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FARMERS' PRACTICES, PROFESSIONALS AND PARTICIPATION:
CHALLENGES FOR SOIL AND WATER MANAGEMENT

Paper for the Workshop on Farmers' Practices and Soil and Water
Conservation Programmes, ICRISAT Centre, 19 - 21 June 1991

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ABSTRACT

Professionals and farmers have contrasting strengths, weaknesses, and objectives. Farmers' strengths include their local technical knowledge, their systems view, and, when secure in tenure and rights, their propensity to farsightedness. Professionals are specialists who tend to simplify and standardise; farmers are generalists who tend to complicate and diversify. Professionals seek conservation, of soil and water; farmers also seek concentration, of soil, water and nutrients, to create stable and productive microenvironments such as deposition fields.

Participation is basic to sustainable development. The approaches and methods of farmer participatory research, of participatory rural appraisal, and of group and community participation, provide starting points. When the rapport, methods and materials are right, farmers - women and men - have a greater ability than professionals have expected to map, model, quantify, rank, score, diagram, analyse, plan and implement plans. To facilitate farmers' participation, professionals become convenors, catalysts, searchers and suppliers, consultants, and tour operators, supporting and strengthening farmers' own R and D. Future sustainable livelihoods will depend on greater adaptability, dynamism and competence among farm families. To support and enhance these farmers' capabilities, the major challenges are now methodological, to develop and disseminate participatory approaches and methods a. to enable professionals to change and learn from and with farmers, b. to assure quality, and c. to scale up and spread in Government.

Changing ideas in rural development

We live in an era of change unprecedented for its speed and unpredictability: change in international relations, in political systems, in the physical environment, in social relations, in technology, in professionalism. In rural development, ideas have not just been changing, but changing faster. Twenty years ago women were not much mentioned. Only ten years ago, the environment was not high on the agenda. Now in the early 1990s we have an evolving and converging consensus on the moving frontiers of development thinking and practice. This values indigenous technology, farmers' participation in research, sustainability, and enabling and empowering rural people to gain for themselves much more of what they want and need.

Increasingly, these changing values have been expressed in the concept of sustainable livelihoods (see e.g. WCED 1987), as a central objective that can be shared by rural people and by policy-makers. Livelihoods can be defined as adequate stocks and flows of food and cash to meet basic needs, and secure means to meet contingencies without becoming permanently poorer. Sustainable refers to the maintenance or enhancement of resource productivity on a long-term basis (for a more detailed discussion see WCED 1987:3-5). Livelihoods are diverse and often complex, with non-agricultural and non-farm as well as agricultural and farm sources. Nevertheless, the great majority of rural livelihoods depend directly or indirectly upon natural resources and upon agriculture. For the sustainability of many rural livelihoods, then, land husbandry is basic.

Of all the changes of the past decade, the most hopeful has been a new professional humility. More and more, it has been recognised that "we" are much of the problem, and "they" are much of the solution. By "we" I mean educated professionals with regular employment who work on rural development (even when we have rural backgrounds or homes, and are also part-time farmers): we include academics, administrators, agricultural engineers, agriculturalists, animal scientists, medical doctors, educationalists, economists, entomologists, extensionists, foresters, hydrologists, seed-breeders, sociologists, soil scientists, teachers, and others. By "they" I mean people who make their living in rural areas, especially farmers and pastoralists, both women and men, and whether literate or illiterate. Shades and subtleties qualify each case, but for clarity I shall draw the contrasts sharply.

Professionals as problem

There have been many professional successes in rural development, but also a daunting number of failures. Again and again, critical analysis of these failures has pointed to professional and bureaucratic error. With smallholder farming, analysis of such errors on the part of "us" as trained professionals, is at first sight a startling paradox, and not what we want to recognise: for it includes ignorance, short time horizons, and scientific reductionism as a constraint.

