Brief:
Two Methods for Measuring Household Food Security and Vulnerability-
Evidence from the Zondoma Food Security Initiative, Burkina Faso

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Objectives: One of the principal objectives of phase II of Africare's Zondoma Food Security Initiative (ZFSI Phase II) in Burkina Faso is to reduce the number of households classified as extremely vulnerable in terms of their ability to manage both periodic and acute drought. Given the central importance of monitoring the project's impact on the most vulnerable portion of the population, identifying the best method for classifying vulnerable groups and their constraints is critical. This bulletin compares and contrasts the results of two different methods for measuring food insecurity and vulnerability levels in the ZFSI Phase II project villages in Burkina Faso. These results were originally presented in the ZFSI Phase II Baseline Survey (Konda and Namema 2005).

Background: The first method, Months of Adequate Household Food Provisioning (MAHFP), was developed by Africare in the late 1990s as a tool for identifying vulnerable groups and measuring the impacts of Africare Title II-funded programs on increasing or diminishing the number of people classified in the most vulnerable groups. The MAHFP guidance was revised again at the 2004 food security workshop and these data were based on that guidance (Africare 2005).[iii] One important achievement of the Africare Title II monitoring and evaluation systems has been to introduce this measurement into the official tracking table of every one of Africare's Title II-funded programs.

The second method for identifying food insecurity is relatively new and is questionnaire-based (hereafter referred to as the FANTA/Cornell questionnaire method). It was developed, pilot tested, and validated on the Africare/ZFSI project by a collaborative research agreement between the USAID Title II-funded Food and Nutrition Technical Assistance (FANTA) project and the Cornell University Division of Nutritional Sciences.

This brief will first present the data on aggregate levels of food insecurity based on the Africare method of Months of Adequate Household Food Provisioning. This is followed by an analysis of

"The data used for MAHFP were collected as part of survey packets used to interview mothers of children less than 24 months of age." Photo credit: I. Konda

food insecurity patterns using the FANTA/Cornell questionnaire method. Finally, the strengths and weaknesses of the two methods will be compared and contrasted.[iv]

Methods: The data used for Africare's measurement, Month of Adequate Household Food Provisioning (MAHFP), were collected as part of the survey packet that was used to interview mothers of children less than 24 months of age (Box 1).[v] Based on the local cultural norms, the concept of "satisfying hunger" was defined as eating two meals per day.

Box 1. Questions Used to Determine the Months of Adequate Household Food Provisioning (MAHFP), ZFSI Phase II Baseline Survey, May 2005

1) How many times per day does your family actually eat?
2) When your family eats, do they satisfy their hunger?
   1. Yes
   2. No

☞ If yes, between now and the next harvest in October, how many months will your family eat enough to satisfy its hunger?

☞ If not, how many months did your family satisfy its hunger (i.e., eat two meals per day) after the last harvest?

The FANTA/Cornell questionnaire consisted of 11 simple questions that assessed if and how households experience food insecurity and the strategies they adopt to combat it. A variable was associated with each of the 11 questions. Each of these variables was scored with a "1" if the response indicated food insecurity and "0" if it did not. Based on the production unit head's responses to the questionnaire, each household was classified in terms of its household food security based on two different systems for assessing food security: one was based on total score of the variables and the other was based on the meaning of the questions[vi] to which the household answered affirmatively.

FANTA/Cornell Ranking Based on Scores. The first system classified production units into the following three categories based on their total scores for the 11 variables (each variable was scored 0 or 1).

Category 1: Least food insecure (with a total score of less than 3)
Category 2: Moderately food insecure (score between 3 and 8)
Category 3: Most food insecure (score greater than 8)

FANTA/Cornell Ranking Based on the Meaning of the Questions. The second system classified production units based on the actual meaning of the question to which the households responded affirmatively. In other words, this system takes into consideration the picture of food security or insecurity painted by the respondents' answers to the 11 questions in the survey.

Category 1: Food secure (total score=0). In this category production units reported no experience of food insecurity.

Category 2: Moderately food insecure. Production units were classified as moderately food insecure if they expressed concern with food provisioning and discussed having to purchase food and reduced food portion sizes.

Category 3: Food insecure. Production units were classified as food insecure if they expressed experiencing more severe food insecurity, such as a reduction in the total quantity of food they consumed and eating lower quality foods (i.e., foods they considered less desirable).

