



Ayden Clark-Veal

Biology Major First Year ARCS Scholar
Georgia-Pacific Award



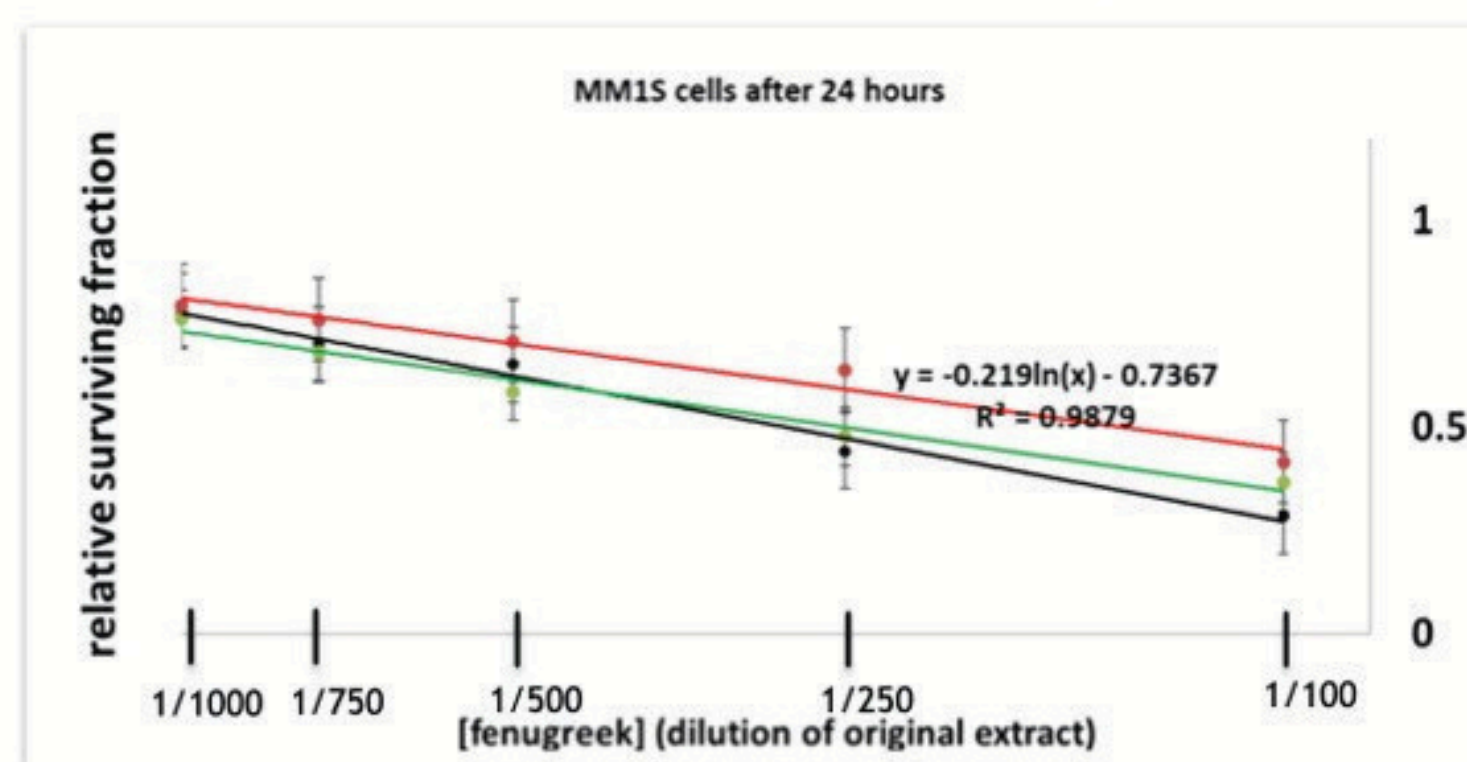
MOREHOUSE
COLLEGE

Fenugreek and its optimal growing conditions

Cancer biologist investigating relationships between obesity and cancer.

