AGROSTEMIN

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EFFECTS OF AGROSTEMIN® APPLICATION ON WATERMELON

(Citrullus lanatus – "Top Gun")

– Uruana – Goiás 2012 –

ACKNOWLEDGMENT

We would especially like to express our gratitude for their support and cooperation during implementation and carrying out of this experiment to:

Ms. Maria de Lourdes
– President of “Cooperuruana” cooperative –

Eng Tiago Moreira Damasceno
– an agronomist of “Cooperuruana” cooperative –

Mr. Rui Alves Barbosa
– a cooperant of “Cooperuruana” cooperative, and the owner of the plantation where the experiment was carried out –

The experiment was carried out on the plantation owned by **Mr. Rui Alves Barbosa** in cooperation with “Cooperuruana” cooperative in Uruana, the State of Goiás in the course of 2012.

“Top Gun” watermelon was used.

Experimental plot consisted of 5 rows of vines (three treated + protective zone + control), 1.25 m x 20 m in size each and the area of 25 m^2.

The number of plants was 27 in each row respectively. The experimental area covered the total of 5 x 27 = 135 vines in total together with control and protective zones. As those in the protective zone were not taken into account, the results included 108 vines/fruits.

AGROSTEMIN®–"green" (green formula) was used for treatment (standard dose 300 g/ha).

Fertilization and application of pesticides on all plots was as usual.

EXPERIMENTAL METHOD

The quantity, the number of treatments with **AGROSTEMIN®** and the phonological stage in which it was applied varied in the experiment. The following variants were established:

"T_1"– the seeds were treated *(**TS**)* with the quantity proportionate to the standard dose of 30g of **AGROSTEMIN®** on 1,000 m^2 on the day of sowing on July 04, 2012;

"T_2"– treatment with **AGROSTEMIN®** was carried out twice:

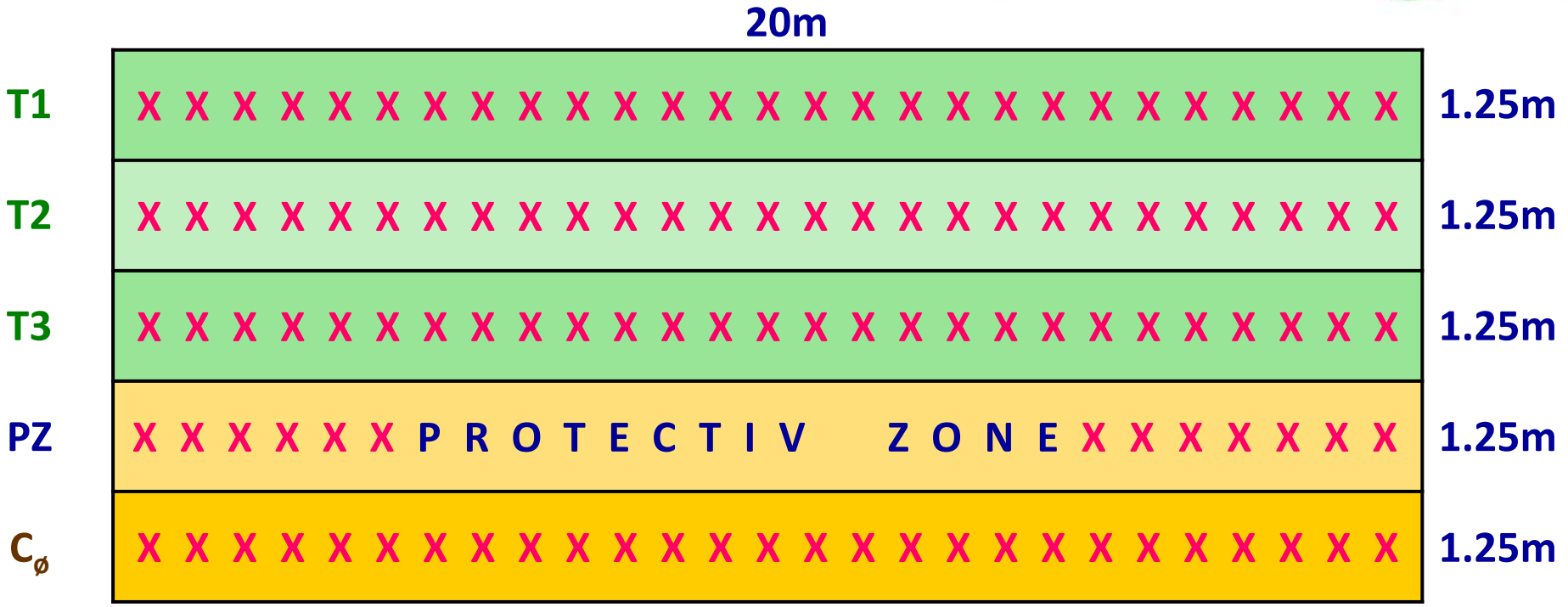
- For the first time – the treatment of seeds *(**TS**)*, with the quantity proportionate to the dose of 15 g of **AGROSTEMIN®** on 1,000 m^2, on the day of sowing on July 04, 2012;
- Second time – foliary – spraying *(**TF**)* with the quantity proportionate to the dose of 15 g of **AGROSTEMIN®** on 1.000 m^2, on July 20, 2012;

