



GRiSP Impact Assessment Research (IRRI, AfricaRice & CIAT)

Samarendu Mohanty, IRRI
Arouna Aminou, AfricaRice
Ricardo Labarta, CIAT

*Impact Assessment Focal Point meeting, Minneapolis,
USA, 25 July 2014*

GRiSP Impact Assessment Studies

- IRRI focal person for IA: Takashi Yamano
- AfricaRice focal person for IA: Aminou Arouna
- CIAT focal person for IA: Ricardo Laborta

- Annual GRiSP M&E and IA meeting in December every year
 - Other CRP M&E and IA specialists also participate in this meeting

- The funding for IA studies comes from different sources:
 - External grants (SPIA/ATAI/BMGF/DFID)
 - Technology delivery projects (STRASA/CSISA)
 - GRiSP-IRRI M&E budget
 - Social Science division budget
 -

40 impact assessment/adoption studies in the past five years (completed/ongoing)

- **Germplasm enhancement: 16**
- **Management enhancement: 20**
- **Both: 4**

**John P. Brennan
Coolamaine Economic Research,
Australia**

And

**Arelene Malabayabas
International Rice Research Institute**



Australian Government
Australian Centre for
International Agricultural Research



**International Rice Research
Institute's contribution to rice
varietal yield improvement in
South-East Asia**

ACIAR IMPACT ASSESSMENT SERIES

74

Estimated benefits from IRRI's contribution to varietal development and releases

	Brennan and Malabayabas, 2011	IRRI study (Raitzer et al., 2013)
Study funding	ACIAR-funded	SPIA-funded
Adoption years	1985—2009 (25 years)	1990—2010 (21 years)
Counterfactual & Attribution	Last cross and pedigree rule	Breeder-Pedigree rule 1990 IRRI shutdown
Source of benefits	Yield gain	Yield and HPR gains
Discount rate	5%	5%
Unit	2009 US\$ million	2005 PPP\$ million
<i>Total benefits for the study period</i>		
Indonesia	16,111	6,952
Philippines	5,088	1,114
Indonesia + Philippines	21,199	8,066
<i>Average annual benefits</i>		
Indonesia	644.44	331.04
Philippines	203.52	53.07
Indonesia + Philippines	847.96	384.11

META-IMPACT ASSESSMENT OF THE IRRIGATED RICE RESEARCH CONSORTIUM (IRRC)

- IRRC – identification, development, dissemination, and adoption of NRM technologies suitable for irrigated rice-based ecosystems in Asian countries.
 - Established in 1997 and funded primarily by the Swiss Agency for Development and Cooperation (SDC)



Contents lists available at [ScienceDirect](#)

Global Food Security

journal homepage: www.elsevier.com/locate/gfs



Enhancing the impact of natural resource management research: Lessons from a meta-impact assessment of the Irrigated Rice Research Consortium



Roderick M. Rejesus^{a,*}, Adrienne M. Martin^b, Phrek Gypmantasiri^c

^a Department of Agricultural and Resource Economics, NC State University, Raleigh, NC 27695, United States

^b Programme Development, Natural Resources Institute, University of Greenwich, Kent ME4 4TB, UK

^c Agronomist, Center for Agricultural Resource Systems Research, Chiang Mai University, Chiang Mai 50200, Thailand

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ABSTRACT

This article presents results from a multi-dimensional impact assessment of a large multi-year Natural Resource Management (NRM) research project for rice – the Irrigated Rice Research Consortium (IRRC) – and uses insights from this assessment to further understand how NRM research can be improved to have more impact in a developing country context. Results of the meta-impact assessment indicate that NRM research generated by the IRRC has provided a wide-range of impacts in multiple dimensions—from

From an investment by SDC of USD12 million, the analysis of a sub-set of technologies across 4 of the 11 countries involved in the IRRC revealed benefits of USD70.5 million and an anticipated benefit of USD297 million by 2016.



ELSEVIER

Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

Impact of the alternate wetting and drying (AWD) water-saving irrigation technique: Evidence from rice producers in the Philippines

Roderick M. Rejesus^{a,*}, Florencia G. Palis^b, Divina Gracia P. Rodriguez^c, Ruben M. Lampayan^d, Bas A.M. Bouman^d

^a Department of Agricultural and Resource Economics, North Carolina State University, Raleigh, NC 27695, United States

^b Social Science Division, International Rice Research Institute (IRRI), Los Baños, Laguna, Philippines

^c Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, Urbana, IL 61801, United States

^d Crop and Environmental Sciences Division, International Rice Research Institute (IRRI), Los Baños, Laguna, Philippines

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Water saving

Irrigation

Rice production

Technology

ABSTRACT

This article evaluates the impacts of a controlled irrigation technique in rice production called alternate wetting and drying (AWD). Propensity score matching (PSM) and regression-based approaches applied to farm-level survey data are used to achieve the objective of the study. The PSM and regression-based approach accounts for the potential bias due to selection problems from observable variables. Results of the impact analysis using both empirical approaches indicate that AWD, particularly the "Safe AWD" variant, reduces the hours of irrigation use (by about 38%), without a statistically significant reduction in yields and profits. This reduction in irrigation time translates to corresponding savings in the amount of irrigation water and pumping energy used. However, further analysis of the impact estimates suggests that the potential magnitude of the selection bias based on *unobservable* variables may still be able to eliminate the measured impact from the PSM and regression-based techniques that only control for selection based on *observable* variables. Hence, the current impact results have to be interpreted with caution and further data collection is needed to construct a panel data that would allow one to account for selection problems due to *unobservable* variables and, consequently, better estimate the AWD impact.

