

AGRICULTURE COMPETITIVENESS

Crop Diversification and Alternatives to Tobacco

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ITGA Issues Day
Santiago, Dominican Republic
5 November 2007

My Background

- Independent consultant.
 - Agriculture economics and rural development
 - Market growth and value chain competitiveness
- Assignments have included work for WHO and World Bank on crop alternatives.
 - Long-term future of tobacco is uncertain
 - Identification of investment requirements and diversification strategies
 - I do not speak for these organizations

[Objectives]

- Consider some of the current pressures for crop diversification.
- Analyze the relative costs and profitability of agricultural crops with existing data.
- Discuss and outline some main issues that need to be considered for crop substitution and improved competitiveness of tobacco.

[Contextual Facts]

- WHO Framework Convention on Tobacco Control (WHO-FCTC).
 - Limits on tobacco advertising and promotions.
 - Non-smoking environments.
 - Excise taxes and other fiscal measures.
- Entered into force on 27 February 2005.
- Presently 168 Signatories; 158 Parties.
- Has set off “alarm bells” calling for crop diversification (and substitution!).

[A Controversial Debate]

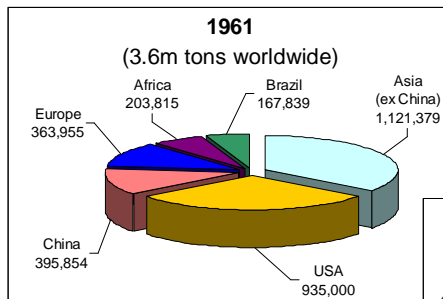
Pros	Cons
<ul style="list-style-type: none">• Tobacco is a major contributor to local economies.• Tobacco is profitable and has brought development to rural areas.• Without tobacco, farmers could not earn as much income.• Tobacco supports food production.• Tobacco creates more employment per hectare than other enterprises.• Demand for tobacco products continues to grow.	<ul style="list-style-type: none">• Does not provide a good income.• Farmers are caught in unequal trading relations.• Tobacco farming has trapped poor growers into a never-ending cycle debt.• Tobacco production exposes farmers to serious health risks.• Tobacco contributes to rural poverty, food insecurity, and child labor.• Tobacco contributes to deforestation and environmental degradation.

- Overall, a diverse and polarizing debate.

[Supply and Demand Trends]

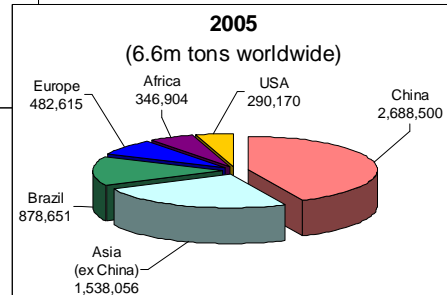
- Demand Trends
 - 1.1 billion smokers in 2000
 - 1.7 billion smokers by 2025
- Supply Trends
 - 80% of tobacco now grown in developing countries.
 - Often grown by poor farmers on very small farms.

Global production (tons unmanufactured)



- Global production nearly doubled (increase about 1% pa since 1980).

- Shift from developed to developing world.



ANALYTICAL CONSIDERATIONS

- What do farmers think about?
- What matters to policymakers?
- What makes a crop competitive?

[Farmer Considerations]

- **Agriculture production and marketing begins with the decisions farmers make.**
 - Costs and profits
 - Rates of return
 - Demand for labor
 - Climatic suitability
 - Market access
 - Investment requirements
 - Skills and experience
 - Production and market risks

[Policy Considerations]

- **Policymakers have additional (macro-level) considerations.**
 - Public health and welfare
 - Worker productivity
 - National income (trade revenue, taxation)
 - Rural incomes, poverty, and food security
 - Environmental sustainability
 - Agriculture extension and input supply
 - Investment promotion
 - Trade facilitation and standards

[Value Chain Considerations]

- **Trade competitiveness depends on:**

- Price
- Quality
- Timing
- Product differentiation
- Adherence to standards
- Minimum order specifications
- Cost build-up
- And much (much!) more...

