

The role of evidence in humanitarian assessment: the Seed System Security Assessment and the Emergency Market Mapping and Analysis

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This paper reviews advances in the development and use of two evidence-based assessment toolkits: the Seed System Security Assessment (SSSA) and the Emergency Market Mapping and Analysis (EMMA). Both were created in the past five years and have been employed in a range of acute and chronic stress contexts across Africa, Asia, and parts of the Americas, in periods of civil strife, displacement, and drought, as well as following earthquakes, flooding, and political instability. The aims of this paper are threefold: to review advances with regard to each tool; to compare how each toolkit gathers and uses evidence, while considering possibilities for greater complementarity; and to reflect on the nature of 'evidence' used to guide humanitarian response in sudden-onset and chronic crisis situations. A comparison highlights the importance of triangulation and informed analysis for drawing conclusions from imperfect evidence, understanding the limitations of each assessment methodology, and confronting tacit assumptions.

Keywords: assessment, emergency, evidence, Haiti earthquake, markets, seed security, seed systems, toolkits, value chains

Introduction

Meeting humanitarian needs is the primary goal of disaster response. Yet, owing to growing need and recurring disasters, there is also pressure to ensure that responses increase resilience by supporting and strengthening local systems, facilitate the transition to development objectives (Buchanan-Smith and Maxwell, 1994), and, above all, meet the humanitarian imperative to 'do no harm' (The Sphere Project, 2004), including harm to longer-term recovery (The SEEP Network, 2009). While the humanitarian community has long espoused the benefits of supporting local capacity (Smillie, 2001), to do so requires an understanding of the context, particularly of local systems. Only in the past few years, however, have assessment methodologies been formalised to inform properly this sort of response (Maxwell et al., 2013). Among other features, assessment tools now include in their scope local market systems, to enable a more robust analysis of post-disaster constraints and response options.

This paper describes and compares two methodological toolkits: the Seed System Security Assessment (SSSA) and the Emergency Market Mapping and Analysis (EMMA). These toolkits gather evidence on how systems (seed systems or market

systems, respectively) respond to crises, in order to identify disaster response actions that address key constraints, enhance the capacities of systems to meet demand, and support longer-term development goals. The aims of this paper are threefold:

- to review the advances of each tool in their respective, fast-moving fields;
- to compare how each toolkit gathers and uses evidence, considering possibilities for greater complementarity; and
- to reflect on the nature of ‘evidence’ as it applies to informing humanitarian response in sudden-onset and chronic crisis situations.

Humanitarian donors respond to scores of disasters every year, often deciding under immense time pressure which interventions to support. For these decision-makers, timely and accurate assessments are required to inform the best response (Maxwell and Watkins, 2003). Although commonly-used tools exist for assessing acute humanitarian needs in some sectors (such as health; see WHO, 1999), approaches for analysing entire systems are less well-established. The SSSA and EMMA were designed to fill this methodological gap, and are now deployed regularly to guide response. The Office of U.S. Foreign Disaster Assistance, United States Agency for International Development (USAID), is a principal funder of both initiatives.

The SSSA was designed to ensure that post-disaster agricultural assistance responded to the actual rather than the assumed need of beneficiary populations. Seed aid has been widely used in disaster response and recovery and it has had a benign image among humanitarian practitioners (Sperling and McGuire, 2010a). However, past practice of seed aid fell short on numerous counts, partly because humanitarian partners lacked the tools to identify specific seed security needs. Tools exist to estimate crop production, notably the joint United Nations (UN) World Food Programme (WFP) and Food and Agriculture Organization (FAO)’s Crop and Food Supply Assessment Missions (CFSAM), but they do not provide a detailed assessment of seed systems. Rather, generally they start with an assumption that seed is needed, and then focus on quantifying this assumed need (see, for example, FAO, 1998; Hughey, Bell, and Chatman, 2012). Often, seed aid has been supplied simply because food need was identified—even though food and seed security are quite different (McGuire and Sperling, 2011). For instance, households may easily source the seed quantities needed to sow a plot, even when they lack sufficient food stocks to sustain them through the ‘hunger season’. Assumed needs help to explain why it is common to find communities that have received seed assistance in multiple seasons in response to recurrent disasters, with minimal positive impact on household seed security (Sperling, Cooper, and Remington, 2008).

Without an understanding of the system, poorly designed seed interventions had the real potential to do harm. Late delivery and maladapted seed were directly harmful, wasting farmers’ land and labour resources (ODI, 1996). Further field evaluations showed that repeated aid was fostering farmer dependency, undermining local and commercial seed markets, and changing crop profiles (Sperling, Cooper, and

Remington, 2008). In contrast, assistance that supports existing seed systems, and meets farmers' needs, can hasten agricultural recovery, increasing the potential for lasting benefits.

The SSSA was developed through an initial collaboration of the International Center for Tropical Agriculture and Catholic Relief Services. It identifies how farmers source seed, and the market linkages that have been affected by the disaster. Then it determines how to jumpstart and sustain variable agricultural systems—while minimising error (in responses or in assessment). The SSSA essentially targets issues within the farming/seed system that weaken household-level seed security, both in the midst of a crisis and on the path to recovery.

EMMA was developed for similar reasons: humanitarian actors realised that uninformed market-led responses, such as proposing cash or local purchase when local supply was insufficient, could cause more harm than good (Nourse et al., 2006; Harvey, 2007; The SEEP Network, 2009; CaLP, n.d.). A growing body of evidence recognised that emergencies had serious economic consequences (see, for example, Saperstein and Campbell, 2008, Zhang, Lindell, and Prater, 2009; Jaspars and O'Callaghan, 2010), yet there were few tools available to assess and understand rapidly markets in these settings (Albu and Murphy, 2007). An assessment tool offering a quick 'snapshot' of critical market systems was needed to help humanitarian decision-makers comprehend which market systems could be used in the response, which might need support to ensure the recovery of communities, and which would have to be circumvented temporarily in order to supply critical goods and services. Other tools, such as CARE's Market Information and Food Insecurity Response Analysis (MIFIRA), also seek to answer the question of how well local markets are functioning after a crisis and what role they might play in the recovery (Sivakumaran, 2011). However, MIFIRA has pre-defined responses and relies on specialist staff to implement the assessment, taking a different approach than EMMA to balancing the trade-offs between quality, timing, and resources in gathering post-emergency data.

