RhizoVital® C5 en patata

RESUMEN Y CONCLUSIONES

Se realiza un ensayo sin repeticiones en patata de invierno en el que se comparan 2 dosis de RhizoVital® C5 (0.5l/ha y 1l/ha) con un testigo sin tratamiento.

En las condiciones ensayadas, siendo el manejo de las 3 tesis comparadas exactamente el mismo y la producción en el testigo sin tratamiento de 32T/ha

- RhizoVital® C5 usado a 1l/ha ha incrementado la **cosecha un 26%, produciendo 8.47 toneladas más por Ha.**
- RhizoVital® C5 a 1l/ha, ha permitido incrementar tanto el **número de tubérculos un 13.4%** (no significativamente) como el **peso medio de los mismo un 11.6%** (significativamente)

OBJETIVO

Evaluar el efecto de Rhizovital C5 en el cultivo de patata con una aplicación post-trasplante.

METODOLOGÍA

Ensayo con 1 aplicación de Rhizovital C5 vía riego

CARACTERÍSTICAS GENERALES

Localización	Pulpí. (Almería) 37.418247, -1.722030
Cultivo	Patata
Variedad	Roja
Fecha de siembra	05-09-2022
Condiciones	Convencional
Objetivo	Evaluación del rendimiento.
Riego	Localizado.
Suelo	Limoso-arcilloso

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RhizoVital® C5 en patata

TRATAMIENTOS

	Tratamiento	Materia Activa	Dosis	Caldo (l/Ha)
1	Testigo	Bacillus atrophaeus cepa Abi05	1 L/Ha	Vía riego
2	Rhizovital C5	Bacillus atrophaeus cepa Abi05	0,5 L/Ha	Vía riego
3	Testigo			

El tratamiento se realizó el día 15 de septiembre, 10 días tras la siembra.

RESULTADOS

El día 30/01 en el momento de la cosecha se realiza una estimación de cosecha mediante el muestreo de 3 subparcelas de 5m^2 por cada tratamiento en las que se cuentan y pesan todos los tubérculos presentes (unos 80 por cada subparcela).

Peso medio de tubérculos

Se observan diferencias significativas en el peso medio de los tubérculos, así como en la distribución estadística de los calibres.

	Peso medio	Incremento
Testigo	194.797 **a**	
RhizoVital C5 0.5l/ha	203.871 **ab**	4.7%
RhizoVital C5 1l/ha	217.330 **b**	11.6%

Distribución de los pesos de los tubérculos

Además de diferencias en los pesos medios, se observa una diferencia clara en la distribución de estos:

Percentil	Testigo	RhizoVital C5 0.5l/ha		RhizoVital C5 1l/ha	
99%	40	30	-25%	40	0%
95%	60	60	0%	70	17%
80%	60	90	50%	90	50%
75%	110	130	18%	120	9%
50%	**180**	**195**	**8%**	**200**	**11%**
25%	250	250	0%	290	16%
10%	340	340	0%	360	6%
5%	380	360	-5%	420	11%
1%	440	560	27%	520	18%

Los percentiles expresan el valor de peso por encima del cual se encuentra determinado porcentaje de los datos estudiados. Es decir:

Percentil 50%. En el testigo, el 50% de los tubérculos pesan más de 180g mientras que con RhizoVital C5 a 0.5l/ha estos pesan menos de 195 (8% más pesados) y con RhizoVital C5 a 1l/ha, pesan menos de 200g (11% más pesados).

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Número de tubérculos

Pese a que no se observan diferencias significativas al 95% de nivel de confianza, se aprecia un interesante incremento en el número de tubérculos por parcela elemental.

	Tubérculos en 5m²	**Incremento**
Testigo	82.0 **a**	
RhizoVital C5 0.5l/ha	82.6667 **a**	0.8%
RhizoVital C5 1l/ha	93.0 **a**	13.4%

Cosecha total

Se observan claras diferencias significativas en la producción por Ha.

	Cosecha T/ha	**Incremento**
Testigo	31.95 **a**	
RhizoVital C5 0.5l/ha	33.71 **ab**	5.5%
RhizoVital C5 1l/ha	40.42 **b**	26.5%

Utilizando 1l/ha de RhizoVital® C5, el incremento neto en cosecha en las condiciones ensayadas es de **8.47 T más por Ha.**

- RhizoVital® C5 usado a 1l/ha ha incrementado la **cosecha un 26%, produciendo 8.47 toneladas más por Ha.**
- RhizoVital® C5 a 1l/ha, ha permitido incrementar tanto el **número de tubérculos un 13.4%** (no significativamente) como el **peso medio de los mismo un 11.6%** (significativamente)