Impacts of Alternate Wetting and Drying

HUMBOLDT-UNIVERSITÄT ZU BERLIN



SLE Publication Series – S241

SLE – Postgraduate Studies on International Cooperation

Study commissioned by the Advisory Service on Agricultural Research for Development of German Technical Cooperation (GTZ-BEAF) in collaboration with the International Rice Research Institute (IRRI)

Water Saving in Rice Production– Dissemination, Adoption and Short Term Impacts of Alternate Wetting and Drying (AWD) in Bangladesh

Dr. Ekkehard Kürschner (Team Leader), Christian Henschel,
Tina Hildebrandt, Erna Jülich, Martin Leineweber, Caroline Paul

Dhaka/Berlin, December 2010





Aerobic Rice – responding to water scarcity

An impact assessment of the 'STAR in Asia' project

Deborah Templeton
Ruvicyñ Bayot

IRRI TECHNICAL REPORT

Aerobic Rice Adoption and Its Impact in North Anhui¹

Shijun Ding¹ Haitao Wu¹ B.A.M. Bouman² Huaqi Wang³ Shaobing Peng² Yuping Chen¹

¹ Zhongnan University of Economics and Law, No. 1, South Nanhu Rd., Wuhan, 430074, China

² International Rice Research Institute, DAPO 7777, Metro Manila, the Philippines

³ China Agricultural University, West Yuanmingyuan Rd., Beijing, 100080, China

Abstract

With scarcity of water resource and shortage in labor supply, there has been increasingly pressure on lowland rice production in China. Aerobic rice has been experimented since 1980s in China. Farmers in north China have been increasingly adopting aerobic rice. However, a little is known about farmers' understanding of aerobic rice and impact of adoption on farmers' livelihoods. This paper aims to get an inventory of number of rice farmers and area of aerobic rice production in the study



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Food Policy

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Analysis of agricultural research investment priorities for sustainable poverty reduction in Southeast Asia

David A. Raitzer^{a,*}, Mywish K. Maredia^{b,1}

^a International Rice Research Institute, Social Science Division, DAPO Box 7777, Metro Manila, Philippines

^b Department of Agricultural, Food and Resource Economics, Michigan State University, East Lansing, MI 48824, USA

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ABSTRACT

Underinvestment in agricultural research has reduced the importance of the subregion's agriculture to date. To help identify specific areas where research can have the impact potential for the poor of all income levels, the impact potential for the poor of all income levels, consumption patterns and the expenditure patterns of the poor are used to offer more detailed assessments of the impact potential of various agricultural research priorities. Patterns of impact potential are identified and the implications for achieving sustainable poverty reduction are discussed.



Agricultural Systems

Volume 106, Issue 1, February 2012, Pages 46–58



Review and analysis of documented patterns of agricultural research impacts in Southeast Asia

Mywish K. Maredia^a,  , David A. Raitzer^b, ¹, 

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DOI: [10.1016/j.agsy.2011.10.011](https://doi.org/10.1016/j.agsy.2011.10.011)

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Abstract

Based on a comprehensive search and review of the literature, 42 studies are identified for in-depth review and analysis of documented impacts of agricultural research from 1959 to 2009. This body of evidence is subjected to a systematic, quantitative scrutiny for the coverage and type of impact to derive patterns, gaps and trends in documented impacts of research in the subregion. The analysis offers compelling evidence that past investments in agricultural research in the region have been productive. In so doing, the study also reveals some persistent patterns and identifies a number of gaps between investments and documented impacts. Strikingly, the benefits are principally derived from rice improvement research, which has generated

Ongoing Studies

1. Randomized controlled trials of submergence tolerance (Swarna Sub1) in Odisha, India, 2001-2015 (collaborator: U.C. Berkeley)
2. Randomized controlled trials of drought tolerance (Sahbhagi Dhan) in Odisha, Jharkhand and West Bengal, 2013-2015 (Collaborator: U.C. Berkeley)
3. 3-controls technology in Guangdong, China (Collaborator: Haifu)
4. Impact evaluation of water productivity of dry direct seeding rice in India



OPEN

SUBJECT AREAS:
FIELD TRIALS
AGRICULTURAL GENETICS

Received
7 August 2013

Flood-tolerant rice reduces yield variability and raises expected yield, differentially benefitting socially disadvantaged groups

Manzoor H. Dar¹, Alain de Janvry², Kyle Emerick², David Raitzer³ & Elisabeth Sadoulet²

