

SEED RELIEF AND SEED SYSTEMS: *an annotated Bibliography*

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1. Catholic Relief Services. (2017). *Agricultural Fair and Voucher Manual*. Baltimore, MD, USA.

This manual provides the technical and operational knowledge for planning, implementing, monitoring and evaluating agriculture voucher fairs. The manual covers various types of agricultural fair and voucher programs including Seed and Voucher Fairs or SV&F, Diversity for Nutrition and Enhanced Resilience or DiNER fairs, livelihood fairs, and vouchers tied to agro-dealers. Livestock and commercialization fairs will not be covered specifically, though many of the same principles and tools covered in the manual could be applied to them. Throughout the manual, we will refer to the events by the generic term “fairs”; however, we will specify which type of fair when necessary. Keep in mind that most agricultural fairs revolve around seed, so seed choice and seed-related issues will be emphasized throughout the manual. Although the manual will provide guidance on the technical substance and logistics related to fairs, there are numerous programmatic issues that need to be thoroughly considered, and decisions to be made, in order to move forward with the planning aspects.

2. McGuire, S., and Sperling, L. (2016). Seed systems smallholder farmers use. *Food Security*, 8(1), 179-195.

Seed can be an important entry point for promoting productivity, nutrition and resilience among smallholder farmers. While investments have primarily focused on strengthening the formal sector, this article documents the degree to which the informal sector remains the core for seed acquisition, especially in Africa. Conclusions drawn from a uniquely comprehensive data set, 9660 observations across six countries and covering 40 crops, show that farmers access 90.2 % of their seed from informal systems with 50.9 % of that deriving from local markets. Further, 55 % of seed is paid for by cash, indicating that smallholders are already making important investments in this arena. Targeted interventions are proposed for rendering formal and informal seed sector more smallholder-responsive and for scaling up positive impacts.

3. McGuire, S., and Sperling, L. (2013). Making seed systems more resilient to stress. *Global Environmental Change*, 23(3), 644-653.

This article discusses seed system security in relation to building resilience to climate stresses and shocks. Provides case study data in contexts of political and civil conflict (Zimbabwe and South Sudan), earthquake (Haiti) and drought (Kenya). It highlights a new toolkit i.e. the Seed System Security Assessment (SSSA), examines what actually happens to seed systems during crises and shows specific features that foster or undermine resilience. It shows that seed systems prove to be relatively resilient, at least in terms of meeting farmers’ planting needs for the upcoming season. Altering crop profiles, making use of multiple delivery channels, and innovating (for example, with new barter mechanisms) all become key, as does mobilizing cross-scale seed supply linkages. Key is that formal seed systems will play a catalytic but supporting role, with the onus on resilience response lying within informal systems, and especially with local markets and their traders. It further defines seed system resilience, identifies eight principles linked to processes that build such resilience, and makes 15 practical recommendations for enhancing seed system resilience in the short and medium term. Finally, drawing insights from seed systems, processes central for building resilience in other development sectors are highlighted.

4. Sulaiman, M. I., and Andini, R. (2013). Lessons learned from seed distribution in Nepal. *Procedia Environmental Sciences*, 17, 20-27.

Complex emergency situation in Nepal particularly affected by political instability and natural calamities led to

food insecurity. Dependency on the food import led this country affected by soaring global food prices in 2007/2008. The Food and Agriculture Organization of the United Nations (FAO) responded with distribution of improved variety of seeds along with capacity building program and technical assistant to small rural farmers in Nepal from 2009 to 2011. This paper reviewed the factors affecting the efficacy of the seed distribution to improve food security based on the surveys on beneficiaries carried out before and after the intervention, crop cutting assessment and group discussions. It was concluded that seed aid was an effective way to improve food security of small farmer's family in the remote area of Nepal under a subset of conditions. Aid has to be designed to do no harm to the existing seed supply chain (which, if compromised, would incur losses to farmers).

5. Byrne, K. G., March, J., McGuire, S., Meissner, L. and Sperling, L. (2013). The role of evidence in humanitarian assessment: the Seed System Security Assessment and the Emergency Market Mapping and Analysis. *Disasters*, 37: S83-S104. doi:[10.1111/disa.12014](https://doi.org/10.1111/disa.12014).

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.

6. Mazvimavi K, Pedzisa T, Murendo C, Minde IJ, and Ndlovu PV. (2012). Cost effectiveness of seed fairs relative to direct relief distribution in Zimbabwe. *Development in Practice* 22: 978-990.

Compares data on cost effectiveness of different seed distribution methods. Seed fairs were found to be more cost effective (\$5.18/pack/HH) than direct distribution of imported seed (\$8.22/pack/HH). Seed fairs offered farmers more choice of crops than direct distribution (which sometimes only gave maize seed). If it is commercial seed that is to be distributed, it's most cost effective to use direct distribution of stocks obtained from seed companies (but this ignores other costs and benefits that are difficult to quantify, like ability to provide education at seed fairs).

7. DFID (2012). Project completion review: Emergency supply of maize seeds to drought-affected farmers in Tanzania. 12 pp.

Evaluation of a project to distribute relief seed (UK provided GBP 2.3 million ≈ US\$3.5m to FAO) and describes how plans had to shift because FAO could not procure all the maize seed required. Phase III of the project shifted away from maize to drought tolerant crops. Phase I: 425 tons of seed given to 42,490 HHs in 9 districts (27% of original target). Phase II: 919 tons (as 398 tons maize, 420 tons sorghum, and 121 tons paddy rice) given to 229,049 HHs in 34 districts. Phase III: with remaining US\$570k, targeted 20,000 HHs with seeds of drought tolerant crops, using seed fairs and existing agro-input dealers instead of direct delivery of seed by NGOs.

8. Ferguson, M. E., Jones, R. B., Bramel, P. J., Domínguez, C., Torre do Vale, C. and Han, J. (2012). Post-flooding disaster crop diversity recovery: a case study of Cowpea in Mozambique. *Disasters*, 36: 83-100. doi:[10.1111/j.1467-7717.2011.01242.x](https://doi.org/10.1111/j.1467-7717.2011.01242.x)

This study examines the extent to which Cowpea diversity was reinstated two years after a flood disaster in Gaza Province, Mozambique. The contribution that seed from various sources made to the recovery was assessed using semi-structured interviews and morphological and molecular data. Data suggest that diversity had

recovered to some extent yet there was evidence of a narrowing of the genetic base, with fewer rare alleles and differences in the distribution of allele frequencies. Although the main channels for accessing seed after the flood were seed relief and markets, these sources contributed to minimal and different diversity. It appears that diversity was regained primarily through social networking in the form of loans or gifts of seed from friends and relatives. The results of the study are discussed in relation to seed relief approaches.

9. Mutonodzo-Davies, C. and Magunda, D. (2011). The Politics of Seed Relief in Zimbabwe. *IDS Bulletin*, 42: 90-101.

A decade of economic and political turmoil in Zimbabwe, as well as a period of radical land reform which reconfigured the country's agricultural sector, dramatically affected its seed system, reducing the supply of quality seeds and undermining regulatory control. The collapse of the seed system was exacerbated by seed relief programmes implemented by the government and aid agencies, which bypassed the normal market chain. In 2010, aid agencies experimented with 'market-friendly' input programmes which also created distortions and were vulnerable to political interference. In resource-constrained settings, subsidy programmes, no matter what design, became objects of political contestation. This article aims to understand how Zimbabwe can rebuild a seed system appropriate to the post-land reform context by asking questions about the underlying political economy of this process, examining the implementation of the input delivery approaches.

10. Langyintuo, A. S., and Setimela, P. (2009). Assessing the effectiveness of a technical assistance program: The case of maize seed relief to vulnerable households in Zimbabwe. *Food Policy*, 34(4), 377-387.

The economic downturn in Zimbabwe (early to mid-2000s) impoverished the majority of households. To help vulnerable rural households improve their food security, the British Department for International Development implemented a seed relief program from 2003/2004 to 2005/2006 that emphasized recycling of maize open-pollinated varieties (OPV). Using data collected from 597 households in six districts in 2006, this study assesses the effectiveness of the program in terms of its targeting of beneficiaries, the flow of information from participating NGOs to beneficiaries on the need to recycle the seeds, and the level of recycling done at the end of the program. The empirical results suggest that the targeting method participating NGOs use inadvertently excludes relatively vulnerable households while including large proportions of relatively well-endowed households in the program. The choice of varieties to distribute is guided more by the ecological adaptability of available commercial seeds and less by preferences of beneficiaries. Notwithstanding the fact that seed selection information is critical in encouraging beneficiaries to recycle distributed seed, not all of them received it. In conclusion, it may be stated that the program undoubtedly contributed to increased food productivity by vulnerable households but its-overall effectiveness could have been enhanced through (i) the involvement of the beneficiaries in the choice of types of seed to be distributed, (ii) better targeting of beneficiaries, and (iii) improved information flow between NGOs and beneficiaries.

11. L. Sperling, Cooper, H.D. and Remington, T. (2008). Moving Towards More Effective Seed Aid, *The Journal of Development Studies*, 44:4, 586-612.

Seed aid is increasingly applied as an emergency response throughout Africa. This article describes its rise, its goals and the seed security principles which should shape it. Drawing on evidence of the effects of disaster, the article reviews the appropriateness of current seed aid responses and suggests ways to link the type of seed security problem with the type of response employed. Direct seed distribution, the dominant form, seems suited for a subset of conditions when farmers procure seed through formal channels and when seed is not sufficiently available in an area. Seed vouchers and fairs may be more widely applicable as this approach strengthens channels that farmers normally use (both formal and informal) and addresses the more common problem of farmers' lack of access to seed. Key for improving seed aid is a better understanding of how local seed markets function, as these provide a core of seed security in normal and stress periods.

12. McGuire, S. J. (2007). Vulnerability in farmer seed systems: farmer practices for coping with seed insecurity for sorghum in Eastern Ethiopia. *Economic Botany*, 61(3), 211.

