sis of the choice of farm organizations, we will be able to obtain much better understanding of the future of agricultural organization in the transitional economies.

In conclusion, the authors of this volume predict that group farming will continue to be dominant farm organization in the foreseeable future in Central and Eastern Europe and the former Soviet Union. Such conclusion, however, is not convincing, because of the lack of supporting evidence. It seems to the present reviewer that there is a good possibility that individual family farming will develop, securing marketing and support services through collective organizations.

I fully recognize the limited availability of statistical data necessary for rigorous empirical analyses in the context of the transitional economies, so that it is probably unfair to criticize the lack of rigorous analyses in this volume. I would like to point out, however, that the contribution of this volume would have been much greater if the synthesis of the findings and arguments were provided in such a way as to stimulate future research in this frontier area of investigation in our profession.

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Maize Technology Development And Transfer: A GIS Application For Research Planning In Kenya
Rashid Hassan (Ed.); CAB International, Wallingford, UK. Published in association with the International Maize and Wheat Improvement Center (CIMMYT) and the Kenya Agricultural Research Institute (KARI), 1998, 230 pp., US$ 85.00 cloth, ISBN 0851-992-870

The staff of most national and international agricultural research organizations recognize the importance for research design and impact analysis of integrating the efforts of social and biological scientists. Often, however, this ‘integration’ occurs on an ad hoc basis, as the confidence of individual scientists in the work of colleagues from other disciplines grows over time, and one discipline (or scientist) ‘informs’ the other. Unfortunately, the principal purpose of economic analysis in agricultural research is sometimes narrowly identified with documenting ‘successes’ or explaining ‘failures’ after the research occurs.

A major contribution of this book is to demonstrate how technology development, impact analysis, and priority setting can be integrated analytically by developing models from the same brass tacks—a digital database incorporating spatially-referenced information on agroclimate, population density, cropping intensity, on-farm trials, and farmer surveys. The most immediate gain to this approach is the refined definition of maize breeding environments in Kenya. The analysis revealed an extensive zone of maize production (some 45% of Kenya’s maize growing area) whose agroclimatic characteristics were not adequately reflected in the targeting scheme then in use. The revised zoning explicitly identified and mapped a ‘transitional’ environment within the established mid-altitude and highland environments, thus providing breeders with more specific guidelines for addressing a significant need for new maize germplasm.

Keying data on crop production environment to information on the perceptions of farmers, farmer characteristics, input use, and management practices can result in more targeted recommendations that have immediate application to the work of a national research program. For example, most adoption studies are conceived and implemented in the absence of agroclimatic or soils information; even when this type of information is recorded by social scientists, their ‘taxonomies’ may not be conformable to those of biological scientists. The geographical information system (GIS) framework enables these variables to be moved from the unexplained (error term) to the systematically explained (explanatory factors) portion of the socioeconomic model.

While the merits and impacts of the GIS database are evident throughout the book, the description of the database itself is relatively limited. The power of a digital (GIS) database is that any number of spatially referenced, thematic layers of data (climate, soil,
production, prices, etc.) can be juxtaposed rapidly in more or less complex ways over which the analyst has control. This provides the exciting possibility of delivering not only problem-specific maps (e.g. the precise geographic fit of a new germplasm), but also a complementary set of spatially-related attribute variables. These can then be used, as was done by the authors, to support a broader range of agronomic and socioeconomic analyses.

The book reveals but does not elaborate on the apparent tension between the maize breeders’ reliance on the elevation variable and the capacity of the GIS to provide more specific information on the spatial distribution of temperature. The authors indicate at various points that reliance on the elevation proxy variable was an underlying cause of the inadequate classification of maize zones that had guided previous breeding efforts. Nevertheless, both temperature and elevation were subsequently included in the cluster analysis that underpinned the core maize zoning work.

This example illustrates that the analytical power and flexibility of GIS alone do not solve the tricky issue of selecting the most appropriate decision variables. How to juxtapose them creatively is another issue. For example, the cluster analysis was performed using 19 variables for each 5 km grid cell (6 monthly values of precipitation, maximum and minimum temperatures for the main growing season and elevation). Much weight was placed on the ability of the cluster analysis to account for within-season climate variability, but cluster analysis does not retain the temporal relationships between variables. The inclusion of a more complex variable such as length of growing period (LGP), which is constructed by explicitly modeling the temporal interaction of climate variables, may have been more exact and efficient. Using LGP would also have resolved another acknowledged problem that the selected six months did not correspond to the onset and length of the rainy season(s) in several important regions of maize production. As the authors acknowledged, they left much that still could be done with the tools they developed.

