Beyond Market Prices:
Improving Productivity and Profitability of Small Farmers

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Agriculture and Development

• The majority of the world’s poor make their living from agriculture

• Improving productivity and profitability is the main pathway for development of the poorest countries (WDR 2008)

• Doing so more efficiently can reduce natural resource consumption and impact
Beyond Market Prices

• Most work using and evaluating ICTs has focused on providing market prices

• While important, this ignores important aspects:
  • Trust and Relationships
  • Quality and Productivity
  • Transportation and Logistics
  • Institutions (ex. cooperatives)
Two Projects

• **Digital ICS** - Quality Control, Certification and Marketing for Cooperatives

• **Avaaj Otalo** - Farmer to Farmer Knowledge and Experience Sharing
Internal Control

• Certification (organic, etc.) and improved quality allow small farmers to differentiate their products and earn premiums

• Cooperatives use *Internal Control Systems* to ensure farmers are following best practices

• Internal control and certification are both labor and data-intensive
Digital ICS

**Inspection** → **Evaluation** → **Report Generation**

Internal Inspectors use mobile phones to monitor:
- Growing practices
- Parcels
- Equipment
- Neighboring crops
- Substances used
- Personal records

w/ Yael Schwartzman, CEPCO
Evaluators use web application for feedback and to decide outcome
- Approved
- Sanctioned
- Expelled
Digital ICS

Inspection ➔ Evaluation ➔ Report Generation

Automatically generates reports
- External Certifiers
- Internal Records
- Producer Records
- Extension Follow-up
Current Results

• Deployed with 900 farmers
• 38% reduction in inspection time
• 69% reduction in evaluation time
• $10,000 yearly savings for cooperative
• Feedback from farmers used to inform decision-making and governance
• Service contract and interest from coops
Digital **ICS**: Producer-2-Consumer

- Trace coffee to parcel
- Growing history
- Farmer’s stories
- Two-way communications
Research Questions

• Data-driven form design
• Organizing, understanding and acting upon qualitative feedback
• Open source business models
• Impact on cooperative, farmer profits
• Impact on consumer behavior
Agricultural Extension

• Farmers have many questions
• Treating specific pests?
• Fertilizer and chemicals to use?
• Government and university extension programs are costly, and still don’t reach many farmers or address their concerns
• Only accessible resource is local input dealer
• No mechanism for contextualizing knowledge
Farmers call an IVR-based voice system to:

- record and tag questions
- review news, questions and answers
- provide answers
- popular questions are broadcast on radio
Current Results

- Pilot with 50 users since January 2009
- Over 3500 calls per month (more than 2 calls per user per day!)
- Three times as many questions answered by other farmers, as by NGO experts
Research Questions

- Voice-based UI design
- Tagging and searching audio content
- Making voice-based systems easier to design and deploy
- Impact on technology / knowledge diffusion
- Cost-benefit analysis
Conclusions

• Providing farmers tools to help themselves
• Empowering institutions
  • Cooperatives, NGOs, networks
• Models can be transferred
  • Improving Feedback Loops
  • Peer-to-Peer Knowledge Sharing
• Sustainable replication is hard!
Thanks!

• Yaw Anokwa, Kuang Chen, Brian DeRenzi, Kurtis Heimerl, Neha Kumar, Neil Patel and Yael Schwartzman

• Asobagri, CEPCO, DSC and IBM

• Nokia Research, Intel Research, Microsoft Research, Unamesa and Transfair

• UC Berkeley School of Information