

Building Pathways out of Rural Poverty through Investments in Agricultural Information Systems

Final Report

Prepared by the WorldAgInfo Design Team
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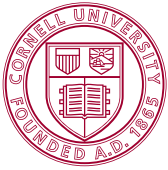
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Contents

Letter of Transmission	iii
Acknowledgments	v
Executive Summary	vii
List of Acronyms	ix
1 WorldAgInfo: 21st Century Agriculture Education and Information Systems Project	1
Terms of Reference and Overview	1
The Agricultural Information Landscape—New Tools for Analyzing Dynamic Systems	5
2 Pathways out of Rural Poverty: Proposed Information Projects Generated by the Workshop in Livingstone, Zambia	15
At a Glance: Proposal Summaries	17
Developed Proposals	
1 WorldAgInfo Systems: A Catalyst for Smallholder Agricultural Innovations	29
2 Market Information: Value-Chain Information System for Agriculture (VISA)	36
3 Real-Time Delivery of Agricultural Information to Smallholder Farmers in South Asia and Africa through Community Knowledge Workers	50
4 Indian Institute of Agricultural Management	61
5 Facilitated Multimedia Instruction to Support University Agriculture Curricula	69
6 Collaborative Content Generation: Building Digital Agricultural Content Modules	77
7 Improving Agriculture Literature Systems in South Asia and Africa	86
8 Multimedia Knowledge Exchange Systems for Smallholder Farmers	97
9 Mobile Phones with Bundled Agriculture Information Systems	114
10 Community Radio Support Systems	124
11 New Agriculture Skills by Radio for Smallholder Farmers	135
12 Soil Testing Probes for Smallholder Farmers	147

	Workshop Agenda	153
	List of Participants	157
3	Knowledge Systems: Outcome of the Workshop at Cornell University, Ithaca, NY	161
	Cornell Workshop Report	162
	Solution Scenarios Submitted for Consideration at the Zambia Workshop	169
	Workshop Agenda	264
	List of Participants	275
4	Ideas for Other Potential Support Initiatives	279
5	Site Visit Reports	283
	South Asia: India & Sri Lanka	284
	Africa: Mali & Zambia	300
6	Smallholder Survey	321
7	Literature Reviews	323



Cornell University
Albert R. Mann Library

15 February 2008

Roy Steiner
Senior Program Officer
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Bill and Melinda Gates Foundation
Seattle, Washington

Dear Roy:

The following report summarizes the results of activities undertaken as part of the "21st Century Agricultural Education and Information Systems Project" (WorldAgInfo), May to December 2007, funded by the Bill and Melinda Gates Foundation and implemented by A.R. Mann Library, Cornell University.

Project activities included consultations with staff of the Bill and Melinda Gates Foundation; site visits to South Asia and Africa by members of the project's Design Team; two international workshops convened in Ithaca, New York, and Livingstone, Zambia, to bring together policy makers, scholars, instructional technology and curriculum specialists, and private sector representatives; literature reviews on topics relevant to smallholder agriculture in Africa and South Asia; and smallholder interviews conducted on-site in India, Sri Lanka, Mali and Zambia by agriculture undergraduate and graduate students.

The report offers a wealth of ideas for innovations in agricultural education and information systems, pulling together the creative thinking of the many people who participated in the project. We believe the unique composition of the project's Design Team, which included members from the fields of agriculture, information technology, and education, succeeded in facilitating outside-the-box thinking. It is not surprising that the team did not always come to a complete consensus on all aspects of the report that follows. However, the report does represent the best thinking of all members of the team.

This opportunity to be of service is much appreciated by all team members. It has been an exhilarating and productive experience for us all.

On behalf of the Design Team,

Dwight W. Allen
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Mary Anderson Ochs
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Executive Summary

New collaborative information technologies offer an exciting opportunity to transform agricultural education and information systems in Asia and Africa. To evaluate this basic premise, the WorldAgInfo Design Team was charged by the Bill and Melinda Gates Foundation with exploring the landscape of agricultural education and information systems in these regions. The outcome, as specified under the Terms of Reference, is a set of recommendations for areas of investment that have the potential to improve the lives of smallholders through better access to agricultural education, training and information. This report provides a summary of the activities undertaken under the Terms of Reference and recommendations for areas of investment.