- ignorance

Professionals have often failed to understand small farmers' priorities or why small farmers do what they do. Isolated on research stations and insulated in laboratories, they have often not known what farmers' technology was. For Africa, a detailed review of the literature recently concluded that "Our current knowledge of indigenous soil and water conservation techniques in Africa is extremely limited" (Reij 1990:15). The same has been true for India, as the novelty of the presentations at this Workshop will show. Professionals worldwide have tended not to notice, or to neglect, what farmers do and what farming systems entail; and these include farmers' actions and abilities as domesticators and

experimenters (Richards 1985, Juma 1989, Rhoades 1989), farmers' creation, protection and exploitation of microenvironments (Chambers 1990), and the diversity and complexity of small farming systems,

Worse, professionals have all too often not known that they did not know. Soil conservation programmes around the world have provided examples of arrogant ignorance and insensitivity, of imposing standardised bad practice on rationally resistant small farmers. In doing so, they have been a particular case of a general tendency. Often "we" - professionals - have been confident that our bookish education has given us superior insights, that "we" know and "they" are ignorant, that "we" should plan for "them", that our packaged technology from research stations and laboratories is superior, that those who do not adopt or who deviate from recommendations are stupid and ignorant; that, in short, we know best and they know worst. But the ignorance has often been ours.

- short time horizons.. Notwithstanding our common beliefs about ourselves, we tend to have short time horizons: economists dominated by discount rates undervalue the future; commercial interests want quick profits; and government programmes tend to be bound to achieve physical targets by the end of the financial year or of the project or plan period. None of these supports sustainability.

- scientific reductionism. Our professions simplify complex reality into its parts, assume uniformities, and control the unpredictable in order to conduct experiments, to study and to measure. Our research in consequence tends to generate standard packages suitable for uniform and controlled environments. Our centralised organisations also prefer and propagate standard solutions. But these tend to misfit the conditions and needs of complex, diverse and risk-prone agriculture, where to raise production and reduce risk farmers often seek not to simplify but to complicate, not to standardise but to diversify their farming systems.

We are further channelled by our disciplinary training, our textbooks and our lectures, into narrow ruts. "Soil and water conservation" as a label does at least bring together soil and water and the distinct professions or subprofessions (soils scientists, hydrologists, etc) which otherwise might tend to consider soil and water separately; but even so, "soil and water conservation" does not mention nutrients, let alone the many other domains and dimensions (climatic, biological, social, economic, microenvironmental, seasonal, annual-perennial etc) in farming systems, let alone sustainable livelihoods.

These are, of course, all negative points; and much positive evidence of successful programmes and interventions could be adduced (as in, for example, Conroy and Litvinoff 1988 The Greening of Aid). But the negative points have a positive other side of the coin. To the extent that there have been errors and omissions in the past, through ignorance, arrogance, short sight, reductionism, standardisation, or other causes, there are opportunities now to do better for the future. For this, the emerging consensus, is that we have to turn much more to "them", to farm families, for pointers to solutions.

Farmers as solution

"Farmers" here and throughout this paper refers to women and men, with special emphasis on those who are resource-poor. There are three respects in which farmers themselves are a key to finding solutions: their knowledge; their time horizons; and their analytical capabilities.

- knowledge. Recognition of the validity and usefulness of what has been called indigenous technical knowledge (ITK) is now so widespread that it does not need to be laboured (For classic statements see Brokensha et al 1980 and Richards 1985). Quite naturally and obviously, farmers are

experts on most aspects of their farming systems; they have to be to survive. There is now a large literature on scientific subjects prefixed with "ethno" - ethno-botany, ethno-climatology, ethno-science and so on - and most recently ethno-engineering (Reij 1990). Of course, scientists have knowledge and access which farmers lack. But in terms of their farming practices, their priorities, and their constraints, farmers have a comparative advantage: they are continuously creating and managing their farming systems; they are the experts - they have to be; they know.

- farsightedness. The stereotype of poor farmers as always living from hand to mouth, and of taking no thought for the morrow, is not borne out empirically. To be sure, those who are desperate will sacrifice the long-term for short-term survival; and those who are insecure and fear loss or displacement, may not invest for the future. Lack of soil and water conservation practices by farmers tends to be associated with absenteeism, with substantial off-farm incomes, and with lack of security - where land is rented or share-cropped (Sanghi and Kerr 1991). In contrast, there is much evidence that wherever small-farm families are present, rely largely on farming for their income, and are secure in their tenure and rights, they have a propensity to strive to take the long view and to invest for future benefits - through planting and protecting trees, through their own soil, water and nutrient conservation, harvesting and concentration (see deposition fields below), and through strategies to increase their land holdings.