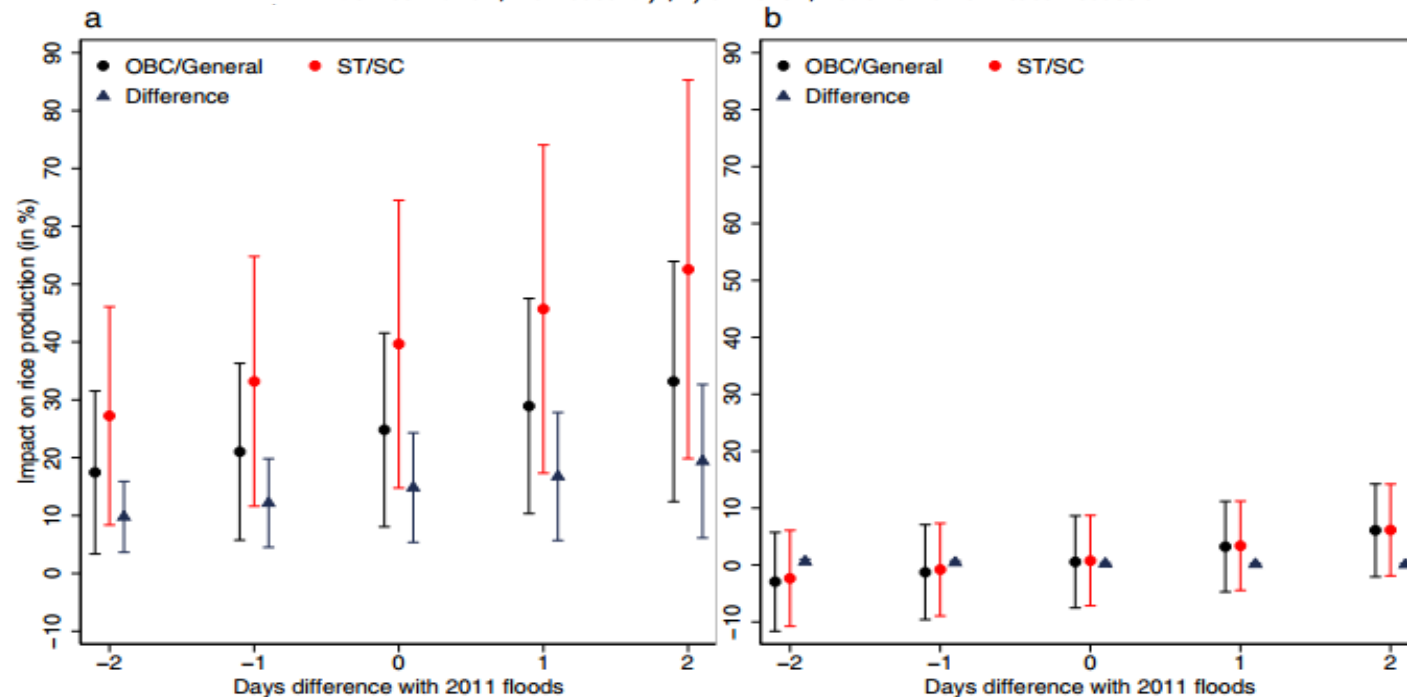


Figure 3 | Projected impacts of adoption of flood-tolerant rice (Swarna-Sub1) on rice production. (a) Bhadrak district and (b) Balasore district. Graphs display forecasted percentage difference in total production between a scenario where all Swarna plots are cultivated with Swarna-Sub1 and a scenario where the plots remain cultivated with Swarna. Differing flood severity is simulated by adding (subtracting) an additional day of submergence for each plot to simulate a flood that is 1 day more (less) severe than 2011 floods. Dots and triangles represent point estimates and whiskers are 95% confidence intervals. Predicted difference in impact between SC/ST and OBC/General farmers is displayed as triangles. Regression estimates from Column 3 of Table 1 are used to generate predictions.

Hyperspectral signature analysis: a proof of concept for tracking adoption of crop management practices

Objective 1

To test the ability of hyperspectral sensors at field level to discriminate crop management practices by identifying key wavelengths and crop stages

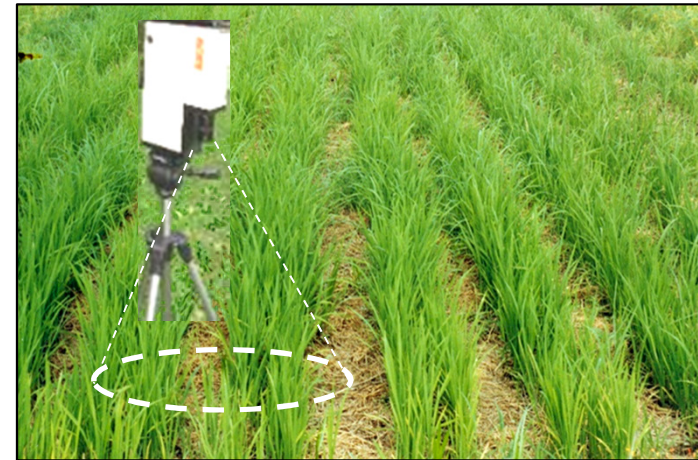
Objective 2

To test for scalability by applying discrimination signatures to hyperspectral remote sensing images

