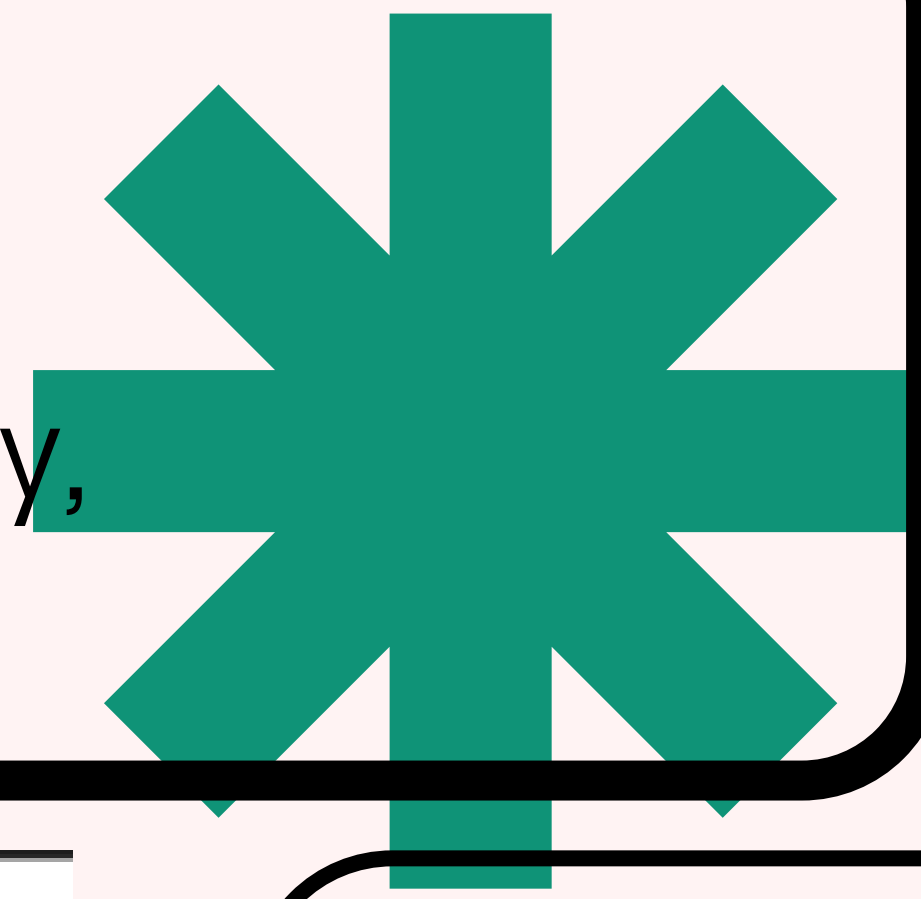


GIBBERELLIN IN MILLET PHYSIOLOGY

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INTRODUCTION

- *Setaria viridis* is a small, fast-growing plant often used to study millet and other grains [1]
- Dwarf millet plants grow shorter due to mutations, often linked to problems with gibberellin (GA) production or response [2]
- Gibberellin is a plant hormone that helps stems grow longer [3]
- Spraying GA on dwarf plants can help us see if their short height is caused by missing GA or not being able to use it [4]

EXPERIMENTAL DESIGN

Purpose:

- To observe how the application of gibberellin effects growth in dwarf millet variants

Research Question:

- How does gibberellin effect millet height?

Hypotheses:

- **Null Hypothesis:** There will be no significant difference in *Setaria Viridis* height with gibberellic acid applied.
- **Alternate hypothesis:** There will be a significant difference *Setaria Viridis* height with gibberellic acid applied.

METHODS

- Millet seeds were soaked in water for 24 hours [5]
- 8 seeds of each variant were planted with 2 seeds in each hole
- There were three replicant pots of each variant for each treatment
- Plants were watered three times per week
- The treatment plants recieved 0.5 g/L gibberellic acid once a week
- Plants were measured twice a week to track growth