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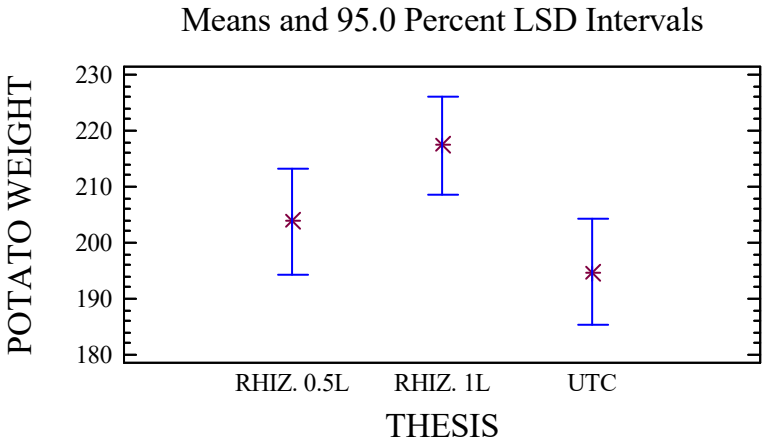
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Multiple-Sample Comparison

ANOVA Table for POTATO WEIGHT by THESIS

Analysis of Variance

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	67794.1	2	33897.0	2.96	0.0525
Within groups	8.82386E6	770	11459.6		
Total (Corr.)	8.89165E6	772			



Multiple Range Tests for POTATO WEIGHT by THESIS

Method: 95.0 percent LSD

THESIS	Count	Mean	Homogeneous Groups
UTC	246	194.797	X
RHIZ. 0.5L	248	203.871	XX
RHIZ. 1L	279	217.33	X

Contrast	Difference	+/- Limits
RHIZ. 0.5L - RHIZ. 1L	-13.4588	18.3109
RHIZ. 0.5L - UTC	9.07422	18.88
RHIZ. 1L - UTC	*22.533	18.3503

* denotes a statistically significant difference.

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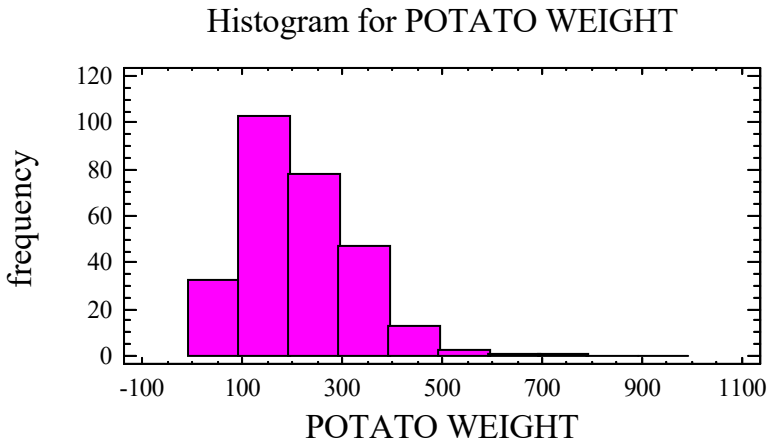
One-Variable Analysis - POTATO WEIGHT (THESIS="RHIZ. 1L")

Summary Statistics for POTATO WEIGHT

```
Count = 279
Average = 217.33
Variance = 13493.7
Standard deviation = 116.162
Minimum = 30.0
Maximum = 790.0
Range = 760.0
Stnd. skewness = 7.18293
Stnd. kurtosis = 6.72581
```

The StatAdvisor

This table shows summary statistics for POTATO WEIGHT. It includes measures of central tendency, measures of variability, and measures of shape. Of particular interest here are the standardized skewness and standardized kurtosis, which can be used to determine whether the sample comes from a normal distribution. Values of these statistics outside the range of -2 to +2 indicate significant departures from normality, which would tend to invalidate any statistical test regarding the standard deviation. In this case, the standardized skewness value is not within the range expected for data from a normal distribution. The standardized kurtosis value is not within the range expected for data from a normal distribution.



Percentiles for POTATO WEIGHT

```
1.0% = 40.0
5.0% = 70.0
10.0% = 90.0
25.0% = 120.0
50.0% = 200.0
75.0% = 290.0
90.0% = 360.0
95.0% = 420.0
99.0% = 520.0
```

The StatAdvisor

This pane shows sample percentiles for POTATO WEIGHT. The percentiles are values below which specific percentages of the data are found.