Category 4: Extremely food insecure. This last category represented production units that qualified as severely food insecure in terms of food intake. To be classified in this category, a production unit experienced at least one of the following activities that are considered to substantially compromise the dignity and well being of the family: (a) children were sent to eat elsewhere; (b) seed stock was consumed; (c) family members spent at least 24 hours without eating; and/or (d) the family borrowed or requested cereals from another family member or a neighbor. These scenarios are considered unacceptable, compromise their dignity, or erode basic assets needed to manage risk (e.g., health, social networks, children's education, livestock reserves, seed stock).[vii]

Results: *Africare's MAHFP.* Based on the Africare method for determining MAHFP, the average number of months of adequate household food provisioning for the entire Phase II project area was 6.8 months with a standard

deviation of 4 months. Based on the households' self-assessment of their food security levels as of May 2005 using the indicator Months of Adequate Household Food Provisioning (MAHFP), the production units (PUs) in the survey were classified into the following three categories.

Category 1: Least food insecure includes households that reported being able to satisfy their hunger for all 12 months (i.e., they did not anticipate experiencing any period of food insecurity through the next harvest).
Category 2: Moderately food insecure includes households that were able to satisfy their food needs for nine months of the year (i.e., that were insecure only three months of the year).
Category 3: Most food secure includes households that were (in 2004-2005) food insecure for more than three months during the previous year.

This study found that 19 percent of households were classified as least food insecure, 28 percent were classified as moderately food insecure and 53 percent were classified as most food insecure (Table 1).

FANTA/Cornell Questionnaire Method. Based on the Cornell/FANTA questionnaire method of ranking by scores, the average food insecurity score was 3.9 for the entire sample; this average falls within the moderately food insecure category.

Based on the Cornell/FANTA questionnaire method of total score for assessing food insecurity, the percentages of PUs for all the project villages classified as food secure, moderately food secure, and food insecure were 54, 32, and 15 percent, respectively (Table 1).

Another analysis of food security for production units was based on the meaning of the questions to which the PU head answered affirmatively. In other words, this system takes into consideration the picture of food security or insecurity painted by the respondents' answers to the 11 questions in the survey. For the entire sample, 12 percent of PUs described no experience with food insecurity and were therefore classified as food secure (Table 1). Twenty-nine percent of the PUs reported uncertainty and worry about having enough food, which classified them as moderately food insecure, 35 percent reduced their consumption and ate less desirable foods, which placed them in the food insecure category, and 24 percent were engaged in action that compromised their dignity and their ability to manage risk, which placed them in the severely food insecure category (Table 1).

Discussion: Each of the two methods (Africare MAHFP and FANTA/Cornell questionnaire) had its strengths and weaknesses as a basis for calculating the two principal food insecurity indicators for the project. The MAHFP required women to estimate the quantity of food intake. Since it was not always clear that the women interviewed in the production units used the same criteria for quantity, this is a major source of bias. One source of bias for the FANTA/Cornell questionnaire method came from the head of the household not being aware of all the survival strategies being adopted (e.g., grain purchases when food stocks were

Table 1. Comparison of Percentage of Households Classified into Different Levels of Food Security

Africare MAHFP		FANTA/Cornell questionnaire method based on scores		FANTA/Cornell questionnaire method based on meaning of questions	
Category 1: Least food insecure	19	Category 1: Food secure	54	Category 1: Food secure	12
Category 2: Moderately food insecure	28	Category 2: Moderately food insecure	32	Category 2: Moderately food insecure	29
Category 3: Most food insecure	53	Category 3: Highly food insecure	15	Category 3: Food insecure	35
				Category 4: Extremely food insecure	24

exhausted and manipulation of food stocks by women in the household). Furthermore, since the data for the two methods were collected from different individuals (mothers versus male PU heads) it cannot tell us as much as if both methods were based on responses from either mothers or male PU heads. A strength of the FANTA/Cornell questionnaire method was that it provided a more structured, systematic mechanism for learning about the quantitative and qualitative aspects of food security.

The FANTA/Cornell method using scores classified food insecurity levels into three categories; the system of ranking by the meaning of the affirmatively answered questions classified food insecurity levels into four categories. The Africare method of Months of Adequate Household Food Provisioning (MAHFP) resulted in a continuous variable (number of months) that the project used to classify the production units into three food insecurity categories. For a wide variety of reasons it is difficult to compare the two classification systems directly. In general, however, there was a high degree of overlap between the two most food insecure categories based on the FANTA/Cornell questionnaire method of ranking by meaning of the question (Categories 3 and 4) and the most food insecure category using MAHFP (< 3 months adequate food provisioning-Category 3).

