

# The effect of mango peel on the growth of okra (*Abelmoschus esculentus*)

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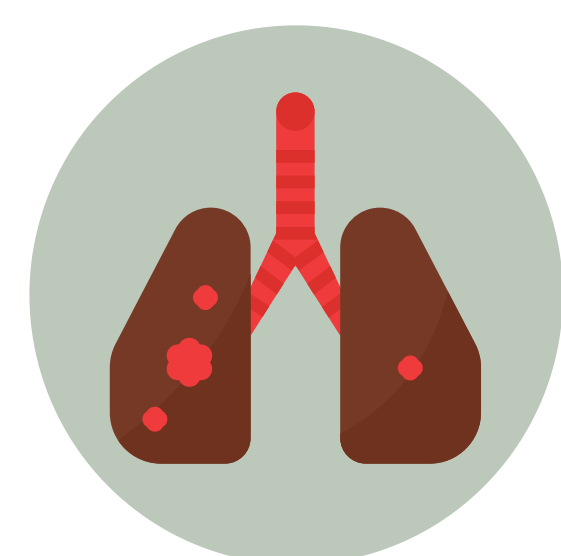
## Abstract

Fertilizers are substances containing nitrogen, phosphorus, and potassium. They supply nutrients to the soil to improve plant growth and plant productivity. While they may have helped the agriculture sector better their crops, recent studies suggest that common fertilizers have adverse effects on the environment and human health. Aside from common fertilizers, fruit peels, such as mango peels, also pollute the environment since their accumulation leads to waste disposal issues. To alleviate these issues, researchers proposed the utilization of fruit peels as fertilizers. In this study, mango peels were utilized as fertilizers to identify their effects on the growth of the okra plants by measuring the plant height and comparing the number of leaves. Five (5) pots with two okra seeds each were assigned specified amounts of mango peels: 0 g, 1 g, 3 g, 5 g, and 7 g. Plant height and number of leaves were measured every two weeks for two months. The results suggest that varying amounts of applied mango peels affect the growth rate of okra, with 7 g yielding both the highest plant height and highest number of leaves. The results can be attributed to the nutrients of the mango peels, such as potassium and phosphorus, which are included in the three primary nutrients found in common fertilizers.

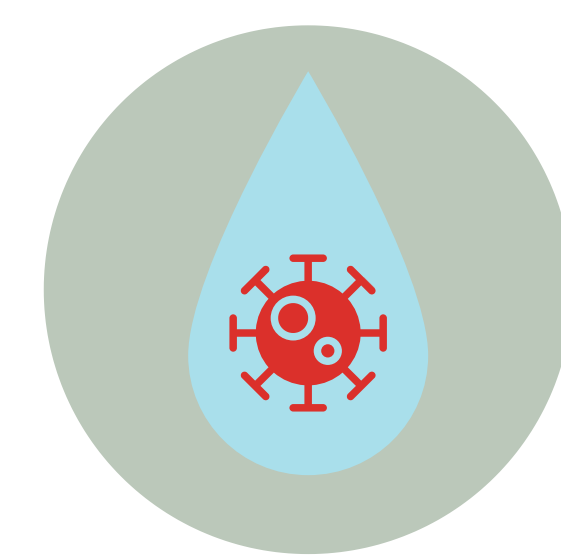
## Introduction

- Fertilizers supply the soil nutrients, primarily nitrogen, phosphorus, and potassium, to improve plant growth and plant productivity.

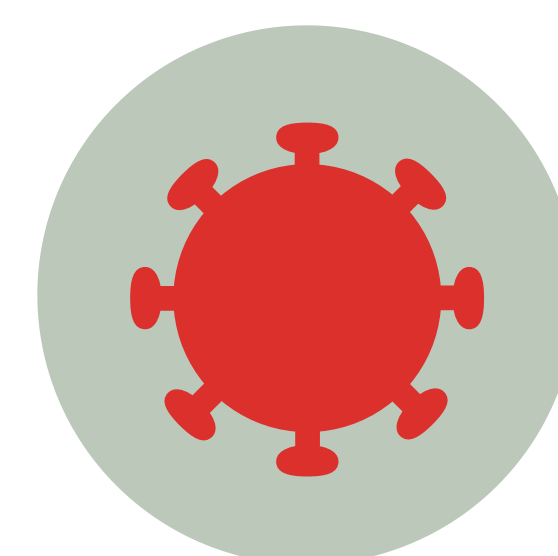
### Negative effects of the common fertilizers