[ANALYTICAL METHODS]

- Crop budget analysis
- Value chain analysis
- Diversification experiences

[Crop Budget Analysis]

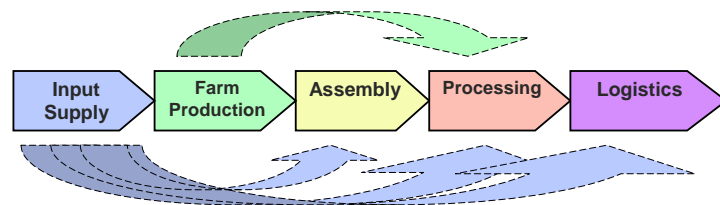
- **Aim is to understand the trade-offs farmers face.**
 - Indicative per hectare budgets
 - Range of management possibilities
 - Traditional and new products
 - Alternative market conditions
 - Spectrum of possibilities, not definitive measurements

[Interpretation of Results]

- Comparison and rankings of tobacco and alternative enterprises.
- Comparison between management levels.
- Sensitivity to changes in yield and price.
- Poverty criteria (ROR, Profit > GNI per capita).
- High income from small area.

Value Chain Analysis

■ Stages of the Value Chain:



- Build-up of costs from stage to stage
- Composition of costs
- How profits are shared

New methodology just recently applied to tobacco.

COUNTRY CASE STUDIES

■ Cost and Profitability Analysis

- Indonesia
- Zimbabwe
- Malawi

■ Value Chain Analysis

- Zambia

■ Diversification Experiences

- Brazil

1. Indonesia

- Large and diverse economy
- Upland and lowland tobacco
- Grown on very small farms

