

# Examining the Relationship Between Fluorescence and Live Fuel Moisture

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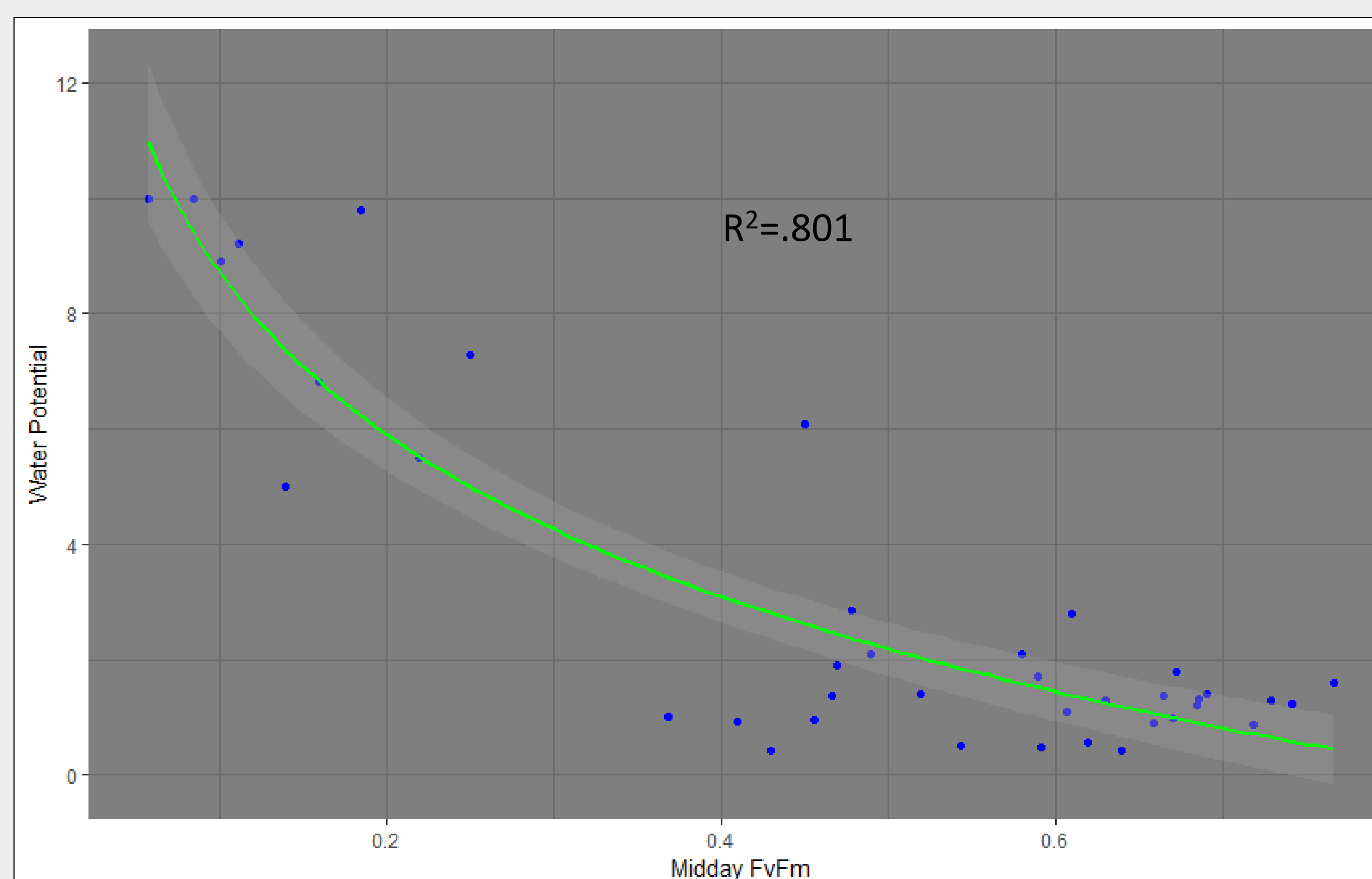
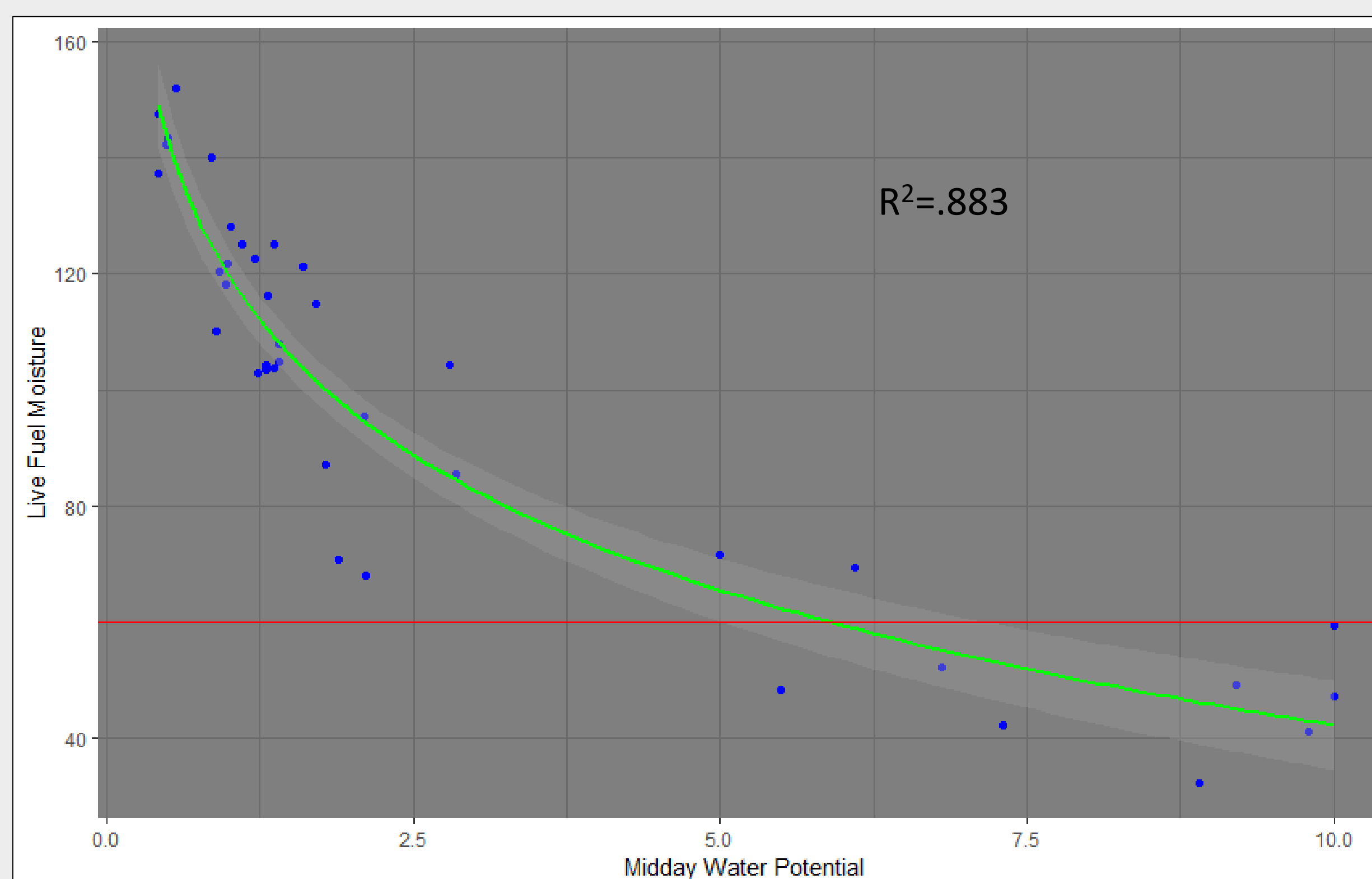
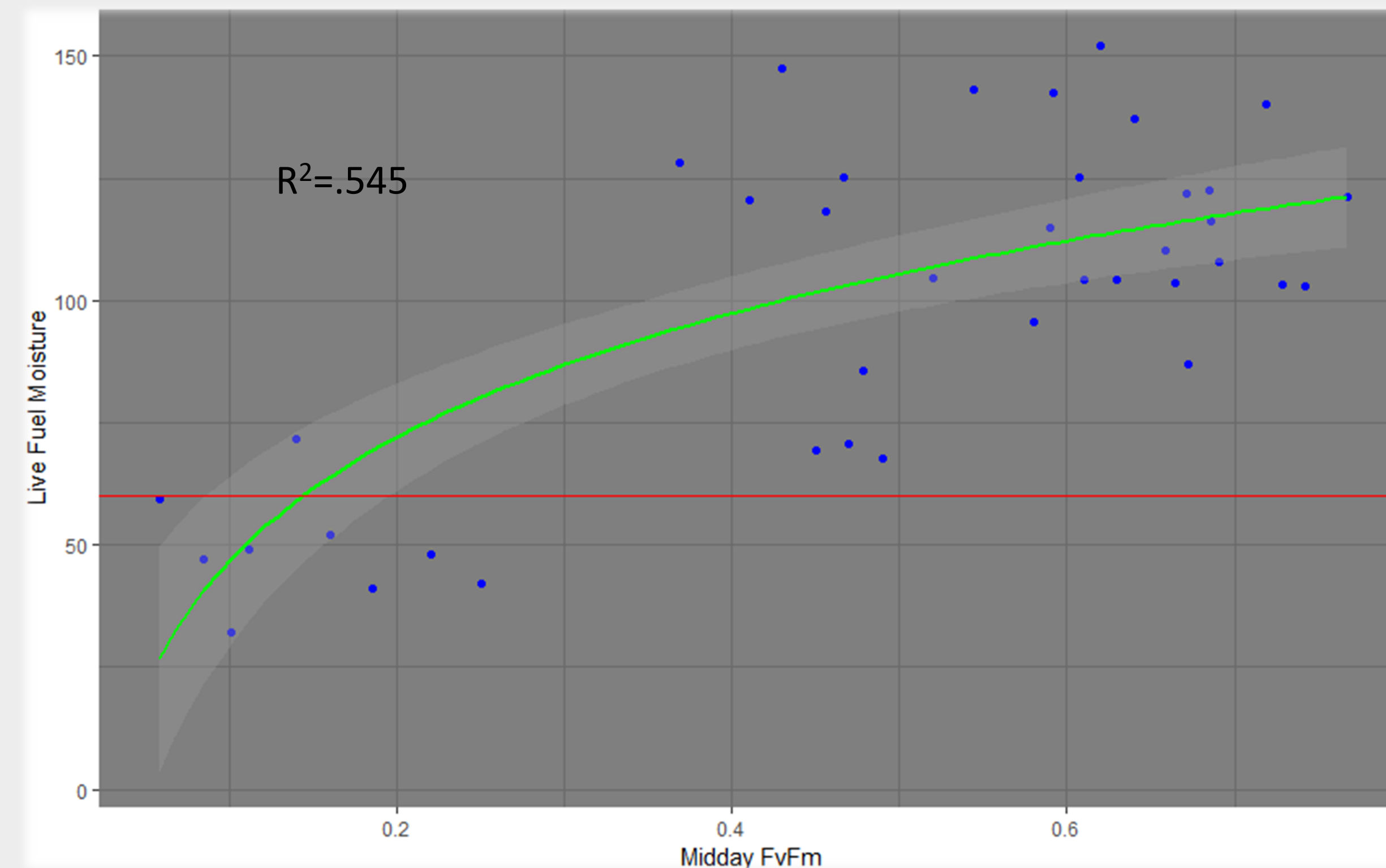
## Introduction

