g of **AGROSTEMIN**<sup>®</sup> on the quantity of seed required to seed one hectare.

Both treatments were carried out with the same quantity of fertilizer, 350 kg per hectare of NPK (20-10-20), and were irrigated.

## STATISTICAL DATA ANALYSIS

The experiment was set according to the principle of Completely Randomized Block Design. The data obtained were submitted to ANOVA (ANalysis Of Variance) and compared by means of F-test, mean values were compared by means of Tukey test at the level of 5% probability.

The subject of statistical data analysis were the differences in the total seed yield and their quality from the point of view of percentage of oil content, i.e. mass of 1000 seeds.

The results of the experiment with the complete statistic data analysis are given in the document ["ANOVA Oil Oils.pdf"](#)

**CONTROL****AGROSTEMIN®**

It can be seen on the photographs enclosed that the plants treated with **AGROSTEMIN®** are more powerful, with the more developed both above – ground part and the root of plant. Magnification of flower head is accompanied by an increased load capacity of the stem plants (thicker stem - without increasing in height).

## STATISTICAL ANALYSIS

Based on table results of statistical data analysis of differences occurring after the variation of goal treatments and their interaction, we can conclude that they are statistically (highly) justified for the yield and mass of 1.000 grains. The fact that **AGROSTEMIN**<sup>®</sup> really represents a factor of high significance both for the quantity and quality of yield has been confirmed.

| C.V. <sup>1)</sup>             | d.f. <sup>2)</sup> | M.S. <sup>3)</sup> |                     |                      |
|--------------------------------|--------------------|--------------------|---------------------|----------------------|
|                                |                    | Yield              | % oil               | mass of 1.000 grains |
| <b>AGROSTEMIN</b> <sup>®</sup> | 1                  | 5983481,01**       | 1.101 <sup>NS</sup> | 896,15**             |
| FERTILIZER                     | 2                  | 315739,04**        | 1.266 <sup>NS</sup> | 12,92**              |
| <b>AGR</b> x FERTILIZER        | 2                  | 311650,39**        | 1.070 <sup>NS</sup> | 11,42**              |
| RESIDUE                        | 18                 | 38359,25           | 0,704               | 0,85                 |
| C.V. <sup>4)</sup> (%)         |                    | 2,92               | 1,97                | 1,44                 |

