

# Food Security by The Numbers

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Observations from the USAID-MSU Food Security  
Cooperative Agreement FS III

**Challenges in Collecting and Using Information To Inform Goals of  
Poverty Reduction, Food Security, Enhanced Productivity and Income  
Growth for Small-Scale Farmers**

*at: 2010 USAID Economic Growth Officer's Conference, June 21-25. Wash, DC.*

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# Discussion Overview

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- **Discuss forces driving empirical data demands**
- **Review main FS III country buy-in issues/data strategy**
- **Discuss typical types of FS III data**
- **Examine capacity building issues**
- **Discuss common problems & success factors**
- **Future issues – selected observations**

# FS III & Other Projects Approach

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- **Numbers for Whom ?  
Strengthen smallholder  
voice in food security  
policy and program  
formulation:**
  - **Build host country capacity  
to conduct applied research,  
outreach and training**
  - **Help integrate empirical  
findings into policy dialogue  
and program design**

## **FS III Countries with Long-Term Connections**

- Mali
- Mozambique
- Zambia
- AFR/SD –Support to  
COMESA

## **(Outside FS III)**

- Kenya
- Malawi
- West Africa

## **(Prior FSA & FS II)**

- Ethiopia
- Rwanda
- Senegal
- Zimbabwe

# **Empirical Data – What Are the Driving Forces?**

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- **Data for whom?**
- **Data for what purpose?**
- **Broad policy purpose?**
- **One time and/or panel data?**
- **Specific design issue/monitoring purposes?**
- **Trade offs and challenges – no easy answer**
- **Critical to show improvements & outputs - strengthens credibility & usefulness of data**

# **FS III Country Buy-In Data Strategy**

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- **Long-term Associate Awards (match local interests with FS III themes & capability)**
- **Link to countries/USAID Missions wanting a longer-term empirical approach to inform policy**
- **Simulate demand for empirical policy information & strengthen the local supply response**
- **Attempt to provide a foundation of empirical data in partnership with host country partners**
- **Improve data design, collection & processing capacity jointly: use an in-service processes**
- **Strengthen the tradition of analysis & outreach** <sup>5</sup>

# Typical Types of Data/Respondents

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- **If possible get nationally representative data**
- **Rural households - farmers - full livelihood including:**
  - **crop, livestock, non-farm & off-farm data income data**
  - **food security indicators based on what is produced as well as purchased/sold**
  - **enhanced demographic information at household-member level, including gender information [Zambia example](#)**
- **Panel data sometimes & relate to annual crop data**
- **Village leaders in some countries**
- **Rural and urban traders/marketing agents**
- **Market information – prices & quantities**
- **Increasingly use GIS information – local and international ([COMESA example](#); [Zambia example](#))**
- **Experiment with ICT for data collection, access, outreach**

# Capacity Building Issues

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- Which host country partners to involve – at least agriculture & statistical offices
- Short-course & longer-term training needed
- Heavier involvement – participation/supervision of FS III staff on key studies. Incentives for quality are key.
- Simultaneous in-service training on using the information to inform policy/program design
- Use many different outreach mechanism not just traditional statistical reports [\(Zambia-example\)](#) [\(FSG example – Food Security Updates via e-mail & DVD\)](#)
- Use software that is most commonly used in host country –SPSS and STATA.
- Experiment with innovation on field/local data entry
- Develop on-line self-tutorials for this software for anyone to use [\(FSG example\)](#)

# Common Problems & Success Factors

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- **What is the right data to collect to deal with some specific questions & anticipate other potential key?**
- **Iterative programs of applied research and policy outreach require early involvement of local partners**
- **Local incentives structure are too often driven by per diems to collect the data – what to do about this?**
- **Academic incentives can also drive efforts towards too little timely interaction and outreach**
- **Projects and donors often want specific evaluation: often cannot be done with these kinds of data alone**
- **Having some free time to allocate to hot policy topics, but not being driven by these [Zambia example 2010 maize crop](#)**
- **Dealing with empirical information that is politically sensitive about program effects - let the data speak**



