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Influence of Pruning on Pitaya Production in the USVI

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Introduction

Pitaya (*Selencereus* sp) or dragon fruit is a climbing winged cactus indigenous to the Caribbean and Central America (Zimmerman, et al. 2013). In the USVI dragon fruit is an attractive crop because of its tolerance to drought and high market price of 6 – 10 USD per fruit. The USVI is prone to hurricanes that can damage pitaya plants. The objective of this study was to determine how pruning would affect fruit production overtime. A severe pruning could simulate hurricane damage and give indications on how plants may recover from serve damage.

Materials & Methods

- Four cultivars used were 'Dark Star', 'Halley's Comet', 'Physical Graffiti' and 'Purple Haze'.
- Treatments were no pruning (control), pruning back to a 1m wide trellis (treatment 1), and heavy pruning back to the support post (treatment 2) (Figure 1).
- Data was collected at harvest for three years on total number of fruits, fruit weight, length and width.

Results & Discussions

- Unpruned pitaya produced more fruits than both treatments in 2021 (Figures 2-5).
- In 2023 production across all cultivars and treatments dropped significantly because of serve drought on island (Figure 2-5).
- 'Dark Star' did not respond well to neither light or heavy pruning. From 2021 - 2023 overall fruit product decreased across all treatments for 'Dark Star'(Figure 2).
- 'Dark Star Control went from and avg 1.63 kg per plant in 2021 to 0.25 kg (Figure 2).
- 'Halley's Comet' lightly pruned plant went from 0.14 kg in 2021 to 0.84 kg in 2022 and heavily pruned plants went from 0.08kg in 2021 to 0.49kg in 2022 (Figure 3).
- 'Physical Graffiti' lightly pruned plants surpassed unpruned plants in 2022 and matched in production in 2023 (Figure 5).
- 'Purple Haze' lightly pruned plants did not match the production of control plants until 2023 (Figure 4).
- Unlike the other cultivars 'Purple Haze' heavily pruned plants outperformed the lightly pruned plants by an avg weight of 0.14 kg (Figure 4).
- In 2023 'Halley's Comet' saw a significant decrease in production across all treatments after a significant increase in both light and heavy pruning in 2022 (Figure 3).

Figure 1. Pruning treatments 1 (left) and treatment 2 (right).

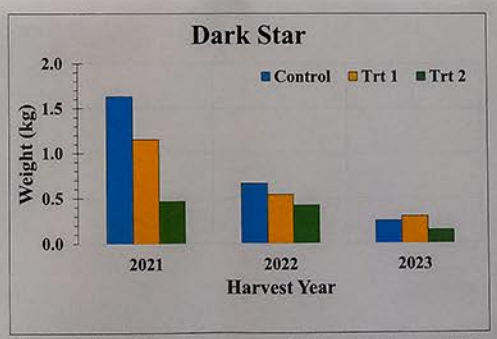

Figure 2. 'Dark Star' average weight per plant overtime

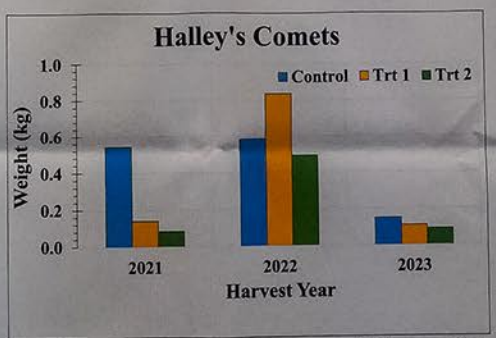

Figure 3. 'Halley's Comet' average weight per plant overtime

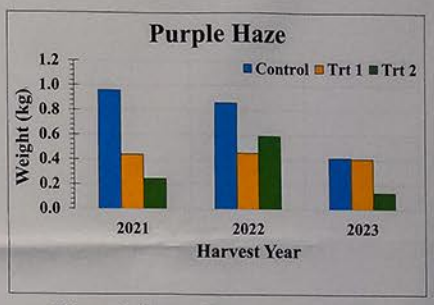

Figure 4. 'Purple Haze' average weight per plant overtime

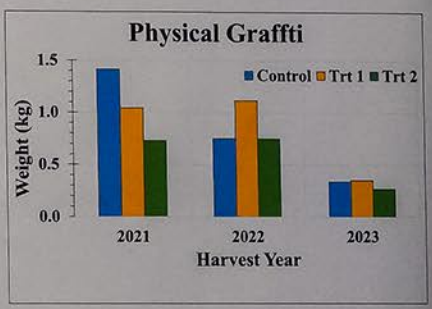

Figure 5. 'Physical Graffiti' average weight per plant overtime

Conclusion

The pruning recommendation for local growers cultivating dragon fruit is light pruning. Light pruning does not affect fruit production as negatively as heavy pruning. Pruning affects each cultivar differently. 'Halley's Comet and Physical Graffiti under light pruning can lead to increased fruit production after recovery. ' 'Purple Haze' takes longer to recover; while 'Dark Star' doesn't respond well to any pruning treatment. It is also important to note that although dragon fruit is cactus fruit production can be affected by drought.

References

Zimmerman, T.W, C. Montilla, S.M.A. Crossman. 2013. Production potential of Pitaya in the Virgin Islands. 49th Caribbean Food Crops Society. 49:120-124.

Acknowledgements

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