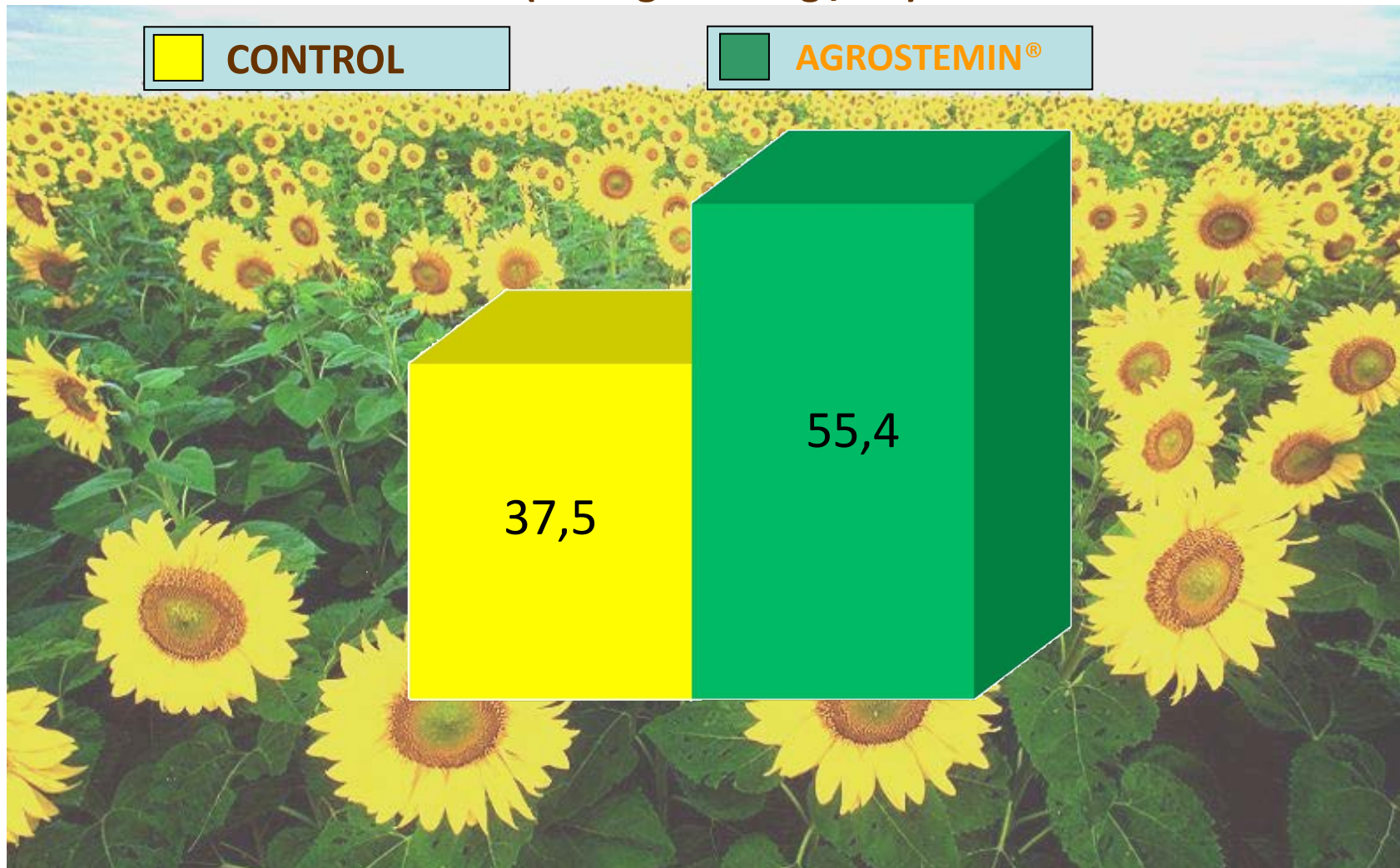
<sup>1)</sup> C.V. – Cause of Variation

<sup>2)</sup> d.f. – degree of freedom

<sup>3)</sup> M.S. – Mean Square

<sup>4)</sup> C.V. – Coefficient of Variation

# YIELD ( in bags of 60kg /ha )



## **YIELD ( statistical analysis )**

The table below shows the comparison of mean values of yield by Tukey test at the level of 5% probability. The data suggest the significant yield increase, 48% more than the control group.

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|                               |                          |              |
|-------------------------------|--------------------------|--------------|
| <b>CONTROL</b>                | <b>(with fertilizer)</b> | <b>37,5B</b> |
| <b>AGROSTEMIN<sup>®</sup></b> | <b>(with fertilizer)</b> | <b>54,4A</b> |

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**TABLE OF COMPARED VALUES  
( grain yield )**

| TREATMENT          |   |                  | YIELD per HECTARE |       |
|--------------------|---|------------------|-------------------|-------|
|                    |   |                  | 60 kg sack        | %     |
| without Agrostemin | X | with AGROSTEMIN® | +17,9             | +47,9 |

## 1000 GRAINS MASS ( statistička analiza )

The table below (1000 grains mass in grams) shows the comparison of mean values of 1000 grains mass, by means of Tukey test at the level of 5% probability. The results suggest that the application of **AGROSTEMIN**<sup>®</sup> led to significant increase of grain mass, i.e. 25.5% in comparison with the control group.

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|                                |                   |               |
|--------------------------------|-------------------|---------------|
| <b>CONTROL</b>                 | (with fertilizer) | <b>58,23B</b> |
| <b>AGROSTEMIN</b> <sup>®</sup> | (with fertilizer) | <b>73,08A</b> |

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