In some other cases also, the studies summarized in the chapters might have been more fully developed in and of themselves. For example, the chapter on variety adoption includes, in addition to a regression analysis based on the factors that are usually considered, a wealth of details on farmer’s ranking of traits, references to genetic diversity and variety turnover. These data are not exploited, however, in the regression model. But if there are shortcomings in individual chapters, they are largely outweighed by the benefit to applied researchers of seeing the range of analyses that stem from a single database. These include: (1) ex ante research evaluation and priority setting; (2) adoption of different types of maize material; (3) the efficiency of fertilizer use; (4) determinants of Striga infestation; and (5), the effectiveness of extension services.

This study occurs at a key juncture for maize research in Kenya and other nations in sub-Saharan Africa. As is pointed out in the book, discussions of maize research impact in many countries of sub-Saharan Africa have shifted from whether farmers adopt high-yielding germplasm to how to better target germplasm development. Those who fund research have shifted their emphasis to natural resource management, and a critical issue is how to integrate agricultural productivity and sustainable resource management into strategies for increasing national food production. Databases and methodologies of this type play an important role in this integrating process because they link productivity to the analysis of environmental and resource issues. They can be used to analyze such issues as the pace of resource degradation and changes in soil fertility, the economic incentives for maintaining agro-biodiversity, and the spatial diversity of transgenic materials. The tool developed in Kenya has also been employed to monitor poverty. Despite their potential, such structured approaches may be threatened by the current emphasis of donors on decentralized, participatory approaches to research.

The book is worthwhile reading for research planners and applied researchers particularly those whose work requires them to take a more strategic perspective because it provides an overview of the utility of an integrated approach and offers insights into the nuts and bolts of its development and application. Deeper issues that cannot be addressed in a single volume are the extent to which efforts of this type can be sustained and replicated in other national agricultural research systems. The central role of GIS capacity as both an organizational and integrating framework was perhaps under-emphasized in the volume. Some discussion of the institutional and resource implications of providing this type of capacity in other developing countries
would also have been useful. In the long run, the economic returns to investment in such databases depends very much on their upkeep and the extent to which national researchers have both the capacity and incentives to conduct research in an integrated fashion.

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Famine In Africa: Causes, Responses, and Prevention

Famine remains a disturbingly real threat in this era of plenty, perhaps nowhere more so than in Africa south of the Sahara. The devastating famines in the Sahel and the Greater Horn in the mid-1970s and again in the mid-1980s and mid-1990s induced unprecedentedly intensive research across the social sciences on the etiology of widespread severe undernutrition and private and public responses to such episodes. Amartya Sen’s 1998 Nobel Prize in economics partly reflects the quality of scholarship in this area over the last quarter century. Scholars’ understanding of the causes of and appropriate ex ante and ex post responses to famine has progressed markedly. Yet, scholars with more than just an academic interest in undernutrition and famine must confront the ongoing need to improve laypersons’ and policymakers’ understanding of concepts, models and empirical regularities now familiar to serious students of food security and famine. This new volume by von Braun, Teklu and Webb takes a significant step toward meeting that need.

The considerable virtue of this book lies in its clear presentation of core issues and principles in relatively uncomplicated language and with a wealth of well-chosen examples. It directly debunks traditional myths surrounding famine—that it largely reflects adverse climate shocks, that crop failure is the proximate cause, or that it is the natural, Malthusian result of growing human populations—using both intuitive and empirical arguments. The authors emphasize that famine reflects unsettled socio-political systems characterized by endemic poverty and risk, and that famine must be understood as the conjunctural consequence of accumulated structural weaknesses and a social or natural shock. Famines neither arise nor retreat suddenly. Concerted efforts by communities, national governments and international donors to remedy structural deficiencies ex ante, in advance of famine, are universally acknowledged to be the preferred approach, but are terribly difficult to achieve in practice.

In the main, this difficulty arises because famine typically strikes where markets, states, and production technologies are all weak. Variability in local, rain-fed agricultural production would be less of a problem if markets with ample supporting infrastructure ensured sufficient food availability in times of local shortage. Equally, segmented and thin food markets would threaten less if agricultural production technologies in use insured ample local food supply. And these two interdependent problems commonly stem in part from government errors of nonfeasance or misfeasance. Governments at war with their own people prove especially unable to guard against famine, and in some egregious cases use food as an instrument of aggression against the state’s internal enemies. One empirical weakness in this volume is that the authors understate the effect of civil conflict on the incidence, severity and duration of famine, including in places like Ethiopia, Sudan and Zimbabwe, which the authors discuss in considerable detail.

Most famine strikes in rural areas, although famine’s effects impact urban areas through migration and marketing links. Since their own labor power is often the poorest’s only asset, increased and less variable rural labor productivity is perhaps the single most important intermediate objective in the struggle to end famines. This point might have been given a bit more attention in the fourth chapter, on production failures. Likewise, the importance of child health, nutrition, and education—which raise these