Air pollution from ammonia emission

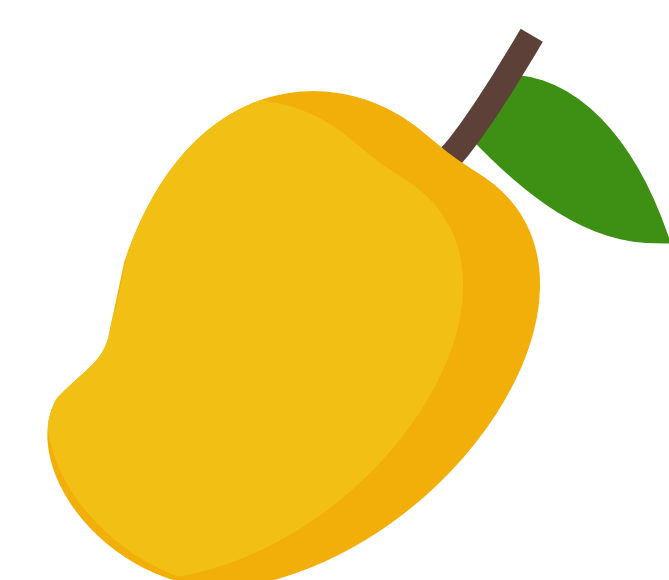


Water contamination from nitrogen



Crop contamination from pathogens in animal manures

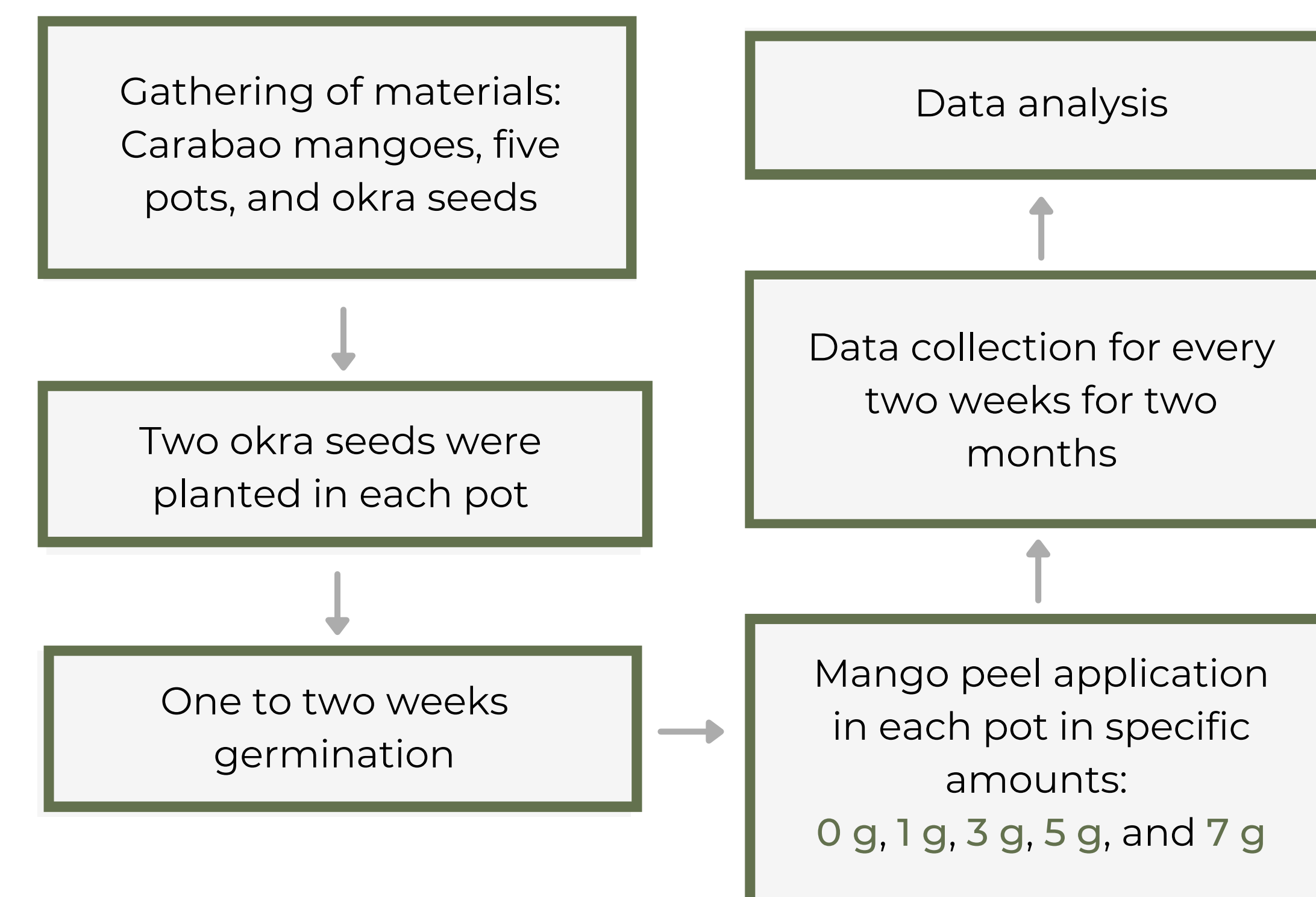
- Researchers have considered using fruit peels as an alternative to the common fertilizers.
- Previous studies have confirmed that fruit peels are suitable to use as fertilizers.
- However, there is still a lack of study regarding the utilization of mango peels as fertilizers.



