



# GROW LIGHT

5<sup>th</sup> IYNT 2017  
Team Indonesia  
Labsky

# PROBLEM

Investigate how different types of artificial lights affect plant growth. What is the role of light spectrum?

# INTRODUCTION

## What is plant growth?

- Irreversible increase in the size of the plant
- Increase in cell numbers and size

## What is a grow light?

- Artificial light source
- Stimulate plant growth
- Electromagnetic spectrum
- For photosynthesis



# Plant Growth Stages

**Safer**  
BRAND

## **Sprout**

Seeds contain all the nutrients they need to germinate and grow their first pair of leaves.

## **Seedling**

As roots begin to develop and spread, plants need a boost of quickly absorbed, well-balanced nutrients.

## **Vegetative**

Nitrogen is most important for plants when their energy is directed into growing stems and foliage.

## **Budding**

Full-grown plants need extra phosphorus during the transition to the blooming stage.

## **Flowering**

Potassium is essential for the development of healthy flowers and fruit.

## **Ripening**

As flowers or fruit reach full maturity, the plants no longer need nutrients—just water.

## **Plant Parts**

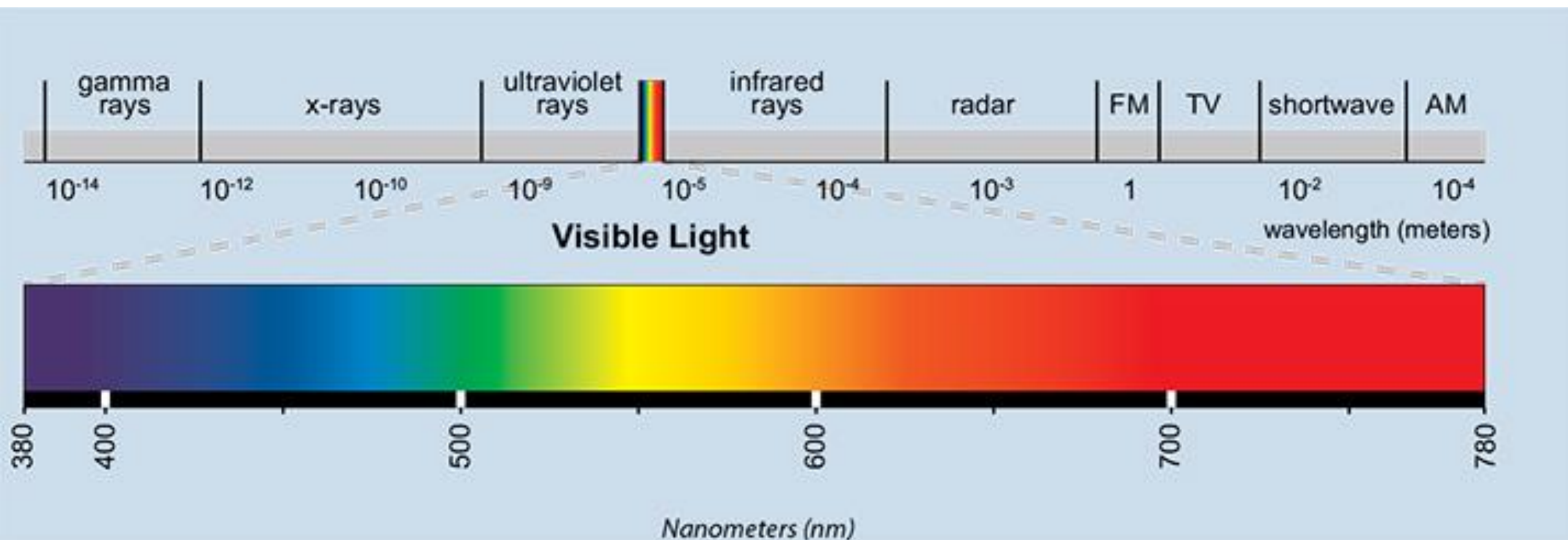
Seeds

Fruit

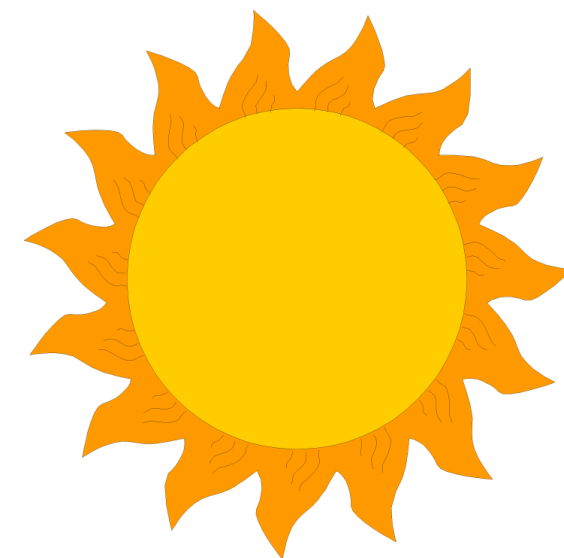
Leaves

Stem

Roots



# GROW LIGHTS



PLANT



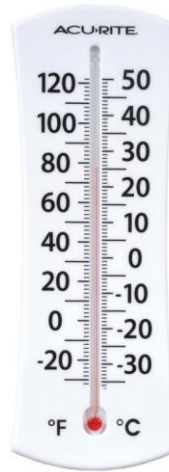
# METHOD



12 hours/day, bright light



1 x/day, drain well



30°C



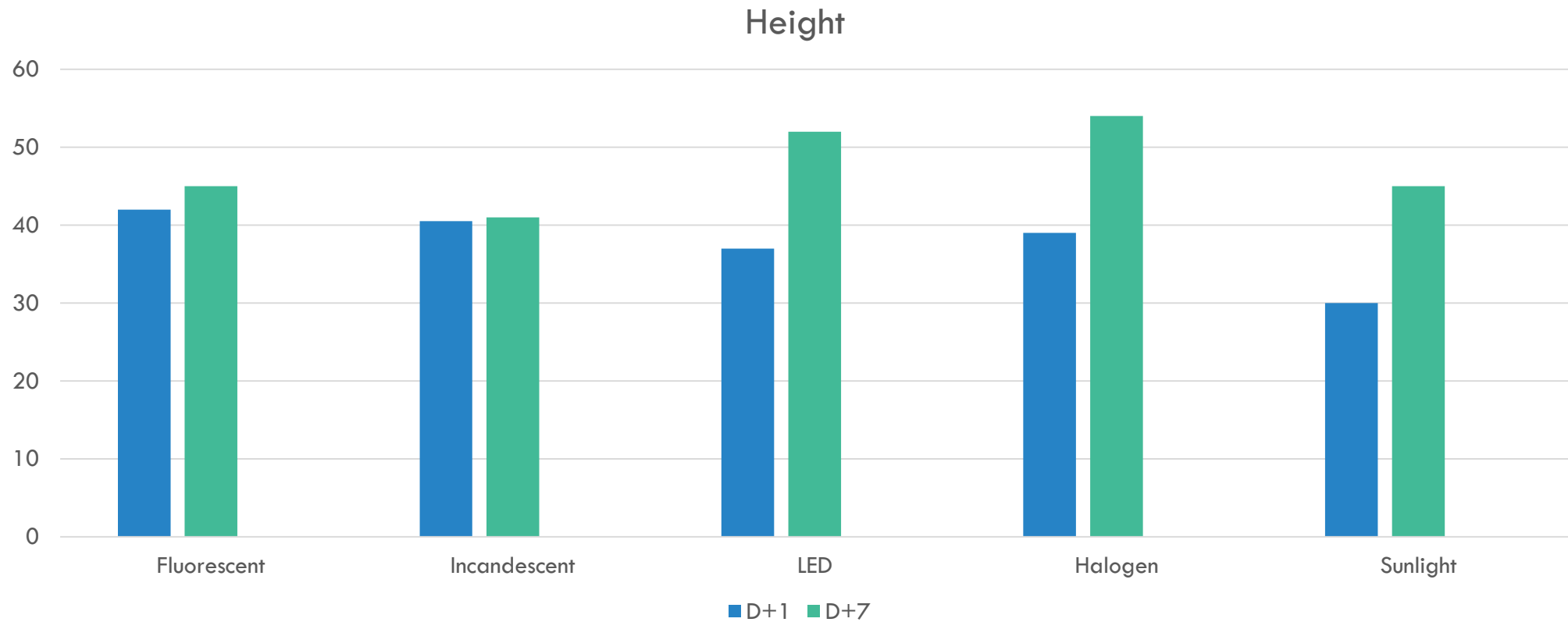
## Measure:

