plant_growth_trial

Source: plant_growth_trial.csv · 80 rows · 4 treatments

SUMMARY

80 rows with 5 measures, compared across 4 Treatment groups. Treatment groups differ significantly in height (p < 0.001): the highest group is 33% above the control. Two of your measures are moderately linked (r = 0.68). 3 measurements are far outside their group's range.

80	5	p < 0.001	Fertilizer B
samples · 4 groups	measures	group difference	highest group

TOP INSIGHTS · 3 OF 4

KEY **Treatment groups differ significantly in height (p < 0.001): the highest group is 33% above the control**

Fertilizer B: mean 33.1 cm against Control 24.9 cm (ANOVA, p < 0.001, η^2 = 0.46). Chlorophyll (SPAD) also differs significantly between the groups.

Recommendation: Report Fertilizer B as the strongest group together with the effect size, not only the p-value.

NOTABLE **3 measurements are far outside their group's range**

Row 19: 41.8 cm in Height (cm), row 65: 9.4 cm in Height (cm) and row 46: 71 SPAD in Chlorophyll (SPAD).

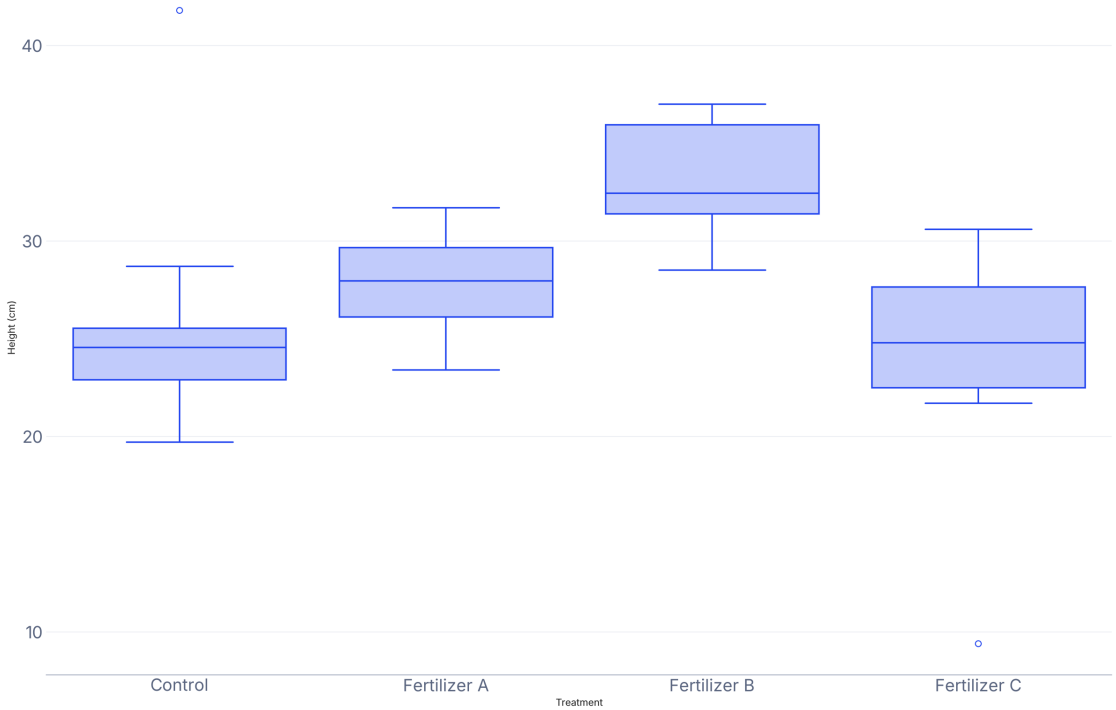
Recommendation: Check these values for measurement or entry errors, and report results with and without them.

NOTABLE **Two of your measures are moderately linked (r = 0.68)**

Height (cm) and Chlorophyll (SPAD): r = 0.68 (Spearman ρ = 0.88, n = 80, p < 0.001). They rise together; the data does not show which causes which.

Recommendation: Treat them as related in further analysis, or explain the mechanism behind it.