EMMA answers questions on both immediate emergency response (market systems critical to survival) and livelihoods (market systems vital for earning income). It poses the following questions:

- Is the market system currently functioning (can supply meet demand)? If not, could it be made to do so relatively quickly?
- How did beneficiaries typically interact with this market (as producers, consumers, labourers)?
- Can they do so now post disaster, and what support (such as cash or vouchers, livelihoods inputs) might they need to participate again?

The next two sections of the paper examine the history and the methods of the SSSA and EMMA, as well as the use of evidence by and the challenges facing these tools. The fourth section compares and analyses both their approach to and their use of evidence.

The Seed System Security Assessment toolkit

The need for the SSSA

The SSSA was developed in 2008 to address a mismatch: simply, agricultural humanitarian response seemed at odds with the reality of farmers on the ground. Field evaluations of stress contexts showed seed systems to be more resilient than ‘common wisdom’ portrayed (Sperling, 2002; McGuire and Sperling, 2013). Despite civil disruption and disasters, farmers generally kept some of their seed stocks, and, if not, they could obtain seed from local markets (Longley, 1997; Sperling, 2002). Furthermore, evaluations indicated that the dominant response, direct seed distribution, frequently was inappropriate. In many disaster contexts, seed was available in a region, but farmers had lost assets and their social networks were disrupted, making it harder to buy or barter for seed. Hence, farmers needed aid to help them access available seed (Sperling, Cooper, and Remington, 2008). Follow-up studies also suggested that the effects of interventions (negative and positive) lasted several seasons, so that even a one-off response was not really short term (Sperling, 2002).

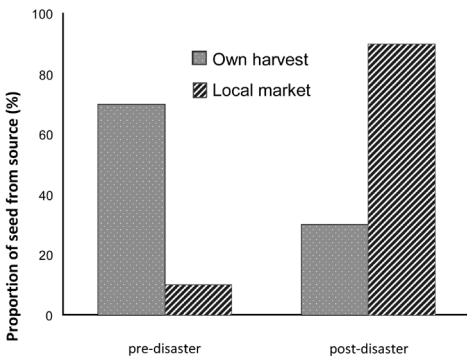
Key questions, recognising dynamism

The SSSA toolkit was developed to help practitioners to target better their response to specific seed security problems (Sperling, 2008). It asks two broad questions, pertaining to the short and the medium term. On the demand side, do farmers have seed available or can they access it? This also considers what types of seeds are needed and preferred. On the supply side, do the seed supply channels function? This also addresses issues of whether the seeds available are of the quantity and quality desired, and whether the prices are within the realm of farmers’ ability to pay.

An understanding of farmers’ dynamism can help to answer these questions. Farmers often adopt coping strategies to deal with immediate and enduring stresses. For instance, when farmers lose their own stocks, frequently they turn to the market for seed

(Sperling and McGuire, 2010b). Or, after a drought, farmers may temporarily shift away from producing maize towards more drought-resistant cassava. Thus, changing practices do not necessarily signal a problem; what matters is whether farmers remain seed secure as their strategies change (Figure 1).

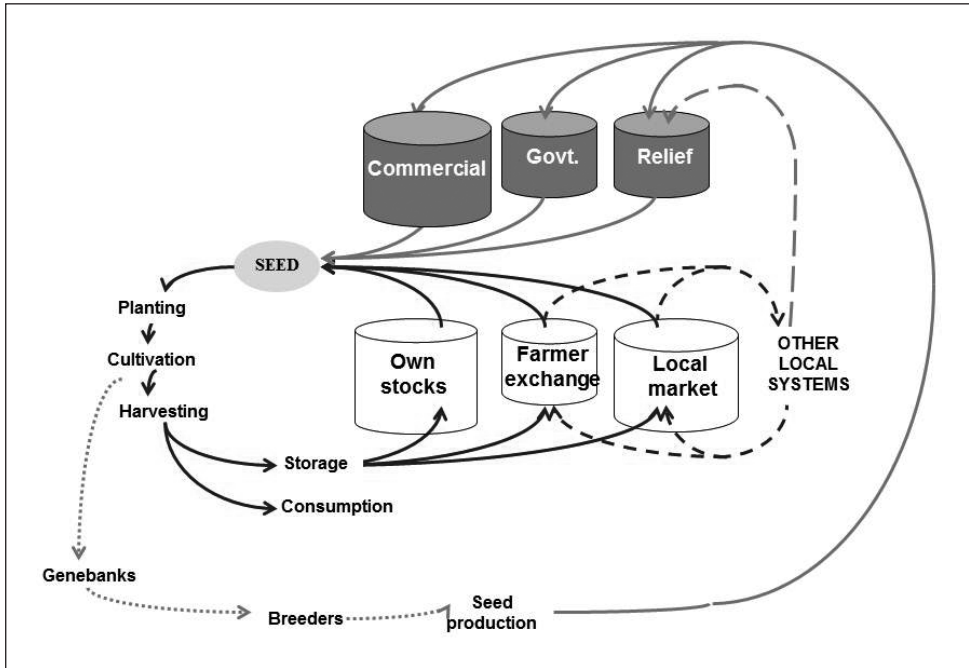
Figure 1. A typical scenario: increased market use post disaster, compensating for diminished home stocks



Source: authors.

Overview

The SSSA focuses on the functioning of all seed systems used by farmers. They include formal channels (government ministries, seed companies, perhaps relief agencies), which supply modern varieties and

Figure 2. Channels through which farmers procure seed

Note: arrows indicate seed flows in 'informal' and 'formal' sectors.

Source: adapted from Almekinders and Louwaars, 1999.

certified seed, as well as informal channels (farmers' own harvests, barter networks, or local markets), which provide farmers with a range of varieties (modern, new local, traditional local) and seed of varying quality. Farmers draw on both formal and informal seed systems. In southern Africa, for example, small farmers may procure hybrid maize seed from commercial companies, bean seed from their own harvest or local markets, and cassava cuttings from neighbours (CIAT et al., 2011a).