# Selected Future Issues

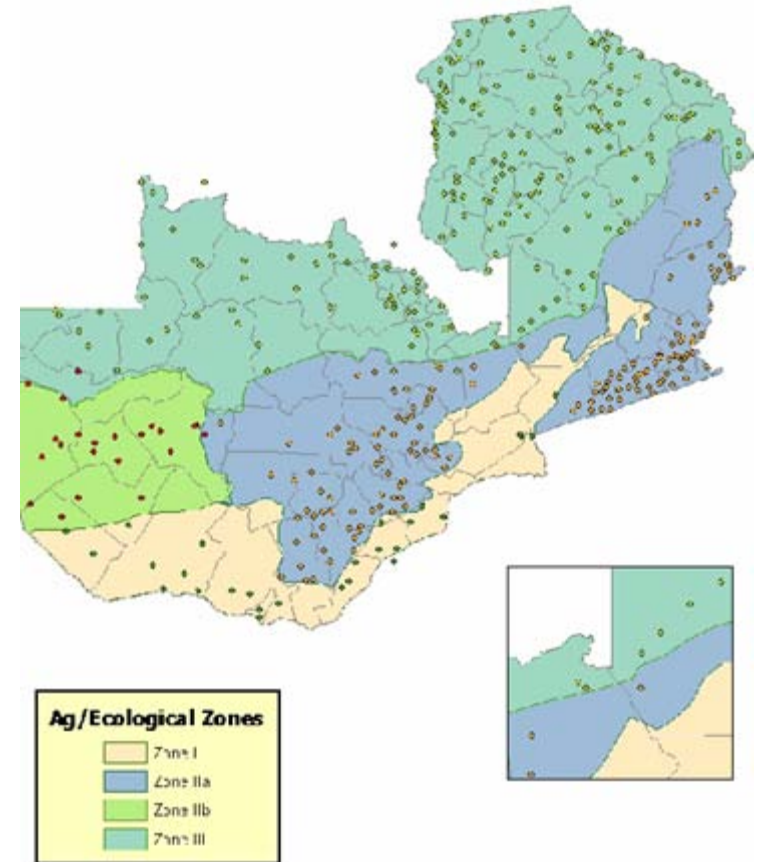
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- **Increase in funding for GHFSI & others – will likely demand more impact assessments & evaluations ([Insights from IDRC work](#))**
- **Turn around demand on impact assessment will increase**
- **Getting groups of Donors to cooperate on basics for information & analysis with locals – avoid competition - a longer-run challenge**
- **Getting host country agriculture Ministries and statistical offices to work well together. Reduce bias from an ag view only**
- **Getting line-items for data/software/ hardware/training/mobility in projects & host govt. budgets**
- **Panel data, experimental or quasi-exp. program implementation designs are likely to become more important**
- **But should avoid crowding out more fundamental and broad-based empirical information on rural sector stakeholders**
- **Opportunities for better targeting with information base & ICT- e-vouchers (SMS scratch cards) to transfer cash & subsidies**

# Supplemental Surveys: Empirical Data on Smallholders in Zambia

## – Nation Wide Random Surveys (PHS/SS 99/00, 02/03 & 07/08= 364 SEAs Supplemental to the Post Harvest Survey)

[Back](#)



Map of Central Statistical Office Statistical Enumeration Areas (SEAs) Sampled in the CSO/MACO/FSRP Post Harvest and Supplemental Surveys in 2001, 2004 and in 2008) by Zambia's Agro-Ecological Zones

# Listing and Data Collection



# 17 Sets of Related Indicator Variables

Looking At Household-Level Composition & Diversity From Different Angles

1. Base Variables - Net Yearly Income & Food Security Indicator (calories retained)
2. Cropping and Livestock Income Components
3. Business (Formal and Informal) Income Sub-Components
4. Non-Ag Wage Subcomponents
5. Demographic Characteristics
6. Land Access and Use Information
7. Other Asset Information
8. Livestock Information
9. Cropping Information
10. Area Allocation to Main Crops
12. Maize Specific Cropping Information
13. Maize Fertilizer Use and Acquisition Information
14. Maize Sales Information by Agent
15. Maize as a Single Cropping Information
16. Location Information by Province
17. Location by Agro-Ecological Zone

**Table 12 b. Household-Level and National Maize Fertiliser Information: National Household-Level Net Yearly Income and Related Food Security Categorization Indicators for Zambian Rural Cropping Households According to Their Position in MAIZE AND MEALIES Market Categories By Low, Medium and High Income Terciles, 2007/2008 Marketing Year. All Values Reported in Constant 2009/2010 ZMK** [Back](#)

