



ADDRESSING LIVELIHOODS WITHIN SMALL-SCALE TOBACCO GROWER BASE

CORESTA AP 2023 | CANCUN



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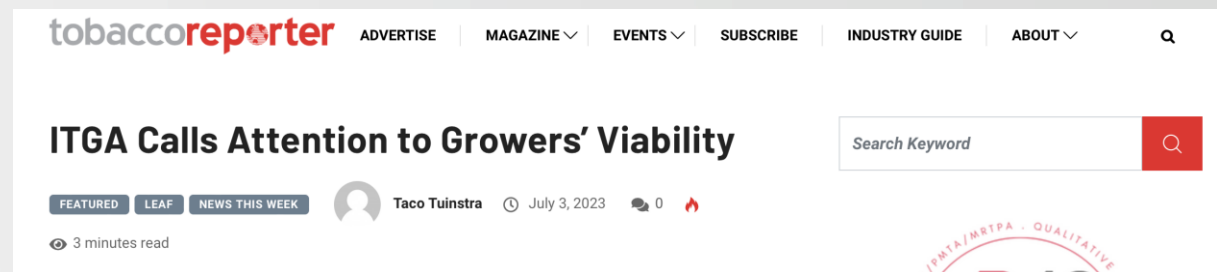


AGENDA

- BACKGROUND
- OBJECTIVE & OUTLINE
- KEY INITIATIVE
 - ▶ CAT – Challenge Action Tree
 - ▶ VRJ – Vision Road Journey
 - ▶ Improvement response
- RESULTS
- CONCLUSION & NEXT STEPS
- ACKNOWLEDGEMENTS

BACKGROUND

- Farmer viability is fundamental to long term sustainability within the tobacco industry
- Historically farmers have been encouraged to ‘improve efficiencies’ in order to increase margins
 - ▶ Enhanced operational efficiencies are normally associated with challenging cost factors
- Recently, there has been increasing focus on "livelihoods" of growers
- Tobacco Workers Conference (TWC USA 2022)
 - ▶ Farmers concerns: soaring input costs; stagnant prices; stagnant yields
- SCIA completed in Zimbabwe in March 2022: Findings identified 8 core impact areas including farmer viability



OBJECTIVE & OUTLINE

1. To develop and roll out a growers' training program targeting livelihoods
2. Use GALS (Gender Action Learning System) field tools: CAT (Challenge Action Tree) & VRJ (Vision Road Journey) to identify and implement an 'improved practice' which will have positive impact on farmer returns
3. Implement 'bud-topping' study to determine impact
4. Include improved practice in contracted farmer training seminars

KEY INITIATIVE

TOPPING PROGRAM FOCUSING ON IMPROVING FARMER INCOMES: PREMIUM ACTIVE TANZANIA LIMITED (PATL)

- Challenge Action Tree (CAT) & Vision Road Journey (VRJ) link well together
- CAT allows farmers to identify root causes and develop solutions to each root cause within three main categories:
 1. Production root cause
 2. Relationship/ household root cause
 3. Marketing root cause
- Using CAT, a production challenge was identified
- After identifying challenges, growers map issues using the VRJ tool: first stage in producing a plan to help them work towards one realisable element of their visioning in order to improve their livelihood

USING CAT FOR ROOT CAUSE ANALYSIS AND SOLUTION



PRODUCTION CHALLENGE

Farmers were experiencing low yields: 1 500kg/ha average (ZW:2 200kg/ha small-scale)