Indonesia Upland Farm Systems



- Already a diverse range of crops

- Extremely intensive farm systems



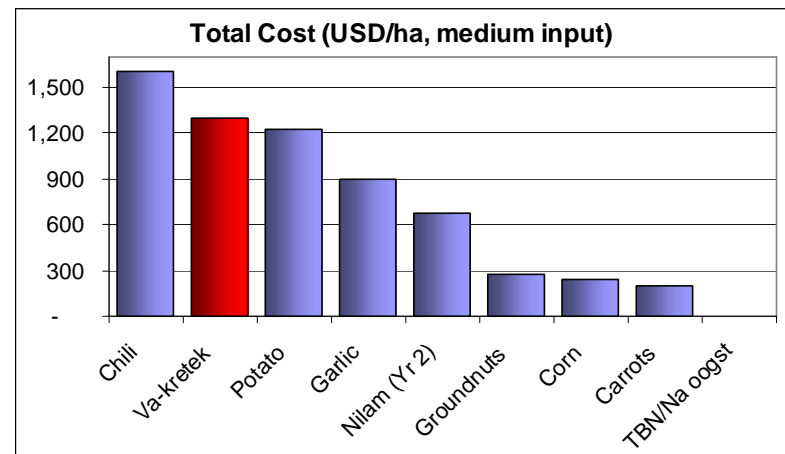
Indonesia Upland Farm Systems



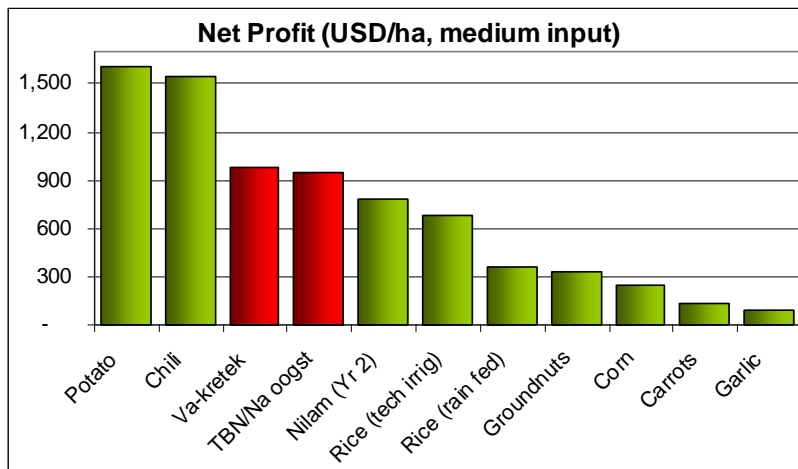
- Making the most of small land parcels



Indonesia – costs



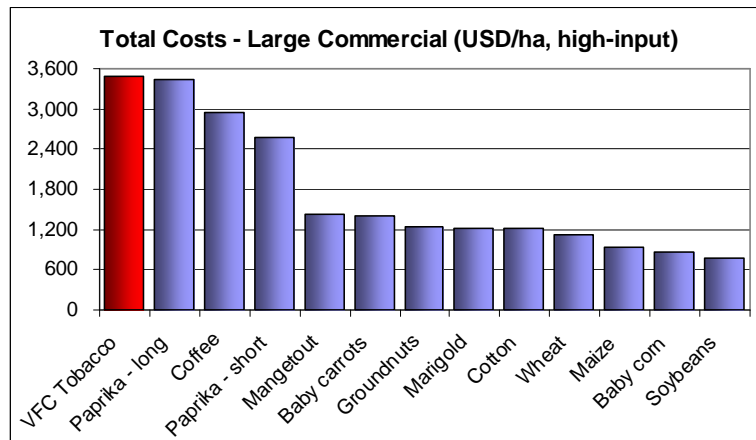
[Indonesia - profits]



[2. Zimbabwe]

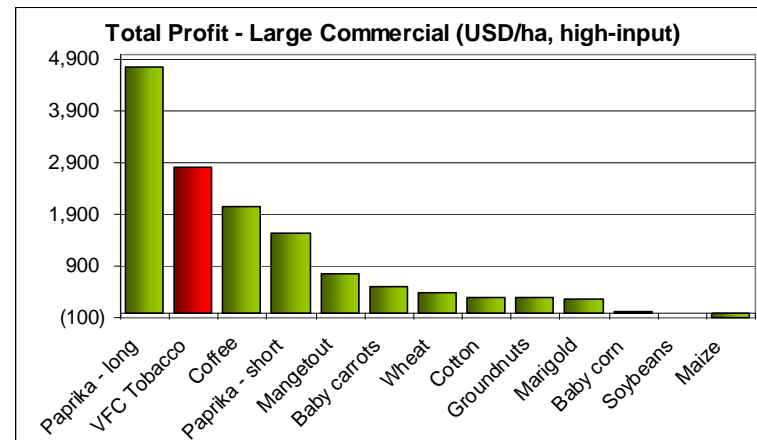
- Historically 10% exports; 30% GDP
- \$400-600m total value down to \$118m
- Mainly a large-scale commercial crop

Zimbabwe – costs



Roses not shown = \$212,000 to \$226,000 total costs per hectare

Zimbabwe – profits



Roses not shown = \$17,000 to \$50,000 net profit per hectare

Zimbabwe

Sensitivity to Change in Yield and Price

	% change in yield to net profit = 0	% change in price to net profit = 0
Large-scale Commercial		
Flue-cured tobacco (irrig)	-48%	-42%
Flue-cured tobacco	-45%	-39%
Paprika (irrigated)	-41%	-38%
Coffee (irrigated)	-34%	-31%
Cotton	-6%	-5%
Soybeans	+16%	+15%
Maize	+24%	+20%
Communal Farmers		
Coffee	-84%	-81%
Paprika	-70%	-68%
Cotton	-64%	-60%
Flue-cured tobacco	-58%	-50%
Burley tobacco	-50%	-45%
Maize	-14%	-11%