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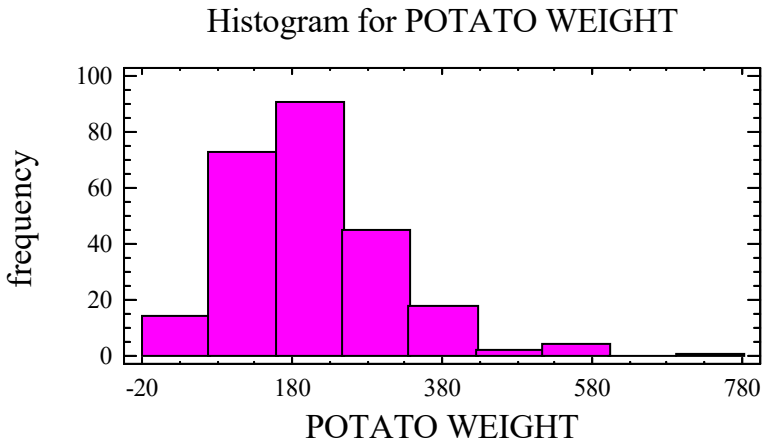
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One-Variable Analysis - POTATO WEIGHT (THESIS="RHIZ. 0.5L")

Summary Statistics for POTATO WEIGHT

```
Count = 248
Average = 203.871
Variance = 10829.5
Standard deviation = 104.065
Minimum = 20.0
Maximum = 710.0
Range = 690.0
Stnd. skewness = 7.87338
Stnd. kurtosis = 9.5875
```

```
The StatAdvisor
---------------
   This table shows summary statistics for POTATO WEIGHT.  It includes measures of
central tendency, measures of variability, and measures of shape.  Of particular
interest here are the standardized skewness and standardized kurtosis, which can be used
to determine whether the sample comes from a normal distribution.  Values of these
statistics outside the range of -2 to +2 indicate significant departures from normality,
which would tend to invalidate any statistical test regarding the standard deviation.
In this case, the standardized skewness value is not within the range expected for data
from a normal distribution.  The standardized kurtosis value is not within the range
expected for data from a normal distribution.
```




```
Percentiles for POTATO WEIGHT

1.0% = 30.0
5.0% = 60.0
10.0% = 90.0
25.0% = 130.0
50.0% = 195.0
75.0% = 250.0
90.0% = 340.0
95.0% = 360.0
99.0% = 560.0
```

```
The StatAdvisor
---------------
   This pane shows sample percentiles for POTATO WEIGHT.  The percentiles are values
below which specific percentages of the data are found.
```

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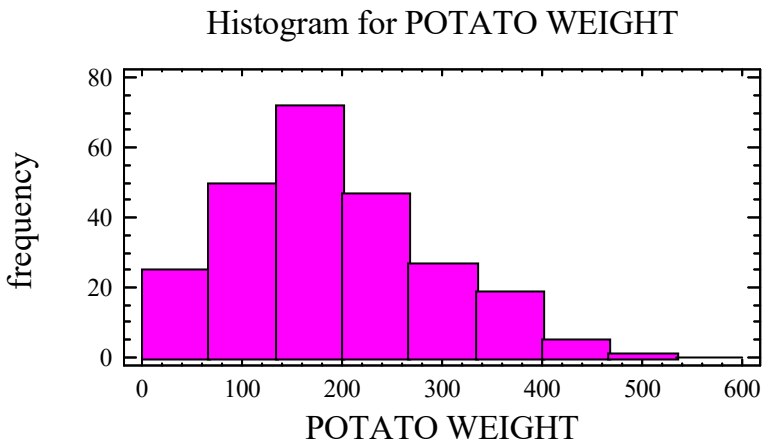
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One-Variable Analysis - POTATO WEIGHT (THESIS="UTC")

Summary Statistics for POTATO WEIGHT

```
Count = 246
Average = 194.797
Variance = 9786.69
Standard deviation = 98.9277
Minimum = 30.0
Maximum = 480.0
Range = 450.0
Stnd. skewness = 3.38123
Stnd. kurtosis = -1.06293
```

```
The StatAdvisor
---------------
   This table shows summary statistics for POTATO WEIGHT.  It includes measures of
central tendency, measures of variability, and measures of shape.  Of particular
interest here are the standardized skewness and standardized kurtosis, which can be used
to determine whether the
sample comes from a normal distribution.  Values of these statistics outside the range
of -2 to +2 indicate significant departures from normality, which would tend to
invalidate any statistical test regarding the standard deviation.  In this case, the
standardized skewness value is not within the range expected for data from a normal
distribution.  The standardized kurtosis value is within the range expected for data
from a normal distribution.
```



Percentiles for POTATO WEIGHT

```
1.0% = 40.0
5.0% = 60.0
10.0% = 60.0
25.0% = 110.0
50.0% = 180.0
75.0% = 250.0
90.0% = 340.0
95.0% = 380.0
99.0% = 440.0
```