- systems perspective. Perhaps the greatest error of conventional professionalism in rural development has been the failure to recognise and enhance farmers' (women's and men's) analytical abilities. We have supposed that only we can understand and prescribe for the complexities of farming systems. So we have compiled long questionnaires, conducted long interviews, extracted much data, and struggled with much analysis to try to decide what would be good for them. We have believed "them" to be incapable of systems analysis. More and more evidence suggests this belief to be false (e.g. Ashby 1989, Conway 1987, Lightfoot et al 1989, Lightfoot et al 1991). What has been missing is our ability to facilitate their analysis. If farmers analyse their farming systems they automatically screen out much redundant information which we in our ignorance would collect. Recent experience suggests that if rapport, methods and materials are right, farmers, whether literate or illiterate, have a much greater ability than outsiders have supposed to map, model, quantify, rank, score, diagram, experiment, observe, analyse, plan, implement and evaluate (Chambers 1991). What has been wrong has been our behaviour and attitudes; what has been missing has been our facilitation and our faith that they can do it, and the rapport, methods and materials needed for them to express, analyse, and enhance what they know.

The Case of Deposition Fields

The contrasting thinking, perceptions and priorities of farmers and of trained professionals can be illustrated by deposition fields in gullies (also known as gully fields and nalla fields). These artificial microenvironments are found in semiarid Ethiopia (ERCS 1988: 36-37), and also in Central America (Wilken 1987: 70-71) and India (personal observations in Karnataka, Gujarat and Bihar). To make these fields, farmers over the years build up barriers of large stones in gullies, progressively trapping erosion silt to make flat, fertile and well-watered fields, often protected by the gully walls from sun and wind. In these microenvironments, they often grow crops (including coffee and chat in Ethiopia, and rice in India) which are of higher value than the field crops on neighbouring rainfed land. The crops are also more reliable: in Gujarat, they have been found to provide the most stable source of a household's food supply (pers. comm. Parmesh Shah). The importance of these silt fields to farmers in India has been indicated by the exaggerated size and visibility they are given when farmers make physical models of their watersheds.

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An example can provide insight into the general points here (2). In the Limbu watershed near Kamalapura in Gulbarga District, Karnataka, farmers have for some decades been making deposition fields in nallas. In recent years, a Government programme constructed gully checks of a standard design and often of a standard size. Typically, these were larger and higher than farmers' silt trap barriers and had to be completed in one financial year. Farmers have not favoured this (literally high) technology since it holds up water instead of meeting their priority of forming fields for sustainable and stable production. Recently, in the lower parts of nallas, where streamflows are larger and where their normal stone wall barriers might not last through big floods, farmers have built walls with a sloping downside apron, similar to a government design, but with two differences. First, the walls are low, in order to trap silt and build up fields gradually, not high to hold water. Second, farmers have bedded long stones in the apron, sticking up like teeth. When I saw this, I thought it was to reduce downstream erosion by breaking the stream flow. A farmer gave a different reason. The purpose was to provide support for the next layer of stones to be placed on the apron. The intention was to build up the wall gradually over the years as good silt was deposited, progressively forming a larger and better field. To meet their priority of concentrating soil, water and nutrients, and higher and more stable production, farmers had innovated, developing technology to fit local conditions and investing for the sustainable long term.

Not surprisingly, deposition fields have been relatively neglected in the literature. They are easy for visitors to overlook: they are often small, and tucked away out of sight in valley bottoms; and their crops often differ from the more visible and extensive field crops higher up the slopes. They are rarely if ever found on research stations: indeed, research stations are sometimes levelled for experimental convenience, their undulations and gullies being seen as problems to eliminate rather than opportunities to exploit.