Zimbabwe – smallholder

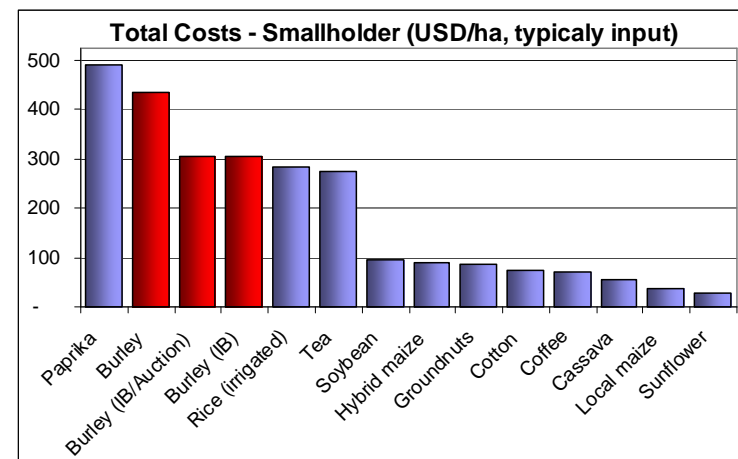
Food Security and Tobacco Production

	Net Profit (\$/ha)	INCOME FROM TOBACCO			Maize Yield at Same Mgt. Level (tons/ha)
		Equivalent value in maize (tons/ha)			
		\$120/mt	\$150/mt	\$200/mt	
Flue-cured tobacco					
High	835	6.96	5.57	4.18	2.00
Medium	571	4.76	3.81	2.86	1.25
Low	433	3.61	2.89	2.17	0.83
Burley tobacco					
High	543	4.53	3.62	2.72	2.00
Medium	408	3.40	2.72	2.04	1.25
Low	190	1.58	1.27	0.95	0.83