YOUR CHART



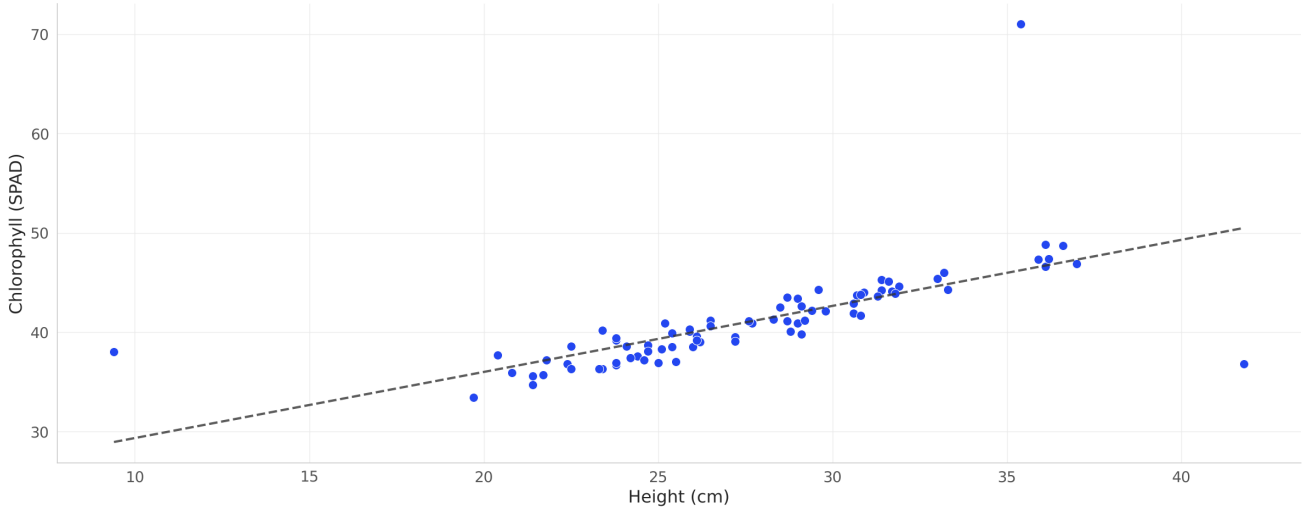
2 · What do the measurements look like?

5 measures at a glance.

Measure	Values	Mean	Median	Std. dev.	Range
Height (cm)	80	27.6 cm	27.2 cm	5 cm	9.4 cm – 41.8 cm
Leaf count	80	12.6	10.5	6.5	6 – 36
Chlorophyll (SPAD)	80	41.1 SPAD	40.3 SPAD	4.9 SPAD	33.4 SPAD – 71 SPAD
Soil pH	80	6.5	6.5	0.19	6.1 – 6.9
Temperature (°C)	80	22.5 °C	22.4 °C	0.53 °C	21.3 °C – 23.9 °C

3 · Do groups differ, and what moves together?

Each measure is compared across the groups of Treatment (one-way ANOVA; Welch's t-test for 2 groups). p-values are Holm-corrected across 5 measures; η^2 is the share of the variation the groups explain.



Measure	Highest group	Lowest group	η^2	p (adjusted)
Height (cm)	Fertilizer B (33.1 cm)	Fertilizer C (24.7 cm)	0.46	< 0.001
Leaf count	Fertilizer B (14.4)	Fertilizer C (10.5)	0.05	0.55
Chlorophyll (SPAD)	Fertilizer B (46.4 SPAD)	Control (37.9 SPAD)	0.46	< 0.001
Soil pH	Fertilizer C (6.5)	Fertilizer B (6.4)	0.04	0.55
Temperature (°C)	Control (22.6 °C)	Fertilizer B (22.3 °C)	0.10	0.14

Correlations

Measure	Measure	r	Spearman ρ	n	p (adjusted)
Height (cm)	Chlorophyll (SPAD)	0.68	0.88	80	< 0.001
Chlorophyll (SPAD)	Soil pH	−0.25	−0.26	80	0.24
Height (cm)	Soil pH	−0.16	−0.18	80	1.00
Height (cm)	Leaf count	0.15	0.20	80	1.00
Height (cm)	Temperature (°C)	−0.13	−0.16	80	1.00
Leaf count	Chlorophyll (SPAD)	0.13	0.11	80	1.00
Chlorophyll (SPAD)	Temperature (°C)	−0.11	−0.22	80	1.00
Leaf count	Temperature (°C)	−0.04	0.07	80	1.00
Leaf count	Soil pH	−0.03	0.02	80	1.00
Soil pH	Temperature (°C)	0.00	0.02	80	1.00

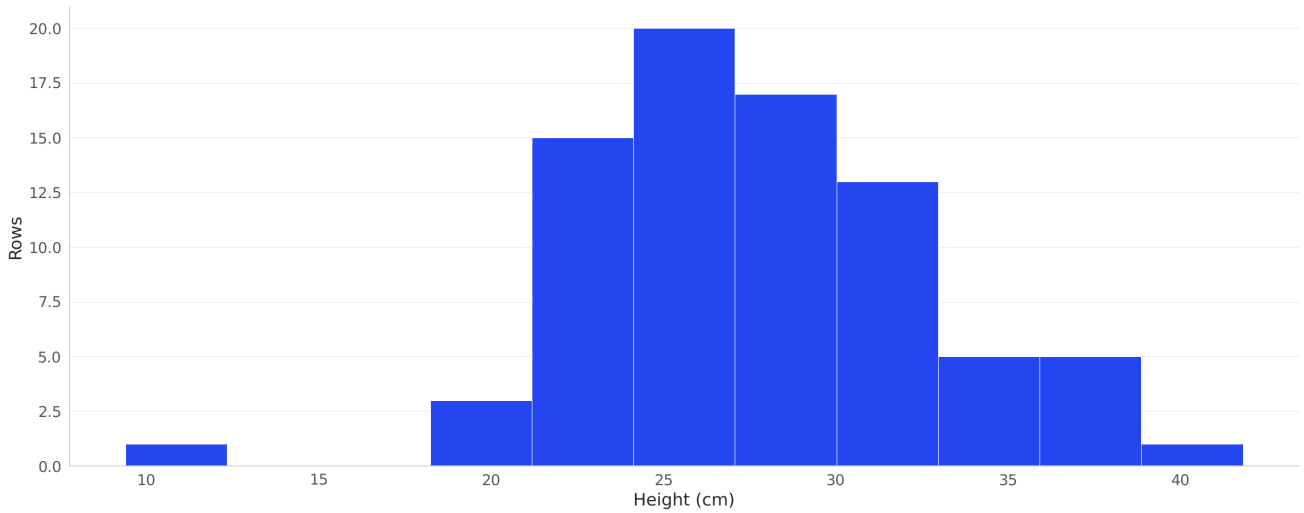
A correlation shows that two measures move together, not which causes which.