1. Height (cm)
2. Number of healthy leaves

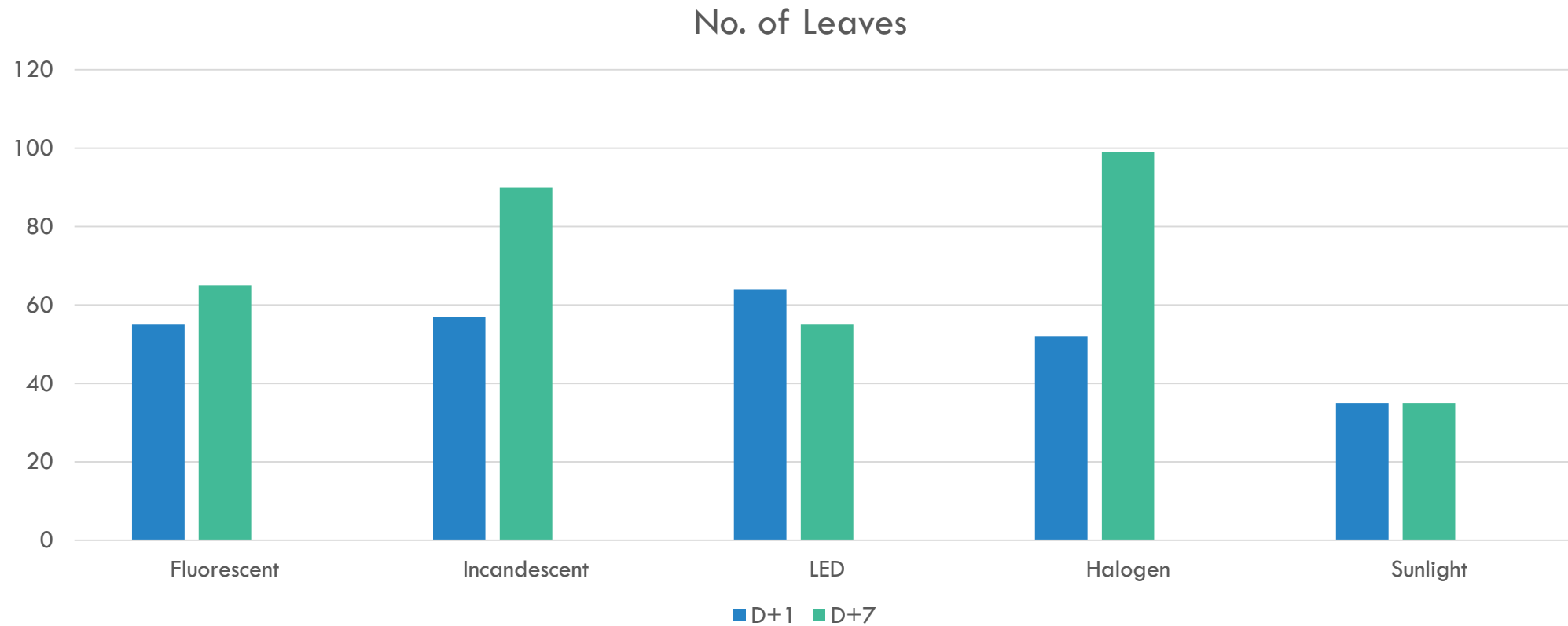
Average = final result



# RESULTS (1)



# RESULTS (2)



# CONCLUSION

Height		
Sample	Effect	Reason
LED	+ 8 cm	Too weak, plant tries to reach light
Incandescent	+ 0.5 cm	Too much heat, high temperature

No. of Leaves		
Sample	Effect	Reason
Halogen	+ 47 leaves	Full-spectrum light, like sunlight
LED	- 9 leaves	Too weak, leaves die

## Artificial lights $\checkmark$ - $\times$ :

1. Halogen (26.5)
2. Incandescent (16.75)
3. Fluorescent (6.5)
4. LED (-0.5)

## Light spectrum:

- Colors by wavelength
- Plants need light for photosynthesis
- Each light has different growth effects on plant

# SOURCES

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***Thank You!***

