RIHN Agricultural Household Survey, 2005/2006 Agricultural Season

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Background and Purposes

The Research Institute for Humanity and Nature (RIHN) Agricultural Household Survey (RAHS) of 2005/2006 agricultural season is conducted to supplement Post Harvest Survey (PHS) conducted annually by the Central Statistical Office of Zambia. The primary aim of this survey is to assess vulnerability and resilience of subsistent small holders to climatic variations. The data will be used to assess impacts of climatic shocks on farm production, to identify vulnerable households, to identify factors influencing resiliency to systemic shocks and to simulate on various possible policy instruments that can enhance resilience of small holders.

The RAHS creates new opportunities that the existing PHS alone cannot provide. By design, this survey is to join with the PHS 2003/2004 and 2004/2005 to create a panel data of three years. Usually, PHS is a repeated cross-section. The accidental panel that happened in the PHS 2003/2004 and 2004/2005 was a result of unexpected budget shortfall at CSO. To take advantage of this otherwise too short panel data, the RAHS was launched to create a longer panel. Such panel data will enable us to study dynamics of household and production and overcome some analytical limitations that are common in repeated cross-section analysis. In addition, RAHS supplements the PHS with wider coverage which includes farm and off-farm income, resource endowment, poverty assessment, health, consumption and coping behaviors. This wider coverage will help us better assess the vulnerability and resilience of the small holders to climatic variations.

Sample Design

Sampling method of RAHS is based on PHS's stratified random sample. The population is first stratified into standard enumeration area (SEA) with probability of being selected being proportional to its size in the first step. In the next step, a number of small farming households living in selected SEA, which cultivates on more than 0 hectare to no more than 15 hectare of land, will be selected. The sampling frame of SEAs is based on Census of Population and Housing in 2000 and 410 SEAs were selected for PHS.

Scope and Coverage

In this study, the project covers 59 SEAs previously selected in 2004/2005 in Eastern and Southern Provinces. Given project's budget constraint, 59 chosen SEAs were optimal. Both Provinces were chosen to control for level of poverty that influences household vulnerability and resilience. Their poverty levels are of intermediate severity relative to the rest of the country with about the same poverty headcounts at 70 percent in 2004 (Simler, 2007[1]). On the other hand, their differences in geographical conditions, ethnicity, crop patterns and resource endowments provide needed variations for subsequent data analyses. The distributions of SEAs are shown in the table below:

Table 1: Numbers of Selected SEAs by District

DISTRICT	NUMBER OF SEA
Eastern Province	
Katete	11
Mambwe	3
Nyimba	4
Petauke	14
Subtotal	32
Southern Province	
Choma	8
Gwembe	2
Kalomo	7
Monze	7
Sinazongwe	3
Subtotal	27

The selection of the SEAs is not designed to represent provincial situations. This is not necessary a drawback because the focus of this survey is to examine behavior at household level and not to obtain provincial production estimates as it is done in the PHS.

A total of 20 households that were previously interviewed in the PHS 2003/2004 and 2004/2005 are selected from each SEA. The expected sample size is 1,180 households. However, CSO attempted to conduct an interview on 1,156 households of which 1,011 households completed the interview. This constitutes an attrition rate of 12.5 percent. Important reasons for failure to get complete response are (i) moving out of SEA, (ii) non contact, and (iii) households dissolved. The distributions of response status are shown in table 2 below:

[1] Simler, K., (2007), Micro-Level Estimates of Poverty in Zambia, Lusaka: Central Statistical Office.