- Most globally advertised fruit
- 50.65 million metric tons of mangoes were produced globally by 2017.
- Abundant in potassium, phosphorus, and calcium

## Methodology

Two researchers were assigned to conduct the experiment.



The pots were labelled as follows in Table 1. The MPs in the code stand for mango peels, while the numbers stand for the amount of mango peels applied in grams.

Table 1. Labels for the amount of mango peels applied to each pot

Code	Amount of mango peels (g)
MP0	0
MP1	1
MP3	3
MP5	5
MP7	7



## Results

### Number of leaves

The number of leaves that were attached to the plant was counted, while those that were unhealthy or wilted but attached were not.

- MP7 had the highest average number of leaves for both January and March
- MP0 had the lowest average number of leaves for January
- MP3 had the lowest average number of leaves for March

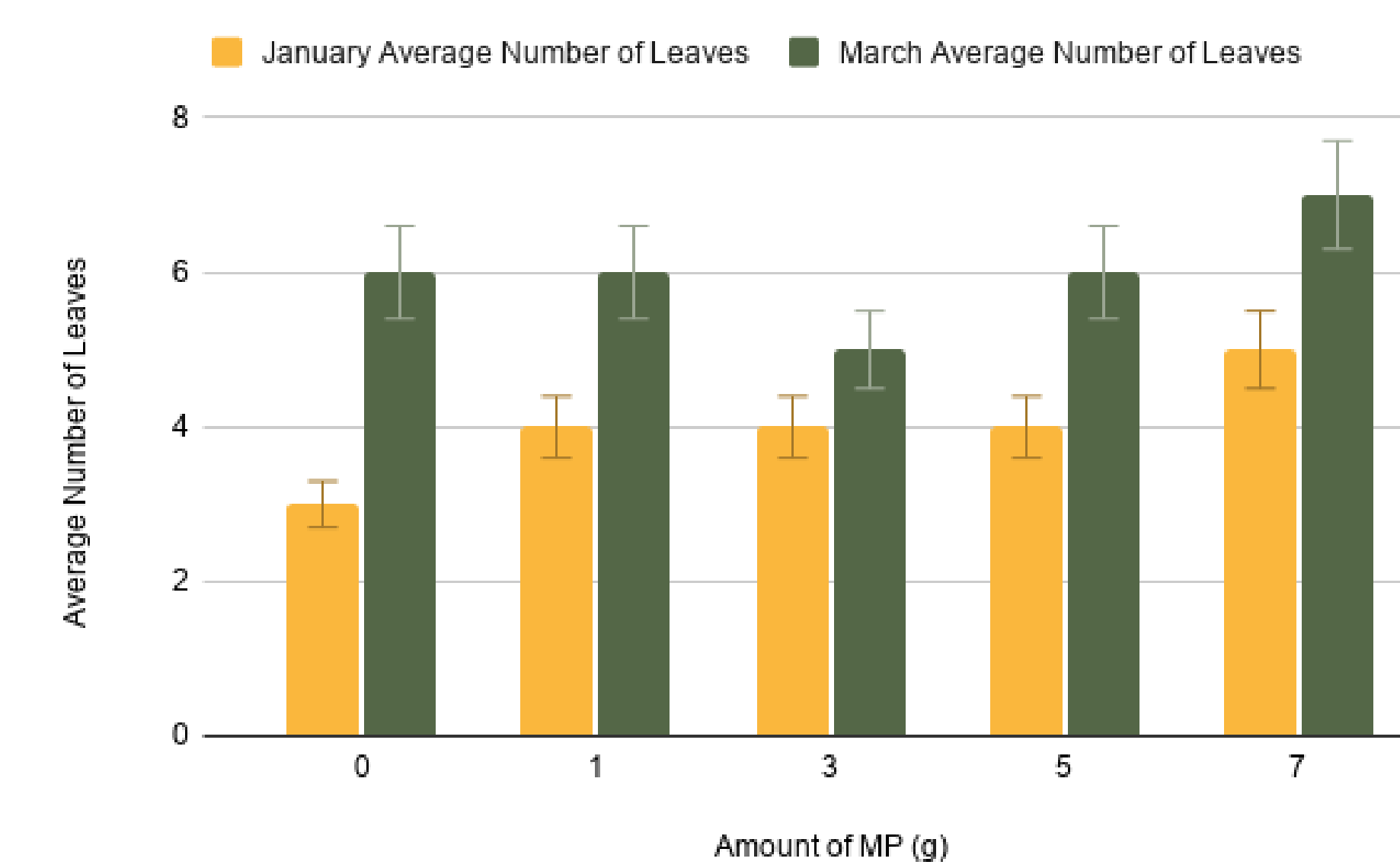


Fig 1. Average Number of Leaves Per MP

### Plant height

The plant height measurement was used as an indicator of its growth rate.