The major components of the project included:

1. Analysis of the agricultural information landscape
2. Site visits to South Asia (India and Sri Lanka) and Africa (Mali and Zambia)
3. Literature reviews on key topics related to delivering agricultural information at the smallholder level
4. Expert consultation workshops – one focusing on knowledge systems held in Ithaca, New York in October 2007 and the second focusing on delivery systems held in Livingstone, Zambia in November 2007
5. Smallholder Survey – over 600 focused interviews with smallholders in India, Sri Lanka, Mali and Zambia

The scope of this project was vast, covering two continents, multiple stakeholders all along the agricultural information chain, and all aspects of agricultural information from soil fertility to marketing mangoes. Thus, the ideas and information presented here certainly are not comprehensive. Rather they endeavor to provide a more holistic analysis of issues involved in strengthening the smallholder sector by reflecting input and views from all the key players who have a role in achieving long-term, sustainable improvements to smallholder agriculture in Africa and South Asia.

While many factors affect the productivity and overall success of smallholder farmers, it is clear that lack of access to agricultural information presents one of the important barriers. It is also clear that there are many creative and innovative initiatives already underway, so there is ample opportunity to have impact by building on ongoing success stories as well as experimenting with new approaches.

Out of the two expert workshops, known formally as the Cornell International Symposium on Agricultural Education and Information Systems, came many ideas for innovations using new collaborative information technologies, as well as some “tried and true” technologies implemented in new

Executive Summary

ways. Twelve proposals; over 30 concept notes are included in this volume. In addition more than 50 potential project initiatives are identified for possible future development. Each proposal was developed with contributions from a multidisciplinary group of professionals who joined the WorldAgInfo team in this work, almost all of whom are considered leading experts in their field. Key issues such as feasibility, scalability, sustainability, and overall impact were given major consideration in designing each of the proposed initiatives.

Although very diverse in terms of technology, target audience, and strategy, the 12 proposed initiatives share some common themes or operational principles.

- The content, value, and quality of information and knowledge are not improved just because information is offered in multimedia or over the Internet. The importance of quality control is almost more critical the more accessible and ubiquitous information becomes.
- Building in extensive feedback mechanisms at all levels from all sources is critical. This can help address the issue of quality control and strengthen the smallholder voice.
- It is important to enable smallholder access to a wide range of support systems so that as many men and women farmers as possible are reached.
- Many of the proposals cite programs that are already making a difference, and could offer a model or potential partner for future collaboration. Investments should capitalize on existing successful programs and innovative organizations, rather than reinventing the wheel.

There is impressive momentum at all levels, from the international to local, to use new technologies to strengthen smallholder farmers and their support network. This presents an optimal environment for scaling and impact.

List of Acronyms

Acronym	Definition
AAAS	American Association for the Advancement of Science
ACCI	African Centre for Crop Improvement
AGORA	Access to Global Online Research in Agriculture
AGRA	Alliance for a Green Revolution in Africa
AICM	Agricultural Information and Communication Management
AIR	Advancement through Interactive Radio
AJOL	African Journals Online
AMARC	World Association of Community Radio Broadcasters
AMARC–WIN	World Association of Community Radio Broadcasters - Women’s International Network
ARDA	Agricultural and Rural Development Authority
ARM	Advanced RISC Machine
ATMA	Agricultural Technology Management Agencies
BMGF	Bill and Melinda Gates Foundation
CBO	Community-Based Organization
CDD	Community-Driven Development
CGIAR	Consultative Group on International Agricultural Research
CIA	Central Intelligence Agency
CIAT	Centro Internacional de Agricultura Tropical
CKW	Community Knowledge Workers
CLIC	Centre Local d’Information et de Communication
CPU	Central Processing Unit
CRS	Community Radio Stations
CTA	Technical Centre for Agricultural and Rural Cooperation ACP-EU
DCFRM	Developing Countries Farm Radio Network
DFID	Department for International Development (UK)
DSH	Digital Study Hall