Type of Maize Seller/Buyer Market Category	Households			Households Producing Maize		Households Producing Maize With Fertiliser		HH-Level Maize Yield Without Fertiliser Kg/Ha	HH-Level Maize Yield With Fertiliser From Any Source Kg/Ha	Qty. HH-Level Com. Fertiliser Purchased Kg/Ha	National Total Tons Com. Fertiliser Acquired Metric Tons	Households Acquiring FSP Fertiliser (proportion of all cropping (ha))			HH-Level FSP Fertiliser Acquired Kg/Ha	National Total Tons FSP Fertiliser Acquired Metric Tons	HH-Level Maize Yield With Fertiliser From FSP Kg/Ha	HH-Level Maize Yield From Com. Source Kg/Ha	Call/AE/Day Retained On-Farm From Cereals & Tubers
	Tercile	% of HHs	Number of HHs	Number of HHs	% of HHs	Number of HHs	% of HHs					# of HHs	% of HHs	% of HHs					
1. Grower and Seller of Maize*	Low	4.2	61,977	61,977	100	25,159	40.6	1,370	1,984	330.1	4,302	7,931	12.8	0.5	181	1,435	2,023	1,955	2,120
	Med	8.6	128,450	128,450	100	65,755	51.2	1,587	2,317	274.6	9,506	29,502	23.0	2.0	246	7,270	2,503	2,080	2,847
	High	14.7	218,885	218,885	100	158,366	72.4	1,900	2,897	284	43,736	81,878	37.4	5.5	439	35,968	2,974	2,904	4,309
Sub Total		27.4	409,313	409,313	100	249,281	60.9	1,655	2,652	287	57,544	119,311	29.1	8.0	374	44,673	2,794	2,572	3,520
2. Grower and Buyer of Maize or Mealies**	Low	14	208,786	208,786	100	37,764	18.1	809	1,157	326.4	5,788	6,083	2.9	0.4	188	1,137	1,226	1,121	1,385
	Med	13.6	202,868	202,868	100	44,043	21.7	1,110	1,571	219.5	4,184	10,656	5.3	0.7	182	1,942	1,511	1,591	2,164
	High	11.3	169,507	169,507	100	66,642	39.3	1,141	1,645	278.2	10,653	15,589	9.2	1.0	253	3,947	1,615	1,682	3,036
Sub Total		38.9	581,160	581,160	100	148,449	25.5	998	1,499	273.1	20,625	32,309	5.6	2.2	217	7,026	1,508	1,516	2,139
3. Does not Grow Buyer Maize/Mealies	Low	4.8	71,160	0	0	968	1.4	0	0	98.8	27	71	0.1	0.0	100	7	0	0	1,219
	Med	3.3	49,373	0	0	0	0	0	-	-	22	0	0.0	0.0	-	0	-	-	2,700
	High	2.6	38,974	0	0	458	1.2	0	0	666.7	458	0	0.0	0.0	-	0	-	0	3,284
Sub Total		10.7	159,507	0	0	1,427	0.9	0	0	455.2	507	71	0.0	0.0	100	7	0	0	2,235
4. Does not Sell nor Buy Maize, nor Mealies***	Low	10.4	155,813	101,115	64.9	18,178	11.7	892	1,245	278.6	3,312	3,035	1.9	0.2	116	351	1,492	1,199	1,907
	Med	7.9	117,006	83,353	71.2	22,355	19.1	1,334	1,680	213.9	1,776	6,578	5.6	0.4	174	1,147	1,721	1,498	3,516
	High	4.7	70,398	57,297	81.4	27,079	38.5	1,508	1,978	304	5,832	7,507	10.7	0.5	328	2,462	1,993	1,973	4,876
Sub Total		23	343,217	241,764	70.4	67,612	19.7	1,154	1,681	271.6	10,920	17,120	5.0	1.1	231	3,960	1,800	1,612	3,082
Total Sample	Low	33.3	497,736	371,878	74.7	82,070	16.5	880	1,416	314.9	13,429	17,100	3.4	1.1	171	2,930	1,638	1,373	1,626
	Med	33.3	497,697	414,671	83.3	132,152	26.6	1,251	1,961	243.6	15,488	46,736	9.4	3.1	222	10,360	2,167	1,798	2,709
	High	33.3	497,764	445,688	89.5	252,546	50.7	1,420	2,483	285.9	60,679	104,974	21.1	7.0	404	42,377	2,702	2,386	3,881
National Ave.		100	1,483,197	1,232,237	82.5	466,768	31.3	1,151	2,137	279.9	85,597	163,811	11.3	11.3	330	55,666	2,446	2,025	2,752

Source: Supplemental Survey to the 1999/2000 Post Harvest Survey, Central Statistical Office, 2007/2008 Marketing Season. Productive assets include only those that match 2004. \* 1/3 of this category do buy small amounts of maize or maize meal, but in net terms are sellers, similar to other hh's in this category.

\*\* 1/10 of this category of households do sell small amounts of grain, but in net terms are buyers, similar to other hh's in this category.

\*\*\* A very small number < 1 % buy, and sell but on net sales are zero.