Preliminary Data

Fenugreek extract showing cytotoxic effects on multiple myeloma cells



Research Background

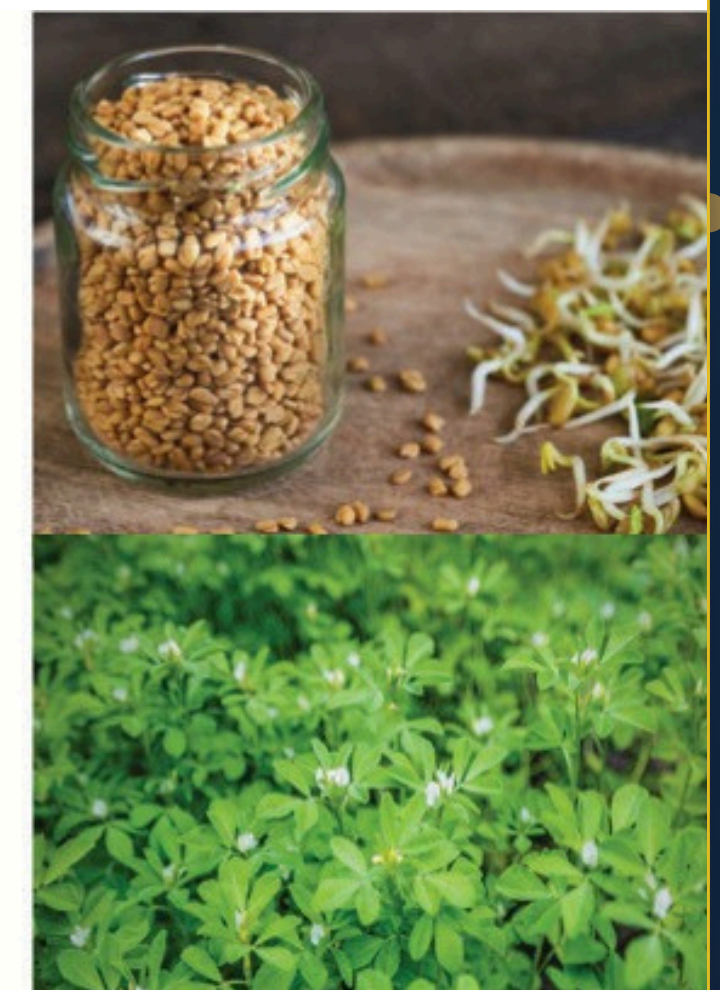
Intensive study of *Trigonella foenum-graecum* (Fenugreek)

Nutraceutical Properties:

- Lactation
- Hypoglycemic
- Gastrointestinal
- Skin conditions
- Anticancer/antioxidant
- Antimicrobial/antibacterial
- Lymphatic stimulation

Botanical Properties:

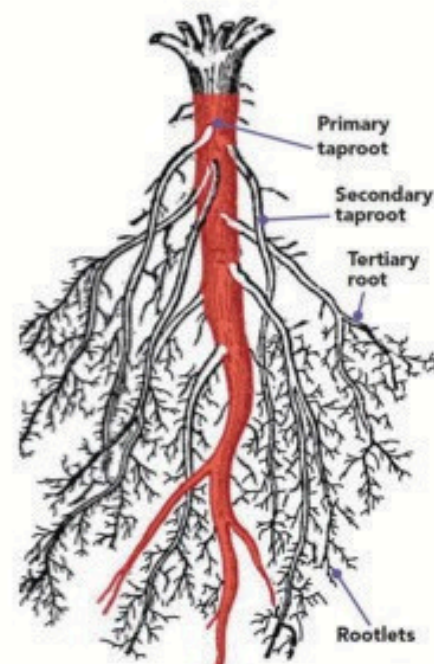
- Fast growing cover crop
- Nitrogen fixator
- Dense growing
- Diverse growing conditions (temperature and soil)



Experimental Design

Comparative analysis of Fenugreek growth patterns in different growing conditions to find ideal volume: biomass ratio and effects of pot size