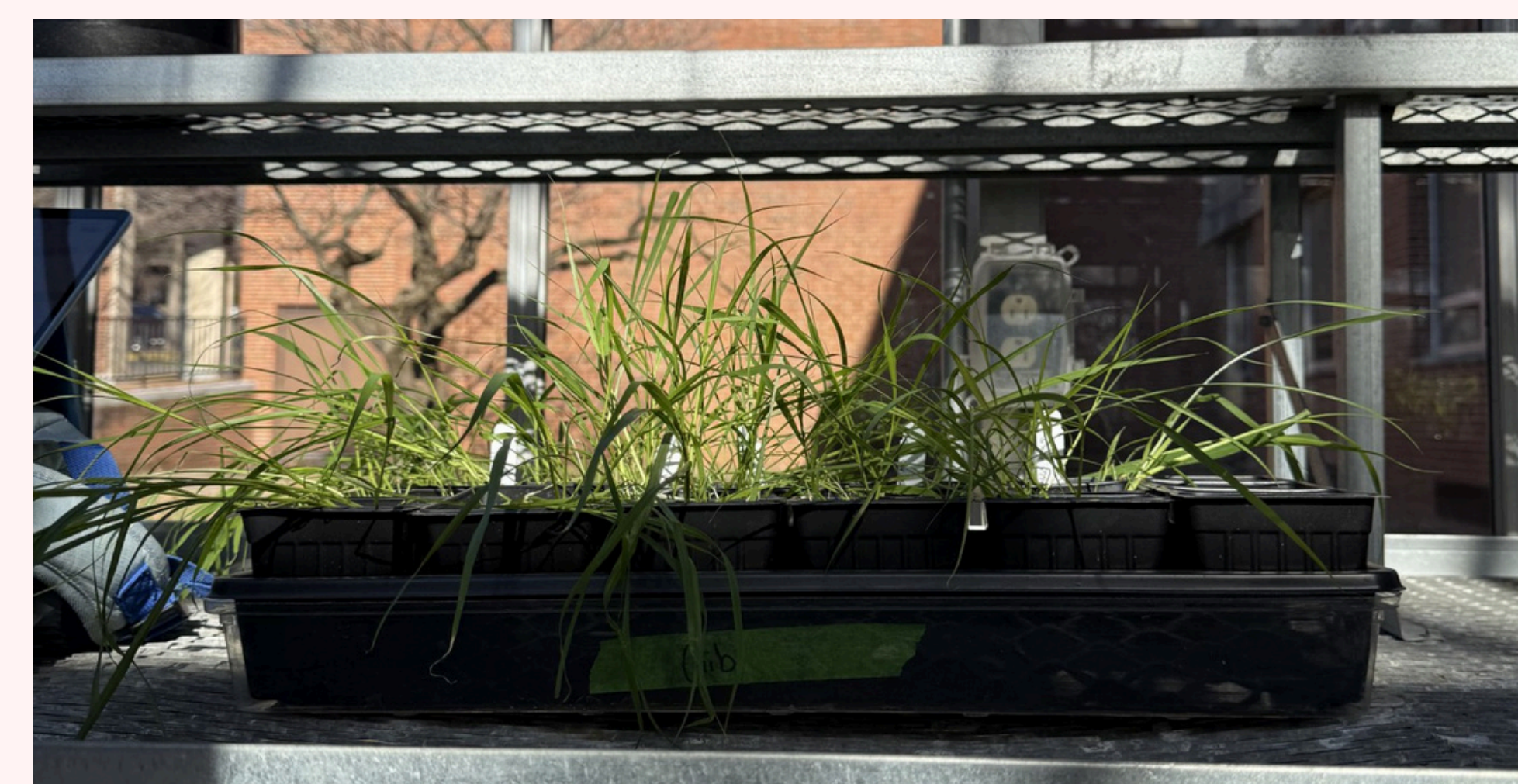
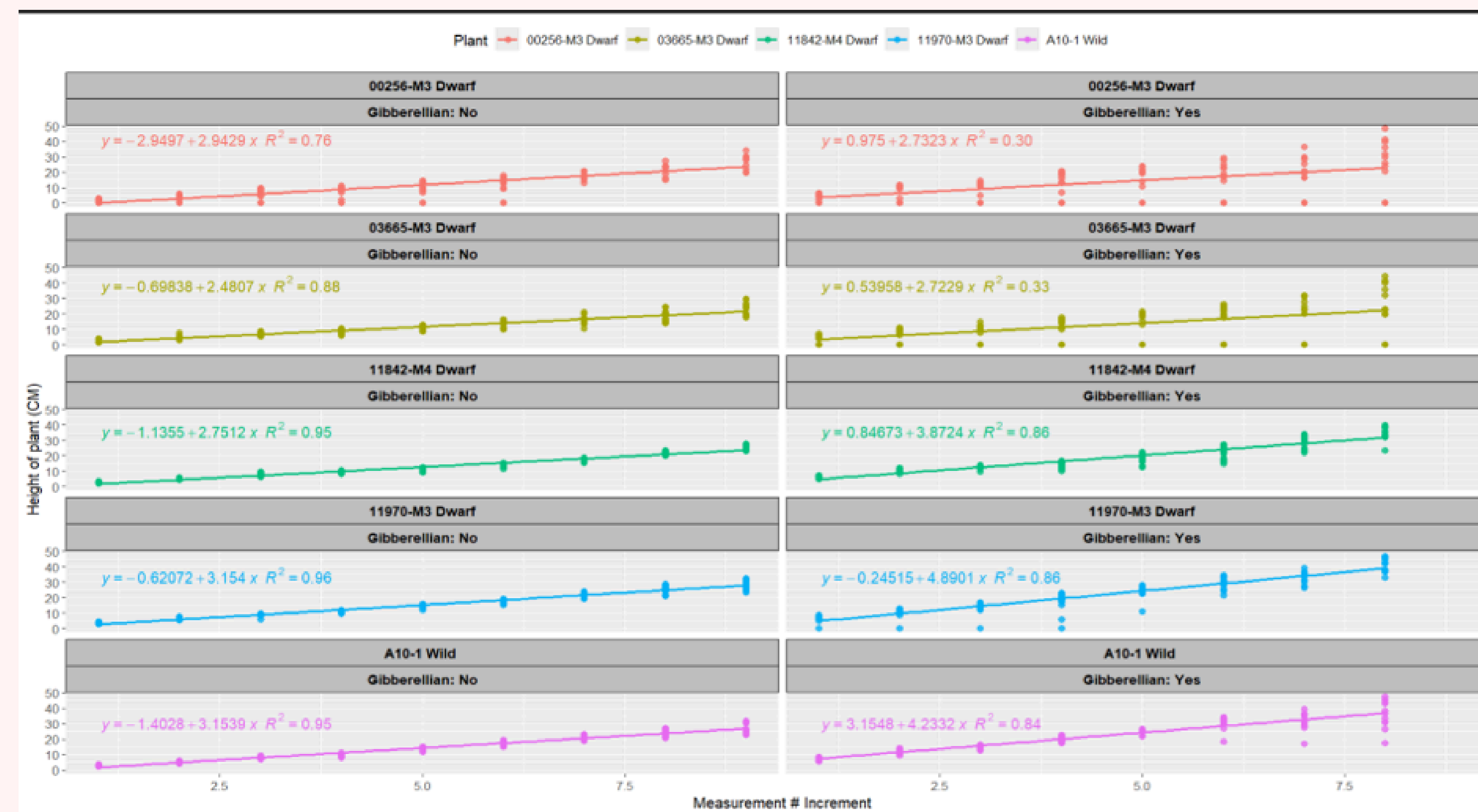