Figure 2 presents one of the classic mappings of seed system channels. Understanding how the systems operate normally is critical to comprehending whether and how channels are functioning post disaster. It is this understanding that enables practitioners to craft appropriate responses. For instance, during the response to the Haiti earthquake of 2010, humanitarian agencies discovered to their concern that many farmers had eaten all of their bean seed. However, Haitian farmers routinely consume or sell their bean stocks for quick income, then buy replacement seed (CIAT et al., 2010).

The SSSA differs from most other agriculturally-focused assessment tools, such as the CFSAM, which tally possible seed need. Rather, the SSSA assesses the seed *system*. Attaining seed security means supporting the systems that give farmers ongoing access to seed of the crops and varieties they require. Seed security issues must be framed within the broader context of cropping and livelihood systems that shape farmers' vulnerability and resilience. Farmers strategically choose crops and varieties to meet different goals and mould their portfolios over seasons and years. The SSSA

aims to understand these processes, and therefore it goes beyond a snapshot of current needs to analyse trends and the ability of seed supply channels to respond to them in the future.

The nature of the evidence and the SSSA

A short SSSA takes about two weeks to complete (four to five days per site), with evidence collected from three or four diverse sites in a region. SSSAs work through partners (government, non-governmental organisations (NGOs), and UN agencies) that are engaged themselves in seed-related activities and committed to enhancing understanding of seed systems. Table 1 summarises the types of evidence and methods used, drawing on a 2011 Kenya assessment (CIAT et al., 2011b). SSSA methods include a two-day training for the assessment team on key concepts in seed security, past research on seed aid, and on using the research instruments. Background information and analyses are discussed prior to field assessment. Guide questions are used for all key informants (agro-enterprise specialists, merchants, officials, seed dealers) and focus groups, with reports generated and discussed daily among the team. Structured surveys are used for households, and seed market actors; rapid data-entry into spreadsheets enables discussion of emerging findings among the members of the field team—and further refinement of questions (see below). Although sample sizes vary with the size of the team, it is not unusual for 100 households and 20 market actors to be surveyed per site, along with 15–20 key-informant interviews and several large focus-group discussions. Several points about the evidence are notable:

- **Multiple actors:** evidence is garnered from multiple actors, each with vested interests. All have insight into seed security but may hold divergent philosophies on how that security might be achieved (such as modern varieties or more local varietal diversity) and whose needs should take precedence (such as commercial farmers or poor women). Key to interpreting the evidence is to acquire ‘enough’ data from each group (for example, to understand primary trends in crop/variety use, or why a past development initiative failed), and to comprehend the agendas that shape informants’ data.
- **Local and regional:** demand is local, but supply may not be. For instance, seed available in a particular stress zone may be locally procured (from own harvests), but it could also come from similar agro-ecological zones in other areas via regional or cross-border trade (CIAT et al., 2011b). The SSSA has started to use geographic information system (GIS) tools to match traders’ seed-sourcing patterns (where do the seeds originate?) with zones of crop adaptability (can traders’ supplies be planted successfully?). The evidence crosses geographical zones to project beyond actual local supply—that is, potential supply.
- **Variation:** this is critical for analysing seed security in high-stress contexts. Farmers’ strategies for raising yields and incomes can vary considerably, in terms of crops and varieties chosen, planting dates, and seed-sourcing strategies. In fluctuating agricultural contexts, a general overall assessment can only inform ‘one-size-fits-all’

responses, when what farmers require are responses they can tailor to their agromonic needs. Hence, SSSA household surveys provide critical evidence, as they measure hundreds of farmers' actual practices. These responses are always disaggregated by gender of household head and size of cultivated area (a rough proxy for wealth), along with other factors where warranted, such as displaced versus resident households.

- **Across time:** agricultural systems are rarely static; looking across seasons and years is essential to understanding how the current stress fits into a pattern or trend. Farmer focus groups detail changes over recent years, whereas household surveys trace seed sourcing over two specific seasons.
- **Qualitative and quantitative:** evidence at each level and for each actor combines both qualitative and quantitative data. The quantitative data helps to counteract bias and stereotypes: assumptions can be quite strong in stress periods, especially among humanitarians whose long experience may lead to entrenched beliefs. The qualitative data, meanwhile, helps to explain why the situation is as it is, and to identify possible response options and pitfalls.

Table 1. SSSA evidence and methods used*

Type of evidence	Commentary
Background information collection	<ul style="list-style-type: none"> • Formal plant breeding, and formal sector seed supply: which varieties and providers serve the area? • Decentralised seed multiplication: who is already multiplying what—and in what quantities? Any special seed producers?
Database utilisation	<ul style="list-style-type: none"> • Government and public databases can provide information on crop area, yields, livelihood zones, and indicators of vulnerability
Key informant interviews	<ul style="list-style-type: none"> • Government and civil society personnel can highlight and comment on agricultural trends, failed initiatives, and new possibilities
Focus-group discussions: community-based; and women's groups	<ul style="list-style-type: none"> • Crop and variety use and trends; market possibilities • Seed source strategies, by crop (now and five years ago) • Women's crop/seed constraints and opportunities • Livelihood/coping strategies (those that work or do harm)
Farmer interviews: settled population; and internally displaced persons (IDPs)	<ul style="list-style-type: none"> • Seed source patterns: 'last and next season' • Manure, fertiliser use, pesticide • Seed aid and new variety access
Agro-dealer visits (seed companies' headquarters and network chains)	<ul style="list-style-type: none"> • Seed types and other input supplies • Business trends; constraints and opportunities
Seed/grain market analysis	<ul style="list-style-type: none"> • Crop and variety supplies on the market • Sourcing areas and pricing patterns (multiple seasons) • Seed quality management procedures • GIS mapping of seed flows

Note: * Example from eastern and coastal Kenya, 2011.

The toolkit: interacting with the evidence

Evidence is not self-explanatory. One has to be able to ‘read’ the evidence and then draw conclusions from it. For the SSSA, reading the evidence entails at least three processes: (i) understanding what might be invisible to a generalist; (ii) understanding what may seem complex; and (iii) displaying the evidence.