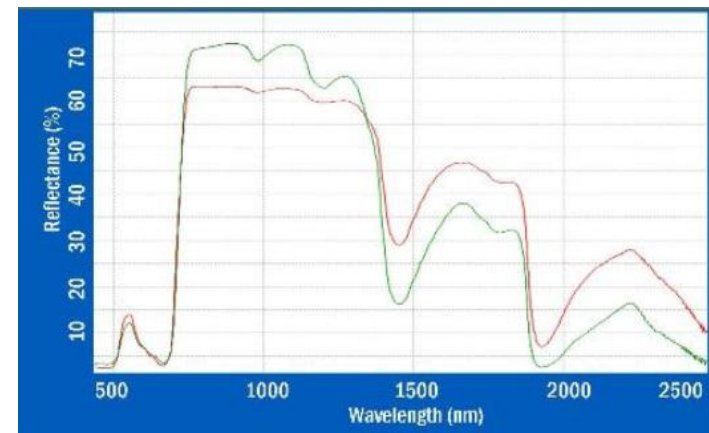
Treatments :

1. TPT rice with traditional methods of irrigation
2. TPT rice with alternate wetting and drying
3. DSR without residue retention
4. DSR with residue retention as surface mulch

Spectroradiometer observations of DSR field with residue as mulch



Farmer participatory site at Kalyana Farm, Karnal, Haryana, India



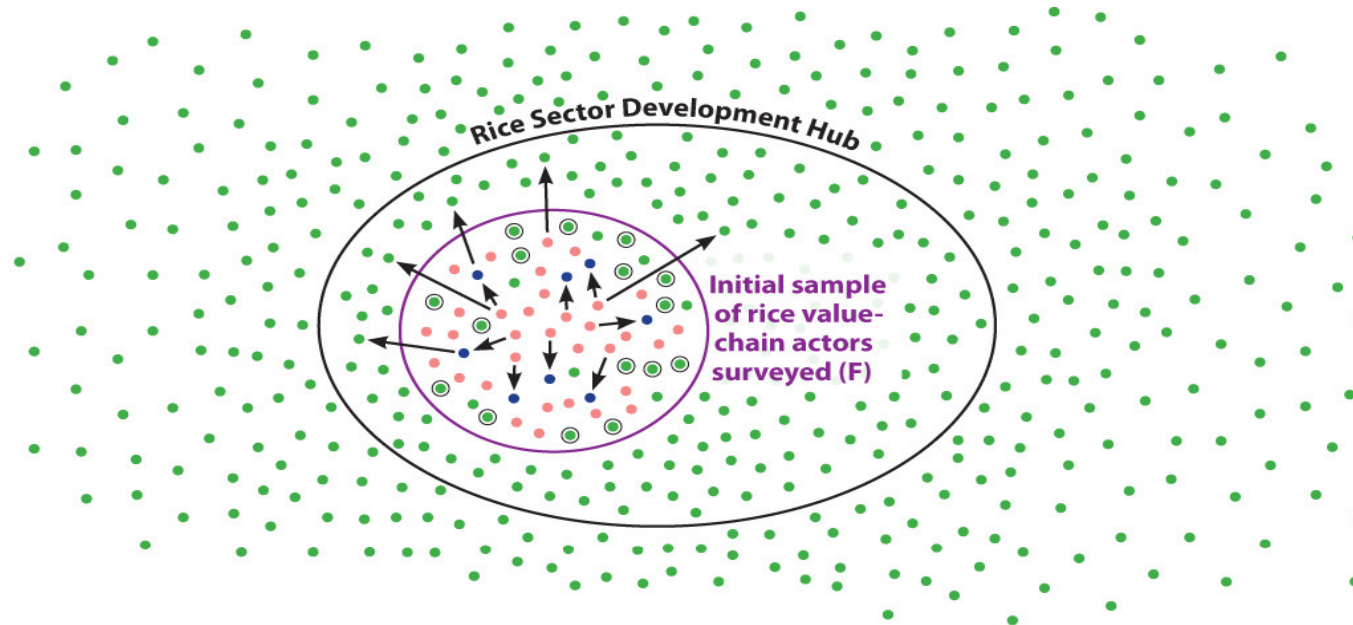
Planned Studies

1. Economic Impacts of the Rice Crop Manager Smartphone App in the Philippines: An Assessment using Randomized Control Trials
2. Livelihood Impacts of Flood and Salinity Tolerant Rice Varieties in Myanmar: An Assessment using Randomized Economic Experiments
(In collaboration with Zacary Brown and Rod Rejesus from N.C. State University)
3. Randomized control trials of drought tolerance (water saving) in Bangladesh
(in collaboration with UC Berkeley)