Table 2: Response Status of Selected Households

RESPONSE STATUS	NUMBER OF HOUSEHOLDS	PERCENT
Complete	1,011	87.46
Refusal	2	0.17
Moved out of SEA	56	4.84
Household dissolved	33	2.85
Non contact	54	4.67
Total	1,156	100.00

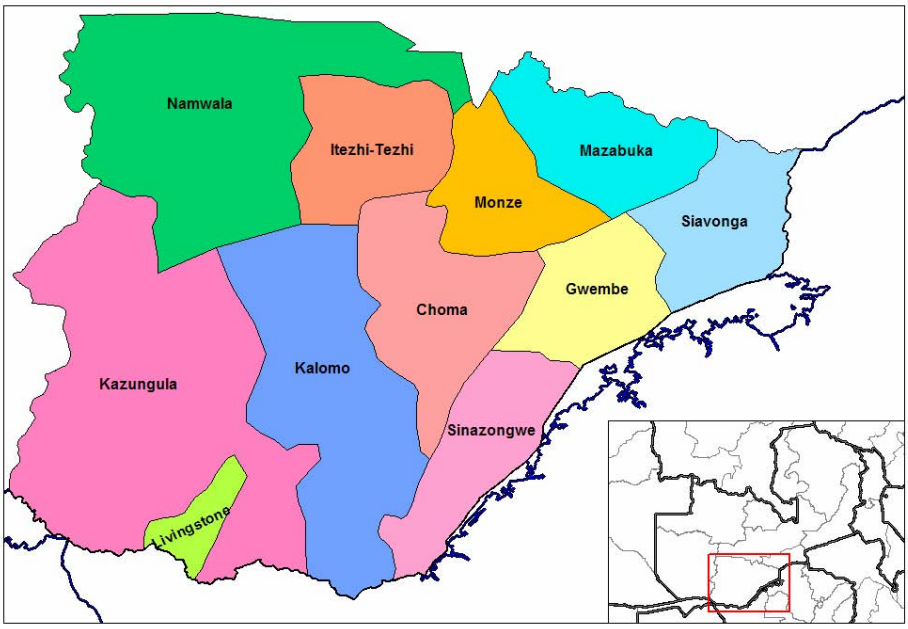

Figure 1: **District Map of Southern Province, Zambia**

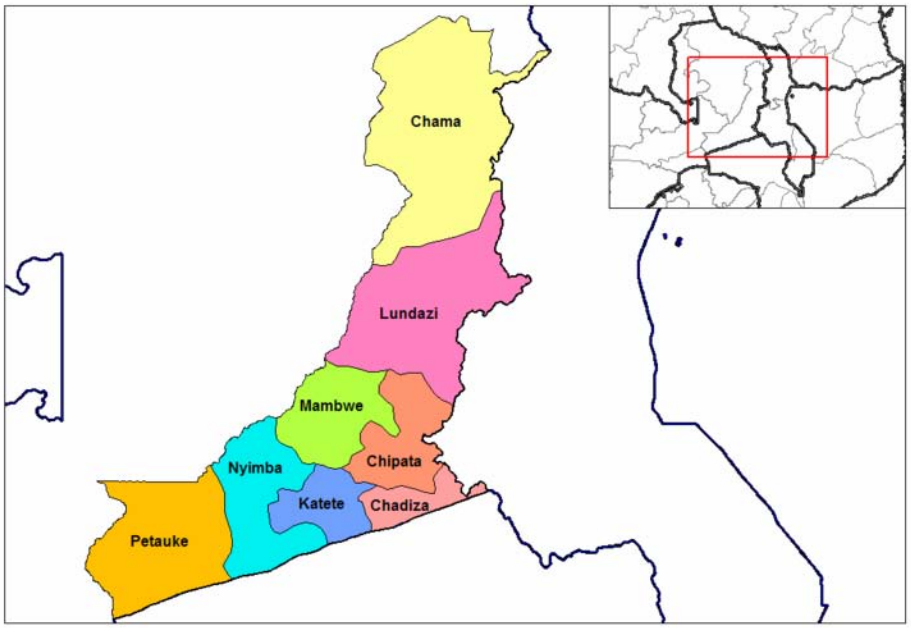

Figure 2: **District Map of Eastern Province, Zambia**

Survey Instrument and Reference Period

RAHS Survey instrument is adapted from two instruments one of which is the Food Security Research Project/Michigan State Unitversity's Supplemental Survey and the second of which is CSO's Living Condition Monitoring Survey. The RAHS covers the following aspects, i.e.

