on-station researchers. This can influence the speed at which research recommendations are passed on to extension. In addition, the need of some researchers to determine cause and effect relationships in on-farm trials has influenced the emphasis placed on farmer managed technology validation.

11. Successful FSR/E programs tend to have sufficient capital for operating expenses. An appropriate ratio of expenditures for staff and operations will ensure that on-farm testing is feasible. Expenditures of 90 percent of the budget for salaries will significantly limit research opportunities.
12. Expatriate technical assistants should be directly incorporated into the structure of the research organization and extension system. They should not be placed in richly endowed projects that have little resemblance to the working realities of national scientists and extension workers. Attempts should be made to work within the existing resource base.
13. Past experience with systems research can facilitate the successful integration of FSR/E programs into the national agricultural system.
14. Farmer participation in bottom-up planning and research is difficult to achieve within a research system that requires lines of authority and responsibility to be clearly defined by the central office. Adapting a flexible and dynamic bottom-up development process to a highly centralized and vertically structured research organization is a difficult task. In the same way that farmers select and modify technologies to fit their particular farming system and resource base, governments are attempting to adjust and incorporate the FSR/E process within the national agricultural structure (McArthur and Rerkasem, 1988).
15. Projects that focus on short-term technology generation and/or production objectives may impede rather than reinforce the long-term goal of integrating the concept and methods of the FSR/E process into the national agricultural system (McArthur and Rerkasem, 1988).
16. Networking is a key activity for overcoming methodological stagnation. The training aspects of meetings are extremely valuable.
17. Many FSR/E projects/programs have not effectively used social science input. Despite the importance of characterization of areas, anticipating socio-cultural problems, and the need for baseline studies to be used as comparisons for evaluations, very few social scientists are brought into FSR/E programs. This is due both to a shortage of trained personnel as well as perceptions on the part of technical scientists. Consideration should be given to how social science input can be useful to ongoing research activities after the diagnostic phase.
18. In spite of the fact that support for FSR/E programs has increased among national planners in low income countries during the 1980s, USAID and other donors began shifting their emphasis away from farming systems research. This declining support dramatically reduced the pace of FSR/E institutionalization after 1985 (Baker and Norman, 1988). Despite such reductions, numerous countries around the world have reorganized their national research organizations to accommodate FSR/E. Regional networks have been established such as the Asian Farming Systems Network and the West African Farming Systems Network to allow scientists to share experiences and learn new ideas. In addition, more than 10 universities in the U.S. have established programs focused on American agriculure (Baker and Norman, 1988).

In light of these developments, USAID played a significant role in establishing FSR/E programs around the world. As a development agency responsible for its past initiatives, backstopping the FSR/E programs in the form of support for training and networking is a necessary obligation.

Possible Trends

Baker and Norman (1988) have outlined a number of directions that the FSR/E approach has evolved toward and speculate on future directions. These include the following:

1. A narrowly focused FSR/E approach which was developed at the IARCs has given rise to a more comprehensive, longer horizon systems approach.
2. Farmer participation in FSR/E activities has increased through time.
3. The domination of FSR/E programs by donor agencies and expatriate technical assistance has given way to localized programs.
4. There is declining interest in describing farming systems, and increasing interest in pushing technologies through the testing stage and extension.
5. The evolution of FSR/E has been heavily influenced by the expanding number of academic professionals representing several disciplines. These academics have shown interest in expanding the focus of FSR/E and placed emphasis on-farmer first perspectives.
6. Bureaucrats in donor agencies and National Agricultural Ministers are questioning the viability and affordability, of decentralized, bottom-up approaches to development. They would like to see the emphasis shift to commodity focused programs that address national planning goals in high pay-off environments. ■