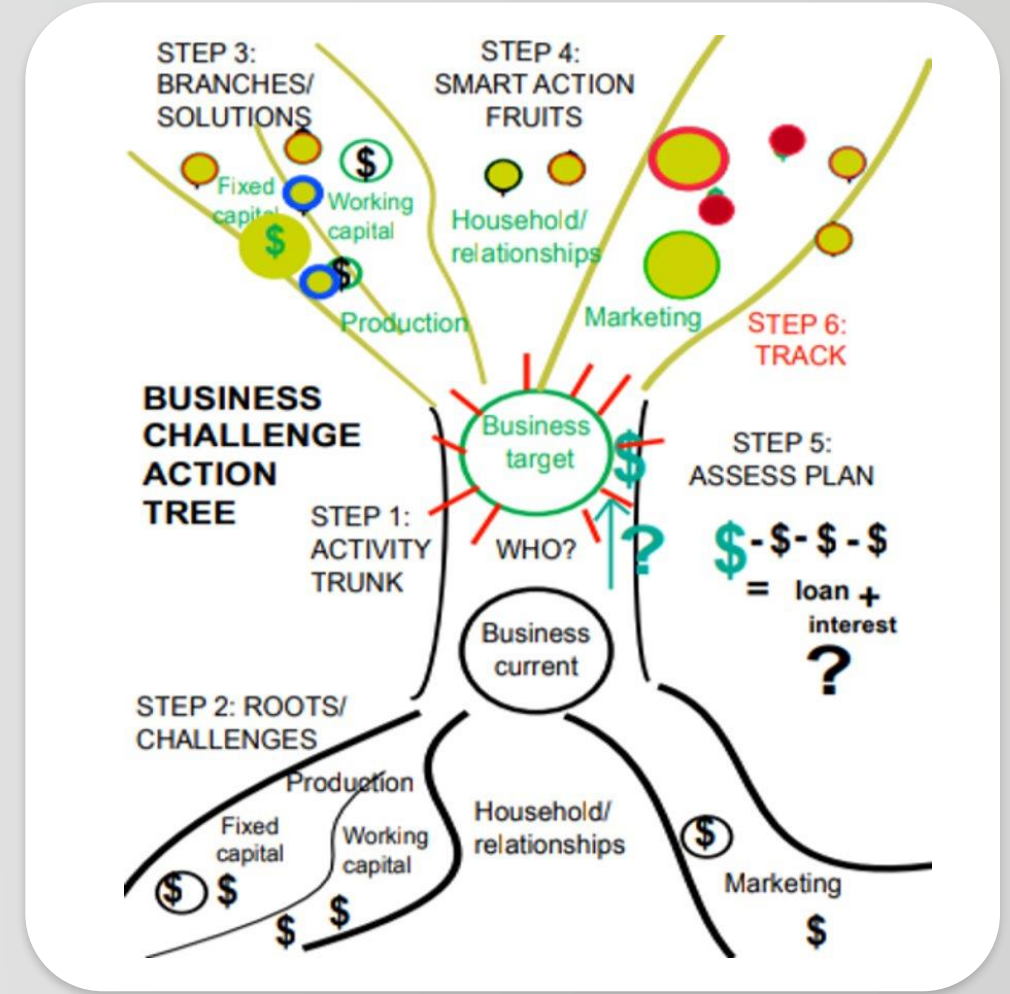
ROOT CAUSE

Poor GAP practices (late topping); losing potential yield = < in income



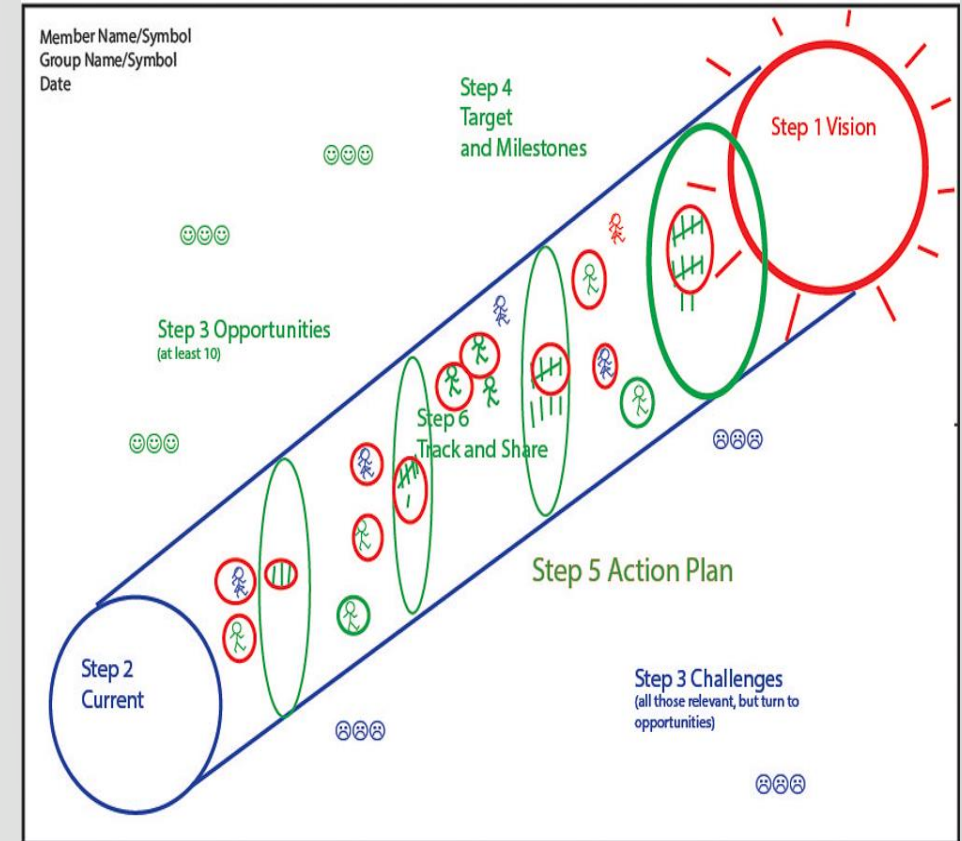
SOLUTION

Implementation of a bud-topping program to improve yield (& quality) and therefore farmer income



USING THE VISION ROAD JOURNEY (VRJ) TO MAP THE IMPROVEMENT RESPONSE

- How can we increase farmer incomes by implementing GAP?
- Key is to maintain COP at existing levels, & at same time >se potential income
- Current situation:
 - ▶ Farmers (most) delaying topping by ~15 days
 - ▶ ~15-20% < in potential yield
 - ▶ Crops grown by PATL are well fertilized
 - ▶ Yield potential ~2 200kg/ha (conservative)
 - ▶ Current yields: 1 500kgs/ha (well below potential)



DEVELOPING AN IMPROVEMENT RESPONSE: PATL BUD-TOPPING

- Bud-topping trial prioritized as an improvement response:
 - ▶ ‘Low-hanging fruit’: low-cost improvement response with short term positive impact
 - ▶ Could be implemented immediately and achieved within a certain timeframe
 - ▶ Hand in hand with financial literacy training to contracted growers to manage their finances
 - ▶ Well documented

TOBACCO PRODUCTION – DAVIS & NIELSEN

Effect of topping on the growth, physiology and chemical composition of leaves

Topping has a much greater effect on the chemical and physical properties of younger than older leaves. For example, the increase in leaf area is confined to leaves that are less than 85% expanded at the time of topping and the younger leaf, the greater the effect on its ultimate area (Wolf & Gross, 1937; Papenfus & Quin, 1984)

TOBACCO PRODUCTION – DAVIS & NIELSEN

Time of topping

The beneficial effects of topping decreases as the time of topping is delayed and seeds are allowed to mature (Papenfus, 1970). Therefore, time of topping has a pronounced influence on the yield and chemical composition of cured leaves. Marshall and Seltmann (1964a) found that the average yield reduction in North Carolina as topping was delayed beyond the button stage was 16kg/ha per day for hand suckered plants.