- production, sale and stock of crops, vegetables, fruit trees,
- input use,
- income and remittance,
- assets,
- consumption,
- poverty status,
- household coping strategies.

The instrument is 40-pages long. The survey focuses mostly on 2005/2006 agricultural season.

Survey Preparation

After developing questionnaires, two joint seminar sessions were organized during the pre-survey stage in March 2007. The first seminar was a meeting between RIHN's researchers and CSO's coordinator, analysts, data manager and statisticians from Lusaka, Southern and Eastern Province offices. The purposes are to clarify objectives, concepts,

structure of questionnaires and to solicit feedback to refine questionnaires. This process took place at CSO's main office in Lusaka and it took one week to complete the seminar. The second seminar was held at provincial level. Participants are enumerators, field supervisors and provincial statisticians. The purposes of this seminar were not only to clarify objectives, concepts and questionnaire structure but also to provide practical skills needed to conduct successful survey. The training took ten days. Immediately after completing the training, enumerators and field supervisors were sent out for field tests. Objectives of pilot testing are two folds. One is to ensure that the questionnaires are capable of collecting desired information and the other is to familiarize enumerators with field interview. The survey was launched in both Provinces simultaneously on March 28, 2007 and completed on April 30, 2007.

Supervisors and Enumerators

Quality supervisors and enumerators are keys to a successful survey. Two supervisors and ten enumerators were deployed for each Province. While supervisors are CSO's official, enumerators are temporary employees that were recruited on a job-based basis. A minimum high school graduation and ability to speak local language are prerequisites for enumerators. The majority of enumerators are experienced field interviewers. Poor job market in Zambia was the main reason for CSO to be able to consistently employ the same group of enumerators. Initially, it took enumerators more than two hours to complete an interview. Growing more accustom to the flow of questionnaires, however, enumerators reportedly took about 90 minutes to complete the household interview. The completed questionnaires were then checked by the supervisors.

Data Entry and Submission

After completing the survey, questionnaires were brought to CSO main office in Lusaka for data entry. The first batch of data files submitted to the institute was in June 2007 and the last batch of files received was on November 11, 2007. A total of 61 data files have been received. The delay of data submission was mainly a result of failure of a supervisor to collect GPS coordinates of 30 sample households in Southern Province. The CSO coordinator had sent out an employee to recollect GPS information. Furthermore, responses to some questions were not input. Upon several repeated verifications, a numbers of observations with incorrect identifiers and identifier shifting were discovered and corrected. At the time of this writing, all known issues have been addressed and corrected. However, an extreme value

issue that is common in field survey remains. Response error, coding error and data entry error are the likely causes of this extreme and implausible value problem.

Data Quality Assessment

High quality data are essential for any research. In reality, no survey data are perfect despite careful planning and execution. To gain some idea about the quality of RAHS data set, we set out to visit some sampled households in September 2007 in Eastern and Southern Province. Chief purposes of this visit were to gain first hand knowledge of farmers' livelihoods, living condition, and environment. Additionally, the research team wished to cross verify information recorded in the questionnaires.

It is found that some farmers have a tendency to under report income generating activities and production. Those under reporting farmers may have been motivated by a faulty speculation that such behavior would likely qualify them for financial or non-financial aid the survey would bring. Nevertheless, this phenomenon is not uncommon. In more developed countries, some respondents tend to under report cash income for fear of tax consequences.

In a village in Southern Province, an enumerator was found to make serious omissions in recording off-farm business activities of a household. That particular household happened to extensively involve in several businesses at the same time. There was no indication that members of that household attempted to conceal information. They even openly and proudly shared information about their livelihood activities and an amount of income they make. Though disappointing, it is difficult to generalize about prevalence of such interview omissions from a very small number of household revisits. What is more important is that what were recorded was recorded accurately among cooperative households. For some reasons, some household intentionally give misleading information to the enumerators. Fortunately, that inaccuracy found was not on a critical part of the survey.