AfricaRice IA framework

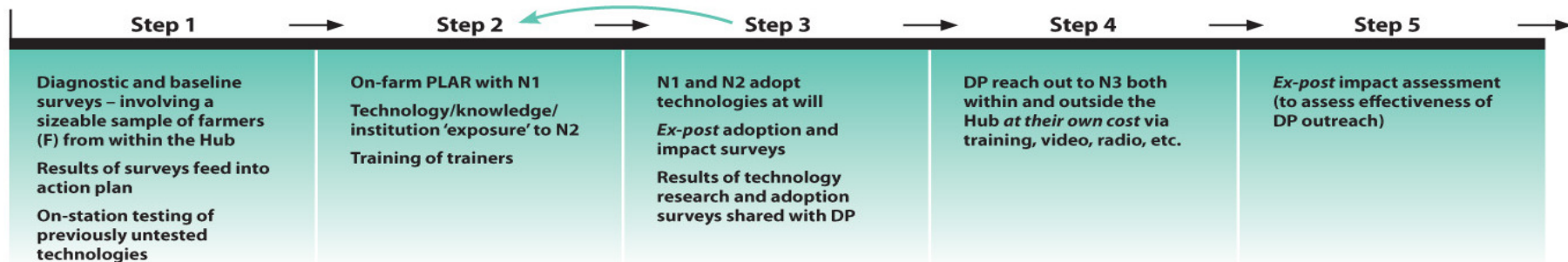
- AfricaRice's Strategic Plan 2011-2020 will be implemented through **three mechanisms**:
 1. *Participation in CRPs*, in particular the GRiSP;
 2. *Rice Task Force Mechanism*: an Africa-wide systematic collaborative research effort build up of critical mass, and ownership by the NARS;
 3. *'Rice Sector Development Hubs'* : zones where rice research products from the CRPs and the Task Forces will be integrated across the rice value chain to achieve development outcomes and impact.

Theory of change and Impact Assessment



Key

- F: sample of value-chain actors for initial surveys
- N1: a subset of F
- N2: a subset of F, mutually exclusive of N1
- N3: all other value-chain actors in the Hub (i.e. not N1 and N2) and some from beyond the Hub
- N0: a sample of actors involved in the initial survey, but neither N1 nor N2 — used as control group