In this section

- Treatment groups differ significantly in height (p < 0.001): the highest group is 33% above the control.
- Two of your measures are moderately linked (r = 0.68).

4 · Which values need a second look?

80 rows and 7 columns checked. No likely typos. 3 values far outside the usual range. No empty cells in the analyzed columns. No duplicate rows.



Measures

Measure	Values	Mean	Median	Middle 50%	Min	Max
Height (cm)	80	27.6 cm	27.2 cm	24.3 cm – 30.8 cm	9.4 cm	41.8 cm
Leaf count	80	12.6	10.5	8 – 15.3	6	36
Chlorophyll (SPAD)	80	41.1 SPAD	40.3 SPAD	38.1 SPAD – 43.6 SPAD	33.4 SPAD	71 SPAD
Soil pH	80	6.5	6.5	6.4 – 6.7	6.1	6.9
Temperature (°C)	80	22.5 °C	22.4 °C	22.1 °C – 22.8 °C	21.3 °C	23.9 °C

In this section

- 3 measurements are far outside their group's range.
- One measure is strongly skewed (skewness 1.7) — the median describes it better than the mean.

5 · Insights & recommendations

KEY

Treatment groups differ significantly in height (p < 0.001): the highest group is 33% above the control

Fertilizer B: mean 33.1 cm against Control 24.9 cm (ANOVA, $p < 0.001$, $\eta^2 = 0.46$). Chlorophyll (SPAD) also differs significantly between the groups.

Recommendation: Report Fertilizer B as the strongest group together with the effect size, not only the p-value.

NOTABLE

Two of your measures are moderately linked (r = 0.68)

Height (cm) and Chlorophyll (SPAD): $r = 0.68$ (Spearman $\rho = 0.88$, $n = 80$, $p < 0.001$). They rise together; the data does not show which causes which.

Recommendation: Treat them as related in further analysis, or explain the mechanism behind it.

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3 measurements are far outside their group's range

Row 19: 41.8 cm in Height (cm), row 65: 9.4 cm in Height (cm) and row 46: 71 SPAD in Chlorophyll (SPAD).

Recommendation: Check these values for measurement or entry errors, and report results with and without them.

INFO

One measure is strongly skewed (skewness 1.7) — the median describes it better than the mean

Leaf count: mean 12.6, median 10.5.

Recommendation: Report the median and the interquartile range for this measure, or use a log scale.

6 · What to do next

The recommendations of this report, most important first.

- Report Fertilizer B as the strongest group together with the effect size, not only the p-value.
- Check these values for measurement or entry errors, and report results with and without them.
- Treat them as related in further analysis, or explain the mechanism behind it.
- Report the median and the interquartile range for this measure, or use a log scale.

Questions your data cannot answer yet

- How does it change over time? — add a date column.

Appendix

Data profile

Column	Role	Unit	Empty	Distinct values
Treatment	Category	—	—	4
Replicate	Identifier	—	—	20
Height (cm)	Measure	cm	—	60
Leaf count	Measure	—	—	21
Chlorophyll (SPAD)	Measure	SPAD	—	65
Soil pH	Measure	—	—	49
Temperature (°C)	Measure	°C	—	23

Data notes

- Replicate is an identifier and not analyzed.

Method

- Every figure is computed from the rows of your file as uploaded; empty cells are left out, never counted as zero. Insights are ranked by importance (key, notable, info), then risks before positives.
- Relationships: group differences by one-way ANOVA (Welch's t-test for 2 groups) with η^2; before/after by paired t-test with effect size d; correlations by Pearson r with Spearman ρ. Significance $p < 0.05$ after Holm correction across all tests of one kind. Totals per row (revenue per order line) are never tested — they differ by size alone.
- Data quality: a likely typo is an amount about 10× or 1/10 of comparable rows (same categories, neighbouring periods); outliers are values with a robust z-score above 3.5 within their group.
- Domain figures (margin, budget variance, conversion rate, resolution time and similar) are computed from the columns named in their tables.