# Analysis of the effect of different planting dates and varieties on the growth and yield of Potatoes (*Solanum tuberosum* L.) in Northern Central Namibia

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## INTRODUCTION

Potatoes are highly valued worldwide for their high yield, nutrition, versatility, and income potential (Zaheer, Akhtar, 2016). Potatoes are the leading non-cereal food crop, ranking third in human consumption after rice and wheat (Ahmadul, Sikdar, 2025). In Africa, potatoes are the second most cultivated crop and are commonly used as a staple food after maize (Muthoni, Shimelis, 2023). Potatoes are a promising crop to address global poverty and hunger, potentially improving food security and boosting farm returns for smallholders. Recent years saw high temperatures and droughts affecting crops globally. Namibia has the potential to increase potato production and diversity (Adekanmbi, et.al, 2024).

## OBJECTIVES

The study aims to identify how planting date and varieties affect potato growth and yield across cultivars and seasons.

## MATERIAL AND METHODS

Three planting phases (March 06, April 06, May 06) and four varieties (Barcelona, Rainbow, Spunta, Montreal) were arranged in a randomized complete block design with four replications. Twelve treatments were organized into four varieties, each with three phases. Data on growth and yield parameters were analyzed using SAS 9.4.

## RESULTS AND DISCUSSION

The maximum chlorophyll content of 53 SPAD value was recorded from Rainbow variety, and the minimum value 51 from phase Montreal which was not significantly different from other varieties. The highest total tuber number (33) was recorded in Spunta on 06 April, with the lowest (3) in Montreal on the third planting date, suggests that growth parameters associated with this phase were limiting for all varieties tested. The highest total tuber weights were recorded in second planting date (06 April 2024) for Rainbow (23 t/ha), Barcelona (22 t/ha) and Spunta (20 t/ha). The study indicates that 06 April is the best planting date for all varieties, considering overall performance and tuber yield, with phase 1 and phase 3 showing poorer results.

## CONCLUSIONS

Overall, marketable tuber weight was highest in planting phase 2 across most varieties, whereas planting phase 3 consistently produced the lowest tuber yield in tons per hectare.

## REFERENCES

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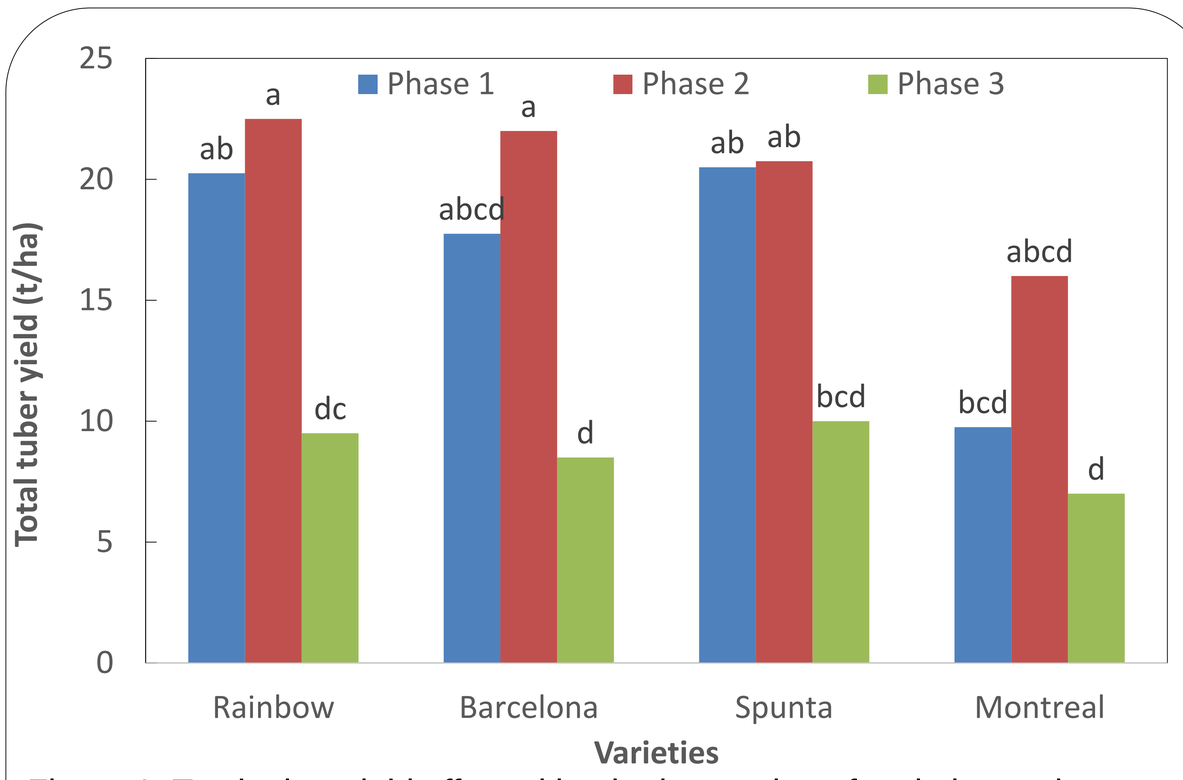


Figure 1. Total tuber yield affected by the interaction of varieties and planting dates. The same letter combinations indicate no significant differences according to the Tukey test ($p > 0.05$).