It is then perhaps less surprising that even in the authoritative and useful review Soil and water conservation in semiarid areas (Hudson 1987), deposition fields are not presented as a category. The author's aim in that review is "...to put ideas and techniques into a large array of labelled pigeonholes, from which technicians can select components to build into a project or programme" (ibid:3). The text is organised under normal professional headings concerned with soil and with water, and with conservation:

- soil conservation
- water conservation
- water harvesting and use
- applications of water conservation

Soil and water tend to be treated in a reductionist manner as separate topics, and nutrients tend not to be mentioned. When deposition behind weirs is considered, (ibid: 117-8) it is from the conventional professional angle of water storage, in sand dams, not to form fields: in this view, sand deposition is good, holding more water, while silt deposition would be bad, holding less. Silt deposition is mentioned (e.g pp 78,91) but without stressing the synergistic linkages of soil, water and nutrient concentration which farmers quite often create and exploit. So the pigeonholes labelled in a conventional professional way miss this farmers' technology.

Conservation versus Concentration

The case of deposition fields illustrates the more general contrast between professionals' objective of conservation and farmers' objective of concentration. Professionals and officials are trained to think in terms of conserving soil, of keeping it where it is; they see erosion as bad.

Farmers too often recognise erosion as bad and see the value of keeping soil where it is; but they also think in terms of concentrating soil, water and nutrients together in microenvironments (Chambers 1990; Scoones 1990). As in Junagadh District, Gujarat, they can be found investing much time and energy in "mining" soil from common land and accumulating it in their fields. As in many parts of Tamil Nadu, they can be found removing the silt fraction near tank bunds to make sandy upland soils more fertile. Such soil moving is laborious and costly. It is here that in the right conditions, erosion can be not a problem but an opportunity. Erosion can be used to move and concentrate soil at low or zero cost. It can be used to transport soil and nutrients to places where they will concentrate, and where they will increase and stabilise production.

Farmers' observed practices on these lines include:

- * ploughing up and down a slope to induce soil movement to form a sustainable and more productive terrace below
- * allowing sheet and rill erosion shift soil downslope to help flatten fields between terrace bunds
- * building up rock bunds at the low corners of fields and boundaries to trap silt
- * constructing and progressively raising rock weirs to let water through earth bunds while capturing and accumulating silt (pers comm. N.K.Sanghi),
- * (as we have seen) exploiting erosion to build up deposition fields in gullies
- * in arid areas, similarly harvesting water and silt but in larger flat areas where field crops or trees can be grown (khadins in Rajasthan (Kolarkar et al 1983; Hudson 1987:90), limans in Israel (Adato 1987))
- * in the low parts of bunded fields where silt, water and nutrients collect, growing different crops - paddy in a field of pigeonpea, groundnuts or chillies in a field of sorghum, etc

Professionals' and Farmers' Views Contrasted

As in these examples, professionals' and farmers' objectives and views often differ. Professionals (which term includes officials) are inclined to think of soil, water and nutrients separately; farmers think more of how they can be combined and contribute to more sustainable production and livelihoods. Professionals have incentives to take a short-term view: they are temporary in their tenure, being liable to transfer, and are concerned with achieving targets within the financial year; in contrast, farm families largely dependent on agriculture, and with secure tenure and rights, take a longer-term view: they usually expect to stay in the same place, and seek permanently to improve their resources and livelihoods. Professionals often work to standard blueprints, as one-off designs; in contrast, farmers build up progressively, adapting and modifying according to changing conditions and experience gained.

Some of these contrasts can be presented diagrammatically:

Table 2 Commonly Contrasting Ways of Thinking of Conventional Soil and Water Conservation Professionals and of Small Farmers

	Soil and Water Conservation Professionals	Small Farmers
Major aim	Achieve physical targets for work done	Gain livelihoods
Mode of analysis	Reductionist	Systems
Time horizon	Shorter term. Financial year targets. Tenure often less secure (staff liable to transfers)	Longer term. Enhancing production. Tenure often more secure
Strategy emphasises	Conservation of soil (keeping it where it is) Harvesting of water	Concentration (of soil, water and nutrients together) and creation of microenvironments

None of this is to argue that farmers are always right, and officials and professionals always wrong; nor that officials and professionals always fail to understand farmers' priorities. Those would be absurd overstatements. The commonsense point is, rather, that professionals are trained and conditioned to perceive soil, water, nutrients, agriculture and priorities in ways which differ from those of farmers. Recognising this is fundamental to the case for participation. For unless farmers' priorities are being met, they are unlikely to participate; and unless they participate, soil, water and nutrient conservation and concentration are unlikely to be sustainable.

