

# **Evaluation of seed and foliar nutrition strategies in wheat cultivation.**

Location: 9 de Julio, Pcia de Bs As.

## 1. Objectives

Evaluation of seed and foliar nutritional treatments in wheat cultivation.

## 2. Materials and Methods

The trial was conducted in the locality of Fauzon, Partido de 9 de Julio, Buenos Aires Province. Location: 35°23'12.86"S; 61°0'41.64"O.

### Foliar treatments trial:

The variety sown for the foliar treatments trial was Baguette 620, on June 10, 2022, at a seeding density of 140 kg/ha. The preceding crop was maize. A conventional tillage system was used. Fertilization was carried out as follows: at sowing, 140 kg/ha of a fertilizer mix (7-40-5-00-6 Ca) was applied, and at stage Z2.3 urea (00-46-00) was broadcast, with a model adjustment of 180-x. The experimental design consisted of microplots with 4 replications.

### Seed treatment trial:

The variety sown for the seed treatment trial was Klein Liebre, on June 25, 2022, at a seeding density of 160 kg/ha. The preceding crop was maize. A conventional tillage system was used. Fertilization was carried out as follows: at sowing, 140 kg/ha of a fertilizer mix (7-40-5-00-6 Ca) was applied, and at stage Z2.3 urea (00-46-00) was broadcast, with a model adjustment of 180-x. The experimental design consisted of macro-strips, measuring 8.40 m wide × 50 m long. Within each macro-strip, harvest was performed from 4 replications, each measuring 8.40 m wide × 10 m long.

### The treatments evaluated were:

#### Seed treatment

Treatment	Dose	Timing
Control Compinche SX	Compinche SX	TS
MIST VG + Control Compinche SX	Compinche SX+ 500cc/100 kg Mist VG	TS

#### Tratamiento foliar

Treatment	Dosis	Momento
Control	200 cc/100 kg + 25 cc/100 kg	Z32
Mist N	2,5 L/ha	Z32
Mist Zn	500cc/h	Z32
Mist Zn + Mist N	500 CC/HA+ 2,5 L/HA	Z32 + Z37

The trial was kept free from foliar diseases through the following foliar fungicide applications:

1st application: September 23, stage Z37

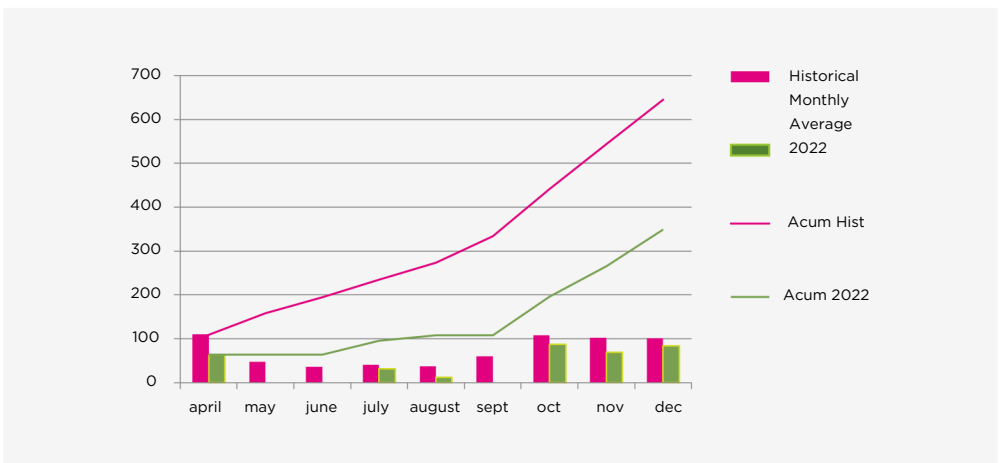
2nd application: October 11, stage Z41

### Climatic details – 2022/23 season

#### Rainfall

MONTHS	PROMEDIO HISTÓRICO MENSUAL	2022
April	111	64
May	47	0
June	36	0
July	41	32
August	38	12
Sept	60	0
Oct	108	88
Nov	103	69
Dec	101	84

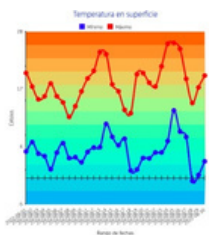
MONTHS	HISTORICAL MONTHLY AVERAGE	2022
April	111	64
May	158	64
June	194	64
July	235	96
August	273	108
Sept	333	108
Oct	441	196
Nov	544	265
Dec	645	349



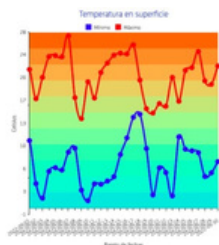
Cumulative rainfall from May to early October was well below the historical average, and even with the precipitation received in October and November, it was not possible to restore crop condition or soil profile moisture.