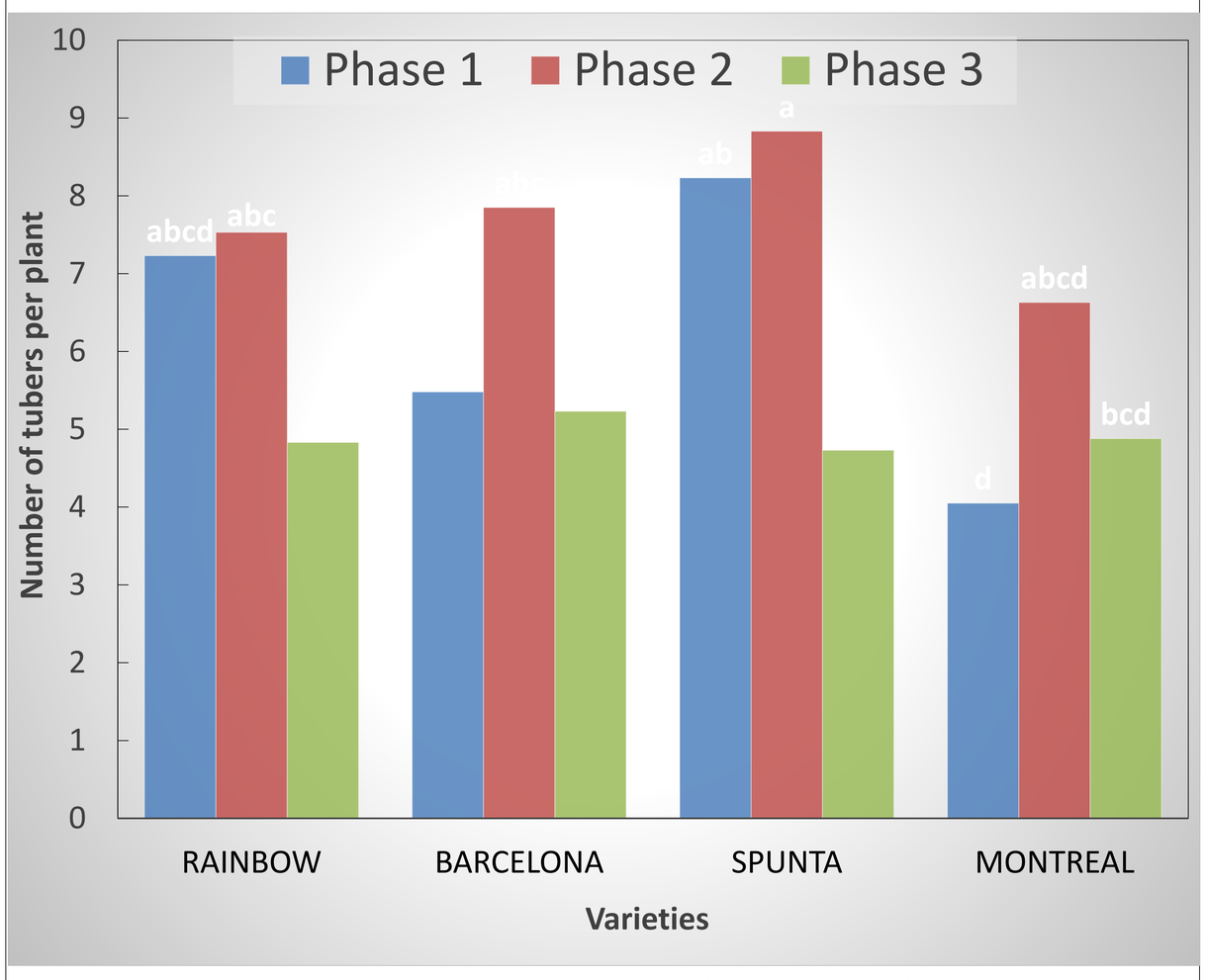


Figure 2. Total tuber number per plant as affected by the interaction of varieties and planting dates. The same letter combinations indicate no significant differences according to the Tukey test ($p > 0.05$).

Table 1. Mean squares from combined analysis of variances over three planting phases for 3 traits of 4 potato varieties in 2024

| Traits | Treatments | Variety | Planting Date | Variety*Planting Date | Error | CV |
|---|---|---|---|---|---|---|
| | (11) | (3) | (2) | (6) | (25) | (%) |
| Total tuber yield | 0.011*** | 0.011*** | 0.056*** | 0.001$^{ns}$ | 61.71 | 21.75 |
| Average tuber number per plant | 138.80** | 33.00$^{ns}$ | 139.70$^{ns}$ | 48.72$^{ns}$ | 42.40 | 12.28 |
| SPAD value | 19.75$^{ns}$ | 55.15$^{ns}$ | 10.35$^{ns}$ | 37.88$^{ns}$ | 43.90 | 12.71 |

*, **, significant at ***, P=0.05, P<0.01, and P<0.01, respectively. Trt = treatments, CV (%) = coefficient of variation in percent, numbers in the parenthesis are degrees of freedom.