- MP7 had the highest average height for both January and March
- MP0 had the lowest average height for January
- MP5 had the lowest average height for March

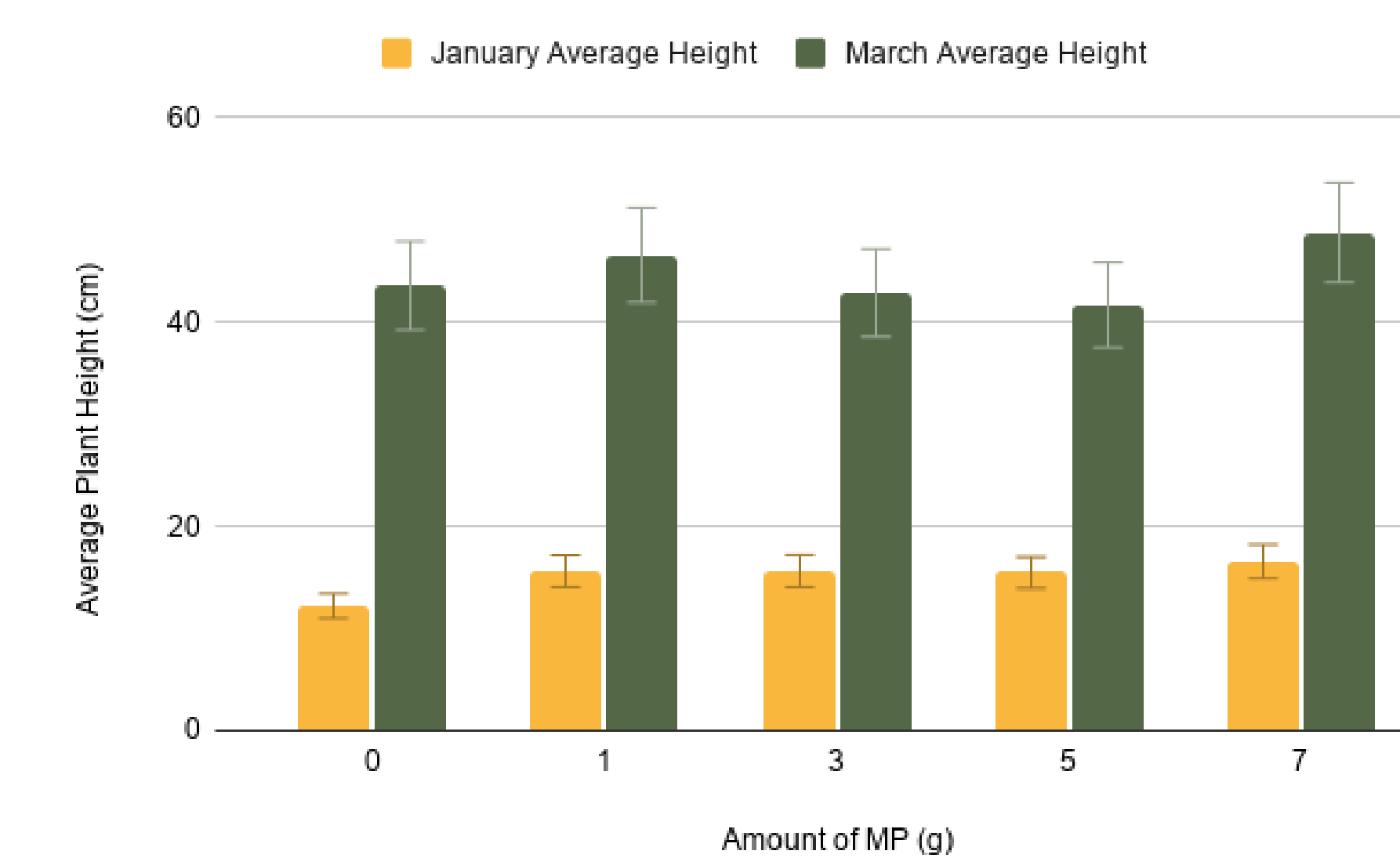


Fig 2. Average Plant Height Per MP

## Conclusion

The results of the study showed that mango peels:



- Affect the growth of the okra plant and;
- Can be an effective alternative to common fertilizers for okra plants

In terms of the best amount of mango peel fertilizers to apply:



- 7 g is the most effective amount of mango peels to apply for the growth of the okra.



- The setup with 3 g of mango peels yielded the lowest plant height and number of leaves.

## Acknowledgement

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## References

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