Many interventions try to address farmers' seed insecurity, though few assess the causes of farmers' vulnerability or understand their coping strategies. This paper analyzes farmers' practices for maintaining sorghum seed security in a specific season (1998–99) in Ethiopia, which provides a richer picture of coping strategies than accounts of "general" practices, as it shows how responses reflect events unfolding over time and household-specific situations. High seeding rates ensure against environmental uncertainty, but not everyone has sufficient seed for repeated sowing should stands fail to establish. Off-farm seed fills this gap, though payment is usually required for substantial quantities; only 20% of seed from other farmers came for free in 1998. Differences between seed suppliers and recipients suggest indicators for chronic seed insecurity. The discussion explores implications for supporting farmers' coping strategies. Helping the poorest farmers access off-farm seed, from other farmers or from merchants, can reduce their vulnerability.

13. van der Walt, Wynand J. (2006) The Role of Relief Seed and Voucher Programme in Inputs Market Development .

Distribution of relief seed following natural disaster has become a common phenomenon in the SADC region, and many member states have had government, donor and NGO support in place for decades. However, a 1999 report published by the FAO (1990) on relief seed and fertilizer systems referred to "inconsistent, incoherent and inappropriate seed approaches", and highlighted a number of lessons learned. Country researchers were therefore contracted by FANRPAN to analyze the current relief seed systems in four countries: Malawi, Mozambique, South Africa and Zambia. The results are intended to provide a baseline overview for policy makers and related stakeholders. For this study, "relief seed" is considered to represent seed donated by seed companies; seed procured and donated by governments and NGOs, and seed distributed free or partly subsidized, directly or through voucher systems.

14. Simfukwe M. (2006). Relief Seed Trade in Zambia. FANRPAN.

The Zambia Relief Seed Trade study was part of a 4-country study (Malawi, Mozambique, South Africa and Zambia) commissioned by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) to determine the importance and share of relief seed in the overall national and regional seed trade. It also aimed to assess opportunities for improving the contributions of relief seed programmes to commercial seed market development. Seed market development is part of the broader regional objective of improving agricultural inputs and outputs markets as a trigger for increased agricultural production and growth in the region.

The motivation for the study was that governments need to recognize the significance of relief seed in the national and regional markets and hence the need for a clear policy on relief seed. The main thesis of the study was that relief seed has become a major component of many national and regional seed markets - especially for crops other than maize and there is, thus, need for governments to make more effective use of the huge investment in relief seed programmes. Also, there is need for establishing minimum standards for the purchase of seed by seed companies (and NGOs/relief agencies) as a way of ensuring the quality and health of seed distributed. The volume and quantity of relief seed trade is also believed to affecting the structure and conduct of seed markets. The study was aimed at presenting options for a higher payoff for this investment.

The specific quest was 4-fold:

1. Determining the size and share of relief seed trade, for all major crops, as a proportion of total seed trade;
2. Determining how the supply and distribution of relief seed is affecting the structure and performance (or evolution) of domestic seed markets;
3. Understanding the structure and performance of regional seed trade as a result of greater use of relief seed;

4. Identifying opportunities for improving the development impacts of relief seed trade.

For purposes of the study, relief seed was defined as all seed distributed through non-commercial channels - including government and NGO food security and farmer support programmes. Relief seed in this study, thus, refers to seed distributed outside the commercial wholesale and retail channels, even beyond periods of crisis.

15. Rohrbach, D. D., Mashingaidze, A. B., and Mudhara, M. (2005). Distribution of relief seed and fertilizer in Zimbabwe: Lessons from the 2003/04 season.

This study summarizes the impacts of input relief programs in Zimbabwe, based on data from surveys conducted in 2004, following two consecutive drought years. The analysis reveals substantial opportunities for improving these programs. First, targeting of beneficiary households must be improved. Many households received inputs from more than one NGO. Targeting can be improved through better sharing of information, and by using simpler selection criteria (e.g, ownership of livestock) to identify beneficiaries. Contrary to common perceptions, farm communities tend to be reasonably successful at maintaining seed stocks even after multiple years of drought. Correspondingly, the delivery of free seed did not contribute to an increase in planted area. Also contrary to common perceptions, distribution of small quantities of fertilizer offered substantially higher returns than distribution of seed. The application of as little as 10 kg of nitrogen per hectare contributed substantially to food security in drought-prone regions. This study also compared three alternative input distribution methods: direct handouts of seed and fertilizer, seed fairs, and the use of vouchers redeemable at retail shops. While direct handouts are logistically the easiest method (and the most widely used), voucher-based programs linked with retail shops potentially offer the greatest development impacts.

16. Ferguson M. (2003). Assessment of the Impact of the 2000 Floods on Crop Diversity in Mozambique. Final Report, September-December 2002. Nairobi: ICRISAT and INIA. 54 pp..

Descriptors: Mozambique, groundnuts and cowpeas, seed systems/relief, seed systems/farmer, seed intervention/seed and tools, seed intervention/fairs and vouchers

Using the case study of the Mozambique floods in 2000, the author contrasts the impact of relief seed, local seed markets and traditional seed systems on peanut and cowpea diversity. The first section provides the background information about the disaster area (biophysical situation and its farming systems). The author elaborates and compares the methods used to assess crop diversity, their results and their implication on the choice of seed-intervention approaches (seed and tools and seed fairs and vouchers).

17. de Barbentane N. S. and Fowler, C. (2003). Seed Relief after Hurricane Mitch in Honduras: A Critical Analysis of Institutional Responses. *The Journal of Humanitarian Assistance* 6 February 2003.

Descriptors: Honduras, seed assessment/disaster, seed assessment/security

This paper is based on interviews among personnel working with local, national and international organizations involved in emergency agricultural restoration following Hurricane Mitch in Honduras. The paper shows that coordination between relief organizations and local communities was generally weak in seed-relief programs. Most organizations also found it less time consuming and risky to distribute varieties already certified and promoted, and which had broad adaptation in marginal areas, than to multiply and distribute local varieties. Further, the paper depicts how institutions designed their interventions without a serious assessment of local seed security or seed-management practices and how the varieties distributed did not always respond to the considerable variations in ecological, economic and social conditions found in Honduras. Seed *supply*, rather than seed *demand*, seemed to be the driving force behind seed-related activities.

18. Sperling L. and Cooper, D. (2003). Understanding Seed Systems and Strengthening Seed Security. Background paper prepared for workshop on Effective and Sustainable Seed Relief: A Stakeholder Workshop, Rome, 26–28 May 2003. Rome: Food and Agriculture Organization of the United Nations. 32 pp.

Descriptors: seed systems/relief, seed systems/farmer, seed assessment/disaster, seed assessment/security, seed intervention/fairs and vouchers

This background paper reviews the rationale for and goals of seed aid. It also provides an overview of seed systems, particularly the "local" or "informal" seed system that provides most farmers with seed most of the time. It also discusses the parameters of seed security, including the distinction between availability, access and use attributes. Acute and chronic emergency seed situations are further described. Lessons learned in the field, particularly in Africa, are summarized and discussed. The paper also compares and contrasts current relief options, focusing on the two dominant responses: direct seed distribution and seed fairs and vouchers. At the end, the authors consider key challenges for moving the seed-aid field forward.

The contents include:

- The rationale and goals of seed aid
- Overview of the seed systems farmers use
- Thoughts about seed security in emergency situations: some conceptual aids
- Major response options currently being used in emergencies
- Major challenges: moving forward

19. Haugen J. and Fowler, C. (2003). Reassessing the Need for Emergency Seed Relief Post-Disaster: The Case of Honduras after Hurricane Mitch. *Journal of Humanitarian Assistance*. Posted 2 January 2004. <http://www.jha.ac/articles/a113.htm>

Descriptors: Honduras, bean, seed systems/farmer, seed guidance handbook/technology transfer, seed assessment/disaster, seed assessment/security

This paper is based on interviews with farmers who received emergency bean seed provisions in Yorito, Honduras, following Hurricane Mitch. The authors analyze the need for and appropriateness of these provisions. Although crop losses were extensive in Yorito, most farmers were able to secure a harvest of at least one major crop, and many of those who had lost all their beans had access to local seed sources. No bean varieties were lost in Yorito as a result of Mitch. Conversely, as improved varieties that were previously unavailable were provided, such aid augmented the local gene pool. However, the authors describe how the seeds provisioned were of a narrow genetic base (due to the low variation in the varieties distributed). Taking the differences in agroecological and socioeconomic variables between communities and households into account, the seeds provisioned were not appropriate for all farmers.

20. Machiri S. T., Strauss P. J., Lomenius M., Goble N. and Mtolera, C. (2003). Strengthening Seed Systems. *SADC Seed News*, Volume 1(1). Harare, Zimbabwe: SADC Seed Security Network, Southern Africa Development Community (SADC).

Descriptors: SADC, seed systems/farmer, seed systems/formal, seed guidance handbook/institutional capacity building, seed guidance handbook/recovery, seed guidance handbook/development, seed guidance handbook/technology transfer, seed intervention/relief, seed intervention/seed vouchers and fairs, seed intervention/community development, seed security assessment/disaster

This newsletter provides extensive documentation on written seed legislation in Southern Africa Development Community (SADC) member states, as well as seed types, prices and quantities being produced in the region. It also provides a catalogue of various seed programs and seed companies, NGOs, community-based organizations and others producing and marketing seed in the region. It addresses the constraints to accessing seed information in the region and highlights the responsibility of the SADC Seed Security Network for ensuring seed

security in the region. The newsletter also shares and exchanges information on seeds, using a network of seed focal points in SADC member states, and has contributed to enhancing the capacity of farmers in the region to be better informed about their seed needs. The contents include:

- Overview and analysis
 - Harmonization of seed regulations in SADC
 - Seed testing: the secret for good yield
 - Seed Information a valuable resource
 - Challenges of the seed trade in SADC region and beyond
 - Rebirth of the African plant breeder
- Recovery from war situations
 - Angola's farmers recover from war
 - Bright prospects for Congo seed industry
- Country experiences
 - Tanzania exploits its potential
 - Malawi learns to manage weather changes
 - Beans offer hope for Malawi farmers
 - Crop research partnership: Zambia's lessons
 - South Africa rewards its plant breeders
- Drought rehabilitation
 - The Zambian experience
 - Making the best of seed vouchers and fairs

21. ICARDA (2002). Seed System Support in Stress Situations. From a code-of-conduct workshop jointly organized by the Ministry of Agriculture and Livestock in Afghanistan, ICARDA and FAO, Kabul, 21–23 May 2002.