- 12 hrs of light, 21°C - 25°C, 60-80% RH
- Bottom watering technique (twice per week)
- Container types vary by size/shape
- Measuring: plant height, flowering rate
- Observing: phytomorphology, hardness, root structure



Early Findings

Small pots

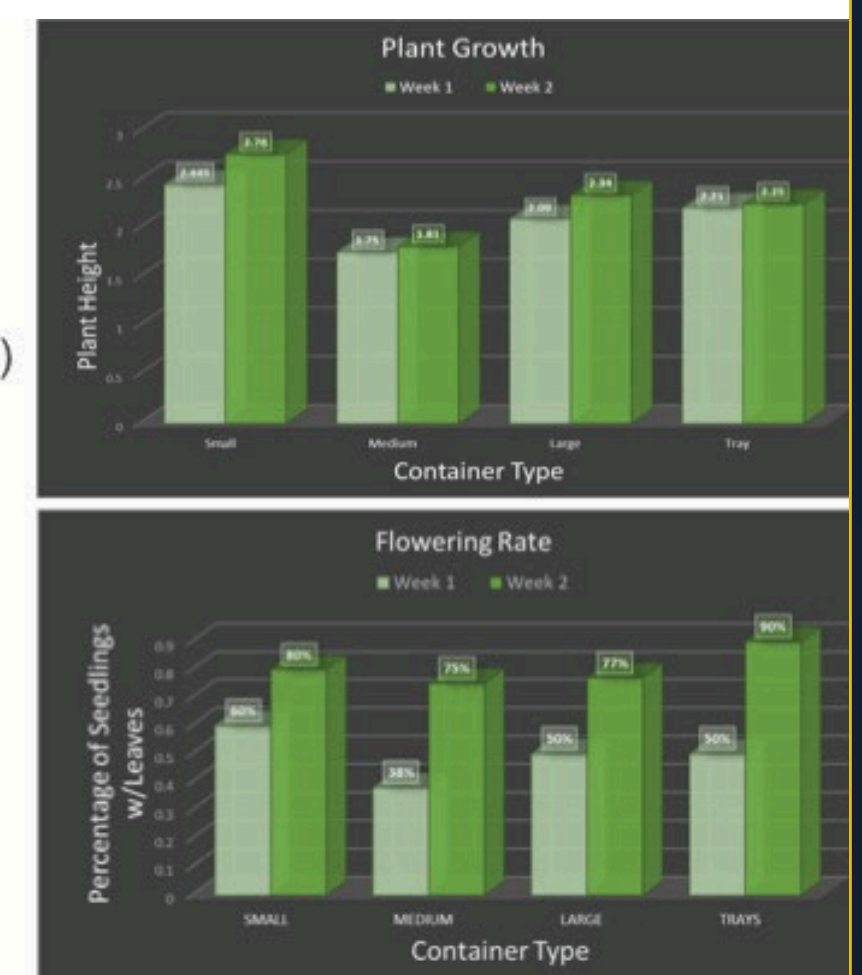
- Curling/leaning sprouts (weak stems)
- Faster growth and leaf production

Large pots

- Uniform phytomorphology
- Hardiness increased

Trays

- Highest flowering rate
- Slowest growth rate



Future Directions

- Replication using different growing containers and plant density combos
- Produce and test plant extracts based on container type and plant density
- Introduce other plant species with similar cytotoxic (anti-cancer) effects



Impact

- Improve quality of botanical studies involving extraction of phytochemicals
- Provide a systematic framework for finding ideal mass to volume ratios for container plant studies
- Promote more studies of crops with medicinal properties for use in clinical trials
- Enhance data involving cytotoxicity of Fenugreek active compounds

This project was in partnership with the Handy Biomedical Research Cluster Laboratory, Troy Jones, Debra Butler, and Dr. Handy in the Morehouse Biology Department. This research project has been made possible through partnership funding from the US Dept. of Education Ronald E. McNair Post-Baccalaureate Achievement Program Grant #P217A220076.

Scholar Awards Celebration
November 15, 2023



**Igniting
Innovation
in Georgia**