Figure 1: Millet Treated with Gibberellic Acid



Figure 2: Millet Grown without Gibberellic Acid

OBSERVATIONS

- **00256-M3**
 - slope (control)= 2.9439 cm/day
 - slope (treatment)=2.7323 cm/day
- **03665-M3**
 - slope (control)=2.4807 cm/day
 - slope (treatment)=2.7229 cm/day
- **11842-M4**
 - slope (control)= 2.7512 cm/day
 - slope (treatment)= 3.8724 cm/day
- **11970-M3:**
 - slope (control)= 3.154 cm/day
 - slope (treatment)= 4.8901 cm/day
- **Wildtype**
 - slope (control)= 3.1593 cm/day
 - slope (treatment)= 4.2332 cm/day
- All GA-treated millet variants experienced a higher average height than their control group counterparts
 - GA-treated 00256-M3 had a less noticeable difference compared to the control group
- All GA-treated millet variants produced lower R² values than their control counterparts

DISCUSSION/CONCLUSION

- GA treated 03665-M3 dwarf, 11970-M3 dwarf, and 11842-M4 dwarf data produced larger slopes than the control
 - May suggest a response to gibberellin.
- GA treated 00256-M3 dwarf produced a smaller slope than the control
 - May suggest no response to gibberellin
- Low R² values in the Gibberellic acid-treated millets
 - GA treated millets had both the highest and lowest heights recorded
 - May indicate genetic variation among individuals of each millet variant, leading to a large range in genetic response to GA
 - Individual millet plants may have outcompeted the other plants within their shared pot, resulting in the stunted growth of others
- Retest, ensure all millet seeds planted grow before beginning experimentation.
- Providing larger pots could prevent individual plants from outcompeting one another
- Further experimentation is necessary to acquire clear and reliable results to make scientific claims regarding different millet dwarf strains' response to gibberellin.

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