Descriptors: Afghanistan, seed systems/farmer, seed systems/formal, seed assessment/disaster, seed assessment/security, guidance/institutional and capacity building

This paper provides guidelines on how to assess seed-security situations and develop seed-support mechanisms. A better understanding of seed security will ensure that appropriate seed interventions are carried out. The paper also describes analytical tools for seed-security frameworks in various disaster scenarios. It ends with advice on how institutional linkages can promote sustainable seed sectors.

22. de Vries J. and Toenniessen, G. (2002). Seed Systems: Reaching the Poor in Numbers. Wallingford, UK: CAB International. 224pp.

Descriptors: Africa, seed guidance handbook/institutional capacity building, seed guidance handbook/development, seed intervention/community development, seed systems/farmer, seed systems/formal, seed guidance handbook/technology transfer

This book describes how improved seeds are a tangible representation of technologies developed for use and long-term ownership by poor farmers. It gives insight into farmer and formal seed systems across Africa, describes four types of seed demands, and offers some practical suggestions towards meeting the different needs. Various roles are explored: that of breeders, private and public seed companies, NGOs, farmers and their organizations and other relevant actors in assuring a sustainable seed supply. The book briefly considers seed policies and regulatory mechanisms in Africa and supports their liberalization and gradual movement toward a seed industry led by the private sector. The book concludes with a reflection on the challenges faced by both private and public seed sectors.

23. CRS, ICRISAT and ODI (2002). Seed Vouchers and Fairs: A Manual for Seed-Based Agricultural Recovery in Africa. Nairobi, Kenya: Catholic Relief Services (CRS) in collaboration with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Overseas Development Institute (ODI).

Descriptors: Southern Sudan, seed intervention/seed vouchers and fairs, seed security assessment/disaster, seed systems/formal, seed intervention/community development, seed guidance handbook/institutional capacity building

This manual describes a new approach to post-emergency seed distribution in Africa, whereby farmers receive not free seed but vouchers that can be exchanged for seed at a specially organized fair. The manual highlights how "seed fairs" rely on commercial seed firms (where they are in operation), as well as local seed producers and traders. Further, it provides an overview of seed systems and their components and describes how to plan and implement the seed-voucher/seed-fair approach. Some the advantages of such seed fairs are also suggested, including that they permit farmers to choose which crops/varieties and quantities they want to access from aid, post-emergency.

This manual contains two articles:

23a. Bramel P., Jones R., Remington T. and Longley,C. (2002). Seed Systems and Disaster Relief: An Overview.

This article defines *disaster* based on its scope and scale and provides insight into the varied phases related to the disaster-relief sequence. The overview suggests the importance of acquiring prior information on agricultural systems and existing seed systems before implementing a response to seed-related disasters. The last section provides details on how to describe and diagnose a seed-security problem in order to develop a project plan.

23b. Maroko J. and Myers, A. (2002). Planning and Implementing a Seed Fair.

This section discusses when, where and why seed fairs can be implemented. It describes the four steps involved in conducting seed fairs: assessment, planning, implementation and evaluation. And it reflects on the constraints and challenges that might arise while conducting seed fairs. Appendices contain samples of data-collection forms and questionnaires used in conducting a seed fair.

24. Longley C. and Sperling, L. (Eds.) (2002). (Special Issue) *Disasters. The Journal of Disaster Studies, Policy and Management*, Volume 26, No. 4, December 2002.

This special issue contains a series of articles that together provide practical insight and interventions on how to strengthen both agricultural and social support to farmers' seed systems in times of stress, how to link shorter term interventions with longer term perspectives and how to minimize ancillary aid damage. The paper illustrates how conventional seed-distribution projects often have less positive impact than anticipated. The paper also shows that interventions can actually decrease seed-system stability and varietal diversity, while bringing unintended negative impact into the social and political economy of recipient communities. The paper further puts forth a series of baseline practices with which to improve the effectiveness of current practice and suggests a range of interventions to supplement the predominant seed-and-tools paradigm.. It also exposes the readers to designing appropriate interventions based on more informed decisions. The key message of this issue is that "seed-and-tools" approaches, as currently practiced without diagnosis, no longer seem justifiable.

The paper's highlights include:

- Enhancing relief aid through agricultural research
- Alternative programming options: seed vouchers and fairs
- Assessment of impact and need
- Right-based approaches, institution building and markets

The volume contains a series of seven articles:

24a. Archibald S. and Richards, P. (2002). Seeds and Rights: New Approaches to Post-War Agricultural Rehabilitation in Sierra Leone. pp. 356–367.

Descriptors: Sierra Leone, seed assessment/disaster, seed systems/relief, seed guidance handbook/recovery

This paper shows how more equitable seed distribution could contribute to fostering a culture of human rights as well as agricultural rehabilitation. The benefits and advantages of more inclusive, right-based alternative approaches to seed distribution are discussed and preliminary results from the pilot phase of CARE's right-based approach to food security are presented. The contents include:

- Introduction: seeds and social inclusion
- Needs and rights: current debates
- "Smart" assistance?
- Developing a new delivery "vehicle" for seed
- Seeds and rights-symbolizing new beginnings

24b. Aubee E. and Hussein, K. (2002). Emergency Relief, Crop Diversification and Institutional Building: The Case of Sesame in Gambia. pp. 369–382.

Descriptors: Gambia, sesame, seed guidance handbook/institutional capacity building, seed guidance handbook/technology transfer, seed guidance handbook/development, seed assessment/disaster, seed systems/relief

This article examines the case of the Catholic Relief Service's (CRS) sesame support program in Gambia, which has spanned more than 25 years. It outlines the transformation process from relief to development and the role that the production of an agricultural commodity (sesame) has played as a key building block. The paper provides a case study of an intervention that has gone beyond the production of seeds to address agronomic research and extension, policy, marketing and institutional issues necessary for successful crop diversification. The contents include:

- Aspects of agronomic research, extension and input supply
- Aspects of policy and institutional environment
- Approaches to grass-roots institutional building, such as the National Women's Farmers' Association in Gambia
- Lessons learned from this case study

24c. Buruchura R. A., Sperling L., Ewell P. and R. Kirkby, (2002), The Role of Research Institutions in Seed-Related Disaster Relief: Seeds of Hope Experiences in Rwanda. pp. 288–301.

Descriptors: Rwanda, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building, seed systems/relief, seed assessment/disaster

This article describes the efforts of a coalition of agricultural research centers, Seeds of Hope (SOH), in the rebuilding of Rwanda, after the genocide and war of 1994. The article further describes how the involvement of SOH highlighted the critical, yet very different, roles for research during emergency versus rehabilitation periods. The cost effectiveness of building in a diagnostic component (before massive seed or germplasm distributions) is also demonstrated. This article concludes with broad lessons learned and reflections on the SOH program. The contents include:

- The Rwanda war and genocide and their "posited" short-term agricultural effects

- Formation and broad aims of the SOH initiative
- Emergency phase: provision of technical information on variety sourcing and targeting
- Rehabilitation phase
- Broad lessons and reflections on SOH Rwanda

24d. Jones R. B., Bramel P., Longley C. and Remington, T. (2002). The need to Look beyond the Production and Provision of Relief Seed: Experiences from Southern Sudan. pp. 302–315.

Descriptors: Southern Sudan, sorghum, seed systems/farmer, seed systems/formal, seed systems/relief, seed guidance handbook/technology transfer, seed assessment/disaster

This article discusses free seed distribution in Southern Sudan as a way of increasing food security instead of strengthening the already resilient local seed system. The authors argue that, rather than imposing outside solutions, whether through seed provisioning or seed production, greater attention needs to be given to strengthening existing farmer systems and designing interventions to alleviate the weaknesses. Through the case study, the article advocates support for the process of farmer experimentation, via informed introduction of new crops and varieties that can potentially reinforce, strengthen and diversify local cropping systems. The contents include:

- Understanding seed systems: farmers and formal
- Sorghum seed systems in Southern Sudan
- Relief seed systems: common misperceptions
- Alternative interventions

24e. Longley C., Dominguez C., Saide M. A. and Leonardo. W.J. (2002). Do Farmers Need Relief Seed: A Methodology for Assessing Seed Systems. pp. 343–355.

Descriptors: Somalia, Mozambique, seed systems/farmer, seed systems/formal, seed systems/relief, seed assessment/disaster, seed intervention/formal, seed intervention/vouchers and fairs

This paper outlines a methodology to help agencies better determine whether or not relief seeds are needed by farmers affected by disaster. The article proposes the development of a seed-system profile (SSP) to understand both the socioeconomic and agroecological aspects of farmer seed systems and presents a five-step framework for assessing seed systems in disaster situations. The authors further explain how a better understanding of farmers' seed systems facilitates the development of relief and rehabilitation interventions that effectively enhance the resilience and reduce the vulnerability of these systems. The contents include:

- Present approach to assessing seed needs
- Seed-systems profile (SSP)
- Assessing the need for seed-system support in a disaster situation
- Suggestions for practical applications

24f. Sperling L. (2002) Emergency Seed Aid in Kenya: Some Case Study Insights from Lessons Learned during the 1990s. Pages 329–342.