List of Acronyms

EDC	Education Development Center
EDGE	Enhanced Data rates for GSM Evolution
FAO	Food and Agriculture Organization
FARA	Forum for Agricultural Research in Africa
GFAR	Global Forum on Agricultural Research
GIS	Geographic Information System
GMO	Genetically Modified Organism
GOFAU	Global Open Food and Agriculture University
GPRS	General Packet Radio Service
GPS	Global Positioning Satellite
HAU	Haryana Agriculture University
HINARI	Health InterNetwork Access to Research Initiative
HIV	Human Immunodeficiency Virus
IAALD	International Association of Agricultural Information Specialists
IAMR	Institute of Applied Manpower Research
IARC	International Agricultural Research Center
ICAR	Indian Council of Agricultural Research
ICM	Information and Communication Management
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICT	Information and Communication Technologies
IEEE	Institute of Electronics and Electrical Engineers
IIAM	The Indian Institute of Agricultural Management
IIM	Indian Institutes of Management
IIT	Indian Institutes of Technology
IMARK	The Information Management Resource Kit
IMF	International Monetary Fund
INASP	International Network for the Availability of Scientific Publications
INSAH	The Institut du Sahel
IPR/IFRA	Rural Polytechnic Institute and Institute of Applied Research and Training (Mali)
IRD	Integrated Rural Development
IRI	Interactive Radio Instruction
ITOCA	Information and Training Outreach Center for Africa
ITU	International Telecommunication Union
IWMI	International Water Management Institute
JTAG	Joint Test Action Group
KACE	Kenya Agriculture Commodity Exchange

KVK	Krishi Vigyan Kendra or Farm Science Centers
LAN	Local Area Network
LARRA	Linking Agricultural Research for Rural Radio in Africa
LCD	Liquid Crystal Display
LED	Light Emitting Diode
MANAGE	National Institute of Agricultural Extension Management
M&E	Monitoring and Evaluation
MIS	Market Information Systems
MISTOWA	Regional Market Information Systems and Traders' Organizations project
MSU	Michigan State University
MVIWATA	Tanzania National Network of Farmers
NAADS	National Advisory Services
NARO	National Agricultural Research Organization
NARS	National Agricultural Research System
NGO	Non Governmental Organization
NIMR	National Institute for Medical Research
NVA	National Virtual Academy (for Rural Prosperity)
OARE	Online Access to Research in the Environment
OMA	Observatoire du Marche Agricole
PDA	Personal Digital Assistant
PGD	Post Graduate Diploma
PPP	Purchasing Power Parity
PROMISAM	Projet de Mobilisation des Initiatives en Matière de Sécurité Alimentaire au Mali
QUESTT	Quality Education Services Through Technology
RAM	Random Access Memory
RRDI	The Rice Research and Development Insitute
RUFORUM	Regional Universities Forum for Capacity Building in Agriculture
SAU	State Agricultural Universities
SDC	Swiss Agency for Development Cooperation
SHG	Self Help Group
SME	Small and Medium-sized Enterprizes
SMS	Short Message Service
SPC	Sahelian Pesticide Committee
SPI	Serial Peripheral Interface
SRO	Sub-Regional Organization
SSA	Sub-Saharan Africa

List of Acronyms

TEEAL	The Essential Electronic Agricultural Library
TERI	The Energy and Resource Institute
TVI	Tutored Video Instruction
UCAD	Universite Cheikh Anta Diop
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USB	Universal Serial Bus
VFPCCK	Vegetable and Fruit Promotion Council in Kerala
VISA	Value-chain Information System for Agriculture
VKC	Village Knowledge Centers
WACCI	Western African Centre for Crop Improvement
WARDA	West African Rice Development Association
WHO	World Health Organization
WIFI	Wireless Fidelity
WOCAN	Women Organzing for Change in Agricultural and Natural Resources
WREN	Water Research and Education Network
WSIS	World Summit on the Information Systems
WTO	World Trade Organization
ZEF	Zentrum für Entwicklungsforschung/Center for Development Research
ZNFU	Zambian National Farmers' Union