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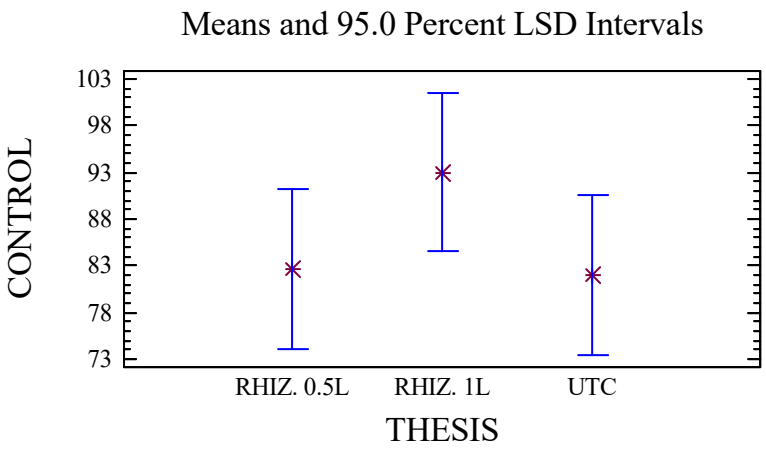
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Multifactor ANOVA – CONTROL (número de tubérculos por parcela elemental)

Analysis of Variance for CONTROL - Type III Sums of Squares

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
MAIN EFFECTS					
A:THESIS	228.222	2	114.111	1.58	0.2819
RESIDUAL	434.667	6	72.4444		
TOTAL (CORRECTED)	662.889	8			

All F-ratios are based on the residual mean square error.



Multiple Range Tests for CONTROL by THESIS

Method: 95.0 percent LSD

THESIS	Count	LS Mean	Homogeneous Groups
UTC	3	82.0	X
RHIZ. 0.5L	3	82.6667	X
RHIZ. 1L	3	93.0	X

Contrast	Difference	+/- Limits
RHIZ. 0.5L - RHIZ. 1L	-10.3333	17.005
RHIZ. 0.5L - UTC	0.666667	17.005
RHIZ. 1L - UTC	11.0	17.005

* denotes a statistically significant difference.

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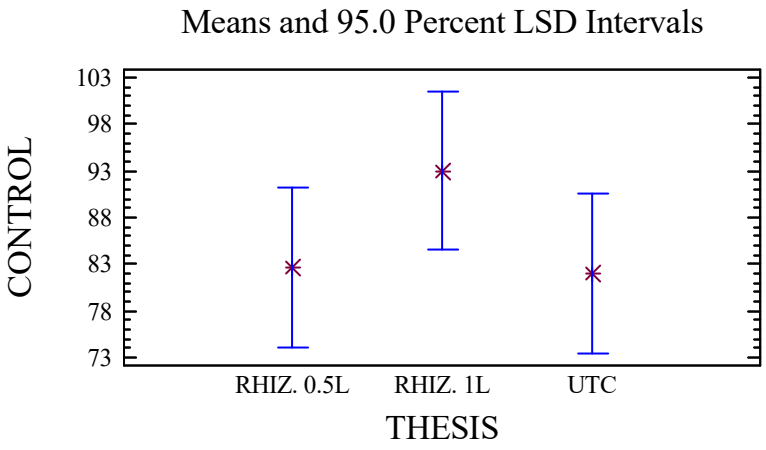
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Multiple-Sample Comparison

ANOVA Table for CONTROL by THESIS (número de tubérculos por parcela elemental)

Analysis of Variance

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	228.222	2	114.111	1.58	0.2819
Within groups	434.667	6	72.4444		
Total (Corr.)	662.889	8			



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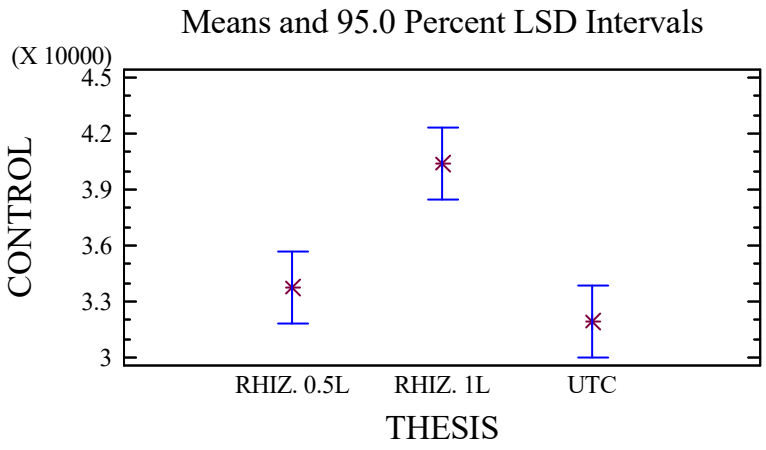
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Multiple-Sample Comparison

ANOVA Table for CONTROL by THESIS (cosecha T/Ha)

Analysis of Variance

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	1.20065E8	2	6.00325E7	16.24	0.0038
Within groups	2.21802E7	6	3.6967E6		
Total (Corr.)	1.42245E8	8			



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