Descriptors: Kenya, seed systems/farmer, seed systems/formal, seed systems/relief, seed assessment/disaster, seed intervention/development

This article reviews the effectiveness of seed-aid distribution in Kenya during the 1990s. It analyzes internal processes and effects, i.e., the performance of the aid itself. It also analyzes external processes and effects, i.e., how the seed-aid intervention affected farmers' broader

agricultural management strategies. The author argues that repeated seed aid has been promoted to lessen the effects of “acute” stress, drought, while Kenyan farmers, in practice, have been experiencing much wider, “chronic” problems with the seed system. The article ends by discussing the diagnosis of seed systems, constraints and opportunities. The distinction between acute and chronic seed-system stress is demonstrated and the range of interventions appropriate to each are outlined.

24g. Remington T., Maroko J., Omanga P., Charles E. and Walsh, S. (2002). Getting off the "Seeds-and-Tools" Treadmill with CRS Seed Vouchers and Fairs. pp. 315–329.

Descriptors: Africa, seed intervention/seed and tools, seed guidance handbook/technology transfer

This paper presents a framework for assessing seed security for seed-system analyses or diagnoses. It also describes an alternative approach to free distribution (the so-called “seeds-and-tools” approach) in agricultural recovery, which combines the distribution of seed vouchers with the organization of seed fairs attended by a range of seed sellers and voucher holders. The paper presents an ex post evaluation of the effectiveness of seed vouchers and fairs and closes with a discussion of the opportunities and challenges ahead. Three conceptual principles of seed security are elaborated: seed availability, seed accessibility and factors associated with seed utilization. The article discusses:

- The persistent reliance on the formal seed sector on agricultural recovery from disasters
- Using a seed-security assessment framework for better seed-system diagnosis
- CRS seed vouchers and fairs: methodology and overview
- Ex post evaluation of CRS seed vouchers and fairs using the seed-security framework

25. David S. and Oliver, B. (2002) Business Skills for Small-Scale Seed Producers: Handbooks for Small-Scale Seed Producers. Handbooks 2. Network on Bean Research in Africa, Occasional Publications Series No. 36. Kampala, Uganda: International Center for Tropical Agriculture (CIAT). 96 Pages.

Descriptors: Uganda, seed guidance handbook/development

Written for people who do not have formal training or experience in seed production, this handbook is intended for use by small-scale farmers, business people and community-based institutions such as schools and churches interested in producing seed of various crops for sale. The contents include, among other themes:

- Why establish a seed business?
- Seed business planning
- Record keeping to improve seed business
- Understanding seed market
- Expanding and organizing the seed business

26. USAID, Kenya (2002). Success Stories. Annual Report FY 2002. Nairobi: USAID, Kenya.

Descriptors: Kenya, seed intervention/seed and tools, seed intervention/formal development

The paper gives an overview of USAID-funded agro-business projects that support local communities in producing certified and packaged seeds of major food crops (maize, beans, sorghum, millet and green grams). It also narrates the positive socioeconomic impacts of such interventions at the level of both farmer seed growers and targeted farming communities.

27. Remington T., Sperling L. and Bramel, P. (2002). Changing the "Seeds and Tools" Panacea: Moving toward Targeted and Effective Seed System Diagnoses and Development Relief Interventions. Paper submitted to the First Stakeholders Meeting: Consortium on Restoring Food Security and Rebuilding the Agricultural Sector of Afghanistan, 20–21 January 2002, Tashkent, Uzbekistan. 6 Pages.

Descriptors: seed systems/relief, seed assessment/disaster

This article highlights the novel distinction between acute and chronically stressed smallholder seed systems, and the emerging practitioner-gearred seed-security framework. The authors differentiate between acute seed insecurity, which may affect a broad range of the population (being brought on by drought or short-duration events, such as failure to plant a single season), and chronic seed insecurity. Towards the end, the article links the seed-security framework to the acute/chronic insecurity distinction and shows how such an integrated tool is critical for matching the appropriate interventions to the immediate on-the-ground problems. Tables are presented that match specific interventions to a range of specific seed-system stresses (acute/chronic, diagnosed as relating to seed availability, seed-access or seed-utilization concerns).

28. Green Foundation, (2002). Community Seed Bank and Community Seed Bank Network). Bangalore, India: Green Foundation.

Descriptors: Ethiopia, seed intervention/community development

This Website provides information on preserving diversity by widening the gene pool through seed banks. It argues that seed banks are key for sustaining communities in future. It also describes how a seed bank works.

29. Longley C., Jones R., Mohammed H. A. and Audi, P. (2001). Supporting Local Seed Systems in Southern Somalia: A Developmental Approach to Agricultural Rehabilitation in Emergency Situations. AGREN Network Paper No 115, July 2001. London: Overseas Development Institute (ODI), Agricultural Research and Extension Network. 20 pp. http://www.odi.org.uk/agren/papers/agrenpaper_115.pdf

Descriptors: Somalia, seed systems/farmer, seed systems/formal, seed systems/relief, seed intervention/seed and tools, seed intervention/seed vouchers and fairs, seed guidance handbook/recovery, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This paper describes the impact of insecurity, shocks and stresses on agriculture and examines whether relief seed distribution is the most appropriate way to assist farmers affected by disasters. The paper shows that by developing a better understanding of the ways in which local seed systems function, it is possible to identify how these local systems can be supported and developed. The paper also highlights a number of ways in which the local seed system can be strengthened as part of a strategy for agricultural rehabilitation.

30. de Barbentane S. (2001). Seeds, Storms and Strategies: A Study on Decision-Making Processes in Seed Supplies and Seed Distribution Intervention in Emergency Situation. Case of Honduras in the Aftermaths of Hurricane Mitch. Master's thesis. Norwegian Centre for International Cooperation in Higher Education (SIU). Summary available online:

Descriptors: Honduras Hurricane Mitch, seed systems/farmer, seed systems/formal, seed assessment/disaster, seed assessment/security, seed guidance handbook/institutional and capacity building, seed intervention/seed and tools

This paper describes the processes behind the choice of activities implemented in emergency agricultural restoration projects after Hurricane Mitch in Honduras. For the majority of agencies involved in the disaster

response, seed interventions were based on the assumption that the disaster had destroyed farmers' seed systems. Therefore, they emphasized multiplication and distribution of a few improved bean and maize varieties instead of strengthening local capacities. The paper also lists some of the reasons that pushed those agencies to use improved varieties instead of local ones. Challenges pertaining to operations around seed emergencies are discussed and general advice is given for carrying out agricultural restoration projects in countries susceptible to disasters.

31. Dominguez C., Rohrbach D., Longley K., Momade S. and R. Jones. (2001). Organizing Seed Fairs in Emergency Situations: Improving the Efficiency of Seed Distribution. Patancheru, India: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). 60 pp.

Descriptors: Mozambique, seed guidance handbook/institutional capacity building, seed guidance handbook/recovery, seed guidance handbook/development, seed intervention/seed vouchers and fairs, seed intervention/community development, seed security assessment/disaster, seed systems/farmer

This manual depicts how 17 years of armed conflict in Mozambique destroyed the country's commercial seed network. The first part describes in detail the nature of seed fairs and their advantages. The second part explains how to organize seed fairs in emergency situations. This manual highlights how seed fairs may be an alternative to the free distribution of seed kits because they can respond more appropriately to the specific needs of each zone and each farmer. Therefore, emergency assistance funds are invested in the effected area instead of being used to import seed kits. The manual also focuses on how seed fairs can help to revitalize the local economy, particularly the commercial seed distribution network in the effected area. Contents include, among other themes:

- Seed fairs
- Steps for preparing a seed fair
- Identifying and assessing potential sources of seed and participants
- Preparing the day of the fair
- Promoting the fair
- Holding seed fairs
- Evaluating the seed fair
- Planning resources needed to hold a seed fair

32. Cromwell E., Cooper D. and P. Mulvany (2001). Agriculture, Biodiversity and Livelihood: Issues and Entry Points for Development Agencies. Overseas Development Institute (ODI). 52 pp.

Descriptors: seed systems/farmer, seed systems/formal, seed guidance handbook/genetic diversity, seed guidance handbook/institutional capacity building, seed guidance handbook/technology transfer

This paper defines the concept of agrobiodiversity, its components and roles, and how it is valued by the various beneficiaries in different agroecosystems. The paper suggests appropriate management of crop genetic resources in both traditional and industrial agricultural systems and describes the relationship between agricultural biodiversity and poverty reduction. Use of agrobiodiversity is specifically suggested as an entry point and policy option to reduce poverty and food insecurity and to enhance people's socioeconomic development across the spectrum of stakeholders.

33. Gameda A., Aboma G., Verkuijl H. and W. Mwangi (2001). Farmers' Maize Seed Systems in Western Oromia, Ethiopia. Mexico, DF: International Maize and Wheat Improvement Centre (CIMMYT) and Ethiopian Agricultural Research Organization (EARO). 42 pp.

Descriptors: Ethiopia, Maize, seed systems/farmer, seed intervention/community development, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

The authors describe the seed system and the mechanisms for seed assessment, testing and release. The paper further explores farmers' mechanisms for acquiring and transferring maize seed and documents the use of released maize varieties and hybrids. Additionally, it describes how descriptive statistics and tobit analysis were used to assess farmers' adoption of improved maize seed and their subsequent seed-management practices and strategies.

Among other themes, the paper includes:

- Seed supply
- Demographic and socioeconomic characteristics
- Maize cultivars grown and farmers' seed sources
- Maize production practices
- Tobit analysis of land allocation to improved maize varieties

34. Almekinders C. (2001). Management of Crop Genetic Diversity at Community Level. Eschborn Germany: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). 53 pp.

Descriptors: seed systems/farmer, seed systems/formal, seed intervention/formal development, seed intervention/community development, seed guidance handbook/genetic diversity, seed guidance handbook/institutional capacity building

This report presents a conceptual framework for supporting community management of agrobiodiversity. It indicates that sustainable community management of agrobiodiversity should be based on farmers' needs and priorities. It recognizes three entry points for the support of community management of agrobiodiversity: at the community, institutional and policy levels.