Delaying topping once stem is past cigarette butt size:
Results in a loss of 300kgs/week/ha in potential yield
(Dr Rob Garvin ex TRB)

Topping increases the mass and size of a leave and alters its chemical composition. **Young leaves respond more to topping than older leaves** and therefore, the earlier plants are topped, the more the leaves are affected. Early topping will allow maximum expansion and development and consequently increase the yield potential of the crop. Experiments have shown that yield potential is reduced by approximately 1% for each day that topping is delayed after the early bud stage. Late topping also results in an overall lower nicotine content and increases the susceptibility of the middle and upper leaves of cultivators susceptible to white mould. **The stage at which the plants are topped has a more marked effect on the crop than different heights of topping.**

PATL'S BUD- TOPPING "JOURNEY TOWARDS IMPACT"

ROOT CAUSES	INPUTS	OUTPUTS	OUTCOMES	IMPACTS
<ul style="list-style-type: none"> • Growers in Tanzania consistently producing low yields (\pm 1500kg/ha vs ZW small-scale \pm2200kgs/ha) • Delayed topping widely practiced (see literature) 	<ul style="list-style-type: none"> • Baseline survey • Training of trainers (theoretical & practical) • Training budget • Scientific research expertise • Social impact expertise 	<ul style="list-style-type: none"> • Observable yield increase and quality improvement • Improved FT awareness of the theoretical and practical implications of bud-topping • Bud-topping forms integral component of FT agronomy training 	<ul style="list-style-type: none"> • FTs are able to accurately assess the connection between bud-topping and farmer livelihoods • Higher yields = increased revenue from sales • Data regarding the bud-topping exercise is easily collected and provides actionable information 	<ul style="list-style-type: none"> • Growers' yield and quality improves • Increased farmer returns so growers have access to higher disposable income