Understanding what might be invisible to a generalist

SSSA instruments, such as question guides for trader interviews, have been developed to help non-specialists identify who may be selling potential seed (grain that can be planted) and to assist them in assessing its quantity, quality, and price. This is especially important for seed that, in local markets, may not be immediately distinguishable from food. These tools also help SSSA partners to comprehend that market sourcing may be more common, and less haphazard, than they assumed hitherto.

Understanding what may seem complex

The SSSA supports the rapid analysis of quantitative data, including during the field-work phase (see Figure 3). SSSA software generates dozens of output tables containing a wide range of survey results (such as the supply channels used, sowing quantities relative to the norm, reasons for sowing less or more, and access to new varieties—all by crop). These are also differentiated by gender and land size. Exploring such outputs with the team aids the analyst in reflecting on the latest qualitative and quantitative data. This helps the team to develop (and query) its understanding of seed systems and to further the iterative use of qualitative and quantitative evidence.

Displaying the evidence

Different actors demand different kinds of evidence; their relative emphasis will shape future SSSAs. Donors and policymakers often seek ‘big numbers’ (that is, a lot of data) to convince them of the appropriateness of a particular response option. Farming communities, conversely, tend to find visual evidence more informative (Gladwin,

Figure 3. New software automates data analysis

Data in Analysis and tables automatically out			
age	HH	HH	Area	Geo1	CrCuA	CrCuA1	CrCuA1	CrCuA1	CrCuA1	CrCuA1	CrCuA1	CrCuA1	CrCuA1	CrCuA1	CrCuA1			
gend	type	size	Resid	cult	Srce	Ac	Loc#	LocU	kg	Qty	Yld	Resow						
35	M	1	7	1	1	TUM	5	3	C	7 fagot	700 M					2		
41	M	1	11	1	2	TUM	5	3	C	10 fagot	1000 B							
54	M	1	8	1	2	TUM	4	3	C	10 fagot	1000 M			3		1		
40	F	1	6	1	3	TUM	5											
46	M	1	12	1	2	TUM	5	3	C	50 fagot	5000 B			3		2		
62	M	1	9	1	2	TUM	8	4	D	100 Verres	20 B			1		2		
68	M	1	12	1	3	TUM	1	4	D	1 Meka	10 B			1		1		
56	F	1	10	1	2	TUM	5	3	H	6 fagot	600 B			1		1		
36	M	1	10	1	2	TUM	5	3	C	600 Ml	3000 B			1		1		
45	M	1	9	1	2	TUM	5	1	A	540 Ml	2700 B			1		1		
40	F	1	6	1	2	TUM	5	3	C	5 fagot	500 B			1		1		
40	M	1	7	1	2	TUM	5	1	A	5 fagot	500 B			3		1		
53	M	1	1	1	1	TUM	2	4	D	2 Meka	20 M			2				
52	M	1	11	1	3	TUM	5	3	C	10 fagot	1000 B			1		1		
52	F	1	7	1	2	TUM	5	1	A	15 fagot	1500 B			1		1		
32	M	1	7	1	2	TUM	5	3	D	30 fagot	3000 B			1		1		
40	M	1	10	1	1	TUM	5	3	C	10 fagot	1000 B			1		1		
50	M	1	9	1	2	TUM	5	3	C	2500 Bouture	2500 B			1		1		
42	F	1	7	1	1	TUM	1	4	D	3 Gobelet	1.5 B			1		1		

Women-headed households					
5) Women-Headed HHs: Amounts for <u>current</u> season:					
More / Same / Less than normal					
Crop	Number of HHs	% of HHs			Mean % Change for all growing the crop
		MORE	SAME	LESS	
Maize	27	25.9	48.1	22.2	20.05
Rice	1	100.0	0.0	0.0	
Cassava *	45	42.2	35.6	22.2	6.46
Groundnut	35	40.0	31.4	28.6	-4.26
TOTAL-all crops	113	37.2	38.1	24.8	6.41

NOTE - means calculated only for crops with 5 or more cases

Source: authors.

Peterson, and Mwale, 2002), so formats such as seed–source maps, and highly interactive discussions, are more useful.

Impact: targeted actions and policy change

A short example highlights policy outcomes:² the Zimbabwe SSSA (CIAT et al., 2009) took place when donors and NGOs were preparing to distribute seed and fertiliser to 600,000 families (one-half of the farming population) in reaction to the near-worthless Zim currency, non-functioning formal seed stores (for maize), and the residual effects of a drought the year before. In contrast to this dim view, the assessment found that farmers generally were seed secure. Evidence supporting this conclusion included: (i) a relatively good harvest, 130 per cent above the previous year; (ii) robust social networks, which supplied between 18 and 38 per cent of the seed (depending on the crop); (iii) strong local markets; (iv) a vigorous unregulated market for hybrid maize seed; and (v) thriving local-level seed production, especially for legumes and sorghum.

The Zimbabwe SSSA concluded that massive direct seed aid to farmers actually would hurt recovery. It would compete with agro-dealers and short-circuit natural linkages between agro-dealers, farmers, rural traders, and seed houses. The SSSA recommended interventions to increase farmers' purchasing power and to inject cash into local economies. Consequently, while 2008–09 saw USD 150 million spent on direct aid, the SSSA encouraged a transition to market-led responses (including input fairs, support for local enterprises, and vouchers) by 2010.

The Emergency Market Mapping and Analysis toolkit

The need for EMMA

The responses to the Indian Ocean tsunami of 2004 and the South Asia earthquake of 2005 raised the profile of the potential of cash programming (Harvey, 2007). Prior to this, limited energy was invested in quantifying how relief goods affect local economies (Saperstein and Campbell, 2008), and the focus of livelihood responses was on the capacities of individuals, rather than on their potential to establish connections with existing markets (Horst, 2006). The joint evaluation of the international response to the Indian Ocean tsunami (Cosgrave, 2007), however, recommended a change from in-kind to mostly cash responses, where the markets would allow, and highlighted that livelihoods programmes often were flawed owing to a lack of contextual knowledge. It also noted that funding decisions frequently were made arbitrarily, rather than on the basis of an assessment (Cosgrave, 2007).