Contents include, among other themes:

- Role of crop genetic diversity
- Role of local and formal seed system in plant genetic resource management
- Community management of crop genetic diversity
- Necessary support to community in management of agrobiodiversity
- Shaping favorable socioeconomic and policy environments

35. Jayasinghe U. (2001). Seed Production in the Developing Countries: CIP Strategy. Bogor, Indonesia: International Potato Center (CIP), CIP-ESEAP Region. 11 pp.

Descriptors: Developing countries, root and tuber crops, seed systems/farmer, seed systems/formal, seed intervention/formal development, seed intervention/community development, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This paper analyzes how the International Potato Center facilitates the integration of improved germplasm and technical, legal, managerial and agricultural interventions to improve the availability of low-cost, high-quality planting material to potato growers in less-developed countries.

Among other themes, the papers includes:

- Seed systems
- Improving formal seed systems
- Strengthening formal and informal seed systems
- Linking formal and informal seed systems

36. Koffa S. N. and D. P. Garrity (2001). Grassroots Empowerment and Sustainability in the Management of Critical Resources: The Agroforestry, Tree and Seed Association of Lantapan. Athens, Georgia: SANREM-CRSP, University of Georgia.

Descriptors: Tree crops, seed systems/farmer, seed systems/formal, seed intervention/formal development,

seed intervention/community development, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This case study uses and draws heavily on the principles of participatory research and development. Furthermore the paper emphasizes building and using interdisciplinary teams of farmers and scientists to define problems and to identify and test potential solutions to the management of the natural resource base. Strategies are discussed that give farmers the capacity to collect/produce, process and develop seeds of a variety of agroforestry tree species, both for developing viable enterprises and conserving biodiversity.

37. Musa M.T. (2001). Alternative Farmer Seed Intervention Systems. *Local Seed Systems News*, Volume 6, No. 4, August 2001. Small-Scale Seed Production Project, GTZ and SADC Seed Security Network.

Descriptors: Africa, seed assessment/seed security, seed systems/farmer, seed systems/formal, seed intervention/community development

The author categorizes both formal and informal seed sectors and defines the scope of their complementarity. The article defines the relationship between food and seed security using a food security framework for effective food production activities. Misconceptions are explored about farmer seed systems and the weaknesses of the formal seed systems for making seeds accessible to farmers.

38. Piguet F. (2001). Assessment Field Trip to East and West Haraghe Zone (Oromia Region). Field Assessment Mission: 3–9 September 2002. Addis Ababa: UNDP Emergencies Unit for Ethiopia (UNDP-EUE).

Descriptors: Ethiopia, seed assessment/seed security, seed assessment/food crop

The author illustrates the use of ecological and social indicators, such as rainfall data, crop and food situations, and local indigenous knowledge obtained through interviews, to assess food crop situations and seed security.

39. Tripp R. and P. Suresh (2001). The Private Delivery of Public Crop Varieties: Rice in Andhra Pradesh. *World Development*, 29 (1):103–117.

Descriptors: India (Andhra Pradesh State), rice, seed systems/farmer, seed systems/formal, seed intervention/formal development, seed intervention/community development, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This paper presents the example of rice in Andhra Pradesh State (India), where private enterprise is supplying an increasing proportion of the seed used by farmers. It also examines the institutional conditions for private expansion into rice seed. Instances are elaborated where low transaction costs allow for the emergence of a wide range of seed enterprises.

The paper includes:

- Public-sector roles in seed provision
- The private seed sector in Andhra Pradesh
- Institutional issues: contracting, incentives and quality
- Alternative strategies for seed provision
- Lessons for seed-system development

40. Remington T., Omanga P., Studer R., Maroko J. and Macek, P. (2001). CRS Seed Vouchers and Fairs: An Innovative Approach to Help Farm Communities Recover from Disaster. CRS Seed Vouchers and Fairs, October 29, 2001. CRS 2001.

Descriptors: East Africa, seed systems/farmer, seed intervention/seed and tools, seed intervention/seed vouchers and fairs, seed guidance handbook/genetic diversity, seed guidance handbook/development

This paper describes the experiences of the Catholic Relief Services (CRS) in supplying seed following disaster situations using seed vouchers and fairs in various CRS projects (Kenya, Southern Sudan and Uganda). The paper also describes the process of identifying seed security and its related constraints using a seed security-assessment framework. Some of the merits of this new approach of seed vouchers and fairs are described, as are CRS's experiences in evaluating seed fairs in Tanzania and Kenya.

41. Tripp R. (2001). *Sowing the Seeds, Strengthening the Roots—Seed System Development in Sub-Saharan Africa*. A research highlight from Socio-economics and Policy Program, Working Paper Series #2. London: Overseas Development Institute and International Crops Research Institute for the Semi-Arid Tropics.

Descriptors: Sub-Saharan Africa, seed systems/farmer, seed systems/formal, seed guidance handbook/technology transfer

This paper gives a rapid analysis of the weaknesses of the formal seed system in supplying seeds for poor farmers in sub-Saharan Africa (Kenya, Malawi and Zimbabwe). The author also considers the nature of seed demand, seed provision in emergency seed-distribution programs, and seed policies in regulatory frameworks. The role of public sector research is specifically mentioned and the paper suggests that precise strategies be developed at the national level, combining public, commercial and local participation.

42. SADC Seed Security Network (2001). *Establishment of SADC Seed Security Network*. Harare: Southern African Development Community Food Security Programme, Food, Agriculture and Natural Resources Development Unit.

Descriptors: Southern Africa, seed systems/farmer, seed systems/formal, seed assessment/disaster, seed assessment/farm food crops, guidance handbook/institutional and capacity building

This document analyzes the weaknesses and shortcomings of the formal seed sector in supplying improved crop varieties bred by national agricultural research systems and international agricultural research centers. These shortcomings spurred SADC to set up the Seed Security Network (SSSN) to assist relevant partners in bridging the gaps in making seed accessible to resource-poor farmers. The functions of the SADC network are described in some detail.

43. Tripp R. and Rohrbach, D. (2001) Policies for African Seed Enterprise Development. *Food Policy*, 2001, vol. 26, issue 2:147-161.

Descriptors: Africa, seed systems/farmer, seed systems/formal, seed intervention/formal development, seed intervention/community development seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This paper examines major impediments and identifies areas of intervention for which seed policies can be strengthened to improve the complementarity between public- and private-sector investment in developing national and regional seed-supply systems. It argues that the failure of formal seed provision in Africa can be attributed largely to the narrow focus of food policy regimes. It also examines these issues in the context of a review of recent investments in seed projects by a range of donors in Africa.

The paper includes:

- Seed-regulation regimes in sub-Saharan Africa
- Public seed-production agencies in sub-Saharan Africa
- Seed-distribution programs in sub-Saharan Africa

- National agricultural research institutes in sub-Saharan Africa
- Commercial seed-development initiatives
- Local seed projects
- Seed-policy reform in Africa

44. Musiska B. and Chibambo, B. . (2000). Community Based Small Scale Bean Seed Multiplication and Dissemination: The Experiences of Malawi Smallholder Seed Development Project of ACTIONAID. The proceedings of Bean Entrepreneurship Workshop held in Arusha, Tanzania, January 12-14, 2000.

Descriptors: Malawi, beans, seed systems/farmer, seed intervention/community development, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This paper describes a joint project of Action-Aid Malawi and the Malawi government in assisting farmers' organizations in producing and supplying approved seeds. The project intended to

- Develop low-cost mechanisms to improve and sustain availability and accessibility of appropriate, improved seed and plant types to resource-poor farmers in the participating communities
- Establish sustainable self-motivating community-based groups to manage seed multiplication and distribution in the communities
- Build local capacity in seed production, seed quality control, on-farm seed selection and storage

It also illustrates lessons learned and constraints during the implementation of the initiative and describes some opportunities for bean seed entrepreneurship in Malawi.

45. GTZ (2000). Support for the Informal Seed Sector in Development Cooperation: Conceptual Issues. Eschborn, Germany: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). 30 pp.

Descriptors: seed systems/farmer, seed systems/formal, seed intervention/formal, seed intervention/community development, seed guidance handbook/institutional capacity building, seed guidance handbook/genetic diversity

This paper aims to identify the conceptual and strategic background supporting the informal seed sector with regard to promoting sustainable seed-supply systems within a development cooperation framework. The paper emphasizes the importance of the informal seed sector, along with its complementarity and interconnectedness with the formal sector. It stresses the importance of seed security for food production and sustainable agricultural development and also underlines the contribution of the informal seed sector to the institutional management of agrobiodiversity and thereby the implementation of agenda 21 of the UN conference on environment and development.

46. Seboka B. and Deressa, A. (2000). Validating Farmers' Indigenous Social Network for Local Seed Supply in the Central Rift Valley of Ethiopia. *The Journal of Agricultural Education and Extension*, 2000, Vol 6(4):245–254.

Descriptors: Ethiopia (central rift valley), seed systems/farmer, seed systems/formal, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This paper describes how farmers' indigenous social networks (social relations, locally developed seed-exchange methods and local institutions) can act as leverage mechanism for the survival of local seed systems. It also discusses farmers' decisions to acquire seeds and the need to value the individual merit of a seed before putting into place any type of program for variety selection, seed multiplication or extension.

The paper includes:

- Seed-supply systems in Ethiopia
- The dualism of seed survival in local seed systems
- Redefining the role of extension in local seed systems
- Indigenous social networks for local seed supplies

47. Preston S. R. (1999). Checklist for Use by Potential Donors before Giving Seeds to Pacific Island Countries after Emergencies. Report prepared on behalf of the Secretariat of the Pacific Community and EU- funded Pacific Regional Agricultural Programme. 7 Pages.

Descriptors: Pacific island countries, seed guidance handbook/development, seed assessment/disaster, seed systems/relief

The purpose of the leaflet is to help potential donors and the recipient of seed aid to understand and avoid some of the most common pitfalls of the "seed-and-tools" approach. It is also intended to draw attention to capacity-building activities, which may have a greater and longer-term impact. The author discusses disaster management and how it is useful to think in terms of "crisis proofing" and the supply systems for seed and planting material.