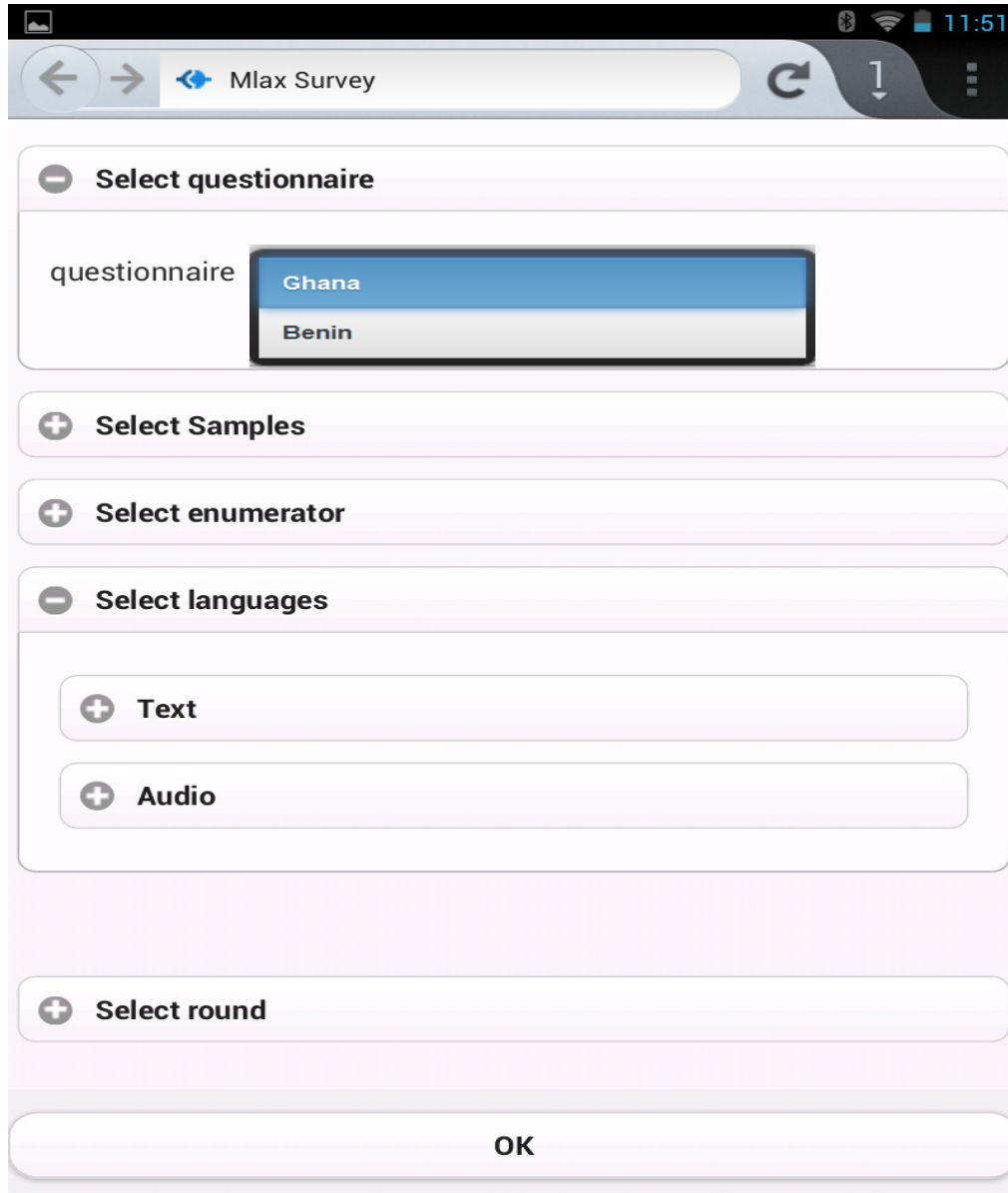
R&D activities a Hub and GRiSP

Protocols	GRiSP themes
Diagnostic survey	Themes 1, 2, 3, 4, 5 and 6
Baseline survey (+ ex-ante impact assessment)	Themes 1, 2, 3, 4, 5 and 6
PVS activities (Garden, baby & mother trials, etc.)	Themes 2 and 6
Quality seed selection/production training	Themes 2 and 6
Agronomy (yield gap assessment & GAP testing)	Themes 3, 4 and 6
Post-harvest (loss assessment & GAP testing)	Theme 4
Mechanization (on-farm testing & adaptation)	Themes 3 and 4
GAP training and video, etc.	Theme 6
Gender Studies	Themes 1, 2, 3, 4, 5 and 6
Ex-post impact assessment	Themes 1, 2, 3, 4, 5 and 6

Hubs baseline data collection

- Data collected in 41 hubs in 23 countries
 - 1312 villages are involved
 - 13 120 rice farming households concerned
 - 19 885 postharvest actors (*10250 traders, 1230 restaurants, 4305 consumers households, 4100 processors*)
- Use of Mlax application (web-based)
- Use of ICT tools (Tablets and smartphones)
- In-country training of NARS collaborators and enumerators

Baseline data collection using Tablets







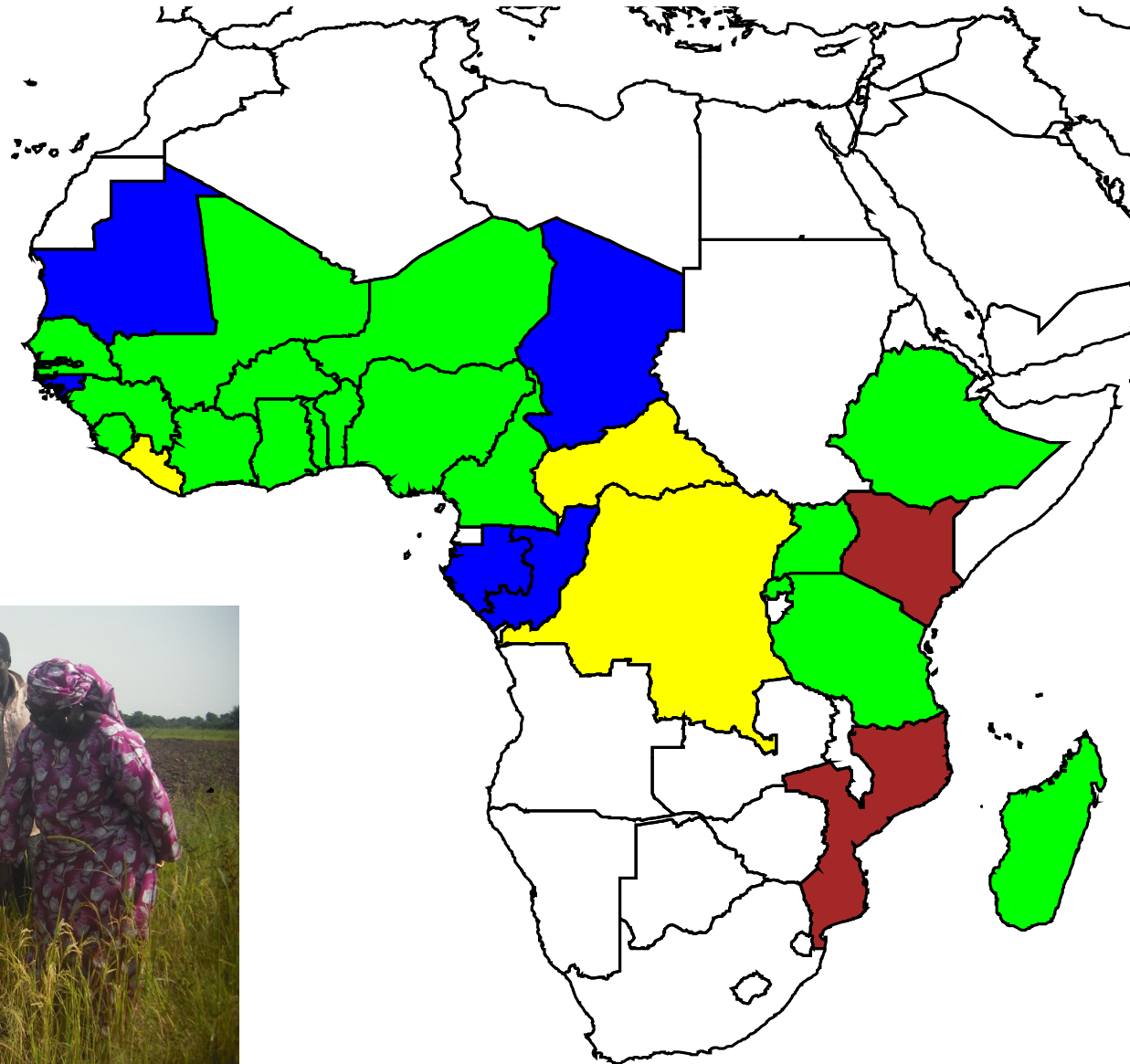
The screenshot shows the Mlax Survey mobile application interface. At the top, there is a navigation bar with a back arrow, a forward arrow, a refresh icon, and the text "Mlax Survey". The status bar at the very top shows the time as 11:51 and various system icons. Below the navigation bar, there are several sections for configuring the survey:

- Select questionnaire:** A dropdown menu is open, showing "Ghana" (highlighted in blue) and "Benin".
- Select Samples:** A button with a plus sign.
- Select enumerator:** A button with a plus sign.
- Select languages:** A section containing two buttons: "Text" and "Audio", both with plus signs.
- Select round:** A button with a plus sign.
- OK:** A large button at the bottom of the screen.



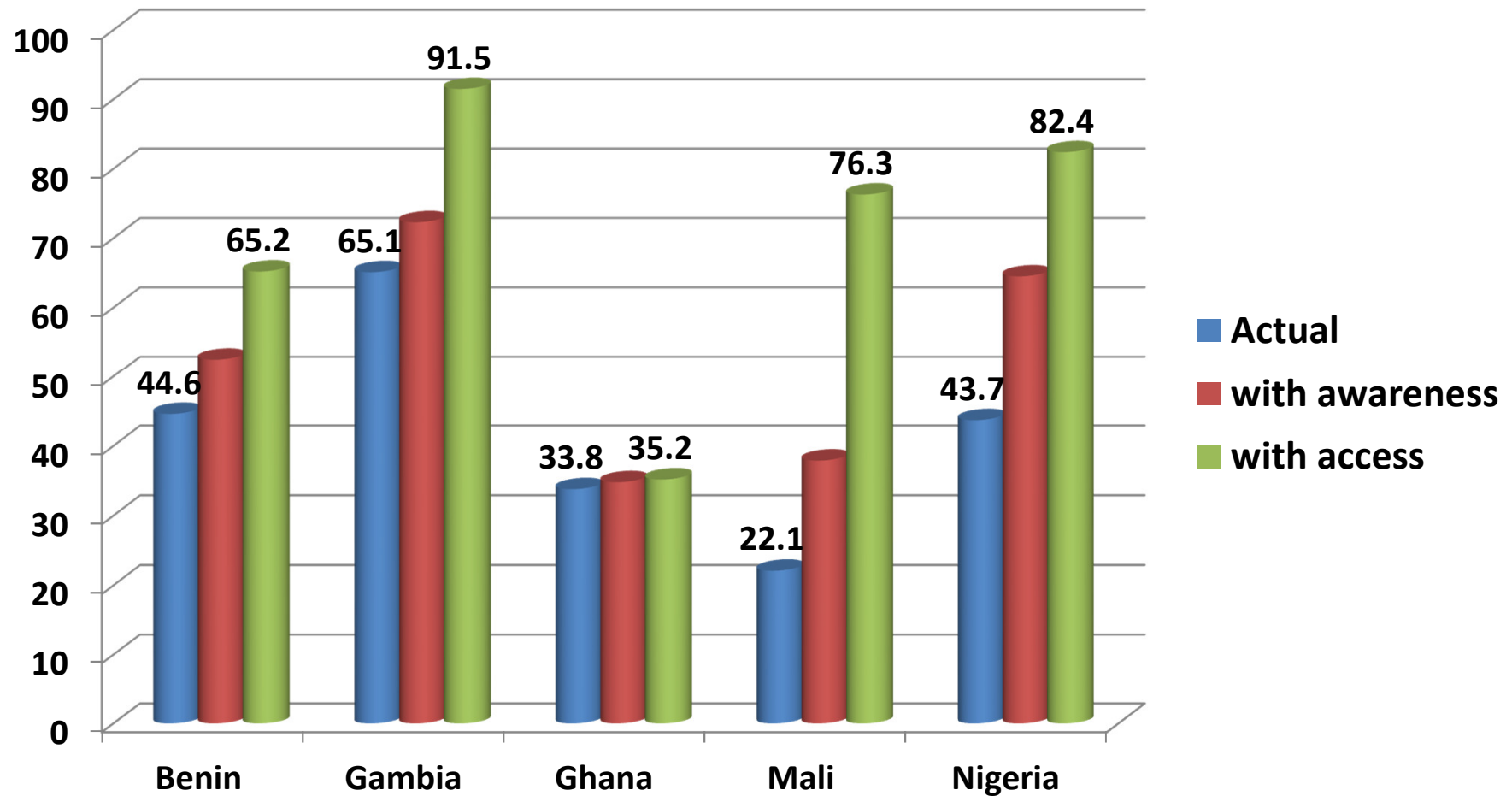
Status of Hub baseline survey

-  Data collection on-going
-  Sampling completed
-  Planned for 2014
-  Not yet planned