Yet few resources existed for market analysis in emergencies in early 2007 (Albu and Griffith, 2005; Nourse et al., 2006; Saperstein and Campbell, 2008). Often this resulted in unintended negative consequences, putting at risk the 'do no harm' imperative of humanitarian work. At the same time, new research (Collier, 2006) into the relationship between post-conflict societies, economic recovery, and the risk of recurrent conflict indicated that well-timed aid could encourage economic recovery

and reduce conflict risks. Humanitarians needed a way to determine quickly whether local markets were functioning and whether local actors could help to provide effective humanitarian responses. Emergency response programming could supply a platform for high-quality transition and development programmes, or it could insert barriers to moving towards stability (Albu and Griffith, 2005; Jaspars and O’Callaghan, 2010). A group of NGOs, including InterAction, the International Rescue Committee (IRC), Practical Action, and Oxfam GB, developed EMMA in 2010 to meet this information gap.

Overview of EMMA

EMMA is a toolkit for humanitarian staff in sudden-onset emergencies to understand better and to make use of critical market systems—those that play, played, or could play an essential role in the survival or the livelihoods of affected populations. As time and resources usually allow for only a few assessments, critical markets must be carefully selected for their importance as a relief item or income source. Examples of selected markets include food staples such as rice, building materials such as bamboo poles or corrugated iron, and income sources such as agricultural labour and cash crops.³

EMMA tools are adaptable, speed-oriented processes designed to reflect the information constraints and urgency of decision-making after a sudden-onset emergency. During an emergency, time is one of the greatest obstacles to adequate economic analysis. The EMMA toolkit (Albu, 2010) draws from market analysis methodologies that have been simplified (Albu and Griffith, 2005), while still providing the required technical rigour for reliable analysis and recommendations.

EMMA is composed of 10 iterative steps (see Table 2). These steps usually are completed in approximately two weeks. The desk review (Step 1) and sometimes market selection (Step 2) may take place prior to deploying the team. Team training of between one and three days typically includes Steps 2 (if not already completed), 3, and 4. The EMMA toolkit provides sample interview guides and observational questions, which the team adapts to the specifics of the emergency, market systems, and geographical location. Steps 5–9 tend to happen concurrently and iteratively throughout the assessment, as field teams conduct interviews and report back regularly to the team leader. During this process, the market map (Step 6) is revised frequently, and survey questions are adjusted to fill information gaps or to resolve conflicting information. Step 10 has been the most challenging stage to date, as writing and sharing of the findings (particularly analysis reports) have been delayed by EMMA team members shifting their energies to the implementation of response activities.

EMMA answers questions on the functioning of the selected market system, its potential for quick recovery, and the roles of various targeted groups within this market. The food security and livelihoods field boasts multiple assessment and monitoring tools; EMMA borrows from many of these, and also fills primary gaps. In contrast to livelihoods assessments such as the Household Economy Analysis (FEG Consulting and Save the Children, 2008), EMMA focuses on each market system individually (although some markets are linked), allowing for a thorough analysis

Table 2. The 10 steps of EMMA

Step 1: essential preparation	Background research on country, existing data sets, important crops, normal coping mechanisms, emergency needs assessments
Step 2: market selection	Choose critical markets to be examined during assessment
Step 3: preliminary analysis	Draft rough household profiles, seasonal calendars, market maps, based on Step 1 knowledge. Identify key stakeholders, potential survey locations, other issues
Step 4: fieldwork preparation	Determine a plan for gathering information, develop surveys, informant questions, and information-gathering tools
Step 5: fieldwork activities	Conduct fieldwork: gather information from households, key informants, and other sources, triangulate information, refine assumptions and maps daily
Step 6: mapping the market	Finalise baseline and emergency-affected market maps
Step 7: gap analysis	Use household profiles, needs assessments, and access constraints to clarify the needs 'gap' faced by specific populations
Step 8: market analysis	Drawing on market maps, provide an analysis of the situation confronting actors in the market system, describing specific constraints and opportunities
Step 9: response analysis	Make recommendations on the feasibility and the timing of various emergency responses, and which actors should undertake them
Step 10: communicate results	Ensure that donors, government actors, NGOs, and local communities are aware of the results of the assessment

Source: adapted from Albu, 2010, p. 14.

of the effects of the emergency on that market, rather than examining the broader issues facing a target community or group. In addition, unlike the Famine Early Warning Systems Network (FEWS NET), which monitors the prices and volumes of principal food commodities over time, EMMA seeks to analyse more deeply the networks of actors and the relationships involved in producing a given commodity, and links this analysis with a profiling of targeted beneficiaries.

EMMA is designed to be used within the first two-to-three weeks of a sudden-onset emergency. In practice, EMMA teams may struggle to complete the analysis; the situation is changing so quickly that the assessment never seems to be 'done'. Since markets fluctuate and people restart economic activities soon after an emergency, the value of EMMA recommendations may decrease as time passes. However, it is a useful snapshot tool, and it can suggest what variables require continued monitoring throughout the recovery process. This market monitoring is especially important during evolving or complex crises, such as in the midst of ongoing conflict, which can rapidly affect supply, demand, and power concentration in critical markets.

The nature of the evidence and EMMA

How does EMMA gather evidence on the functioning of the selected market system, on its potential for quick recovery, and on the roles of various targeted groups within the selected market?

Baseline and post-disaster

To differentiate disaster-related disruptions from entrenched patterns, EMMA first establishes an understanding of baseline market functions, then overlays post-disaster features (Albu, 2010, pp. 75–114). This is done through interviews with key informants using recall, or using reliable pre-disaster market information from FEWSNet or Household Economy Analysis (HEA) assessments, followed by interviews with crisis-affected actors. The intention is to paint a rough pre-crisis picture to distinguish between what is a genuine disaster effect (potentially requiring intervention) and what may be inefficient, unfair, or unusual, but not necessarily problematic.

Gathering the evidence: what is ‘good enough’?

EMMA is designed to balance rigour with speed. Analysis relies on an iterative process of constantly questioning available evidence: information received during the desk review, data gathered from observation, and information obtained from a (necessarily limited) number of interviews and surveys. Conflicting information must be resolved; abnormal or unexpected data must be queried with common logic and existing knowledge.

This gives rise to a number of challenges in determining when information is ‘good enough’ to constitute evidence. When should the EMMA team stop gathering information on a particular actor or function of the market? Usually this is a judgement call: incorrect assumptions may be drawn from insufficient evidence; however, the team should not waste valuable time gathering information to support already-established conclusions.