- Eastern Red Cedars (*Juniperus virginiana*) have dynamic flammability and are often indicated by live fuel moisture (LFM), which is the amount of moisture in a plants leaves relative to its dry mass
- LFM is directly related to leaf water potential, or the amount of tension within a plants water conducting vessels.
- Leaf water potential can be used to estimate LFM, but is not economically optimal.
- Chlorophyll fluorescence is a possible substitute for this issue due to fluoreimeters being less costly and user-friendly.
- **The objective is to correlate fluorescence with LFM to eliminate the need for leaf water potential.**

## Methods

- Samples were taken at around noon for 2 months once per week. 5 junipers were used by having them undergo drought stress and measuring fluorescence, water potential and dry mass.
- Water potential was measured using a Scholander pressure chamber, and fluorescence with a fluoremeter.
- Dry mass was measured by weighing leaf clippings while wet and storing them in a drying oven before re-weighing while dry.
- LFM was calculated as (wet mass – dry mass) / (dry mass)

## Figures



## Discussion

- Limitations included the inability to access a drone based scanner, which can measure fluorescence in multiple junipers simultaneously.
- Preliminary data suggests a correlation between fluorescence and live fuel moisture, but further research is necessary.
- Soil moisture will be measured gravimetrically, so data is not yet available.

## Conclusion

- **Midday chlorophyll fluorescence correlates with live fuel moisture in eastern redcedar in the greenhouse.**
- **Future research will attempt to apply the models found here into field populations of eastern redcedar.**

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