Publications	Policy/Outreach
Policy Syntheses	
Research Reports	
Annual Project Report	»
Academic Articles	
Thesis Reprints	
Administrative Reports	»
ACF Reports	»

Policy/Outreach	Topic Directories
Policy Syntheses	
Policy/Workshop Presentations	
Notes on Current Topics	
Media Coverage	
Mbaselas	

Topic Directories	Surveys	Pa
Cassava & sweet potato		
Cassava value chain		
Conservation Farming		
Cotton value chain		
Emergency Response		
FSP Study Tour		
GART/ZARI Training Docs		
High Prices		
Horticulture value chain		
Input Use		
Livestock value chain		
Maize value chain		
Market Info Dev		
Natural Resource Management		
Output Market		
Prime-Age Mortality		
Rural HH Income		
Trade		

## Zambia Food Security Research Project (FSRP)

Help Topics: [Accessing Documents](#) | [Publication Series](#) | [Searching](#)

Quick Links on This Page 



**Resource Materials - Zambia Agricultural Fertilizer Programme Study Tour. Gaining Insights From on-going Reforms in Malawi, Kenya and Tanzania. MACO/ACF/FSRP**

Surveys	Partners	Links
		<a href="#">CSO/PHS Surveys</a>
		<a href="#">CSO/LCMS Surveys</a>
		<a href="#">CSO/MACO CFS Surveys</a>
		<a href="#">FSRP Survey Instruments</a>
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[Back](#)

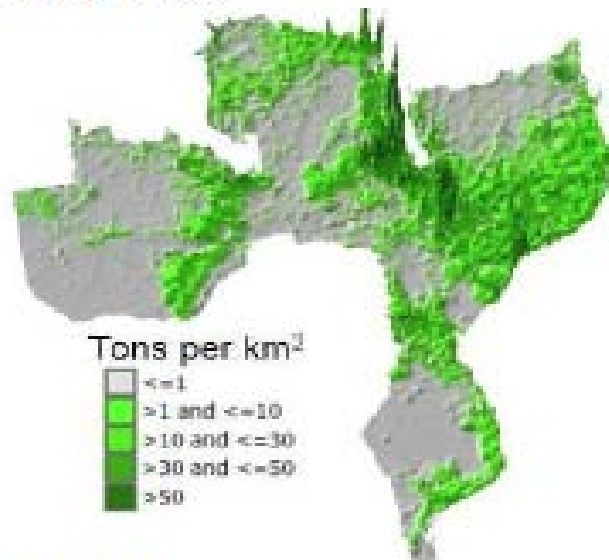
### Self-Tutorial Sample Session for STATA

- STATA 10 for Windows SAMPLE SESSION. Cross-Sectional Analysis. Short Course Training Materials. Designing Policy Relevant Research and Data Processing and Analysis with STATA 10 for Windows 1st Edition.
  - [Instructions](#)
  - [Data](#)
- STATA 8 for Windows SAMPLE SESSION. Cross-Sectional Analysis. Short Course Training Materials. Designing Policy Relevant Research and Data Processing and Analysis with STATA 8 for Windows 8th Edition.
  - [Instructions](#)
  - [Data](#)

### Self-Tutorial Sample Sessions for SPSS

- [Instructions and description](#) of the sample sessions
- [Data required for all of the following sample sessions](#) (in Zip format) (for Portuguese TS data see below). This file contains the data files necessary to properly run all the sample sessions. The commands in the sample sessions assume that your data is stored in c:\docs\sample, so we recommend that you unzip the sample files to that folder.
- [Changes in SPSS 15](#). M. Beaver. February 2007
- Self-Tutorial Sample session for Windows-**Cross Sectional** Analysis. Department of Agricultural Economics, Michigan State University.
  - SPSS 17 (2009). [English](#) (CDIE reference number pending)
  - SPSS 15 (2007). [English](#)
  - SPSS 10.0 4th Edition (2000). [English](#) | [Português](#) | [Français](#) | [Español](#)
  - SPSS 7.5 Revised by Jean-Charles Le Vallée, 3rd Edition (1999) [English](#) | [Português](#)
- Self-Tutorial Sample session for Windows-**Time Series** Analysis. Department of Agricultural Economics, Michigan State University.
  - SPSS 10.0 2nd Edition (2000) [English](#) | [Português](#)
    - [Dados para TS 10 em Portugues](#) (in Zip Format)
  - SPSS 7.5 Revised by Jean-Charles Le Vallée, 3rd Edition (1999) [English](#)