One of the major strengths of the FANTA/Cornell classification system was its capacity to highlight the special needs and concerns of the most severely food insecure group (Category 4 in the ranking by the meaning of affirmatively answered questions and score of more than eight in the ranking by score). Another strength of the FANTA/Cornell method of ranking by the meaning of affirmatively answered questions was that it highlighted the need for safety nets that could prevent the marginal households in the FANTA/Cornell category three (food insecure) and category two (moderately food insecure) from falling into category four (extremely food insecure) as a result of a personal or local crisis. Once households fall into category four (extremely food insecure), they are unlikely to re-emerge without extensive investment in rebuilding basic assets. Unfortunately, the special needs and constraints of this most severely affected group get lost in the more general, and much more expansive, Africare category of "< 3 months food insecurity."

Lessons Learned and Recommendations: Based on the analysis, the evaluation team recommended that ZFSI Phase II retain the existing two impact indicators in the project Indicator Performance Tracking Table (IPTT), and the existing Africare method for calculation of Months of Adequate Household Food Provisioning. For the sake of clarity, however, it was recommended that the formulation of Impact Indicator 1.2 be changed from "percentage decrease in the 3rd category of food insecurity" to "percentage of insecure PUs (> 3 months insecurity)." This indicator could then be compared to category three of the FANTA/Cornell questionnaire method based on scores and, more so, to Categories 3 and 4 of the classification based on the meaning of the questions.

Furthermore, it was recommended that the final survey of ZFSI Phase II "re-execute" the FANTA/Cornell questionnaire as a tool for assessing the project's impact on increasing or decreasing the percentage of households in the most chronically food insecure group (category four), which is less visible under the MAHFP classification system.

Finally, Africare should consider asking men the same questions they asked women (as the basis for measuring the MAHFP). This wider base would enable the project to get better information on some of the other issues, such as key factors that affect food availability through non-market and market exchange, in the event of a food crisis.

References:

Africare. 2005. *How to Measure the Months of Adequate Household Food Provisioning (MAHFP) in Food Security Interventions (FSI)*. Revised February. Unpublished Internal Guidance. Washington DC: Africare/Headquarters.

Africare. 2007. Guidance: How to Measure Months of Adequate Household Food Provisioning (MAHFP) Based on Participatory Rural Appraisals in Food Security Interventions. *Africare Food Security Review,* September, http://www.africare.org/at_work/offd/index.html. Washington DC: Africare/Headquarters.

Coates, J., A. Swindale, and P. Bilinsky. 2006. *Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator Guide.* Washington DC: FANTA.

Frongillo, E. A., N. Chowdhury, and E. C. Ekström, R. Naved. 2003. Understanding the Experience of Household Food Insecurity in Rural Bangladesh Leads to a Measure Different from that Used in other Countries. *Journal of Nutrition* 133 (2003a): 4158-4162.

Frongillo, E. A., S. Nanama. 2003. *Development and Validation of an Experience-Based Tool to Directly Measure Household Food Insecurity within and across Seasons in Northern Burkina Faso.* Ithaca, NY: Cornell University.

Konda, I. and A. Nanéma. 2005. *USAID Title II Zondoma Food Security Initiative Phase II Baseline Survey.* Burkina Faso: Africare.

Radimer, K. L., C. M. Olson, J. C. Greene, C. C. Campbell, and J. P. Habicht. 1992. Understanding Hunger and Developing Indicators to Assess it in Women and Children. *J. Nutr. Educ.* 24: 36S-45S.

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[iii] Africare has recently developed and revised a guidance paper (Africare 2007) for using MAHFP based on the participatory rural appraisals and is currently revising the quantitatively based MAHFP guidance (forthcoming in this series).

[iv] For a complete presentation of the results as they are relevant to the official indicators for the ZFSI Phase II project see the Baseline Survey (Konda and Nanema 2005).

[v] The Phase II baseline survey was conducted during May 2005. This is a time period when the stores from the previous year's harvest (November) are running low and the demands for agricultural labor for field preparation and planting are at an all-time high. Therefore, it is the time of year when data would reflect the most number of food insecure households.

[vi] "Meaning of the question" refers the qualitative categorization (to represent different levels of food security) of the meaning of the questions to which respondents answered affirmatively.

[vii] This was not surprising given the historical impoverishment of the original project villages compared to the new project village prior to ZFSI Phase I interventions.