

# Conclusions

Farmer participatory research in agriculture is, above all, a systematic dialogue between farmers and scientists to solve agricultural problems. The methods presented in this book are tools for guiding and organizing that dialogue. As the reader has seen, this manual and the agricultural research projects it describes are structured to reflect a sequence of participatory research activities that can be summarized as follows:

- learn from farmers;
- identify technological options to test;
- design a method to test them; and
- evaluate their impact.

Participating farmers and scientists implement all these activities jointly. The section on diagnosis in this manual has dealt with the first two activities, the section on the evaluation of current and

new technologies has dealt with the third one, and the section on impact assessment has dealt with the final activity. Although this manual has explained participatory research activities in a fixed order, by now readers will understand that these activities are not steps in a strictly linear process. During research on the interventions, or even the impact assessment, new understanding can be generated and interventions can be modified or changed. Finally, readers should be reminded that they should pick and choose the methods that are relevant for their work rather than launching into some predetermined scheme. The specific methods selected should fit into a coherent plan for technology generation, rather than being one-off exercises.

# References

- Adams, A.M., T.G. Evans, R. Mohammed, and J. Farnsworth. 1997. Socioeconomic stratification by wealth ranking: Is it valid? *World Development* 25: 1165-1172.
- Ashby, J.A., T. Garcia, M. Guerrero, C.A. Quiros, J.I. Roa, and J.A. Beltran. 1995. Institutionalising farmer participation in adaptive technology testing with the CIAL. *ODI Agricultural Research and Extension Network Paper No. 57*. London, UK: Overseas Development Institute (ODI).
- Bellon, M. R. 1991. The ethnoecology of maize variety management: A case study from Mexico. *Human Ecology* 19: 389-418.
- Bellon, M.R., and J.E. Taylor. 1993. "Folk" soil taxonomy and the partial adoption of new seed varieties. *Economic Development and Cultural Change* 41: 763-786.
- Bellon, M.R., M. Smale, and F. Aragon. 1998. Identifying maize landraces for participatory breeding: Does gender make a difference? Paper presented at the workshop on Strategic Research on Gender Issues in Rice-Based Household Economy, August 1998, International Rice Research Institute, Los Baños, Philippines.
- Bellon, M.R., M. Smale, A. Aguirre, S. Taba, F. Aragón, J. Díaz, and H. Castro. 2000. *Identifying Appropriate Germplasm for Participatory Breeding: An Example from the Central Valleys of Oaxaca, Mexico*. CIMMYT Economics Working Paper 00-03. Mexico, D.F.: CIMMYT.
- Bellon, M.R., P. Gambara, T. Gatsi, T.E. Machedmedze, O. Maminimini and S.R. Waddington. 1999. *Farmers' Taxonomies as a Participatory Diagnostic Tool: Soil Fertility Management in Chihota, Zimbabwe*. CIMMYT Economics Working Paper 99-13. Mexico, D.F.: CIMMYT.
- Bellon, M.R., and J. Risopoulos. 2001. Small-scale farmers expand the benefits of improved maize germplasm: A case study from Chiapas, Mexico. *World Development* 29(5) (forthcoming).