METHODS & MATERIALS

- Three locations (Mbeya, Katavi & Ruvuma regions of Tanzania)
- RCBD w. 2 treatments & 10 replications
- K326 Variety
- Plot dimensions; 12.0 m wide and 8.4 m long ($\approx 1/100$ th Ha)
- Leaf measurements (length & width) taken 3WAT & 6WAT + yield



METHODS & MATERIALS

- Leaf length and width measurements taken from “leaf” stalk position three weeks after topping and six weeks after topping (ten plants per rep)
- Cured leaf yield data collected at the end of the season
- PROC GLIMMIX SAS 9.4 (contrast statements), LSD 0.05
- Fixed effects: topping practice (Grower std vs Bud-topped)
- Random effects: environment & replication
- Variables analyzed: topping practices

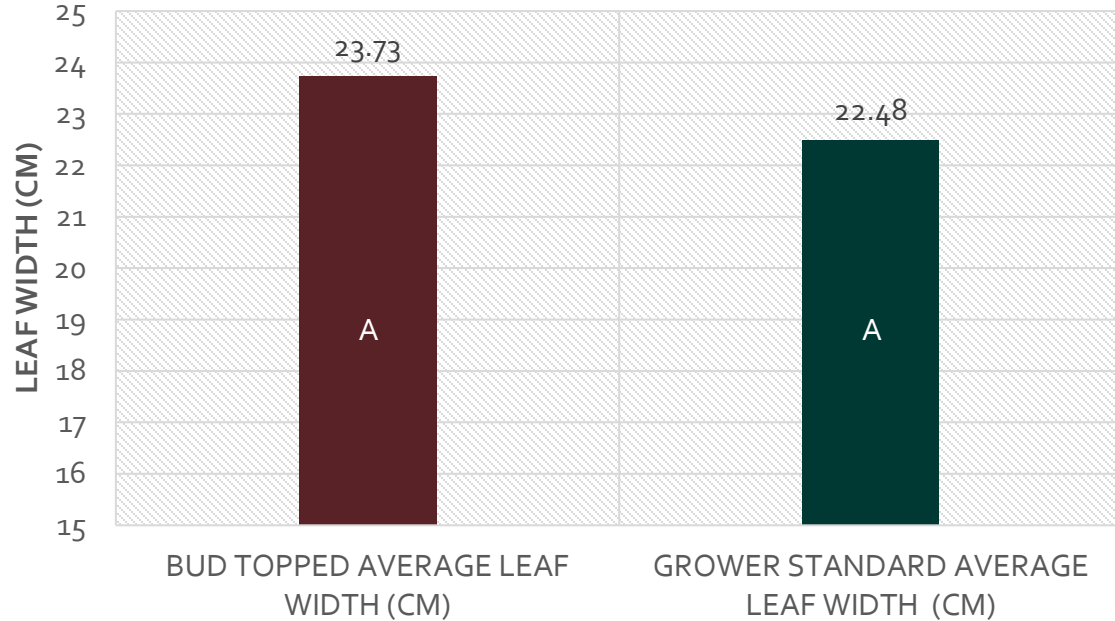


RESULTS

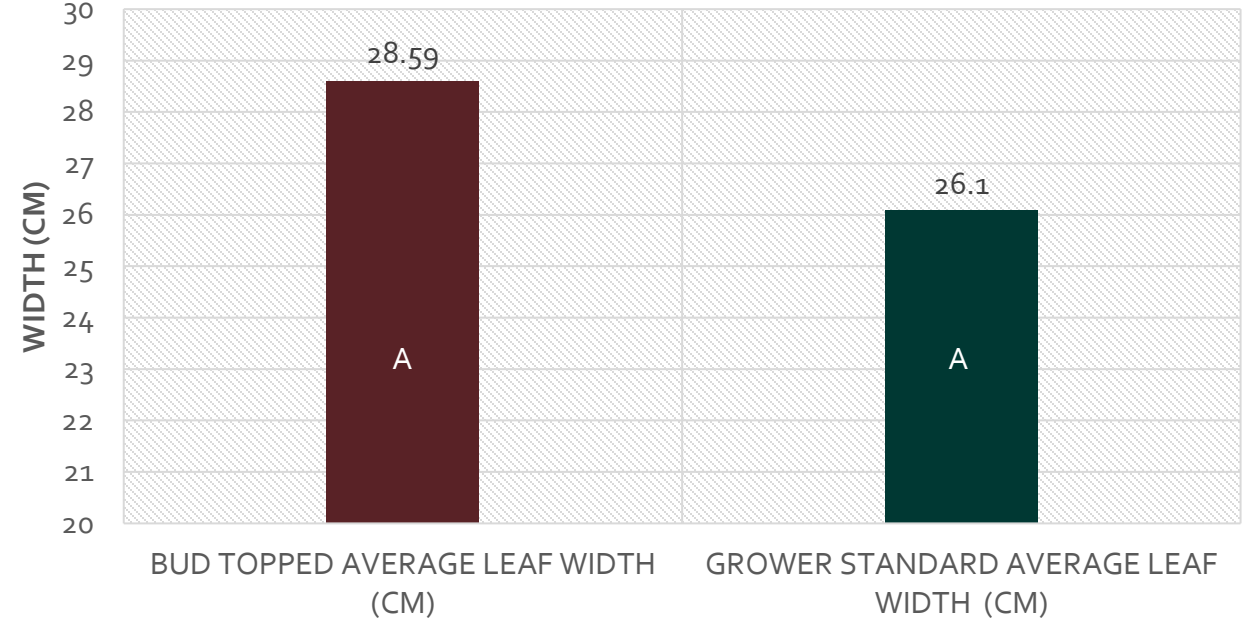
Treatment	3WAT Length	3WAT Width	6WAT Length	6WAT Width	Length Change	Width Change	Yield
	cm				%		
Bud Topping	58.01	23.73	65.51	28.59	13.26	21.32	1602
Grower Std	58.18	22.48	63.85	26.1	9.86	16.58	1260
P>F	ns	ns	ns	ns	0.003	0.049	0.003