The EMMA toolkit includes sample market maps and Microsoft Excel-based graphics to depict household income and expenditure patterns. These help the analysts to visualise the data and to compare it with a range of other assessments, to see if it follows established patterns. For example, several informants in an EMMA assessment of the northern Sri Lanka rice market claimed that rice millers in provincial towns captured the bulk of the profits; yet the large number of millers, their geographical spread, and their ‘price-taker’ relationship with wholesalers contravened this allegation (Meissner, 2011).

Technological tools, though, cannot substitute for the analyst’s judgement. The process of triangulation helps to sort out opinion from fact; well-chosen key informants also can help to validate data and hypotheses (Albu, 2010). Thus, interview sample sizes vary dramatically from one EMMA assessment to the next. Setting a defined information agenda for the assessment also can help to clarify when strong, detailed evidence is needed and when generalised information is acceptable.

Multiple actors, multiple perspectives

Like the SSSA, EMMA employs systems thinking. Humanitarians are comfortable interacting with their traditional beneficiaries to understand their needs and constraints—but by doing so, they acquire only part of the picture (Locke and Byrne,

Table 3. Sources of evidence collected by EMMA

Type of evidence	Commentary
Background information collection	<ul style="list-style-type: none"> Existing local livelihoods analyses Household data sets (government or international organisation) FEWS Net data on markets and livelihoods
Livelihoods analysis interviews	<ul style="list-style-type: none"> Potential beneficiaries: women and men, those with vulnerabilities, displaced and host community, different geographic areas, different livelihood strategies
Key-informant interviews	<ul style="list-style-type: none"> Government officials NGO, UN, donor staff Civil society personnel Other experts, including sector experts
Market-actor interviews	<ul style="list-style-type: none"> Retailers, wholesalers, traders, importers/exporters, consumers Service providers (banks, microfinance institutions, transporters, extension agents) Cooperatives or associations, government regulators
Observation	<ul style="list-style-type: none"> General market functioning—supply and demand State of critical infrastructure (roads, market stalls, fields) Market actors' behavior (buying and selling) Retail prices for key goods

Source: authors.

2008; Byrne and Albu, 2009). As with seed aid, unconscious biases and assumptions are common within emergency responses. Some humanitarian actors distrust the private sector, particularly buyers and traders, assuming that these 'middlemen' control or exploit other market actors, even though this may not be the case (cf. Jones and Shaikh, 2005). Interviews with multiple actors clarify where they fit in the system, how well the market functions in terms of efficiency and price, and its potential to contribute to the recovery efforts.

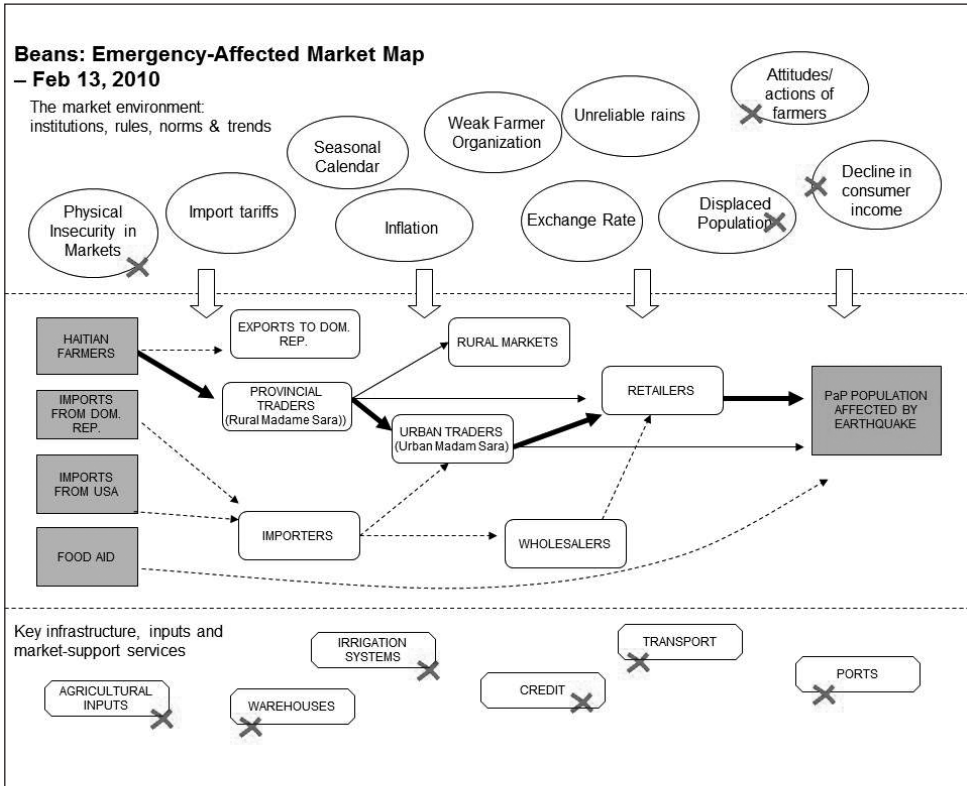
Assessing market governance and market power

EMMA explicitly analyses power relations and control in the market system, through questions and guidance (Albu, 2010). These range from formal, explicit regulation (price controls, import tariffs) to informal, often 'invisible', control. There is unlikely to be 'hard' evidence of the latter. However, signals such as a low number of market actors fulfilling any one function (such as few importers of a key commodity) can indicate the ability to set prices or otherwise exert power, and potentially to be a bottleneck to response efforts.

The toolkit: interacting with the evidence

The evidence produced by an EMMA assessment is encapsulated in the market map (see Figure 4), which answers visually the essential questions posed during the assessment:

Figure 4. Sample market map



Note: PaP = Port au Prince.

Source: IRC et al., 2010.

the relationships between actors and the market system as a whole, the system’s ability to respond to the crisis, and the needs gap faced by the target population. The market map has proved to be a powerful tool for agencies, as it permits them to take a systems approach to solving problems and to understand how their actions affect those other than the intended beneficiaries (Brady, 2012).