- Bentley, J.W. 1992. The epistemology of plant protection: Honduran campesino knowledge of pests and natural enemies. In R.W. Gibson and A. Sweetmore (eds.), *Proceedings of a Seminar on Crop Protection for Resource-poor Farmers*. Chatham, UK: TCA and NRI. Pp. 107-118.
- Bentley, J.W. 1994. Facts, fantasies, and failures of farmer participatory research. *Agriculture and Human Values* 11: 140-150.
- Bentley, J.W., and G. Rodriguez. 2001. Honduran folk entomology. *Current Anthropology* (forthcoming).
- Biggs, S.D. 1989. Resource-poor farmer participation in research: A synthesis of experiences from nine national agricultural research systems. *OFCOR Comparative Study Paper No. 3*. The Hague, Netherlands: International Service for National Agricultural Research (ISNAR).
- Buckles, D. (ed) 1993. *Gorras y sombreros: Caminos hacia la colaboración entre técnicos y campesinos*. Mexico, D.F.: CIMMYT.
- Buckles, D. 1995. Velvetbean: A "new" plant with a history. *Economic Botany* 49: 13-25.
- CIMMYT. 1988. *From Agronomic Data to Farmer Recommendations: An Economics Training Manual*. Completely revised edition. Mexico, D.F.: CIMMYT.
- CIMMYT. 2000. *CIMMYT-Zimbabwe: 2000 Research Highlights*. Harare, Zimbabwe: CIMMYT.
- Cromwell, E. 1990. Seed diffusion mechanisms in small farmer communities: Lessons from Asia, Africa, and Latin America. *Network Paper 21*, Agricultural Administration (Research and Extension) Network. London, UK: Overseas Development Institute (ODI).
- Daniel, W.W. 1978. *Applied Nonparametric Statistics*. Boston, Massachusetts: Houghton Mifflin.
- Doss, C. R. 1999. *Twenty-Five Years of Research on Women Farmers in Africa: Lessons and Implications for Agricultural Research Institutions; with an Annotated Bibliography*. CIMMYT Economics Program Paper 99-02. Mexico, D.F.: CIMMYT.
- Edwards, R.J.A. 1987. Farmers' knowledge: Utilization of farmers' soil and land classification in choice and evaluation of trials. Paper presented at the workshop, Farmers and Agricultural Research: Complementary Methods, 26-31 July, Institute of Development Studies, University of Sussex, UK.
- Franzel, S.C. 1984. Modeling farmers' decisions in a farming system research exercise: The adoption of an improved maize variety in Kirinyaga District, Kenya. *Human Organization* 43: 199-207.
- Gambara, P., T. Gatsi, and O. Maminimini. 1998. Farmer participation in a soil analysis survey in Chihota Communal Area, Marondera District. Agritex and Department of Research and Specialist Services, Marondera, Zimbabwe. Unpublished report.
- Gill, G.J. 1991. *But How Does It Compare with REAL Data?* RRA Notes No. 14. London, UK: International Institute for Environment and Development (IIED).
- Gladwin, C.H. 1979. Cognitive strategies and adoption decisions: A case study of nonadoption of an agronomic recommendation. *Economic Development and Cultural Change* 28: 155-173.
- Gladwin, H., and M. Murtaugh. 1980. The attentive-preattentive distinction in agricultural decision-making. In P. F. Barlett (ed.), *Agricultural Decision Making: Anthropological Contributions to Rural Development*. New York, New York: Academic Press. Pp. 115-136.