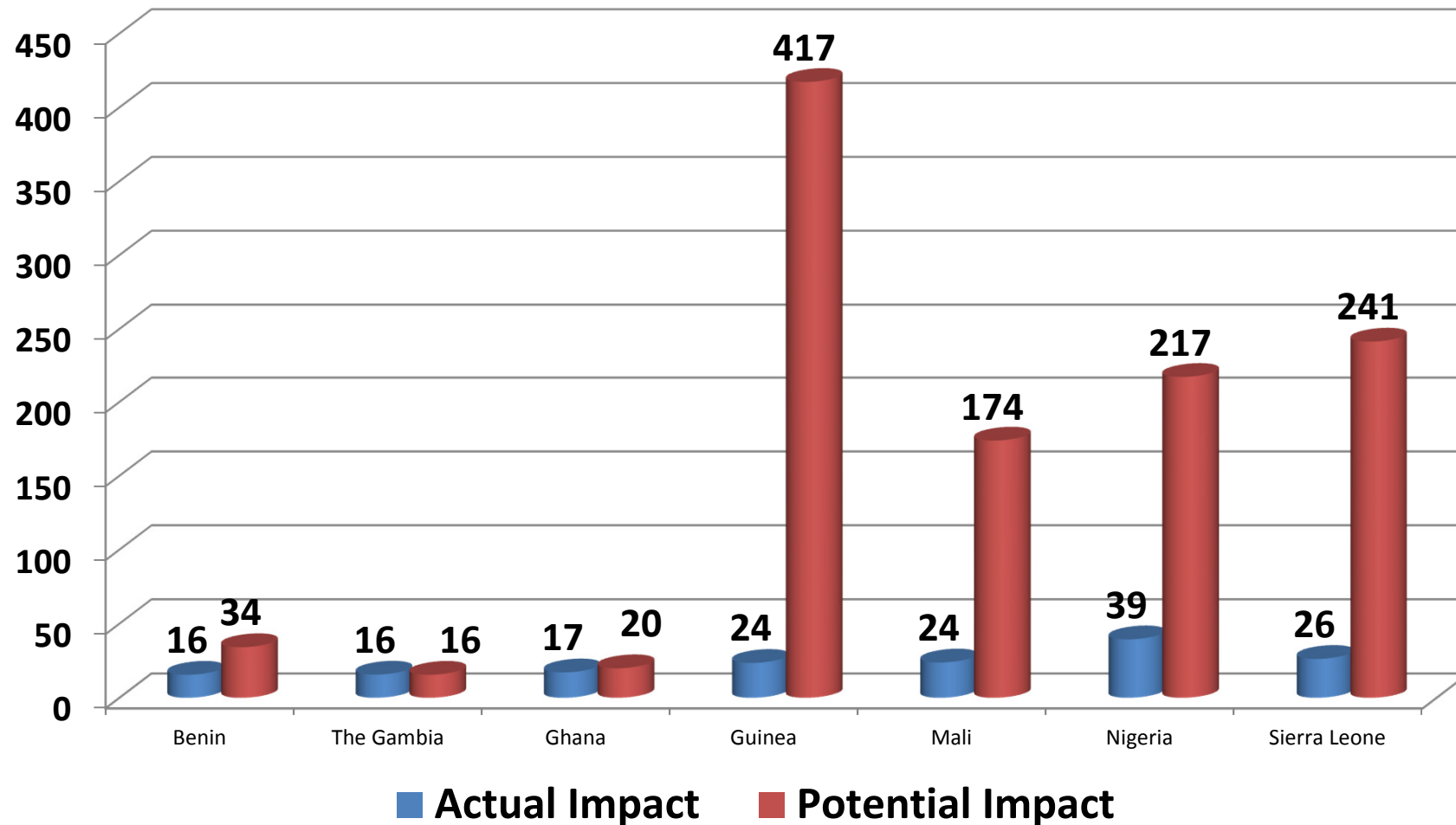
Highlights Ex-post impact assessment

Actual and potential Nerica Adoption rate



Highlights Ex-post impact assessment

Total Actual and potential Impact of NERICA adoption on Rice Output (in Thousands of Tonnes)



Examples of IA publication (AfricaRice)

- Awotide Bola Amoke, Aziz Karimov, Aliou Diagne, Tebila Nakelse. 2013. *The impact of seed vouchers on poverty reduction among smallholder rice farmers in Nigeria.* *Agricultural Economics* 44 (2013) 1–12
- Diagne, A., Glover, S., Groom, B., and Phillips J. 2014. *Africa's Green Revolution? Raising Awareness of New Rice Crops for Africa (NERICAs).* *The World Financial Review*: January - February 2014, pp. 64-67.
- Awotide Bola Amoke, Taiwo Timothy Awoyemi , Kabir Kayode Salman and Aliou Diagne. 2013. *Impact of Seed Voucher System on Income Inequality and Rice Income per Hectare among Rural Households in Nigeria: A Randomized Control Trial (RCT) Approach.* *Quarterly Journal of International Agriculture*, Vol. 52 (2):95-118.

Thank you