48. Almekinders C. and Louwaars, N. (1999). Farmers' Seed Production: New Approaches and Practices. London: Intermediate Technology Publications Ltd. 291 pp.

Descriptors: seed systems/farmer, seed systems/formal, seed guidance handbook/technology transfer, seed guidance handbook/genetic diversity, seed guidance handbook/institutional capacity building, seed intervention/community

The authors carry out an analysis of formal seed-sector performance and critique it as inadequate in regard to supplying seed to small-scale farmers. Thus, the book takes local systems as a starting point, seeking to enhance the strengths of these systems through the use of appropriate breeding and seed-production knowledge and practices.. The authors aim their work at farmers' groups and organizations that are able to link farmers and technology development. The book begins by describing and analyzing local seed systems and gives a brief introduction to related topics ranging from crop production and genetic resource conservation to policy issues. The authors further present a useful discussion of technical aspects of seed production, with concise overviews of the basics of seed quality and the agronomy of seed production. Using case studies, the authors discuss an array of techniques for analyzing farmers' seed systems and for identifying ways to support these systems, such as experimentation with varietal improvement. Annexes contain advice on agronomic practices and seed-production techniques for more than 20 crops, a glossary, contacts, etc.

49. David S. and Sperling, L. (1999). Improving Technology Delivery Mechanisms: Lessons from Bean Seed Systems and Research in Eastern and Central Africa. *Agriculture and Human Values* 6:381–388.

Descriptors: Uganda, Rwanda, Burundi, DRC, seed guidance handbook/technology transfer, seed guidance handbook/genetic diversity

This article addresses concerns of technology dissemination for small farmers, specifically focusing on the distribution of new varieties of a self-pollinating crop. Based on research on the bean seed system, it reveals four commonly held basic assumptions to be false: first, small-scale farmers cannot afford to buy bean seed and that they rely either on their own stocks or obtain seed from other farmers; second, small-scale farmers cannot afford to buy seed of newly introduced varieties or will not risk it; third, farmers' seed networks function efficiently in varietal diffusion; and last, a good variety will sell itself. Based on the reality under which small farmers actually operate, the article offers recommendations for improving the delivery of newly introduced bean cultivars by NARS and seed suppliers.

50. Richards P. and Sperling, L. (1999). The Silent Casualties of War. *UNESCO Courier*, July/August 1999.

Descriptors: seed assessment/seed security, seed assessment/disaster, seed systems/farmer

The article describes the negative effects of small-armed conflicts on local and formal seed supplies and the consequences on crop biodiversity and on the food sector in general. It describes how the informal seed sector goes through a difficult process of recovering as a result of war, an analysis that is complicated by lack of documentation and information on local varieties. This situation may be aggravated by humanitarian agencies that supply inappropriate seed materials, using "seed-and-tools" approach.

51. David S., Kirkby R. and S. Kasozi (1999). Assessing the Impacts of Bush Bean Varieties on Poverty Reduction in sub-Saharan Africa: Evidence from Uganda. Paper presented at the workshop "Assessing the impact of agricultural research on poverty alleviation," San Jose, Costa Rica, 14-16 September 1999. CIAT Pan African Bean Alliance. 12 pp.

Descriptors: Uganda, bush bean, seed assessment/security, seed assessment/food crops, seed intervention/seed and tools, seed intervention/formal development, seed intervention/community development, seed guidance handbook/technology transfer

This paper investigates the impacts of two modern bush bean varieties, K132 and K131, on income, food security, bean consumption patterns and gender relationships at the household level. Structured as a longitudinal study of rural Ugandan communities, the paper provides a cross-sectional and historical perspective of change based on household wealth status. Conclusions suggest that modern bean varieties can make important contributions to poverty alleviation, and the mechanisms for enhancing the research-poverty linkages are explored.

52. Maredia M., Howard J., Boughton D., Naseem A., Wanzala M. and Kajisa, K.. (1999). Increasing Seed System Efficiency in Africa: Concepts, Strategies and Issues. MSU International Development Working Paper No. 77. East Lansing, MI, USA: Department of Agricultural Economics, Michigan State University. 66 pp.

This paper provides a conceptual framework that can be used by agricultural leaders, administrators, policy-makers and seed-program managers (a) to understand key factors affecting seed-system development and (b) to be able to compare organizational and institutional strategies for increasing the effectiveness of seed systems. It also provides a recent literature review of studies of seed-system development in sub-Saharan Africa.

The paper includes:

- What is a seed system?
- Seed systems in Africa
- Seed-system transformation: a conceptual framework
- Strategies to promote linkages for seed demand and supply
- Implications for farmers, government, and the private sector

53. Muliokela W. S. (1998). Technology Transfer in Rural Communities of Sub-Saharan Africa: Seeds as a Bridging Tool. Proceedings of the Regional Technical Meeting on Seed Policy and Programmes for Sub-Saharan Africa, Abidjan, Côte d'Ivoire, 23–27 November 1998. Seed and Plant Genetic Resources Service, Plant Production and Protection Division, Food and Agriculture Organization of the United Nations.

Descriptors: Sub-Saharan Africa, seed systems/farmer, seed intervention/formal development, seed guidance handbook/technology transfer, seed guidance handbook/institutional capacity building

This paper starts by discussing the ideal seed-policy setting for technology transfer to rural communities, using seed as a tool. It reviews the various ways that rural communities can have sustainable access to new and high-

yielding technologies. In addition, the author discusses costs, benefits, strengths and weaknesses as well as opportunities for strengthening technology transfer models via improved seed.

The paper includes:

- Seed policy
- Methods to support seed policy
- Seed utilization by smallholders
- Seed as a tool for technology transfer

54. FAO (1998) Developing Institutional Agreements and Capacity to Assist Farmers in Disaster Situations to Restore Agricultural Systems and Seed Security Activities (Project GCP/INT/660/NOR). Proceedings of the international workshop, Rome, Italy, 3–5 November 1998. Rome: Seed and Plant Genetic Resources Service, Plant Production and Protection Division of the United Nations Food and Agriculture and Organization.

The document contains 13 articles:

54a. Bushamuka N. V. (1998). Restoration of Seed Systems and Plant Genetic Resources after Disasters: A Synthesis of the Background Papers.

Descriptors: seed systems/farmer, seed systems/formal, seed systems/relief, seed assessment/disaster, seed assessment/security, seed guidance/institutional and capacity building, seed guidance/recovery, seed guidance/development

This paper covers the following topics: (1) disaster characterization, (2) farmer seed systems and disasters, (3) plant genetic resources and seed relief, (4) regulatory aspects of seed security, (5) seed stocks and seed multiplication in emergency situations, and (6) food and seed assistance in the recovery from crisis. The author stresses the importance of local varieties and crop diversity in agricultural systems of disaster-prone countries. He also suggests that strategies for the restoration of local varieties after disasters should be based on the understanding and farmers' perception of the importance of crop genetic diversity and how it is maintained in the farming systems.

54b. FAO (1998). Seed Stocks and Seed Multiplication in Emergency Situations.

Descriptors: seed assessment/seed security, seed assessment/disaster, seed systems/formal, seed systems/relief, seed guidance/relief, seed guidance/recovery, seed intervention/community

This paper describes activities pertaining to seed supplies, both in normal circumstances and in times of emergency/disaster situations. It emphasizes the role played by local seed sources, NARIs/IARCs and neighboring countries in assisting devastated areas in restoring crop seed systems. It also brings attention to the need for strong seed-related information systems to guide emergency operations (planning/implementing). Early warning systems and signs to monitor the seed situation are also discussed. The paper ends by describing a successful case study of FAO emergency seed operations in Afghanistan.

54c Gascon J. F. (1998). Les Distribution Gratuites d'Intrants Agricoles et les Programmes de Multiplication de Semences au Rwanda de 1994 a 1998.

Descriptors: Rwanda, seed systems/farmer, seed intervention/seed and tools, seed intervention/community development, seed guidance handbook/institutional capacity building

This paper describes emergency seed operations carried out in Rwanda until 1998 as a result of

the 1994 genocide. The operations were carried out using a "seeds and tools" approach. It involved many partners, such as CGIAR members, local and international NGOs and UN agencies, and was coordinated by the Ministry of Agriculture assisted by FAO. The author provides reasons for sourcing seeds from the local market and from organizations in neighboring countries with similar agroecological conditions. The experience of FAO in supporting farmers' in producing certified seed is also elaborated, and details are provided on the scale of seed distribution per crop species over the four-year period. In general, the intervention is assessed as having had a positive impact on food security, and the paper ends by sharing lessons and guidelines for carrying out seed interventions in emergencies.

54d. Grunewald F. (1998). Characterizing Disasters.

Descriptors: seed systems/farmer, seed systems/relief, seed assessment/disaster, seed assessment/security

This paper gives a typology of various disasters (manmade and natural) and the key variables for characterizing them. The ways in which disasters affect agricultural activities and biodiversity especially rural economies, farming and food security and seed systems, are also described. Final sections address issues of disaster preparedness and response, including early warning information and institutional collaboration.

54e Hines D, Wikrema S and L. van Straaten (1998). Food and Seed Assistance in Recovery from Crisis.

Descriptors: seed systems/farmer, seed systems/relief, seed assessment/disaster, seed assessment/food crops, seed guidance handbook/institutional and capacity building, seed guidance handbook/recovery, seed guidance handbook/development, seed guidance handbook/genetic diversity

This paper deals with the relationship between food and seed resources, and their joint role in relief, recovery and development. It considers the complementarity between food and seed interventions and presents an overview of the issues and measures needed for more effective joint programming. Initial sections review stakeholders' roles in recovery situations and in food and seed provisioning. Lessons learned about the operational aspects of joint programming are elaborated with examples from both a literature review and case studies of three recovery situations: Burundi, southern Sudan and northern Uganda. The paper concludes with a discussion of the constraints to and opportunities for joint programming of food and seeds.