Figure 19. Grid Map of Staple Food Production and Sales, Normal Year  
a. Production of Maize Plus Cassava



b. Sales of Maize Plus Cassava

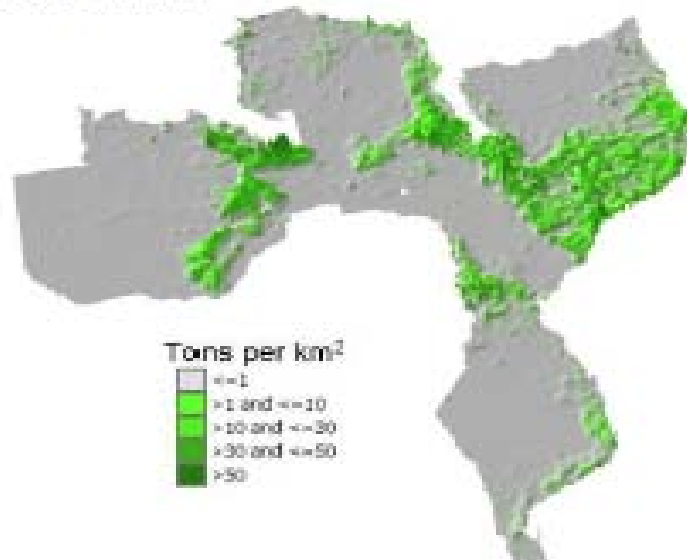
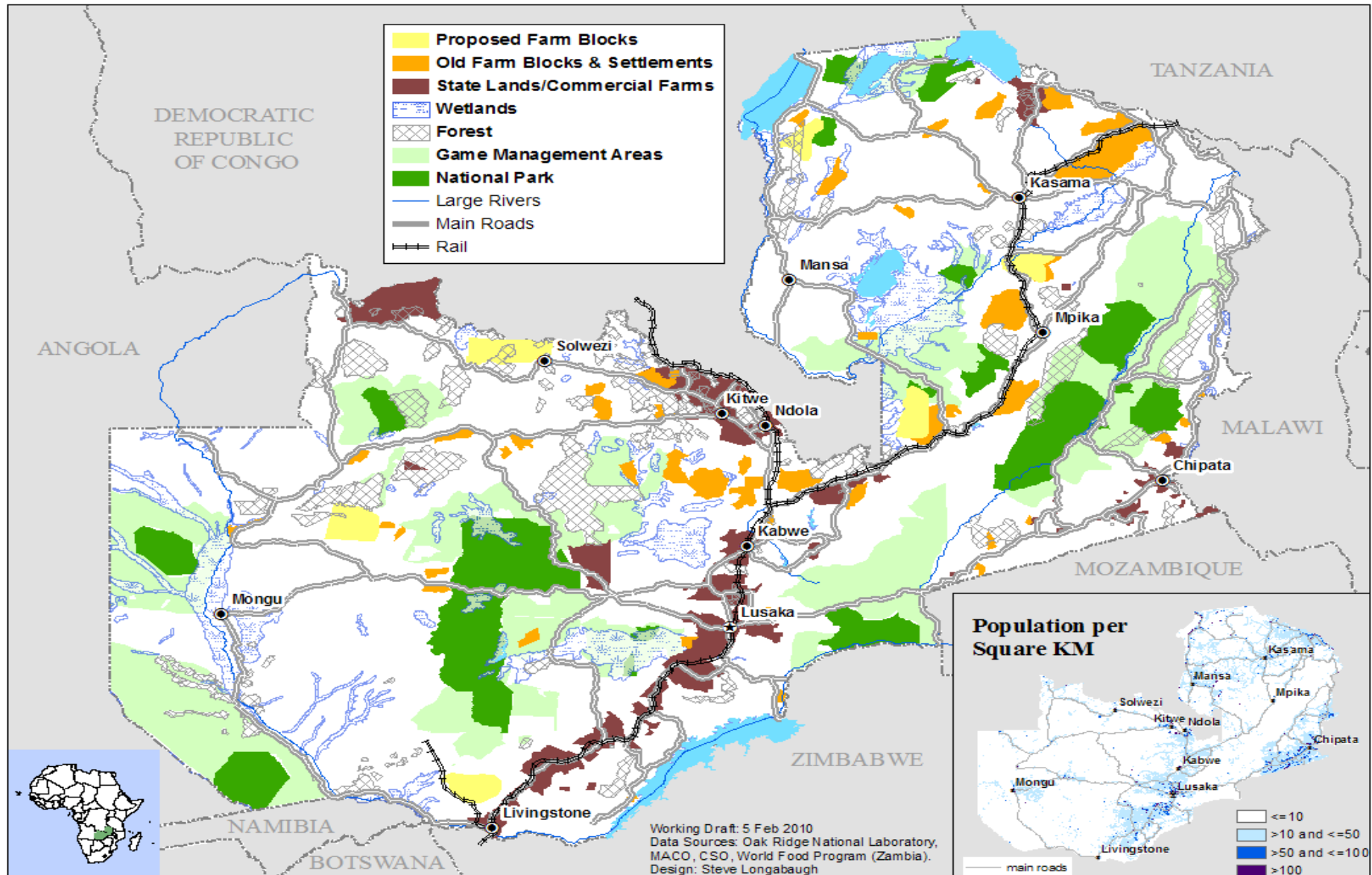
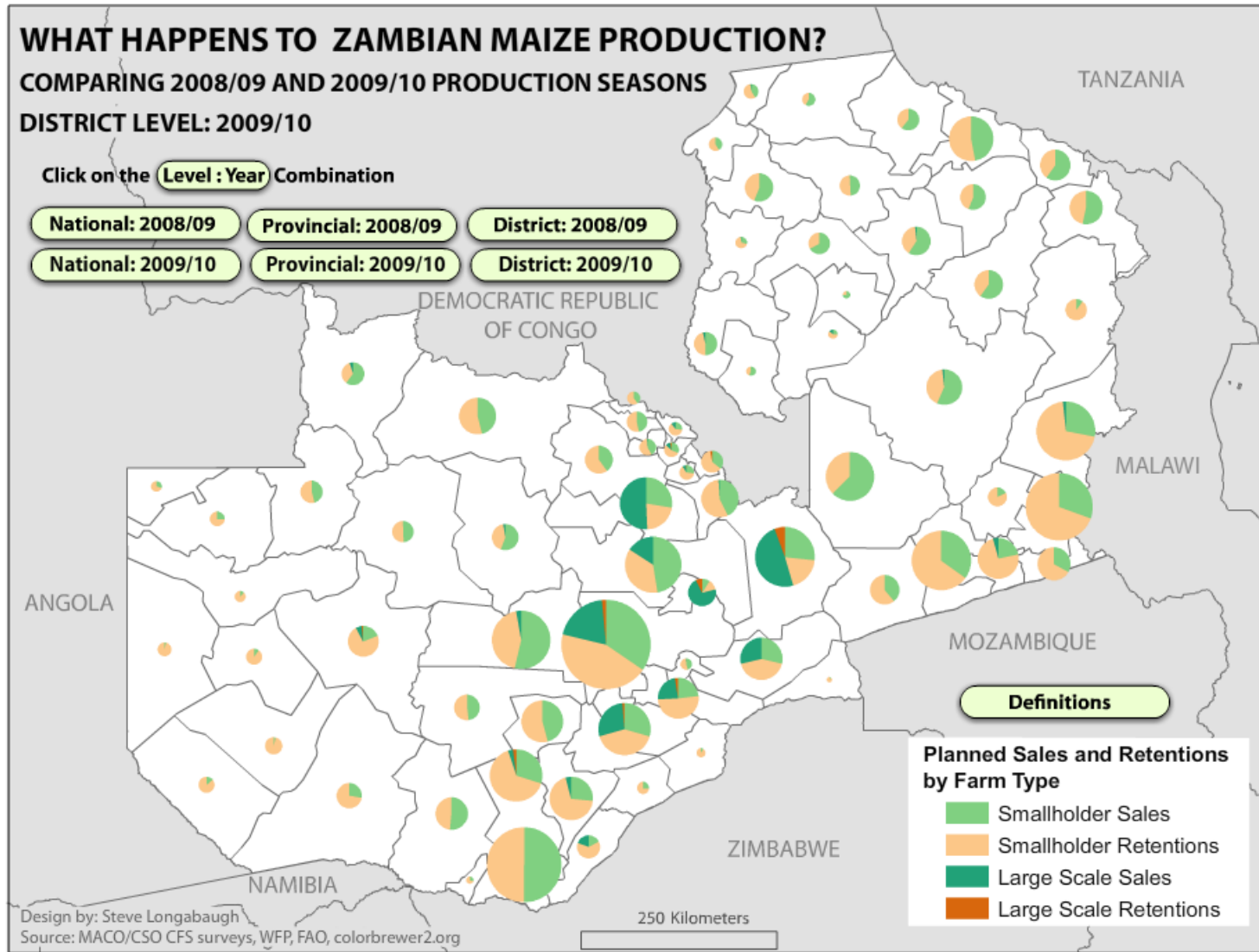