No similar interviewer's omissions were found in Eastern Province. Interestingly, we discovered that households living near the border are likely to conceal their cash generating activities because of their involvement with cross border trading some of which was socially acceptable but not legally.

Incidences of enumerator or supervisor errors were relatively higher in the Southern than in Eastern Province. However, there are some indications that response errors are likely to be higher in the Eastern Province especially areas near borders. No evidence of any enumerators, beside the case of interview omission, intentionally recorded inaccurate information. The response and enumerator errors are not uncommon in survey data especially

one that is conducted in developing countries. The key issue is not whether or not those errors exist but rather at what degree. It is difficult to give objective evaluation of the quality of RAHS data set based on limited information. Detecting data abnormalies will provide more accurate assessment. Perhaps, it suffices to argue at this early stage that RAHS data are of equal or greater quality than any other standard surveys CSO has ever conducted. The logic of this argument is based on the panel nature of this survey. Unlike cross-section survey, data abnormalies can be detected with greater ease in panel data and, therefore, an incentive to intentionally record inaccurate data is lessened among those whose opportunity costs are greater than short-run benefits gained from under-work.

Future Improvements

A drawback of this survey is probably its untimely execution of the survey. Ideally, the survey should have been conducted immediately after the end of the 2005/2006 agricultural season to reduce recall errors. However, this delay happened not by choice but by necessity. The project commenced in fiscal year 2006/2007. By the time all preparations were in place, it was not possible to immediately conduct the survey during planting season in Zambia because the majority of the sample areas were not accessible during rainy season. Immediately after the arrival of the next dry season, the survey was launched. Fortunately, this delay issue is not likely to reoccur in the next follow up survey.

The next follow up survey should focus on quality assurance. Survey instrument needs to be streamlined. Some questionnaires need to be sharpened to better collect the desired information. Recording and interviewing skills of enumerators can be improved by learning from imperfections in this survey. Third-party supervision can intensify CSO's supervising efforts and improve provincial coordination. Data entry needs to be done in a timely manner. It is obvious that there were production congestion at CSO. Third party data entry and checking is an attractive option to reduce errors from data entry and to avoid congestion at CSO. Costs of using third party can be offset, at least partly if not all, by reduced survey costs paying to CSO.

Summary

The primary purpose of the RIHN Agricultural Household Survey (RAHS) of 2005/2006 is to assess vulnerability and resilience of subsistent farming households to climatic variation. The survey covers 59 standard enumeration areas (SEAs) in Eastern and Southern Province for a net total of 1,015 households. What is so special about this cross-section survey is that it becomes a panel data of three years when combined with the Central Statistical Office's Post Harvest Survey (PHS) of 2003/2004 and 2004/2005 agricultural season. Furthermore, the survey covers wider area than what the PHS usually covers. Besides the production, sale and stock of crops, vegetable and fruit trees and input use, the RAHS interviewed farmers on in- and off-farm income and remittance, asset holdings, food consumption, poverty status, risks and coping behaviors. The survey was conducted by CSO.

From the research team's sampled household revisits, it has been observed that farmers have a tendency to under report production and income generating activities. This under reporting tendency becomes more pronounced in households locating near borders. Furthermore, our random interviewed confirmed that enumerators did record information accurately. However, an omission of a key section of questionnaires in one household was discovered and corrected. A weakness of this survey is the likelihood of recall errors since the survey was conducted one year after the target study year. Overall, it is believed that the RAHS is of satisfactory survey quality because the incentive for enumerators to perform duty honestly was heightened by the relative ease of detecting fraud in panel survey. Despite the data quality satisfaction, there still are ample rooms for improvement.