RESULTS

BUD TOPPED VS GROWER STANDARD "LEAF" STALK POSITION WIDTH 3WAT

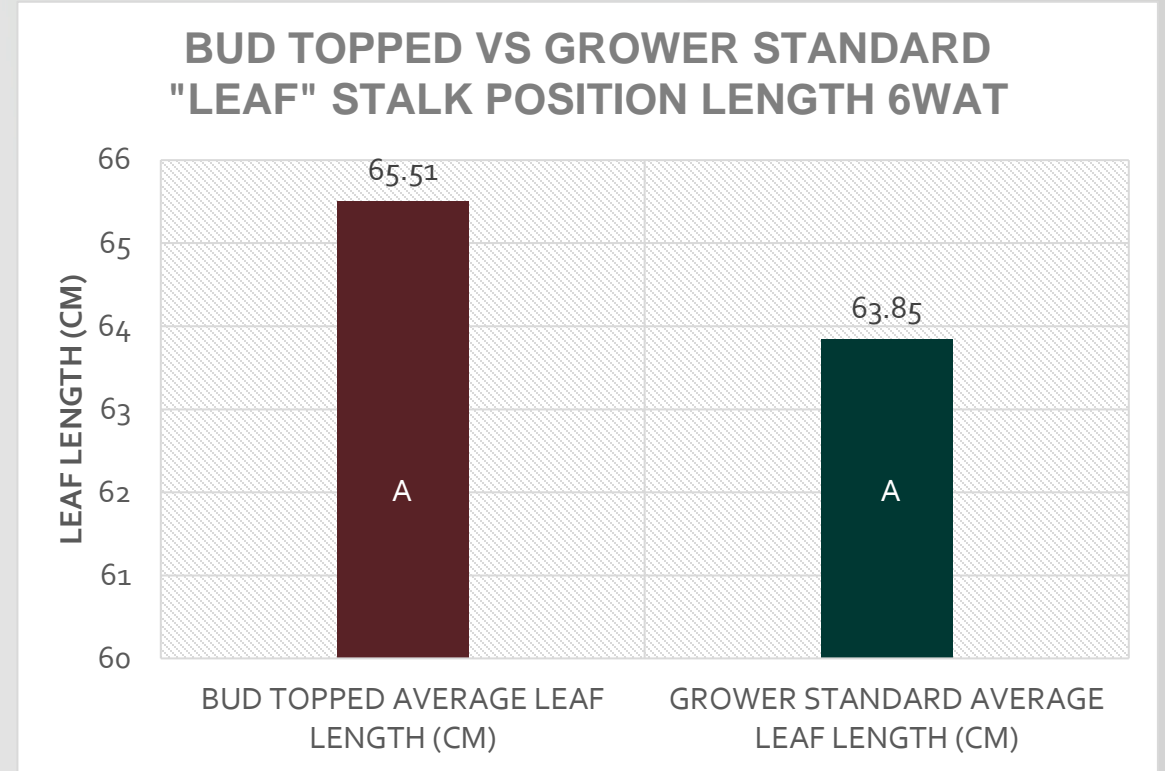
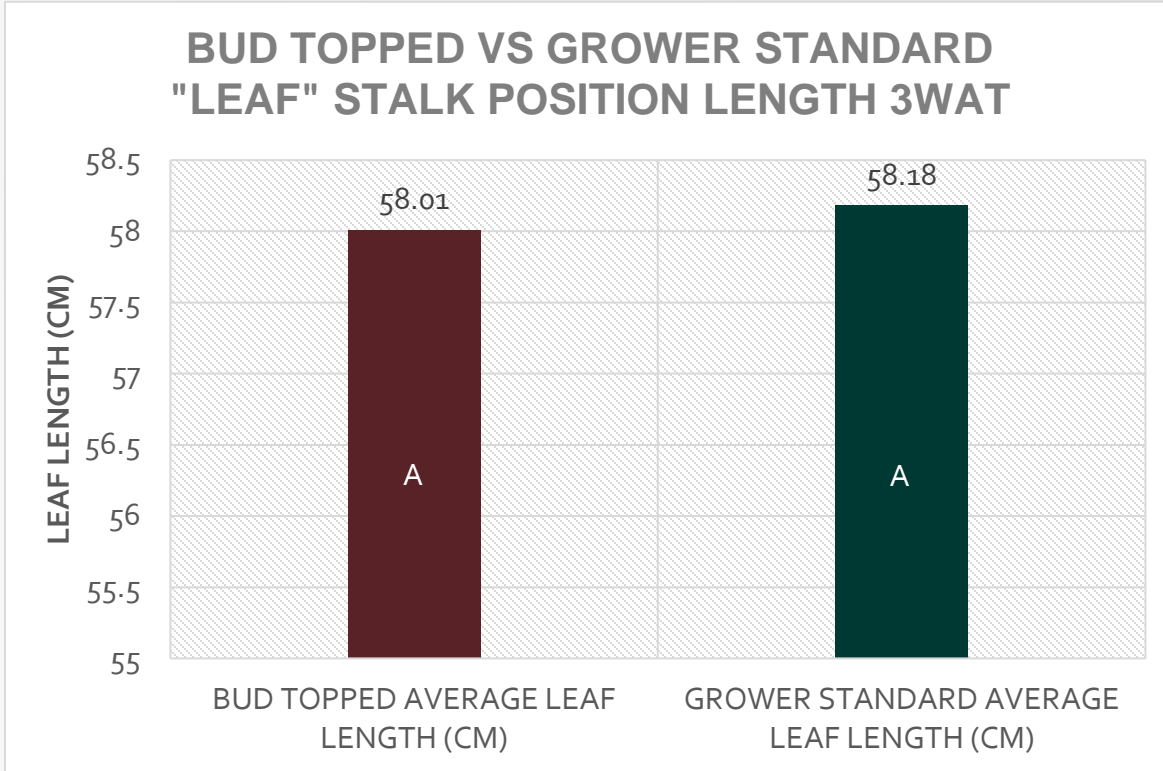