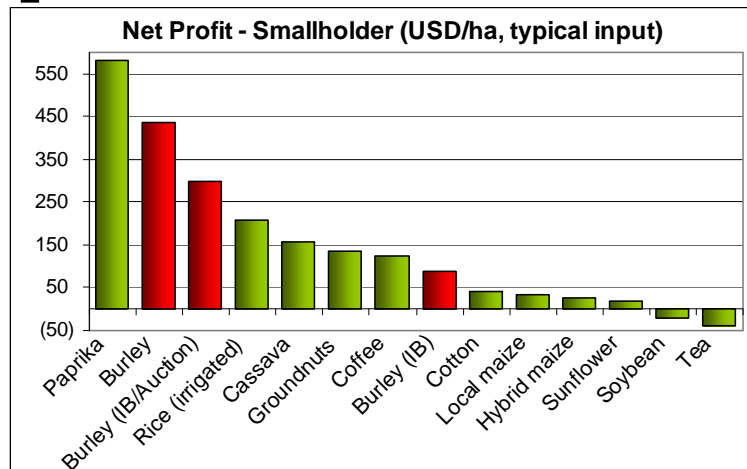
3. Malawi

- 40% GDP from tobacco
- 1 in 5 employed in tobacco
- Extremely small farm sizes

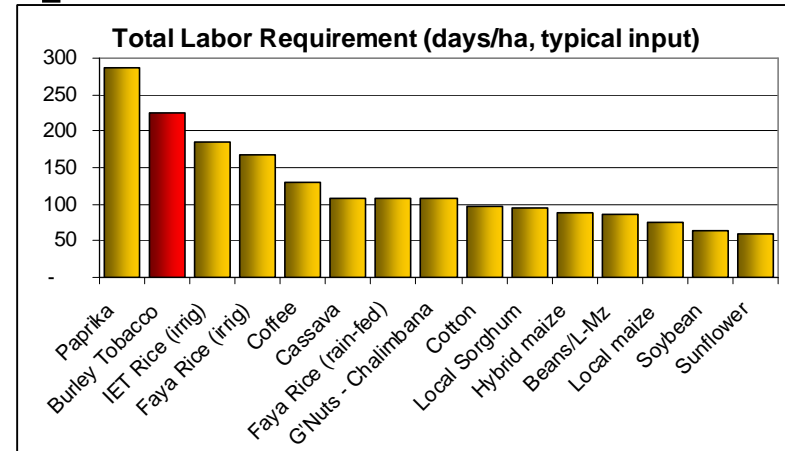
Malawi – costs



Malawi – profits

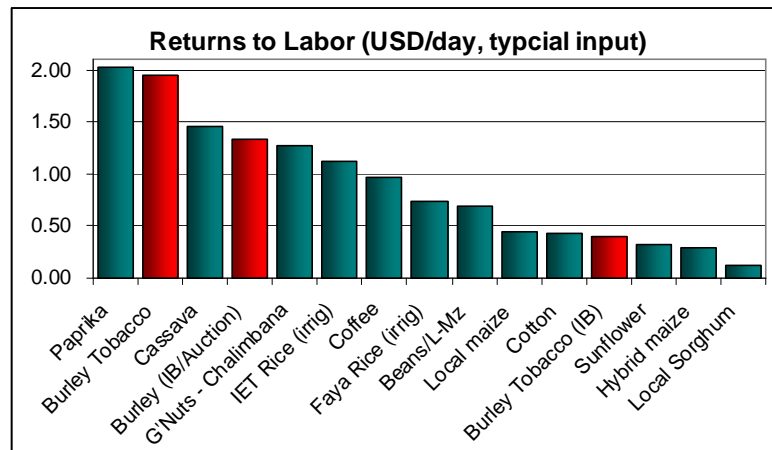


Malawi – labor requirement



Tomato not shown = 788 days/ha

Malawi – returns to labor



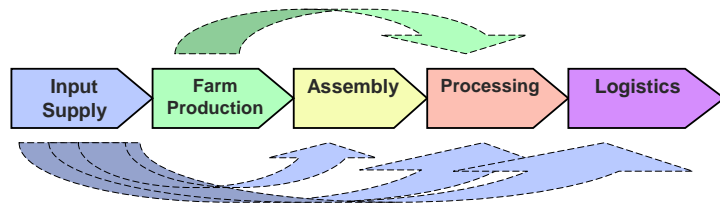
Tomato not shown = \$9.32/day

4. Zambia

- Large and smallholder farmers
- Rapidly changing sector
- Value chain approach

Value Chain Analysis

- New method recently applied to tobacco (and other commodities).
- Stages of the Value Chain



Zambia – Large Commercial

Large Commercial VFC (per MT data).

VFC Tobacco (LCF)	FARM GATE PRODUCT		ASSEMBLED RAW MATERIAL		PROCESSED RAW MATERIAL		TRADED PRODUCT		Final Commodity	
	ZMK	USD	ZMK	USD	ZMK	USD	ZMK	USD	ZMK	USD
Gross revenue	7,200,000	1,800.00	8,154,930	2,038.73	9,354,930	2,338.73	12,480,000	3,120.00	19,200,000	4,800.00
Production costs										
Crop purchase		-	7,200,000	1,800.00	8,154,930	2,038.73	9,204,000	2,301.00	14,160,000	3,540.00
Other variable costs	5,660,005	1,415.00	913,200	228.30	1,200,000	300.00	3,120,000	780.00	4,800,000	1,200.00
Investment costs	554,141	138.54	41,730	10.43	-	-	-	-	-	-
Total costs	6,214,146	1,553.54	8,154,930	2,038.73	9,354,930	2,338.73	12,324,000	3,081.00	18,960,000	4,740.00
Final income										
Gross margin	1,539,995	385.00	41,730	10.43	-	-	156,000	39.00	240,000	60.00
Net profit	985,854	246.46	-	-	-	-	156,000	39.00	240,000	60.00
Rates of return										
Gross margin/total VC		0.27		0.01		0.00		0.013		0.013
Net profit/total costs		0.16		0.00		0.00		0.013		0.013

- **Farmer profit:** Much higher than arable crops, but grown on smaller area and usually just 1-part of a diverse farm system.
- **Merchant profit:** Around \$39/MT raw material, but depends on financing and investment budget.