54f. Hodgkin T. and Murthi, A. (1998). Plant Genetic Resources and Seed Relief.

Descriptors: seed guidance handbook/institutional capacity building, seed guidance handbook/recovery, seed intervention/relief, seed intervention/community development, seed assessment/disaster, seed assessment/security, seed systems/farmer, seed systems/formal, seed guidance handbook/genetic diversity

This paper highlights the main aims of the FAO Global Plan of Action for conserving and using plant genetic resources in food and agriculture. Using specific examples, it illustrates the potential value of the world's plant genetic resources in helping farmers and communities confront disasters and restore agricultural systems, as well as the "how to" in going about it. *Ex situ* conservation of some of the world's largest nationally based collections and those of CGIAR centers are described, as are general procedures for conservation of plant genetic resources and management of crop conservation information.

54g . Longley C. and Richards, P. (1998). Farmer Seed Systems and Disaster.

Descriptors: seed systems/farmer, seed systems/relief, seed assessment/disaster, seed assessment/security, seed guidance handbook/institutional and capacity building, seed guidance/genetic diversity, seed guidance handbook/development.

This paper focuses on farmer seed systems from a social and socio-technical perspective. Three major aspects of a farmer seed system are considered: (1) the nature of planting material in relation to local agricultural production, (2) mechanisms of seed acquisition and (3) seed-management strategies relating to *in situ* conservation, local crop development and farmer breeding. The paper highlights features of vulnerability and resilience in times of stress and how appropriate assistance might be provided for disaster mitigation and rehabilitation. Key variables for assessing the impact of disaster on farmer seed systems are presented, and the need for further local-level research is emphasized. The final section contains recommendations concerning the roles and responsibilities of the various agencies involved.

54h. Louwaars N. P. and Tripp, R. (1998). Regulatory Aspects of Seed Security.

Descriptors: seed assessment/seed security, seed systems/formal, seed systems/farmer, seed systems/relief.

The authors define and characterize both formal and informal seed systems. The factors predetermining crop and variety choices by farmers are explored and aspects of seed security introduced. The article also gives detailed insight into seed-regulatory issues as they touch on programs for seed security and seed emergencies in developing countries. The document ends with recommendations on issues related to formulating flexible seed regulations in seed-security programs at both the national and international levels.

54i. Matos M. E. (1998). Seed and Plant Genetic Resource Restoration in Disaster and Conflict Situations in Angola: Some Experiences from over 20 Years of Conflict Situations.

Descriptors: Angola, seed guidance handbook/genetic diversity, seed intervention/seed and tools, seed systems/farmer, seed systems/formal seed systems/relief, seed intervention/community development

The author describes seed interventions and how they were carried out in Angola using a "seed-and-tools" approach, elaborating on experiences preserving plant genetic resources in such a conflict context and depicting successful collaboration between the Agricultural Research Institute (ARI) and local farmers.

54j. Nankam C. (1998). Agricultural Recovery and Emergency Seed Restoration in the Post Disaster Situation in Angola. A Case Study: World Vision International.

Descriptors: Angola, seed intervention/seed and tools, seed systems/farmer, seed systems/relief, seed assessment/disaster, seed assessment/security, seed guidance handbook/institutional and capacity building, seed guidance/recovery, seed guidance/development

This paper discusses the initiatives of World Vision International (WVI) to rehabilitate the agricultural production of Angolan smallholder farm families after the war. It describes WVI experiences in restoring sustainable agricultural seed systems within farming communities,

based on on-station and on-farm testing of germplasm from IARCs and on an extensive system of local seed multiplication, production and delivery.

54k. Sperling L. (1998). The Effects of the Rwandan War on Crop Production, Seed Security and Varietal Security: A Comparison of Two Crops.

Descriptors: Rwanda, potato and beans, seed assessment/disaster, seed systems/formal, seed systems/farmer, seed guidance/institutional capacity building, seed guidance/genetic diversity, seed intervention/community

This article focuses on the effects of the 1994 Rwandan war on the seed security of two major crops: beans and potatoes. It reveals that bean varieties at the household, local and national levels were not much affected by the conflict because of the farmers' dependence on local seed channels (the informal seed sector). However, the potato seed system was significantly affected, both in quantity and quality, because of the farmers' dependence on formal seed systems, which ceased functioning early in the conflict. At the end of the paper, the author draws several lessons from the Rwandan case that affect broader issues of assessing seed security and crop variety, such as suggesting that equal attention should be paid to understanding and, if possible, safeguarding the seed channels that can re-supply germplasm. She also shows the importance of distinguishing between farmers' *absolute* (a true scarcity of varieties or seed in a region) versus *relative* lack of varieties or seed. Remedial action in such circumstances should focus on re-introduction, seed delivery, or interventions to build seed capacity. Relative lack, the common scenario in Rwanda, however, implies a problem with accessing seed (e.g., farmers may not have adequate funds available).

54l Temba M. M. (1998). Farmer Seed Systems.

Descriptors: seed systems/farmer seed systems/relief, seed assessment/security, seed guidance handbook/technology transfer, seed guidance handbook/genetic diversity

This paper reviews the socio-cultural and economic issues that determine the demand for seed and suggests possible organizational implications for supporting seed-supply systems to satisfy household food security. It delineates the stages needed to support local seed systems in particular, and relevant responsibilities. It also analyzes existing strengths and weaknesses of such local seed systems. A description is included of the specialized expertise and incentives of each stakeholder involved in devising strategies for strengthening local seed provisions as well as the transaction costs that characterize collaboration among different types of organizations. At the end of the paper, the author provides examples of positive interventions, which might be effective in identifying and alleviating seed-related disasters in limited-resource communities.

54m Tunwaar N. S. (1998). Emergency Seed Supply in Afghanistan.

Descriptors: Afghanistan, seed systems/farmer, seed assessment/disaster, seed intervention/seed and tools, seed guidance handbook/development, seed guidance/recovery, seed guidance/institutional and capacity building

This paper describes a case study of a seed program that was implemented in Afghanistan as a result of many years of war. It describes how the project was carried out, starting from its emergency phase through to rehabilitation. At the end of the paper, the author gives some lessons learned and recommendations based on the project experience.

55. FAO (1998). International Workshop on Seed Security for Food Security. Contributions for the Development of Seed Security Strategies in Disaster-Prone Regions. Proceedings of the workshop, Florence, Italy, 30 November to 1 December 1997. Rome: Food and Agriculture Organization of the United Nations.

This document includes the three following articles:

55a Bishaw Z. and Turner, M. (1998). A Regional Perspective on Seed Security.

Descriptors: seed systems/farmer, seed systems/formal, seed guidance handbook/institutional capacity building, seed guidance handbook/development, seed intervention/community development, seed security/seed assessment

The paper attempts to define seed security and describe the issues and strategies that are required to ensure farmers' access to seed in both normal and disaster years. It reviews policy and regulatory constraints in the formal seed sector that may hinder effective responses to emergency seed supplies at the national and regional levels, drawing on the experiences of the West Asia and North Africa (WANA) region. The contents include, among other themes:

- Aspects of food security
- Aspects of seed systems
- Aspects of seed security
- Initiatives for regional cooperation
- Role of public sector and NGOs

55b. Scowcroft W. R, Fiebig W. and Bushamuka, V. (1998). Developing Seed Security Strategies and Programmes for Food Security in Developing Countries.

Descriptors: seed assessment/seed security, seed assessment/disaster, seed systems/formal, seed systems/farmer, seed guidance/relief, seed guidance/development, seed guidance/genetic diversity, seed intervention/community

The document highlights some of the forces at work that promote seed security systems. It describes the concept of seed security and spells out possible strategies to achieve seed security goals. These strategies include protecting local diversity, strengthening the seed-supply sector at the national and regional levels, and effecting government policies that promote such security.

55c. Wobil J. (1998). Seed Security Initiatives in Southern Africa.

Descriptors: southern Africa region, seed systems/farmer, seed systems/formal, seed intervention/community development, seed intervention/formal development, seed guidance handbook/institutional capacity building

This paper describes how the use of quality seeds along with other inputs and appropriate cultural practices can increase crop production and productivity. It also suggests how to design a practical action program to entrench seed security as a permanent feature of the Southern Africa Development Community (SADC).

The paper's contents include, among other themes:

- Seed-supply systems in SADC countries
- Impact of recent climatic factors
- Challenges and issues of informal seed-sector activities in SADC countries

- Seed-security situation in SADC
- Historical background on the establishment and operation of SADC seed-security network

56. FAO, Seed Plant Genetic Resources Services (1998). Seed Production and Improvement Assessment for Sub-Saharan Africa. A working paper to stimulate debate in the upcoming meeting on Seed Policy and Programmes in Africa. Rome: Seed and Plant Genetic Resources Service, Food and Agriculture Organization of the United Nations.

Descriptors: Sub-Saharan Africa (SSA), seed systems/farmer, seed systems/formal, seed systems/relief, seed assessment/security, seed assessment/food crops, seed intervention/seed and tools, seed guidance handbook/genetic diversity, seed guidance handbook/institutional capacity building

This paper gives a detailed analysis of issues relevant to seed production and distribution. It also examines important linkages between seed-supply systems and other services available to farmers in the region. It suggests that there are alternative strategies for policymakers that can be adopted according to the prevailing conditions in each country.

Among other themes, it includes:

- SSA farming systems (agroecological and socioeconomic conditions and natural resource management)
- The status of the agricultural sector in the region
- Seed and food security and their linkages in sub-Saharan Africa
- Seed-supply systems (informal and formal and in between)
- Constraints faced in the development of the seed-supply sector and suggestions for future improvement of the seed-supply system in the region

57. Gisselquist D., Kampen J., Sykes T. J. and Gary, A. (1998). Initiatives for Sustainable Seed Systems in Africa. Washington, DC: The World Bank.

