From Roller Coasters to Rocket Ships: Lessons from Past Successes in African Agriculture

Steven Haggblade
Michigan State University
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Roller Coasters or Rocket Ships?

Production (000 tons)

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IFPRI Review of Successes in African Agriculture

1. Methods
2. Lessons
   a. What has to happen?
   b. How?

1. Methods

- Inventory “successes”: expert survey
- Select informative cases: advisory panel
- Comparative case studies: case study teams
- Generalize: analytical teams plus stakeholder workshops
Case Studies Reviewed

- Maize: Kenya, Malawi, Zambia, Zimbabwe
- Cotton: Mali
- Cassava: Nigeria, Ghana, Malawi, Zambia
- Horticultural exports: Kenya, Ivory Coast
- Dairy: Kenya, Ethiopia, Uganda
- Conservation farming: Burkina, Zambia
- Improved fallows: Kenya, Zambia

Categorizing the Case Studies

<table>
<thead>
<tr>
<th>Motors of change</th>
<th>Case studies</th>
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</thead>
<tbody>
<tr>
<td>Comprehensive public research, input and marketing package</td>
<td>Maize, Cotton, Dairy</td>
</tr>
<tr>
<td>Public R&amp;D</td>
<td>Cassava</td>
</tr>
<tr>
<td>Private-led marketing</td>
<td>Export horticulture</td>
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<tr>
<td>Research and extension: private and public</td>
<td>Conservation farming, Improved fallows</td>
</tr>
</tbody>
</table>
Plan of Attack

1. Methods
2. Lessons
   a. What has to happen?
   b. How?

2a. What has to happen?

- Improved productivity
- Adequate incentives
The Dynamics of Agricultural Change

Decision-making Environment (DE)

Incentives

Natural shocks

Farm households

Income

Equity

Sustaina

Production Possibilities

Public, collective, firm

Natural shocks

Rest of world

Pests

Natural, rest of world

Public, collective, firm

Actions (A)

Results (R)
The Dynamics of Agricultural Change

*Decision-making Environment (DE)*

*Actions (A)*

*Results (R)*

Incentives

Farm households

Natural shocks

Income

Equity

Sustainability

Production Possibilities

Nature, rest of world

Public, collective, firm

Pests

Improved productivity: technology
**Improved productivity: management**

<table>
<thead>
<tr>
<th></th>
<th>Yield (kg/ha)</th>
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<tbody>
<tr>
<td></td>
<td>Cotton</td>
</tr>
<tr>
<td>Conventional plowing</td>
<td>820</td>
</tr>
<tr>
<td>Conservation farming basins</td>
<td>1,280</td>
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<tr>
<td>Sources of difference</td>
<td></td>
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<tr>
<td>higher input use</td>
<td>90</td>
</tr>
<tr>
<td>early planting*</td>
<td>40</td>
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<tr>
<td>water harvesting in basins*</td>
<td>330</td>
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<tr>
<td>total difference</td>
<td>460</td>
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</table>

**Improved productivity: marketing**

![Price trends and Wholesale-retail margins graphs](image)
The Dynamics of Agricultural Change

Decision-making Environment (DE)

Actions (A)

Results (R)

Incentives

Natural shocks

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Production Possibilities

Public, collective, firm

Natural shocks

Nature, rest of world

Pests
Adequate incentives: Cassava Nigeria

Adequate incentives: Malian cotton
Adequate incentives: growing markets

The Dynamics of Agricultural Change

Decision-making Environment (DE)  Actions (A)  Results (R)

Incentives

Nature, rest of world

Production Possibilities

Natural shocks

Income

Equity

Sustainability

Pests

Public, collective, firm
Plan of Attack

1. Methods
2. Lessons
   a. What has to happen?
   b. How?

2b. How?

- Public goods plus private incentives
- Patience and perseverance
- Think regionally
Public vs private: many options are possible

<table>
<thead>
<tr>
<th></th>
<th>Public</th>
<th>Private</th>
<th>Public and private</th>
<th>Public → private</th>
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</thead>
<tbody>
<tr>
<td>Technology</td>
<td>• Cassava</td>
<td>• Conserv. farming</td>
<td>• Improved fallows</td>
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<td></td>
<td>• Maize</td>
<td>• Dairy</td>
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<tr>
<td>Marketing</td>
<td>• Horticulture</td>
<td>• Dairy</td>
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<td>• Cotton</td>
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Key public goods

- Research
  - Open pollinating varieties
  - Vegetatively propagated crops
  - Orphan crops
- Disease control
- Infrastructure
- Policies
2b. How?

- Public goods plus private incentives
- Patience and perseverance
- Think regionally
Patience and perseverance

• Dairy: 80 years
• SR52: 28 years
• TMS cassava: 18 years + 7 years

→ SLOW MAGIC
Pests and diseases constantly mutate

Mutating pests and disease require sustained research

Cassava Production in Uganda
(index 1981=100)
2b. How?

- Public goods plus private incentives
- Patience and perseverance
- **Think regionally**

Think regionally: technology

- Cotton
- Maize
- Cassava
- Dairy
- Improved fallows
- Conservation farming
Think regionally: trade
Think regionally: trade

Conclusions

• Success is possible
• What has to happen?
  – Improved productivity
  – Adequate incentives
• How
  – Public goods plus private incentives
  – Patience and perseverance
  – Think regionally