Gap analysis compares the needs of potential beneficiaries to their ability to meet them through the market. By doing so, the market system map is linked to potential responses, helping emergency response teams to understand how long there is likely to be a requirement for assistance.

The quality of the evidence gathered by EMMA is greatly influenced by the quality of the assessment team. Although EMMA is designed for non-economic experts, having at least one team member with experience of market analysis has proven invaluable (Byrne, 2011). Those who are familiar with the country context and with performing rapid assessments in general also tend to generate higher-quality results. EMMA does not necessarily need a large team, but rather people who can understand and analyse relationships and spot patterns and who can identify biases (Powell and Brady, 2012).

The toolkits compared

Although both the SSSA and EMMA were included in a recent review (Maxwell et al., 2013), this paper contains the first detailed comparison of the two toolkits.

The SSSA and EMMA have several methodological similarities: both assess the properties of systems, considering multiple actors, institutions, and scales in order to identify responses that avoid disrupting local systems' capacities, and which can enhance their strengths. They emphasise the importance of the availability of and access to a particular commodity or service, and relate this to the needs of beneficiaries, disaggregated by key features (displacement, gender, wealth status). The toolkits seek to comprehend change over time by comparing current (usually post-crisis) system properties with earlier, baseline, conditions. In addition, both use multiple methods, qualitative and quantitative, to gather data.

The tools also differ substantially, though: whereas EMMA analyses one market system at a time, the SSSA covers all priority crops. The latter is designed for agricultural systems and seed systems—this specificity confers analytical depth, but hinders application to other systems. As a more general toolkit, EMMA can be used with nearly any good or service, yet its flexibility means that it is not optimised for any one market.

Regarding timing, EMMA was designed for use shortly after relatively rapid-onset crises, generating time-bound results (although it has been employed for more chronic stresses). The SSSA may be used longer after an initial shock, and it considers both short-term and chronic stresses; thus its findings may have validity over a longer time period. While the toolkits assess formal and informal market relationships, EMMA is also concerned with critical infrastructure and the 'rules' governing markets. The SSSA, meanwhile, evaluates in particular informal seed channels, restricting analysis of formal (commercial) sectors to immediate supply and delivery. Finally, the SSSA frames its analysis and recommendations around dynamic, variable farmer behaviour in response to stress. EMMA, in contrast, highlights changes to the post-disaster context and frames recommendations around differing capacities among implementers and decision-makers.

In practice, there is relatively little duplication in the SSSA and EMMA, and their complementarity suggests that they could be usefully coupled in stress contexts. EMMA, as a rapid-analysis tool, is more likely to be used first; if it points up a potential seed-system blockage for a critical crop, these insights could quickly feed into SSSA planning.

Comparing the toolkits in the same context

After the Haiti earthquake of 2010, EMMA and the SSSA were both employed by a coalition of multiple organisations (CIAT et al., 2010; International Rescue Committee et al., 2010; Meissner et al., 2010). They were conducted in February–April (EMMA) and May–June (SSSA) 2010. EMMA focused on market-chain analysis for beans as food in Port-au-Prince, and as both a food and income source in the southeast department, whereas the SSSA concentrated on seed security across primary crops, and related agricultural issues countrywide.

However, a comparison of their findings at the points of intersection—beans—offered a more comprehensive perspective and highlighted a wider range of possible responses. Of note, EMMA concentrates on both the producer (who may also be a consumer) and on town/urban consumers (who may not farm at all). Hence the toolkit has a refined view of the entire scope of demand. The SSSA, in contrast, focuses on farming needs, but can look at crop trade-offs, in ways not immediately evident through a single-crop lens. Interestingly, the two assessments reached the same global conclusions for beans: there was no significant shortage—the major constraint, by far, was access, owing to a lack of purchasing power. For producers, the SSSA demonstrated the high magnitude of cash need: farmers buy more than 80 per cent of their bean seed and spend an astounding USD 60–70 on seed per season (for all crops). For market suppliers, EMMA identified constraints, especially among the ‘Madame Sara’ traders, who lacked storage and safe lodging near major markets.

The SSSA results showed that farmers sowed less in the season just after the shock: a decrease of 15.9 per cent across crops and regions. Yet the reductions were not directly correlated with the effects of the earthquake. Reductions in seed use near the epicentre, Léogâne, were just 13 per cent, versus 36 per cent drops in the non-earthquake-affected but drought-prone zone of the northwest. Furthermore, seed availability (that is, a lack of seed) was a very minor problem (four per cent of responses), and there was no need to import seed. Rather, the reduction in seed use was because of financial constraints, land-tenure concerns, health problems, and drought. The majority of seed security constraints identified were deeply chronic ones. Unlike nearly everywhere else, ‘eating one’s seed’ is not a signal of distress in Haiti; it is a normal practice, particularly for crops such as beans. In addition, farmers generally cannot access new varieties (86 per cent having obtained no new variety in the past five years), other needed inputs, or even regular technical advice. There are few sources supplying new seed, and little agricultural innovation. With this data, the immediate needs because of the earthquake became clear. Only a few of the SSSA’s 44 recommendations focused on the emergency phase. Rather, the SSSA called for a shift towards addressing chronic stress problems and seeking developmental/agro-enterprise opportunities, with some support for rural women and traders, as a way to inform development and longer-term concerns.

The EMMA assessments found that the price of beans increased immediately post disaster but had already begun to fall within normal levels by the time of the evaluations. The largest disruptions due to the earthquake were related not to a lack of inputs or of supply, but to a sudden decline in demand owing to deaths, displacement, and a lack of consumer income. Hurricane-related damage to transportation and storage also had an effect, but the assessments concluded that, on a national level, the market system was capable of meeting consumer demand and continuing to function, if demand could be stimulated via cash or vouchers, and if infrastructure damage (such as to irrigation) could be repaired in the medium term.

In the short term, the major recommendations of both approaches focused on enhancing access (through cash transfers and vouchers—with EMMA recommending these

for producers and consumers of beans). In the medium term, both recommended the development of financially sustainable bean seed systems.