BUD TOPPED VS GROWER STANDARD "LEAF" STALK POSITION WIDTH 6WAT



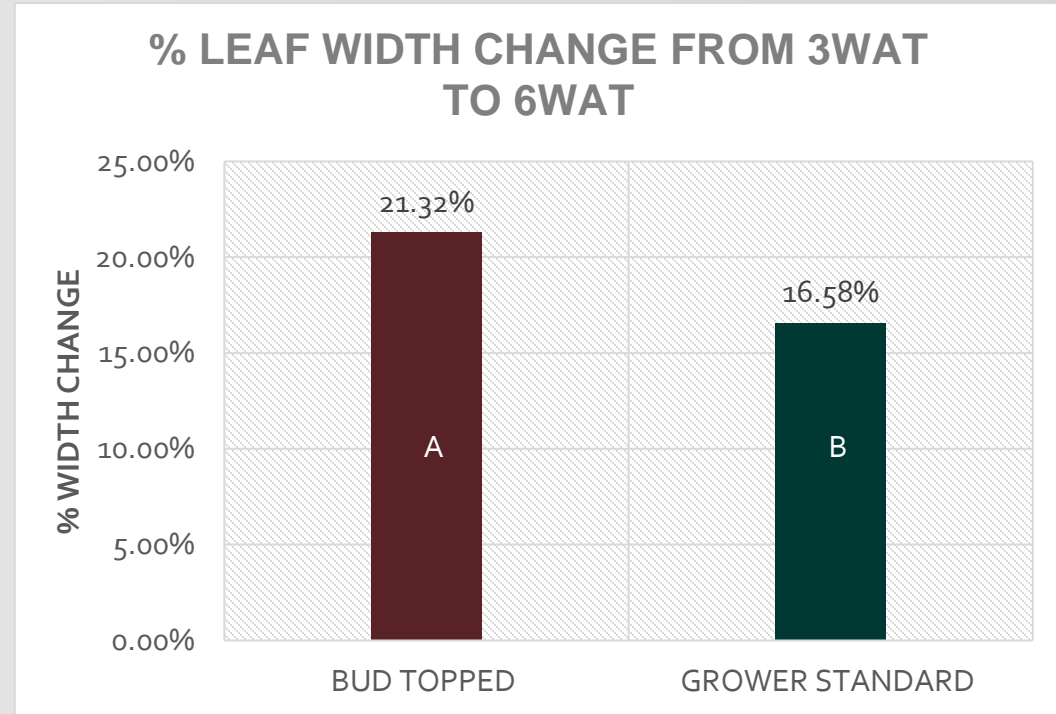
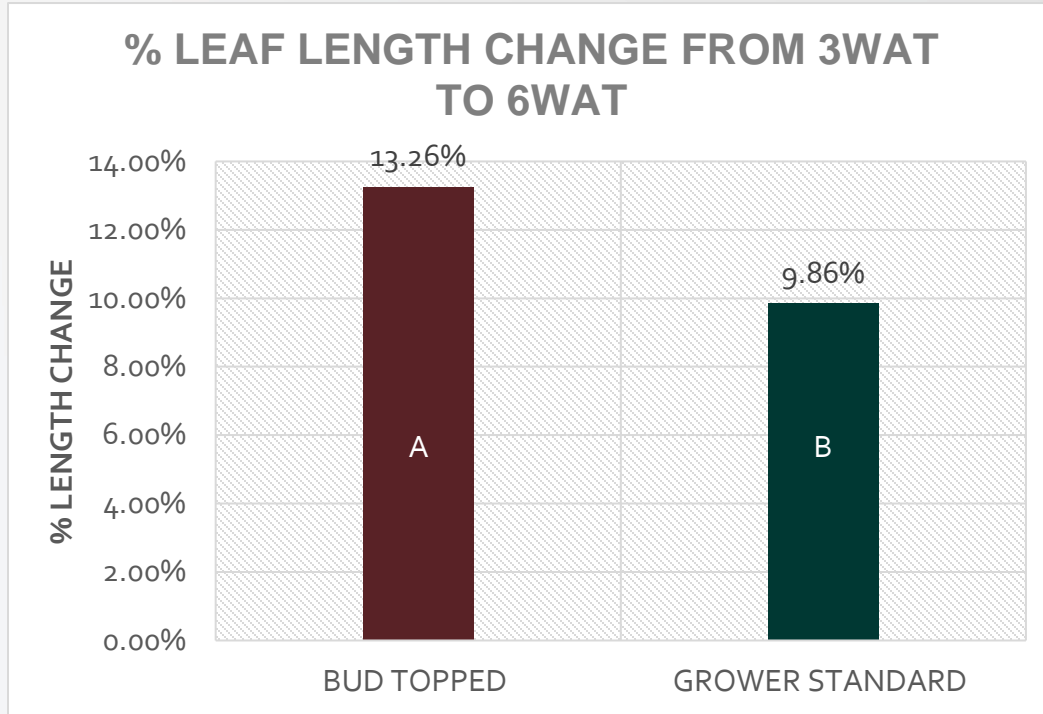
^a Treatment means followed by the same letter are not significantly different at the $\alpha=0.05$ level.