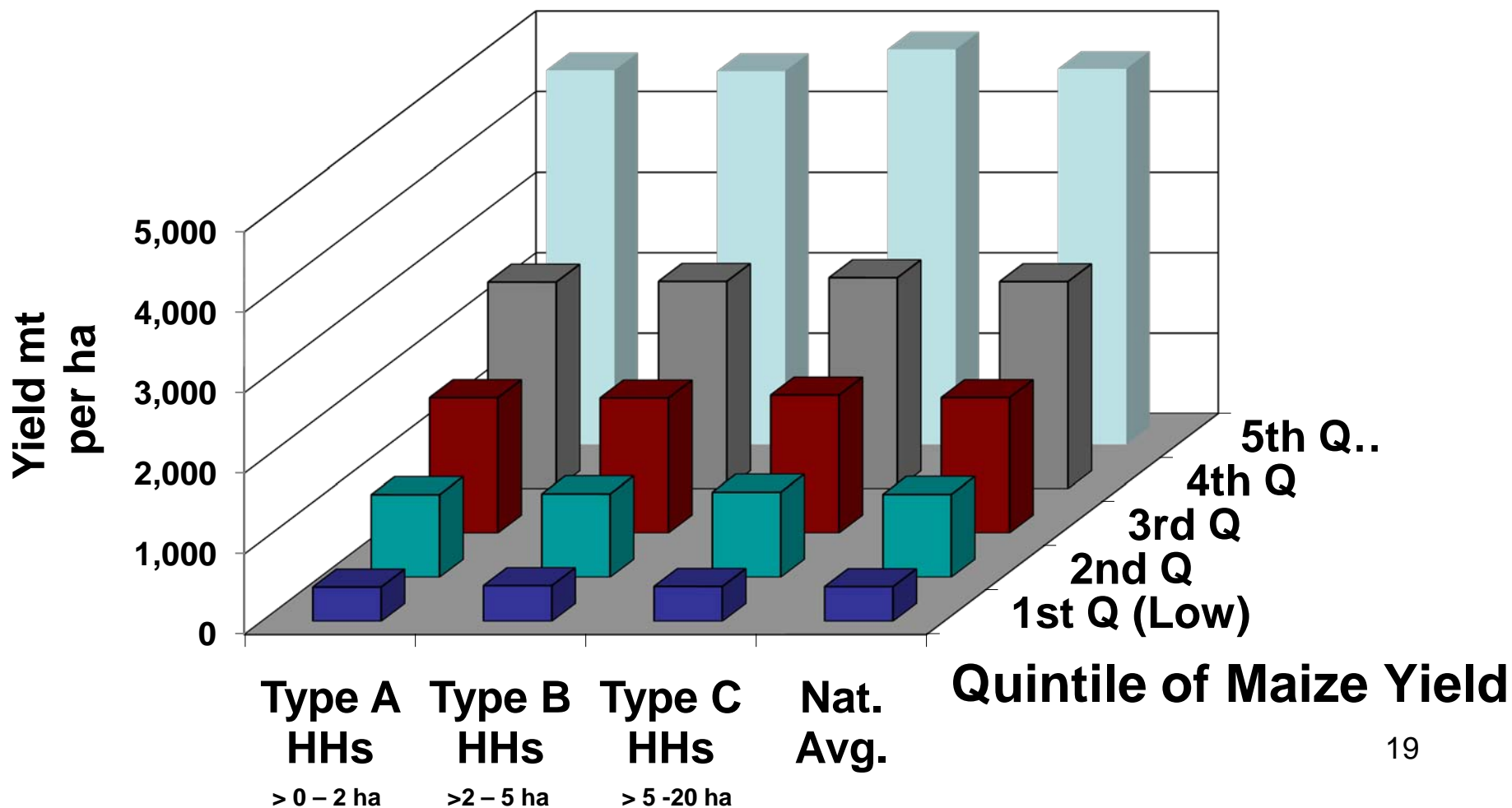


Figure 1. Map of Important Land Use Features and Population Density in Zambia



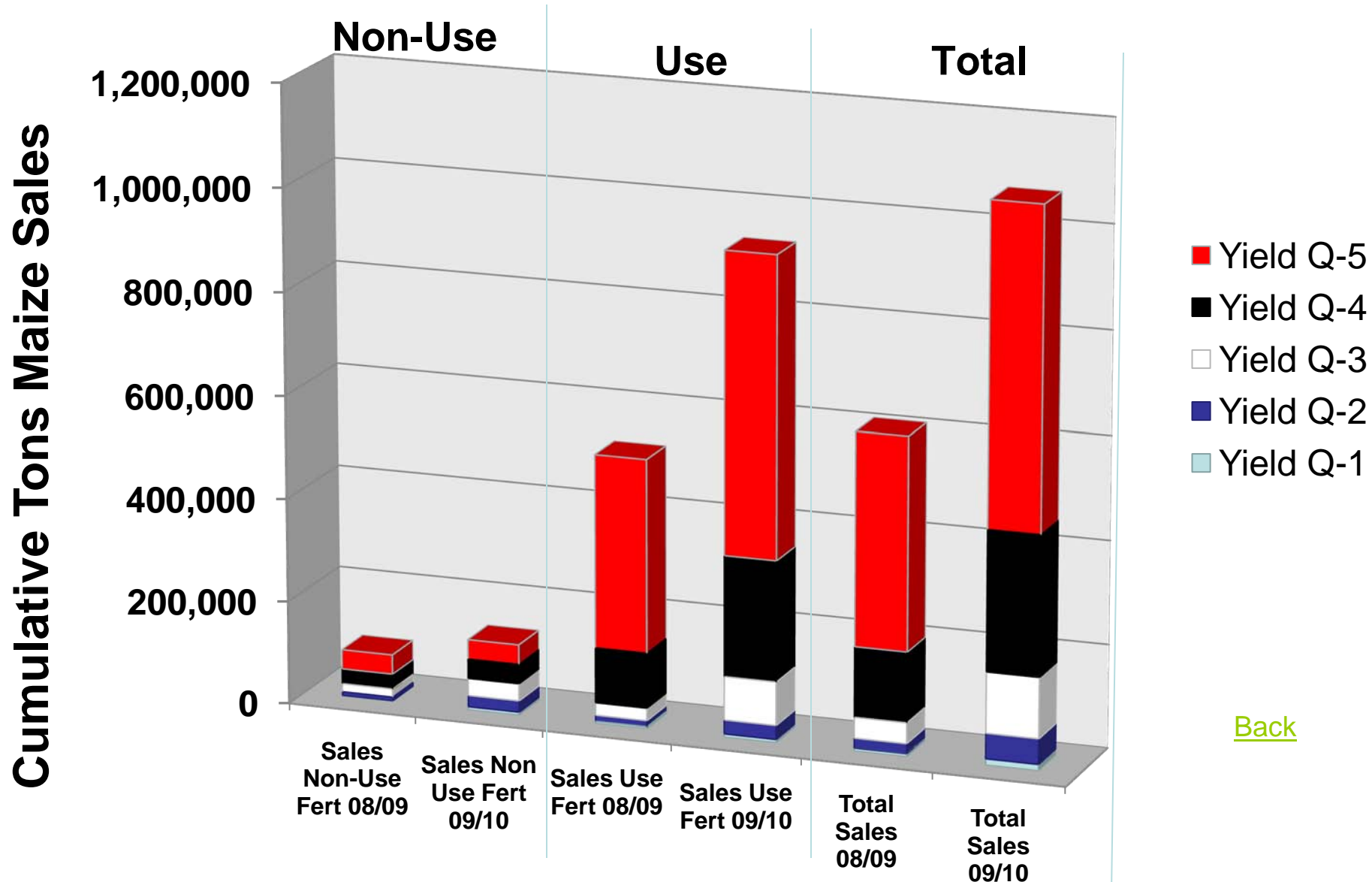


# 2009/10 Levels of Maize Yield by Quintiles and Type of S/M Households (A, B and C)



# Sales Vary More in Zambia by Yield Level Than by Farm Size

## - Expected Maize Sales by Year and Yield Quintile of S/M –Scale HHs and Use/Non-Use of Fertiliser in Zambia



[Back](#)

[Back](#)

## **MSU AFRE Food Security International Updates**

### **What**

We periodically send out an MSU AFRE Food Security Update, which is an e-mail notice about items recently modified, added or in the process of being posted to MSU's Food Security Group's Web Site. All items listed are currently downloadable in Adobe Acrobat format or will be available shortly. Listings for publications at MSU and in each specific country where we work are generally mutually exclusive. Those searching for research publications by specific MSU and/or host-country collaborators should therefore consult specific in-country, as well as the campus-based publication lists. Users may click on the URL for each specific section to gain quick access to the documents.

### **Prior Issues of MSU AFRE Food Security International Updates**

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- 2008 : [October](#), [July](#), [April](#), [January](#)
- 2007 : [October](#), [June](#), [March](#)
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- 2003 : [December](#)

[BACK](#)

# Insights and Humor from IDRC – Impact Evaluation

## Output Outcome Downstream Impact Blues – and other IDRC Impact Assessment Training Tools

[http://www.idrc.ca/en/ev-62239-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-62239-201-1-DO_TOPIC.html)