The largest disagreement between the two methodologies pertained to the matter of emergency seed distribution. The Port-au-Prince EMMA recommended cash- and voucher-based support for access to seed, with certified seed distribution as a secondary option. The southeast department EMMA recommended the distribution of higher-quality seeds to producers to assist with the short-term access bottleneck. In contrast, the SSSA analysts saw direct distribution as addressing access but potentially harmful to the seed system, undermining local seed trade and commercial supply. The SSSA suggested the introduction of new varieties only within development programmes, which can follow farmers closely over multiple seasons.

Together the two reports highlight a comprehensive agenda: stimulate overall demand; improve the availability of quality seed; and strengthen agricultural value chains.

Challenges and areas for improvement

Although continued use of these toolkits will refine further the methodologies, the main challenges lie not in generating evidence from assessments, but in getting this evidence accepted and used. Other challenges relate to representing evidence, timing, and market issues possibly missed by rapid tools.

Accepting the evidence

Norms shape how evidence is received. For instance, SSSA evidence may not automatically change the opinions of those involved in seed aid, which is subject to stereotyping and vested interests (Sperling and McGuire, 2010a). Distrust of the private sector may colour how EMMA findings are read by some people. Assessment teams need to confront such biases (internally, and with users) as the information does not speak for itself. A related issue is whether audiences view evidence as sufficiently 'hard'; they may not agree that 'good enough' data *is* good enough. For example, some argue that the small samples used in EMMA do not provide adequate rigour (Sivakumaran, 2011), even if the conclusions are supported by secondary data or pre-existing baselines. The SSSA does gather data from large samples, although it also draws important insights from interviews and focus groups. Both assessments triangulate evidence to bolster the precision of their rapid assessments, but some evidence still may be disregarded by researchers and development actors, who have more time to gather comprehensive data.

Using the evidence

The response choices generated, and implemented, depend on the prior experience of the assessment teams, and of the implementers. SSSAs can produce diverse short- and long-term recommendations, especially when team members are familiar with a wide range of response options. However, implementers may find it challenging to move away from responses they already know (such as direct distribution), and

humanitarian actors may not be equipped to transition to development programming. EMMA's face similar constraints: they benefit from specialised expertise on teams to widen the spectrum of response options (Powell and Brady, 2012), yet implementation is also shaped by users whose normal responses focus on delivering commodities or vouchers/cash (Sivakumaran, 2011). EMMA is, by design, oriented towards immediate response decisions (Maxwell et al., 2013). In addition, development-oriented actors simply may be absent or ineffective in some settings, making the application of the longer-term recommendations of either toolkit less likely.

Representations of evidence

Both methodologies represent aspects of systems through specific outputs, such as figures, maps, and tables. EMMA's market maps are particularly effective communication tools. Inevitably, though, a single item tells only part of the story of a system. While reports and oral presentations can paint a fuller picture, decision-makers may focus on particular elements in isolation, and miss the wider context. There is also the possibility that data to support general conclusions (such as the volume of wheat sold is around 10–20 per cent lower than is normal) are misinterpreted as exact figures (such as a deficit of 150 metric tons of wheat in location X). This misses the utility of such data in highlighting potential concerns and guiding decision-making. Ideally, there would be sustained follow-up between SSSA and EMMA teams and decision-makers to consider evidence in detail, but time and job constraints mean this is rarely possible.

Timing

Both toolkits often are driven by speed, to inform decisions in the very near future. These pressures are especially acute for EMMA, where the importance of a fast report to donors, government officials, and other decision-makers cannot be overstated (Powell and Brady, 2012). Most EMMA's, therefore, are only relevant if performed swiftly, and if the findings are shared immediately. As post-disaster environments change, however, the analysis may soon be outdated. SSSA's, meanwhile, pay much attention to chronic stresses, which should mean recommendations have a longer shelf-life. EMMA also is moving increasingly beyond its original use immediately post disaster, including in slow-onset disasters such as drought (Ethiopia and Kenya), evolving complex crises (the Abyei region of Sudan), informing longer-term recovery programming (northern Sri Lanka), and baseline assessments as emergency preparedness. This may allow for more robust collection of evidence, where time and security permit, and provide a longer validity period for findings. In some circumstances, though, a more development-focused market assessment methodology may be more appropriate. For less experienced analysts, using the EMMA toolkit in situations other than rapid-onset disasters may lead to an imbalance between rigour and speed.

Market issues

Power relationships in markets are important, particularly for shaping access, equity, and distribution of risks. While both toolkits investigate constraints to access, barriers to market participation, and monopolies, some aspects of power relationships (such as cartels, corruption, price fixing, and patronage networks) are less visible through rapid analysis. War economies pose particular challenges, where weak civil controls foster clandestine/illegal trade (Jackson, 2009). However, the commodities assessed by EMMA and the SSSA (food, shelter materials) may be less affected, simply because minerals/weapons are more lucrative to ‘tax’ (Rubin, 2000). Finally, EMMA appraises the market for a single commodity, raising issues concerning the effective use of time and resources for one market assessment, and the appropriateness of choice. Careful selection of markets for analysis, guided by country and technical expertise, can help, as can choosing markets that allow inferences on linked commodities (such as those sharing traders or suppliers) (Sivakumaran, 2011).

Conclusion

In a sudden-onset humanitarian situation, assessments must ‘make do’ with imperfect information. However, EMMA and the SSSA demonstrate that it is possible to gather, validate, and share useful data as evidence to inform appropriate humanitarian response.

In these imperfect data environments, several strategies help to bring an assessment to the point of being ‘good enough’. These include: using skilled analysts who can adopt a systems perspective; understanding that quickly gathered data has an ‘expiration date’ in terms of its usefulness as the situation changes; using existing information (livelihood analyses, price trends) strategically to compare current data with baselines; and triangulating data or seeking representativeness when large sample sizes are not feasible.

Perhaps most importantly, EMMA, the SSSA, and any quality humanitarian assessment must be aware of respondent and interviewer bias, and must challenge entrenched assumptions and beliefs. EMMA and the SSSA’s approaches to evidence—gathering from a variety of sources in an assortment of ways, and filtering through experience—help to account for these biases and counteract the challenges of timing and access constraints. In turn, this can lead to timely decision-making for appropriate humanitarian response.

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- ² Other SSSA cases can be found at <http://www.seedsystem.org>.
- ³ Information from <http://emma-toolkit.org/> (accessed on 25 April 2013).

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