"T_3"– Foliary – spraying *(**TF**)* – one–off, with the quantity proportionate to the dose of 30 g of **AGROSTEMIN®** on 1.000 m^2 on August 13, 2012;

"$C_ø$"– Control – untreated – without **AGROSTEMIN®**.

*"**TS**"* – Seeds treated by dusting – "mixed with seeds";
*"**TF**"* – treated with water suspension, over the leaves – "foliary".

SKETCH OF TEST PLOT



T1 – 25m^2 ; 27 vines; once ***(TS)***; **AGROSTEMIN®** – **"green"** 1 x 0.75g (30 g/1,000m^2)

T2 – 25m^2 ; 27 vines; twice ***(TS+TF)***; **AGROSTEMIN®** – **"green"** 0.335g ***TS*** + 0.335g ***TF***

T3 – 25m^2 ; 27 vines; once ***(TF)***; **AGROSTEMIN®** – **"green"** 1 x 0.75g (30 g/1,000m^2)

PZ – 25m^2 ; 27 vines; protective zone – untreated – without **AGROSTEMIN®**

$C_{ø}$ – 25m^2 ; 27 vines; untreated – without **AGROSTEMIN®**

*"**TS**"* – Seeds treated by dusting – "mixed with seeds";
*"**TF**"* – Treated with water suspension, over the leaves – "foliary".

SOWING
(July 04, 2012)

Seed treatment – ***TS***
(**T1** and **T2**)

Sowing

VIEW OF THE WATERMELON FIELD

(17th day from the day of sowing)

Treatment of Variant "**T2**" second time – foliary ***(TF)***

VIEW OF THE WATERMELON FIELD

(**August 13, 2012** – 41th day from the day of sowing)