### Soil-level temperature

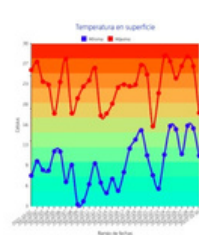
August 2022



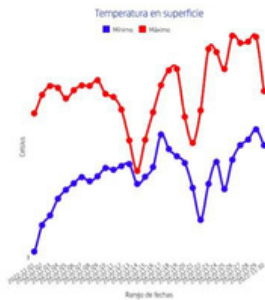
September 2022



October 2022



November 2022



In the 2022/23 season, a high frequency and intensity of frosts was recorded, even into the month of November. This factor, together with the low rainfall, had a negative effect on crops. A significant reduction in the number of tillers and spikes was observed, and the strong impact of late frosts further affected grain number and weight, resulting in yields well below those of a normal year.

**3. Results**

**3.1 Evaluation of root growth in seed treatment**

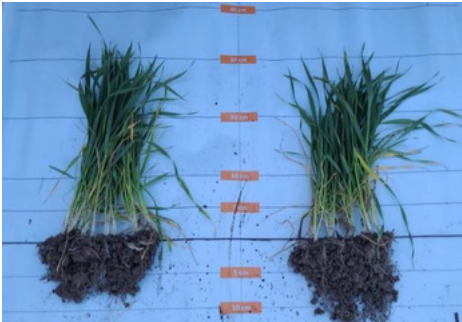
A scale from 1 to 5 was used, where 3 corresponds to the control treatment:

- 1-2: lower growth than control
- 4-5: greater growth than control

Evaluations were carried out at two growth stages: V1.2 and V2.2.

Date	Phenology	Treatment	Scale
21 - July	V1.2	Compinche SX	3
21 - July	V1.2	Mist VG	4

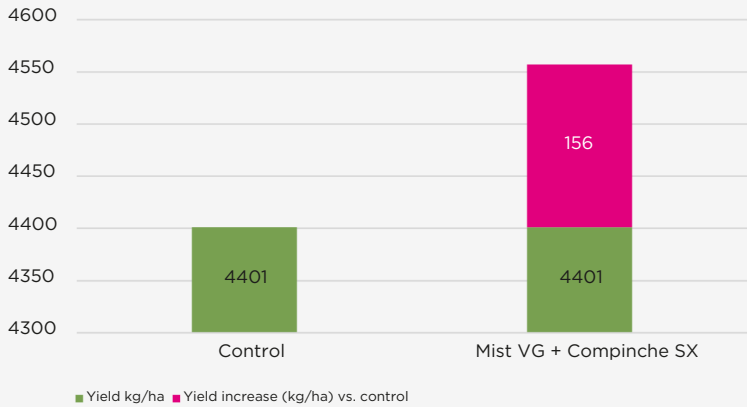
Date	Phenology	Treatment	Scale
4 / 8 / 22	V2.2	Compinche SX	3
4 / 8 / 22	V2.2	Mist VG	4



### 3.2 Yield

Treatment	Yield kg/ha
Control - Compinche SX	4401
Mist VG - Compinche	4557

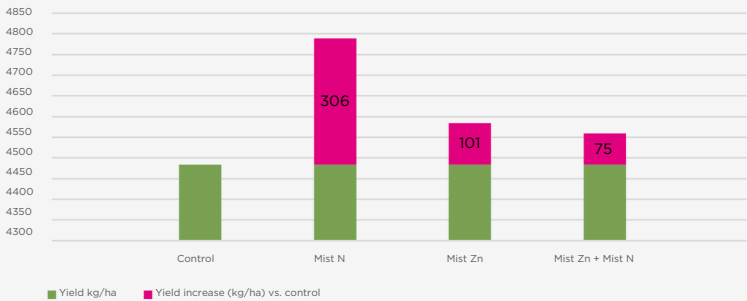
Yield increase (kg/ha) vs. control



### 3.3 Results – Foliar treatments

Treatment	Yield kg/ha
Control	4483
Mist N	4789
Mist Zn	4584
Mist Zn + Mist N	4559

Yield increase (kg/ha) vs. control



#### 4. Conclusions

- During the season, the wheat crop faced very adverse climatic conditions, making it one of the campaigns with the worst records in terms of rainfall and late frosts. The combination of precipitation levels (less than 50% of the historical average) and a succession of frosts, even into late November, created one of the most unfavorable production scenarios in the region under study, with yields well below normal.
- Under these recorded conditions, all evaluated treatments, both seed and foliar, showed differences compared to the control treatment.



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