Descriptors: Sub-Saharan Africa, seed systems/farmer, seed systems/formal, seed intervention/formal development, seed guidance handbook/institutional capacity building

This World Bank policy document describes how improved seed varieties are essential inputs for increasing crop productivity. It further describes how a reliable source of competitively priced, locally adapted, improved varieties, coupled with appropriate inputs and management practices, can greatly increase and sustain agricultural efficiency, productivity and profitability. The paper provides an overview of the current status of African seed systems and challenges to sustainable seed systems in SSA. It also describes in detail the World Bank's seed initiatives in SSA, especially its strategies and building of linkages. At the end of the paper, an annex provides some guidelines for reviewing seed regulations in African countries and for advising on regulatory reforms.

Among other themes, the paper includes:

- World Bank involvement in African seed development
- Challenges to sustainable seed-system development
- Sub-Saharan African seed initiatives
- Some guidelines for reviewing seed regulations in African countries

58. Scowcroft W. R. and Scowcroft, C.E.P. (1998). Developing a Strategy for Sustainable Seed Supply Systems in Sub-Saharan Africa: Policies, Stakeholders and Coordination. Proceedings of the Regional Technical Meeting on Seed Policy and Programmes for Sub-Saharan Africa, Abidjan, Côte d'Ivoire, 23–27 November 1998. Rome: Seed and Plant Genetic Resources Service, Plant Production and Protection Division, Food And Agriculture Organization of the United Nations.

Descriptors: Sub-Saharan Africa, seed systems/farmer, seed systems/formal, seed assessment/security, seed

intervention/formal development, seed guidance handbook/institutional capacity building

This paper highlights the relationship between seed and food security in sub-Saharan Africa (SSA), a region that is plagued by natural and man-made disasters. The paper discusses the concept of seed security. The authors also describe SSA seed systems, which are comprised of formal and informal seed sectors, and their interrelationships, so as to ensure an effective strategy for seed security. Towards the end, the authors provide elaborate guidelines for establishing a sustainable seed supply in SSA.

The paper includes:

- Issues of seed security in sub-Saharan Africa
- Aspects of seed systems in sub-Saharan Africa
- Characteristics of formal and informal seed systems
- Guidelines for a sustainable seed supply
- The role of stakeholders in sustainable seed security, their interaction and coordination

59. Fisher G., Vetthuisen H. and F. Naditergaele . (1998) . Towards Seed Security: Local Farmer Varieties Stored in the World's Genebanks Could Be Used to Restore Crop Production Following Disasters. *Agriculture 21 Magazine*, Spotlight. Rome: Food and Agriculture Organization of the United Nations.

Descriptors: Rwanda, seed assessment/security, seed intervention/seed and tools

Using the case of Rwanda, which received assistance to restore seed-crop systems as result of the 1994 war and genocide, this paper briefs readers on the negative impacts of food aid combined with importation of poorly adapted crop varieties (which can lower crop yields and keep them lower for years). Towards the end of the paper, the authors briefly discuss FAO policies on aspects of sustainable use of plant genetic resources and some components of seed security. These include protection and conservation of crop genetic diversity, robust seed-supply systems and sound national and regional policies whereby the CGIAR assisted other relevant partners in carrying out emergency seed operations.

60. Anon (1997). Seed Supply. Key Sheets for Sustainable Livelihoods, Service Delivery. Overseas Development Institute (ODI).

Descriptors: seed systems/farmer, seed systems/formal, seed assessment/security

This work highlights some of the key issues related to farmers' seed demands and considerations which need to be taken into account when seed-supply programs are designed. It also explores aspects of regulatory reform in order to develop private (small and medium-sized) seed enterprises.

61. Lewis V. and Mulvany, P.M. (1997). A Typology of Community Seed Banks. Chatham, UK: Natural Resources Institute NRI). 47 pp.

This report reviews community seed banks and categorizes them into community seed exchanges, organized seed banks, seed-savers' networks and ceremonial seed banks. Each is considered with regard to the two primary objectives of seed banks — farmer seed security and biodiversity conservation — and their relative merits and problems are discussed. The report highlights those areas where our knowledge is still scanty and recommends future studies aimed at improving their applicability and relevance to the farming community. The authors depict, in particular, the issues of (a) how best to work with existing seed-banking practices and (b) how to resolve the conflicting requirements of varietal conservation and the socioeconomic needs of farmers.

Among other themes, the contents include:

- Seed characteristics
- A typology of community seed banks
- A description of the different types of seed banks

62. David S., Kasozi S. and C. Wortmann (1997). An Investigation of Alternative Bean Seed Marketing Channels in Uganda. Network on Bean Research in Africa, Occasional Publications Series No. 19. Cali, Colombia: International Center for Tropical Agriculture (CIAT). 16 pp.

Descriptors: Uganda, seed guidance handbook/technology transfer

This study describes the seed-distribution channels of newly released bean varieties, channels that are often a weak link in the technology-transfer process. It details the research conducted in Uganda to assist national commodity programs to devise cost-effective delivery systems for improved bean varieties. Action-oriented experiments tested the appropriateness of non-conventional distribution channels, namely, rural shops, a rural health clinic, women's groups and an NGO. The findings confirm the feasibility of distributing seed packets through market and non-market channels, although these must be assessed by seed suppliers in a country-specific context. The paper also offers guidelines for the distribution of new bean varieties by formal institutions.

63. ODI Seeds and Biodiversity Programme. (1997). Seed Provision during and after Emergencies. *Good Practice Review 4*. London: Overseas Development Institute Relief & Rehabilitation Network. 134 Pages.

Descriptors: Seed systems/farmer, seed assessment/disaster, seed guidance handbook/institutional capacity building

This Good Practice Review aims to bring readers up to date on the latest developments in knowledge and techniques in seed provision during and after emergencies. It targets different types of organizations involved in seed provision (UN agencies, donor agencies, NGOs, NARS and CG centers) and distinguishes among emergencies such as armed conflicts, natural disasters or—in the worst cases—a combination of these phenomena. The book focuses on emergency seed provision (ESP) and long-term seed capacity-building activities, clearly delineating where these broad thrusts are relevant. The authors also give a summary of the directions seed provision may take in the future. In its annexes, the book provides checklists of data required for planning, monitoring and evaluating ESP and capacity-building interventions. The book's contents include the following sections:

- Emergency seed provision
- Seed capacity building after emergencies
- Future directions

64. Richards P. and G. Ruivenkamp (1997). Seeds and Survival: Crop Genetic Resources in War and Reconstruction in Africa. Rome: International Plant Genetic Resources Institute (IPGRI). 61 pp.

Descriptors: West Africa, rice, seed guidance handbook/technology transfer, seed guidance handbook/genetic diversity, seed systems/relief

This book considers the impact of man-made disasters on the management of plant genetic resources in regions where crop plant genetic resources are still partly (or mainly) conserved *in situ* by small-scale agriculturalists. Using case studies of rice genetic resources in the eco-region of the Upper West Africa coastal zone, the authors deal with the following set of issues:

- War, low-intensity conflict and erosion of plant genetic resources
- Relief, rehabilitation and management of plant genetic resources
- Policy and practical options to link the fields of relief, rehabilitation and plant genetic resource management effectively

The report ends with an overview of a model scheme that seeks to effectively address some of the basic food-security needs of war-affected communities in the West African rice zone, while taking the dynamics of local conflict into account.

65. Chemonics International and USDA. (1996). Seeds for Disaster Mitigation and Recovery in the Greater Horn of Africa. Report prepared by Chemonics International and USDA Famine Mitigation Activity. USAID Contract Number DHR- 5438-Q- 00-1091-00. Washington, DC.

Descriptors: Great Horn of Africa, seed guidance handbook/institutional capacity building, seed guidance handbook/technology transfer, seed assessment/disaster, seed systems/farmer, seed systems/security

This report provides information useful to agencies planning and implementing programs dealing with seed for disaster mitigation and recovery (SDMR) for farmers who have suffered natural or complex disasters. It focuses on the Greater Horn of Africa (GHA) and describes the social and economic dynamics of seed distribution in the GHA region. It recounts recent experiences, including lessons learned while conducting SDMR, and provides guidelines for planning SDMR interventions. It also furnishes information on potential seed sources, issues of seed quality relevant to SDMR in the region, and the opportunities and constraints for matching crop varieties to agroecological contexts. Annexes provide further information on seed-production techniques and on seed sourcing for the GHA.

66. Cromwell E. (1996). Governments, Farmers and Seeds in Changing Africa. Wallingford, UK: CAB International. 192 Pages. Available from Oxford University press:

Descriptors: seed systems/farmer, seed systems/formal, seed guidance handbook/institutional capacity building, seed intervention/community development, seed guidance handbook/genetic diversity

This book presents the results of the first study to investigate the African seed sector in detail and describes the relationship between governments and farmers in sub-Saharan Africa. The book emphasizes that the need for alternatives to large-scale government seed-supply organizations has become urgent in the face of Africa's stagnating crop yields and mounting food deficits.

67. Sperling L., Scheidegger U. and Buruchara, R. (1996). Designing Seed Systems with Small Farmers: Principles Derived from Bean Research in the Great Lakes Region. ODI: AGREN network. Network Paper 60, January 1996.

Descriptors: Great Lakes Region, seed systems/formal, seed systems/farmer, seed guidance handbook/genetic diversity, seed guidance handbook/technology transfer, seed intervention/community

This publication contrasts the performance of the informal and formal bean channels in Rwanda, Burundi and the Democratic Republic of Congo. Major concerns pertaining to the multiplication and diffusion of new bean cultivars using both informal and formal channels are analyzed and relevant action research to overcome varied constraints is presented. This paper provides a synthesis of five years of research on bean seed distribution and multiplication in the Central Africa region and suggests basic principles for enhancing the development of sustainable farmer seed systems. Issues of variety diversity, reaching a range users, disease control, and speeding up diffusion are all discussed. The authors' prime focus is on new cultivars, although many of the lessons also apply to seed intervention involving farmer varieties.