Scaling the Uptake of Agricultural Innovations: The role of sustainable extension and advisory services

Scaling Agricultural Technologies
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Major Themes Covered

- Framing ‘scale’ in the uptake of agricultural technologies
- Important concepts of technology diffusion and uptake
- Application of extension principles in practice
Key Questions

- How do we **define** scale when thinking about the adoption of agricultural technologies and practices?
- How do we **design** for the potential of scaling the up-take of agricultural innovations?
- How do we **sustain** the momentum of scaling behavior change once it is initiated?
Place-based Nature of Agriculture

Natural site: Where species are able to grow.

Socio-economic site: Where species are allowed to grow
• Elimination
• Addition
• Manipulation of the environment

Source: von Maydell, 1990
The Farming Environment

Physical
Biological
Economic
Social
Institutional

Source: adapted from Shaner et al., 1982
Farming System Characteristics

Source: adapted from Shaner et al., 1982
Adoption Domain

“recommendation domain”
Every innovation has its natural scale of utility.

No innovative change is permanent.

Image Source: http://www1.eere.energy.gov/solar/sunshot/seeds_sandia.html
The Diffusion of Innovations

Source: Rogers, 1964
ADOPTION PROCESS
- Awareness
- Interest
- Evaluation
- Trial (adaptation)
- Adoption

Q: How many dissemination efforts are explicitly designed to facilitate individual adoption as part of their theory of change?

Source: Rogers, 1964
Q: How many interventions are designed to allow adoption to take place, let alone takeoff?

Source: Rogers, 1995
Process of Diffusion

INNOVATION CHARACTERISTICS
• Perceived advantage
• Complexity
• Riskiness
• Trialability (lumpiness)
• Observability

Q: How many interventions incorporate the essential characteristics of the innovation into their diffusion strategy?

Source: Rogers, 1963
The Varied Nature of Extension Services

• Extension is **human capital enhancing education and training**, usually delivered in non-formal settings for adult learners

• Includes a wide variety of activities:
  – extending technologies and methods (T&V)
  – answering farmer questions (Advisory Services)
  – non-formal education/learning (Farmer Field Schools)
  – Organization of groups and then into associations and then businesses (facilitation extension)

• Extension services necessarily involve face-to-face or personal communication with farmers
## Multiple Pathways of Getting to Scale
*(modified from Birner and Anderson, 2007 and others)*

<table>
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<th>Delivery Organization</th>
<th>Public Sector</th>
<th>Private Sector Farmers</th>
<th>Private Sector Companies</th>
<th>NGOs</th>
<th>FBOs</th>
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<td>Public Sector</td>
<td>Public sector extension</td>
<td>FFS provided by public sector</td>
<td>Private companies contract PS</td>
<td>NGOs contract PS</td>
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<td>Private Sector: Companies</td>
<td>Contracting</td>
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<td>Input linked ext., outgrowers</td>
<td>NGOs hire Private</td>
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<tr>
<td>Private Sector: Individual Providers</td>
<td>Contracts, coupons</td>
<td>FFS, Private Service Providers</td>
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<td>NGO hires agents</td>
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<td>Third Sector: NGOs</td>
<td>Govt contracts</td>
<td>Farmers pay fees</td>
<td>NGO hires agents, free</td>
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<tr>
<td>Third Sector: Farmer-Based Organizations</td>
<td>Public support, subsidies for extension</td>
<td>FBO hires agents, FFS</td>
<td>NGO pays agents employed by FBO</td>
<td>Agents hired by FBO providing service to members</td>
<td></td>
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Value of Extension

• Birkhauser, Evenson, & Feder report a range of rates of return, most between 13% to 80%

• Alston et al. estimate a median rate of return on extension of 62.9% (focus: staple crops extension)

• Keynan, Olin and Dinar studied farmer payments of bonuses designed to increase quality and responsiveness of extension
  – All the 17 farmer groups paid the bonuses and continued with the program the following year

➢ High rates of return signal under investment
Learning Process Approach to Scaling

Effective
Efficient
Scaling-up

Source: Korten, 1980
Scaling the Update of Innovations through Sustainable Agricultural Extension

- Using what we know about human behavior to support behavior change;
- Using what we know about the diffusion of innovations to design interventions that reach their appropriate scale;
- Sustaining efforts long enough to allow ‘scaling’ to happen;
- Working at scale, to achieve impacts of scale;
- Engaging processes and relationships with potential to continually deliver new information, new options, new possibilities.

Not one or another...it’s all, and.

Applying what we already know is itself an innovation.
This presentation was given by:

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www.meas-extension.org
Essential Nature of Scale in Agriculture

Source: http://www1.eere.energy.gov/solar/sunshot/seeds_sandia.html
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Individual Pathways

CONSUMPTION SPREADS FASTER TODAY

Source: Felton in Cox and Alm, 2008
Multiple Sources/Multiple Providers

Source: Dedire, 2013