Treatment of Variant "**T3**" for the first time – foliary ***(TF)***

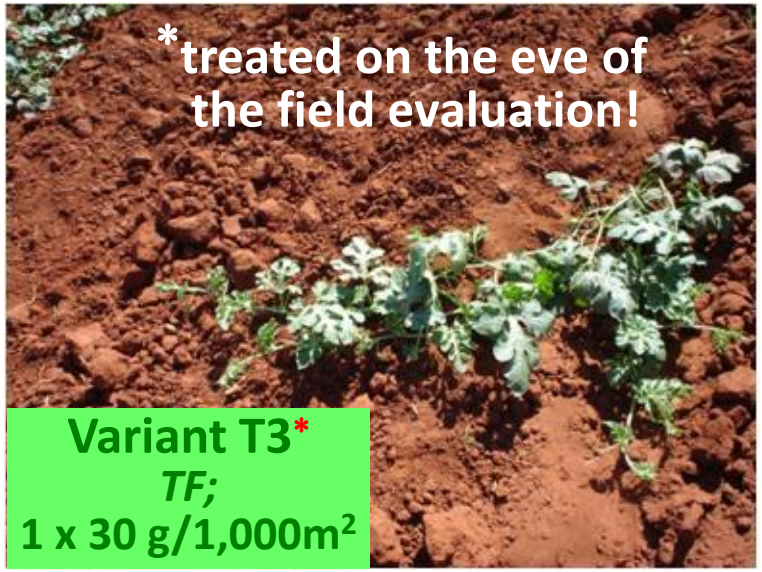
(on the eve of the field evaluation)

THE EVE OF THE FIRST FIELD EVALUATION

(**August 13, 2012** – 41th day from the day of sowing)

Variant T1
TS;
1 x 30 g/1,000m²

Variant T2
TS + TF;
2 x 15 g/1,000m²



***treated on the eve of the field evaluation!**

Variant T3*
TF;
1 x 30 g/1,000m²

CONTROL

PHENOLOGICAL OBSERVATIONS

The first evaluation dated August 13, 2012

Preliminary evaluation of the influence of **AGROSTEMIN®** – "green" formula, 41 days after the sowing on the development of watermelon vines:

Variant "**T1**"– *(**TS**)* the effect of the treatment is the most expressed, the vines are more developed, more branchy and with increased foliage mass in comparison with other variants and control;

Variant "**T2**"– *(**TS** + **TF**)* as far as biological potential of plants is concerned, this variant is second best, better than **T3** and control;

Variant "**T3**"– *(**TF**)* general appearance of plants was not at the level of habit achieved in plants from **T1** and **T2**;

Note: at the day of evaluation the plot was sprayed with **AGROSTEMIN®**

Control "**$C_{ø}$**"– was in every respect far worse than **T1**, slightly less worse than **T2**, approximately equal to **T3**.

THE EVE OF THE SECOND FIELD EVALUATION

(**August 30, 2012** – 58th day from sowing)

Measuring across experimental areas

Measuring the size of leaves and fruits, on the 58th day from sowing

Measuring fruit mass, on the 58th day from sowing

Thinning
(evaluation, selection and removal of unnecessary fruit)

Company expert with the manufacturer in the experimental field

PHENOLOGICAL OBSERVATIONS

(58th day from sowing)

The second evaluation dated August 30, 2012

In case of Variant "**T1**" (***TS*** – 1 x 30 g/1,000m^2 **AGROSTEMIN®** – "green") , it is observed that foliage mass is lusher. By measuring the diameter and fruit mass it has been determined that their development in this variant is more uniform than in control one.

In Variants “"**T2**" (***TS*** + ***TF*** – 2 x 15 g/1,000m^2 **AGROSTEMIN®**) and "**T3**" (***TF*** – 1 x 30 g/1,000m^2 **AGROSTEMIN®**) it is noticed that there are significant differences in comparison with control.

After 58 days from sowing, the team of manufacturers entered the field and selected and removed (thinned) the excess fruit. In this way each vinewas left with only one, the most developed watermelon, in other words, so many vine so many watermelons.