- Grandin, B.E. 1988. *Wealth Ranking in Smallholder Communities: A Field Manual*. Rugby, UK: Intermediate Technology Publications.
- Hardaker, J.B., R.B.M. Huirne, and J.R. Anderson. 1997. *Coping with Risk in Agriculture*. Wallingford, UK: CAB International.
- Hildebrand, P.E. 1984. Modified stability analysis of farmer managed, on-farm trials. *Agronomy Journal* 76: 271-274.
- Johnson, A. 1972. Individuality and experimentation in traditional agriculture. *Human Ecology* 1: 149-59.
- Johnson, A. 1974. Ethnoecology and planting practices in a swidden agricultural system. *American Ethnologist* 1: 87-101.
- Kamangira, J.B. 1997. Assessment of soil fertility status for agroforestry interventions using conventional and participatory methods. M.S. thesis, Bunda College of Agriculture, University of Malawi.
- Kamara, A., T. Defoer, and H. De Groot. 1996. Selection of new varieties through participatory research, the case of corn in Southern Mali. *Tropicultura* 14: 100-105.
- Lamers, J.P.A., and P.R. Feil. 1995. Farmers' knowledge and management of spatial soil and crop growth variability in Niger, West Africa. *Netherlands Journal of Agricultural Science* 43: 375-389.
- Lal, R. 1987. *Tropical Ecology and Physical Edaphology*. Chichester, UK: John Wiley.
- Pingali, P., Y. Bigot, and H. Binswanger 1987. *Agricultural Mechanization and the Evolution of Farming Systems in Sub-Saharan Africa*. Baltimore, Maryland: Johns Hopkins.
- Perales, H. 1993. Experimentación campesina. In D. Buckles (ed.), *Gorras y sombreros: Caminos hacia la colaboración entre técnicos y campesinos*. Mexico, D.F.: CIMMYT. Pp. 9-16.
- Reid, G.V., M.R. Binks, and C.T. Ennew. 1991. Matching characteristics of a service to the preferences of customers. *Managerial and Decision Economics* 12: 231-240.
- Rhodes, R., and A. Bebbington. 1988. *Farmers Who Experiment: An Untapped Resource for Agricultural Development*. Lima, Peru: International Potato Center (CIP).
- Richards, P. 1986. *Coping with Hunger: Hazard and Experiment in an African Rice-Farming System*. London, UK: Allen and Unwin.
- Sandor, J.A., and L. Furbee. 1996. Indigenous knowledge and classification of soils in the Andes of Southern Peru. *Soil Science Society of America Journal* 60: 1502-1512.
- Sall, S., D. Norman, and A.M. Featherstone. 1997. Adoption of improved rice varieties in the Casamance, Senegal: Farmers' preference. Poster presented at the 23<sup>rd</sup> International Association of Agricultural Economists Conference, 10-16 August, Sacramento, California.
- Scoones, I., with C. Chibudu, S. Chikura, P. Jeranyama, D. Machaka, W. Machanja, B. Mavedzenge, B. Mombeshora, M. Mudhara, C. Mudwizo, F. Murimbarimba, and B. Zirezeza. 1996. *Hazards and Opportunities. Farming Livelihoods in Dryland Africa: Lessons from Zimbabwe*. London, UK: Zed Books and International Institute for Environment and Development (IIED).
- Smale, M., and V. Ruttan. 1997. Social capital and technical change: The *groupements* Naam of Burkina Faso. In C. Clague (ed.), *Institutions and Economic Development*. Baltimore, Maryland: Johns Hopkins. Pp. 183-200.
- Smale, M., and A. Phiri, with contributions from G.A. Chikafa, P.W. Heisey, F. Mahatta, M.N.S. Mwanyongo, H.G. Sagawa, and H.A.C. Selemani. 1998. *Institutional Change and Discontinuities in Farmers' Use of Hybrid Maize Seed and Fertilizer in Malawi: Findings from the 1996-97 CIMMYT/MoALD Survey*. Economics Working Paper 98-01. Mexico, D.F.: CIMMYT.
- Smale, M., A. Aguirre, M. Bellon, J. Mendoza, and I. Manuel Rosas. 1999. *Farmer Management of Maize Diversity in the Central Valleys of Oaxaca, Mexico: CIMMYT/INIFAP 1998 Baseline Socioeconomic Survey*. CIMMYT Economics Working Paper 99-09. Mexico, D.F.: CIMMYT.
- Smith, K., C.B. Barrett, and P.W. Box. 2000. Participatory risk mapping for targeting research and assistance: With an example from East African pastoralists. *World Development* 28(11): 1945-1959.
- Snapp, S. 1999. Mother and baby trials: A novel trial design being tried out in Malawi. *Target, The Newsletter of the Soil Fertility Research Network for Maize-Based Cropping Systems in Malawi and Zimbabwe* 17:8.
- Sperling, L., and M.E. Loevinsohn. 1993. The dynamics of adoption: Distribution and mortality of bean varieties among small farmers in Rwanda. *Agricultural Systems* 41: 441-453.
- Sperling, L., M.E. Loevinsohn, and B. Ntabomvura. 1993. Rethinking the farmer's role in plant breeding: Local bean experts and on-station selection in Rwanda. *Experimental Agriculture* 29: 509-519.
- Tripp, R. 1989. Farmer participation in agricultural research: New directions or old problems? *IDS Discussion Paper* 226.
- Tripp, R., and J. Woolley. 1989. *The Planning Stage of On-Farm Research: Identifying Factors for Experimentation*. Mexico, D.F., and Cali, Colombia: CIMMYT and Centro Internacional de Agricultura Tropical (CIAT).
- Tripp, R. 2000. The organization of farmer seed systems: Relevance for participatory plant breeding. Paper presented for the symposium on the Scientific Basis for Participatory Improvement and Conservation of Crop Genetic Resources, 8-14 October 2000, Oaxtepec, Mexico.
- Wilken, G.C. 1987. *Good Farmers: Traditional Agricultural Resource Management in Mexico and Central America*. Berkeley, California: University of California Press.