RESULTS



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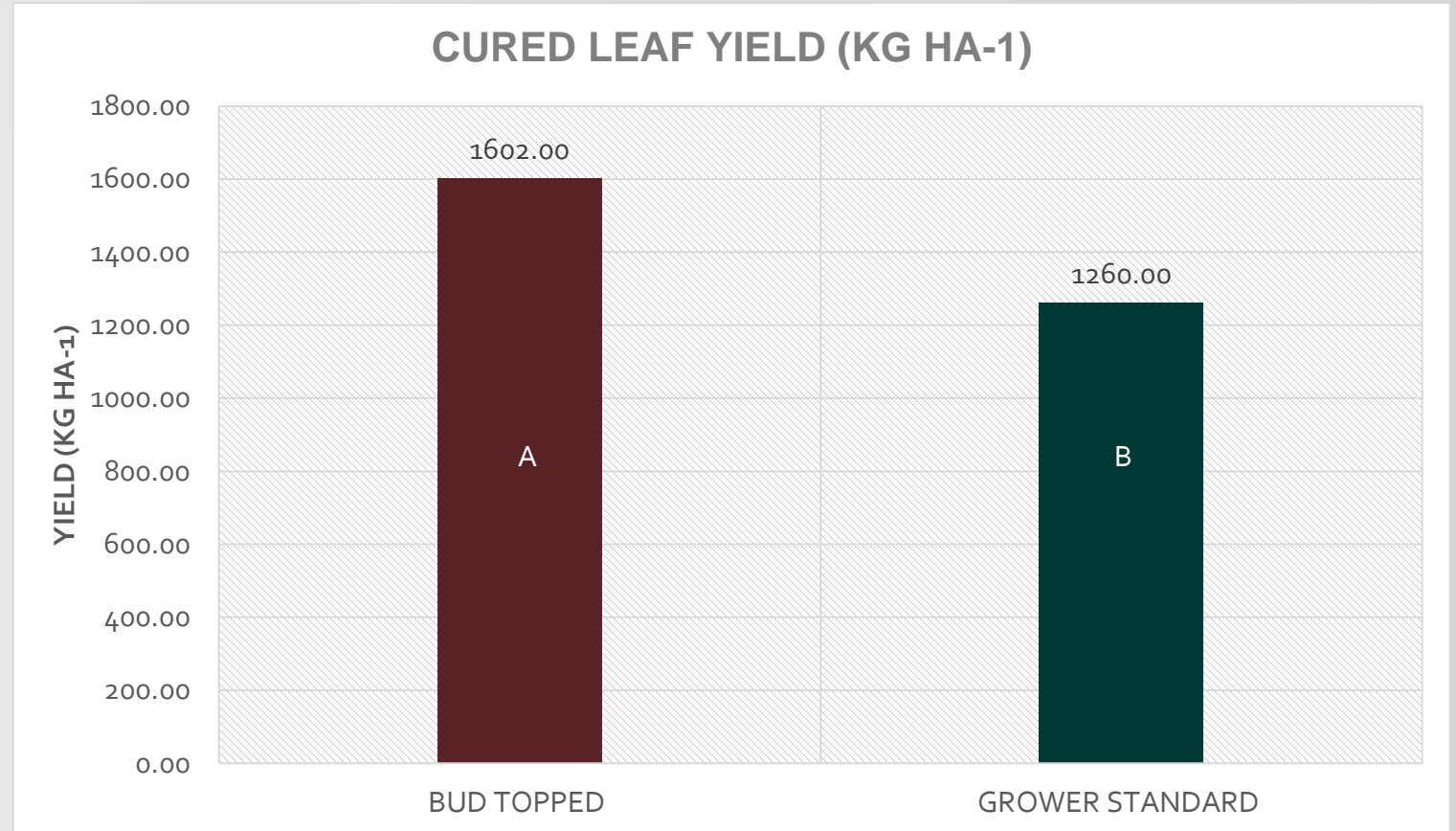
RESULTS



^a Treatment means followed by the same letter are not significantly different at the $\alpha=0.05$ level.

RESULTS

- Significant (27%) yield increase:
- 1260kg/ha vs 1602 kg/ha
- @ \$2.36/kg = > of \$807/ha
- QI (Quality Index) not assessed in current season
- Expected to have positive impact on QI with associated increase on average price



^a Treatment means followed by the same letter are not significantly different at the $\alpha=0.05$ level.

CONCLUSION & NEXT STEPS

- Leaf length & width % change significant
- Bud topped plots outyielded grower standard plots by 342 Kg ha⁻¹
- Bud topping increased grower income by \$ 807 ha⁻¹
- Simple improvement response can have a significant positive impact on overall farmer viability
- Educating farmers on basic financial literacy is first step towards ensuring farmer viability

- Continue trials for x 3 seasons
- Include QI analysis to differentiate quality from standard practice tobacco
- Improved GAP to be included in farmer training seminars & farmer handbooks
- Roll out financial literacy training to contracted grower base

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