

# Agricultural Extension Cost – Profit

## Quantifying Benefits of Extension, Costs Profit Models

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# Extension Benefit & Value



- Generally accepted (assumed) that extension is needed and
  - A beneficial & viable investment
  - Is important to improve and maintain productivity
  - Does increase profits (along the whole value chain, providers and producers)
- Extension is perceived as viable investment, but exact data and ways to measure return don't exist.
- Sustained and increasing investments for extension, will -should- depend on its viability (\$ return on investment)
- Important data is *not* captured, e.g.:
  - Monetary input and return
  - Extension uptake and impact of different messages
  - Streamlining and focusing of extension (productive farmers, those adopting the messages)
  - Extension contribution to increased viability and revenue
- No, feasible and costs effective ways to measure profitability of extension
- Little to no empirical studies/data of the economic (monetary) benefits of agricultural extension



# Study

- COMPACI / GIZ; assess viability (cost-profit) and consequently the sustainability of the company investments into extension services.
- Michael Jenrich
- Munya Machila
- Benjamine Mlambo



# Extension Monitoring



- The number of meetings/sessions with farmers or groups
- The number of group training sessions
- The number of farmers trained/met
- Indirect: e.g. production, productivity, yield, food security, income increase
- Others, e.g. gender, youth participating

No/very limited indicators on adoption, application

No info on return on investments (**costs ↔ profit**)



# Study - Objective



- Assess extension systems, targets and cost profit monitoring systems (if any).
- Develop, systems to verify extension viability (*input vs. outputs*), ways to measures uptake, impact and financial return
- Review sustainability and viability of extension and investments made into extension through:
  1. Capturing of extension costs & assessing impact
  2. Development of extension indicators and impact monitoring
  3. Identifying best and most viable practices
  4. Monitoring processes
- Identify critical extension and profitability thresholds (e.g. breakeven points and needed productivity increases)
- Develop and share options for providers to measure uptake and impact



# Model



4 - Step approach, in cooperation with cotton companies in TZ, MZ and ZM

1. Extension cost records: (records to calculate extension costs, toa; and per farmers)

- template for providers to record and break down extension costs

2. Translating extension costs to output:

Product units (per farmers HH, ha, etc.), costs as crop value (e.g. kg of cotton), to identify breakeven point and production targets for extension

3. Verify and value extension impact (productivity change)

Field assessments of adoption of extension, based on specific extension indicators.

4. Track yield impact:

Measure yield (productivity) differences and resulting financial gains for farmers/companies through adoption (measure farmers adopting vs. those that did not)





# Indicators and Methodology



Development and testing of specific (cotton) extension indicators

Assessment of farmers that do/don't apply messages (yes-no)

Compare yield of farmers that do or don't

Analysing of yields of application of indicators (1 to 5)

Example indicators to verify extension uptake/adoption:

1. Timely planting - (within recommended window of planting)

2. Correct plant population, lines, spacing, thinning

3. Timely and sufficient weed control

4. Correct crop protection

5. Timely and correct harvesting and delivery (quality)



# Findings



- Most companies (within the study) provide extension services (at different intensity, costs)
- Agreed need for extension, but impacts (yield & \$) are not quantified (quantifiable)
- At - current and constantly - low productivity and returns extension is questioned, -high extension costs at stagnant productivity (some companies cut extension)
- Despite heavy investment, low productivity (yields) remain low, with little (if any) improvements (*is extension effective*)
- Current extension adoption measurement is activity based (number of meetings, training etc.)
- Extension is an important link between producers and buyers
- No cost profit monitoring
- Extension indicators could also measure impact and quantify extension adoption (quality control)





# Extension Costs In Product



Company	Extension Costs (total)	Number of farmers	Extension costs/farmer (\$/per season)	Extension Cotton value (at \$0.30/kg)
1	460.000	30.000	15	51
2	1.400.000	66.000	21	70
3	1.350.000	51.000	26	88
4	803.000	73.000	11	37



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# Extension Yield Impact (Model)



Extension intensity levels		low	medium	high
Extension messages adoption		10%	25%	60%
Extension yield gap (possible gain)*	600	60	150	360
Yield increases for respective extension**				
a) timely planting (20%)	120	12	30	72
b) spacing (20%)	120	12	30	72
c) weeding (20%)	120	12	30	72
d) plant protection (20%)	120	12	30	72
e) harvest (20%)	120	12	30	72
Yield gain**		60	150	360
Resulting Yield (current + gain) in kg/ha		460	550	760



- Current yield 400 kg/ha, Potential: 1000 kg/ha, possible gain 600 kg/ha (100%)
- \*\*calculated % increase through more intense extension)

# Extension Return (Model\*)



Extension Intensity	low	medium	high
Extension Value (kg cotton/farmers)	17	33	67
Net yield gain (gain - minus cost)	43	117	293
Value of gain (\$)	13	35	88
Extension costs/farmer	5	10	20
Extension profit/farmer	8	25	68
Total extension costs	50,000	100,000	200,000
Total extension gain (\$)	80,000	250,000	680,000
Extension investment return (input - output ratio)*	1.60	2.50	3.40



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\* Model 10.000

\*\* Extension gain (USD) @ \$ 0.3 /kg

# Model Extrapolation/Use

- Provided extension messages are:
  - Relevant/Correct
  - Adopted, Applied
- **Adoption is basis!**
- Returns do out way costs by a large margin (confirming extension's value)
- Development of set up and measurement (indicators) for various value chains
- Support promotion of extension



# Summary



- Currently extension viability and monetary impacts are not known
- Models to calculate financial effects are not existing/applied
- Practicable ways and means to calculate would also improve application and quality
- Partners see the proposed indicators based extension cost - profit model as a workable model providing a feasible and practicable cost profit calculation model
- Testing and verification through field tests within current systems to verify and adjust models is still needed
- Justification & confirmation of extension value/viability would justify investments and strengthen roll-out and impact





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# Thank you

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