Zambia – Smallholder

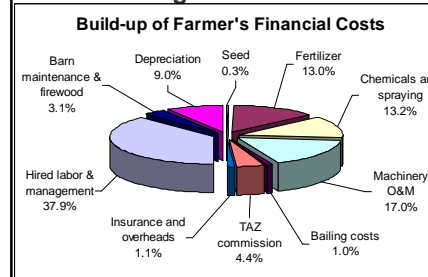
Smallholder VFC (per MT data).

VFC Tobacco (FAM)	FARM GATE PRODUCT		ASSEMBLED RAW MATERIAL		PROCESSED RAW MATERIAL		TRADED PRODUCT			
	ZMK	USD	ZMK	USD	ZMK	USD	Traded Raw Material		Final Commodity	
							ZMK	USD	ZMK	USD
Gross revenue	7,200,000	1,800.00	8,082,930	2,020.73	9,282,930	2,320.73	12,350,000	3,087.50	19,000,000	4,750.00
Production costs										
Crop purchase	-	-	7,200,000	1,800.00	8,082,930	2,020.73	9,204,000	2,301.00	14,160,000	3,540.00
Other variable costs	3,056,680	764.17	841,200	210.30	1,200,000	300.00	3,120,000	780.00	4,800,000	1,200.00
Investment costs	314,188	78.55	41,730	10.43	-	-	-	-	-	-
Total costs	3,370,867	842.72	8,082,930	2,020.73	9,282,930	2,320.73	12,324,000	3,081.00	18,960,000	4,740.00
Final income										
Gross margin	4,143,320	1,035.83	41,730	10.43	-	-	26,000	6.50	40,000	10.00
Net profit	3,829,133	957.28	-	-	-	-	26,000	6.50	40,000	10.00
Rates of return										
Gross margin/total VC		1.36		0.01		0.00		0.002		0.002
Net profit/total costs		1.14		0.00		0.00		0.002		0.002

- **Farmer profits:** Much higher per ha than LCF (but grown on a small area).
- **Merchant profits:** Lower than than LCF due to outgrower costs and quality.

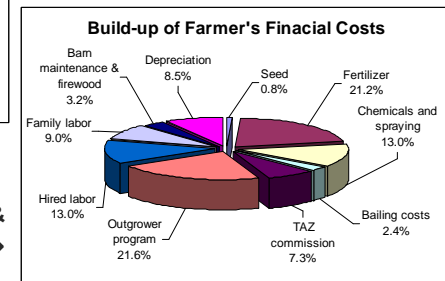
Zambia – Farm Level Cost Components

Large-Commercial



← Mainly management and machinery O&M

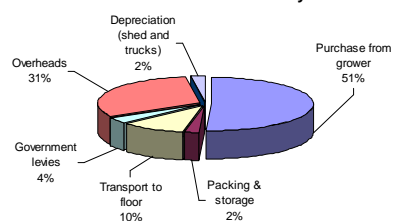
Smallholder



Mainly outgrower charges & fertilizer →

Zambia – Other Value Chain Cost Components

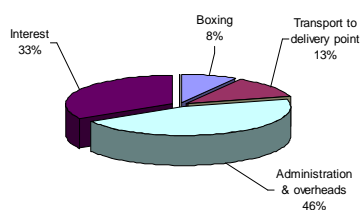
Financial Costs at Assembly



Financial Costs at Processing



Financial Costs at Distribution



Zambia - Value Chain Indicators

Domestic Value Added (DVA) = Domestic costs and mark-ups
+ Official duties and tax
+ Unofficial charges and extra costs

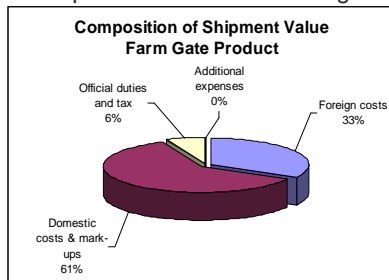
Shipment Value (SV) = Domestic Value Added
+ Foreign components