Watermelon field on the day when harvesting began

(**September 27, 2012 –** 86th day from sowing)

The procedure of evaluation and measuring on September 27, 2012

(86th day from sowing)

Measurements results of September 27, 2012

№	T 1 (kg)	T 2 (kg)	T 3 (kg)	$C_ø$ (kg)
1.	13.30	6.30	11.40	16.00
2.	7.70	6.10	8.00	7.00
3.	10.20	9.70	11.1	15.20
4.	10.80	7.60	7.80	11.00
5.	13.50	6.70	16.90	11.50
6.	14.00	7.30	12.50	6.20
7.	10.30	9.90	12.20	7.80
8.	13.90	14.30	8.70	5.50
9.	12.60	11.70	11.90	11.60
10.	11.40	7.00	12.20	9.60
11.	9.00	8.30	9.20	12.10
12.	10.00	8.70	10.60	6.80
13.	11.60	8.00	9.30	9.50
14.	14.60	8.80	10.80	13.80

№	T 1 (kg)	T 2 (kg)	T 3 (kg)	$C_ø$ (kg)
15.	8.80	10.30	8.70	4.70
16.	10.70	10.90	8.10	9.40
17.	10.08	13.10	8.10	9.20
18.	6.70	9.80	10.00	8.70
19.	6.40	11.20	9.80	9.10
20.	6.90	11.60	7.10	12.20
21.	10.70	8.60	8.20	8.30
22.	10.70	11.60	8.40	9.30
23.	8.90	13.00	8.90	12.20
24.	9.40	9.40	7.00	7.90
25.	11.90	10.50	10.10	9.10
26.	12.10	10.30	8.40	6.20
27.	11.80	14.30	9.40	6.10
Σ	**288.70**	**265.00**	**264.80**	**256.00**

T1 – 25m^2 ; 27 vines; once *(**TS**)*; **AGROSTEMIN®** – **"green"** 1 x 0.75g (30 g/1,000m^2)

T2 – 25m^2 ; 27 vines; twice *(**TS**+**TF**)*; **AGROSTEMIN®** – **"green"** 0.335g ***TS*** + 0.335g ***TF***

T3 – 25m^2 ; 27 vines; once *(**TF**)*; **AGROSTEMIN®** – **"green"** 1 x 0.75g (30 g/1,000m^2)

$C_ø$ – untreated – without **AGROSTEMIN®**

*"**TS**"* – Seeds treated by dusting – “mixed with seeds”;

*"**TF**"* – Treated with water suspension, over the leaves – “foliary”.

ANALYSIS OF RESULTS

Yield increase accomplished

Variant	INCREASE		
	on experimental plot with 25 m^2		reduced to 1 alqueir Go and average (Brazilian) yield of 150 t/alq – Go (1 alqueir Go = 4,84 ha)
	apsolute	relative	
T1	32.70 kg	**12.77** %	19,155 kg
T2	9.00 kg	3.23 %	4,845 kg
T3	8.80 kg	3.15 %	4,725 kg

Calculation of the possible profit from AGROSTEMIN® application (*TS* – 30 g/1,000m^2) at 2 alq. (Goiás) = 9.68 ha with 300 t average yield (30 t/ha)

AREA		/	2 alqueir	1 hectare
AVERAGE YIELD		/	300 t	30 t
INCREASE YIELD 12,77%		1.00 t	38.31 t	3.83 t
PROFIT	**REDEMPTION PRICE**	0.45 R$/kg	17,240 R$	1,724 R$
		0.15 €/kg	5,747 €	**575 €**

CONCLUSION

The obtained results suggest that **AGROSTEMIN®** has positive effects on yield increase in watermelon cultivation, regardless of the variant of its application (**T1**, **T2**, i **T3**).

Variant **T1**, in which just before sowing the seeds were treated with the dose equivalent to 30 g of **AGROSTEMIN®**– "green" at 1,000 m^2, proved the best variant resulting in the biggest increase of yield (**12.46 %**) in comparison with control variant ($C_{ø}$).

For the treatment of seeds with **AGROSTEMIN®** (variant **T1**) it is very important for the seeds to be previously moistened, as is the case in watermelon sowing. Before sowing, as a rule, the seeds are soaked in water for 12 hours in order to swell, i.e. the seed membrane to crack and thus facilitate germination. Immediately before sowing, **AGROSTEMIN®** is stirred together with pesticides and in the form of emulsion poured over the seeds. Mass should be homogenized by careful stirring.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