VFC Tobacco (LCF)	FARM GATE PRODUCT		ASSEMBLED RAW MATERIAL		PROCESSED RAW MATERIAL		TRADED PRODUCT			
	ZMK	USD	ZMK	USD	ZMK	USD	Traded Raw Material		Final Commodity	
	ZMK	USD	ZMK	USD	ZMK	USD	ZMK	USD	ZMK	USD
Domestic Value Added										
Costs & mark-ups	4,066,728	1,016.68	5,319,419	1,329.85	6,025,279	1,506.32	9,269,660	2,317.41	11,723,391	2,930.85
Official duties & tax	480,003	120.00	681,759	170.44	875,899	218.97	1,347,537	336.88	2,201,606	550.40
Additional costs	-	-	-	-	-	-	-	-	-	-
Total DVA	4,546,731	1,136.68	6,001,178	1,500.29	6,901,178	1,725.29	10,617,197	2,654.30	13,924,996	3,481.25
Foreign costs	1,667,415	416.85	2,153,752	538.44	2,453,752	613.44	3,775,004	943.75	5,035,004	1,258.75
Total Shipment Value	6,214,146	1,553.54	8,154,930	2,038.73	9,354,930	2,338.73	12,324,000	3,081.00	18,960,000	4,740.00

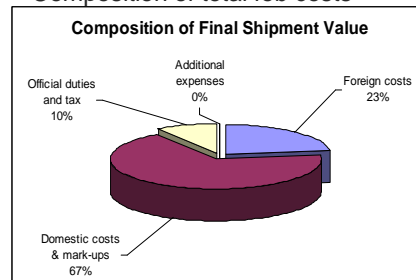
Compare final SV with equivalent parity price.

Zambia – Value Chain Components

Composition of costs at farm gate



Composition of total fob costs



- Most costs are domestic (which indicates good scope for improvement).
- Accumulated taxes are relatively modest.

5. Brazil

- Diversification experience
- World's 2nd largest tobacco grower
- Avg. 2.6ha plots on 16.8ha farms

[Brazil - Diversification Experience]

- Three examples:
 - Agro-ecological crops to local outlets
 - Bananas for national trade
 - Specialty vegetables to supermarkets
- Contrasts with developed country experience and quota buy-backs.

[Brazil - Diversification Experiences]

- Each model a success, but with limited outreach.
- Many ups and downs along the way.
- Practical supply chain considerations became apparent:
 - Quality, timing, coordination, delivery
- Niche products are possible, but only an incomplete answer.

MAIN CONCLUSIONS

- Lessons from the analysis
- Agenda for future research

Main Conclusions

- **Tobacco is likely to remain profitable for the grower, except...**
 - It is expensive to produce and can be risky.
 - Social costs can be high.
- **Tobacco is not the only crop able to provide a high income, except...**
 - Most rival crops are also expensive and have smaller markets.
 - Rival crops must be competitive and may require special supply chain investments.

[Main Conclusions]

- **Diversification means developing more than 1-2 “magic” commodities.**
 - Agro-ecological conditions
 - Farmer skill
 - Farm size
 - Input availability
 - Competing demand for resources
 - Market opportunities
- **The challenge also relates to poverty reduction and economic growth.**

[Main Conclusions]

- **Time is likely on the grower’s side**
 - Long-term demand is still promising.
 - Tobacco is robust to price change.
 - WHO-FCTC is nothing like the end of tobacco agriculture.
- **But that does not mean there is room for complacency.**
 - A world without tobacco (or less tobacco) is coming.
 - New crops take time to emerge.

[Main Conclusions]

- **Tobacco can help fuel diversification.**
 - Horticulture in Zimbabwe
 - On-farm technology and improvement
 - Non-farm economic growth
- **Sustained competitiveness also means investing in tobacco.**
 - Malawi farm gate pricing
 - Outgrower costs (and problems) in Zambia
 - Crop research and extension

[Main Conclusions]

- **Growers and sector planners need to have a long-term vision.**
 - Relative costs and profits
 - Special investment requirements
 - Long-term market prospects

Important to have a solid platform for open discussion of the trade-offs and opportunities!