Participation as underdeveloped technology

Participation is changing. In an earlier phase it often took the form of a survey which led to planning by outsiders. The plan was then taken to farmers who were told "This is what we have planned for you" and asked "Have you any objections?". But in the past five years the frontiers of participation have been on the move. Farmers have shown they can often do better than us many of the activities that we earlier thought only we could do. On practical as well as ethical grounds, their priorities are seen to deserve primacy, and conservation is to be made "farmer friendly" (Douglas 1991b). In rural research, some are talking of a coming revolution through participatory methods (e.g. Rhoades 1990). Approaches and methods are being rapidly invented and evolved, but are still underdeveloped, leaving scope for exploration.

Three main streams of innovation have been farmer participatory research, participatory rural appraisal, and community participation.

i. farmer participatory research

There are many labels for farmers' participation in R and D. An early distinction was made between informal (by farmer) and formal (by scientist) research (Biggs 1980). This was followed by farmer-back-to-farmer (Rhoades and Booth 1982), farmer participatory research (Amanor 1988; Farrington and Martin 1988), participatory technology development (ILEIA 1989), and farmer first (Lightfoot 1989). The labels do not matter: the substance does.

The essence of farmer participatory research and of the farmer first approach is a shift from the transfer of technology (TOT) model. In TOT, technology is generated by professionals on research stations and in laboratories and then transferred as packages to farmers; farmers are taught and trained. In the farmer first (FF) model, teaching and training does still have some part to play, as with simple designs for farmers' own experiments (Bunch 1985: 138-146), or with appropriate technology such as the water tube level in Burkina Faso or the line level in Kenya (Hudson 1987:1)). But central to FF are farmers' own analysis, design,

observation and evaluation, conducted by them themselves. The roles of scientists and extensionists then change. They become not transferers of technology, but convenors of farmers' groups, catalysts and facilitators for farmers' discussions and analysis, searchers for and suppliers of what farmers want and need, consultants for farmers' experiments, and tour operators who arrange visits for farmers to learn from each other. The main aim is not to transfer technology but to enhance farmers' competence.

In FF, the standard package of practices of TOT is replaced by a basket of choices from which farmers can select for their diverse and complex farming conditions. In the words of a recent soil research bulletin (IBSRAM 1990:8) "The interest of testing different systems is to give options for farmers to choose from, depending on their environmental, economic and social conditions". A function of the formal research system is, then, to help generate choices for farmers. At the same time, as in the case of deposition fields, farmers continuously experiment, innovate and adapt technology themselves, doing their own R and D.

ii. participatory rural appraisal

Participatory rural appraisal (PRA) is a recent development, an outgrowth from rapid rural appraisal (RRA) (for which see Khon Kaen 1987). It has been pioneered especially in Kenya (Rocheleau, Weber and Field-Juma 1988:43-67; Kabutha and Ford 1988; NES et al 1990) and in India (McCracken 1988; MYRADA 1990 -). More and more, the activities which were earlier the domain of outsiders are undertaken by rural people. A striking example is participatory mapping and modelling (Mascarenhas and Prem Kumar 1991). Earlier, sketch maps were made by outsiders as part of RRA. Now, the outsiders' role is to facilitate mapping by villagers. Done well, this reveals mental maps far more detailed, accurate and revealing than anything an outsider could quickly achieve. In watershed programmes, participatory mapping can provide farmers with a tool for planning and for monitoring progress (Shah 1991). Farmers have also shown a remarkable capacity for analytical diagramming (seasonal analysis, matrix ranking and scoring, systems and causal diagramming) (Conway 1989; Lightfoot et al 1989, 1991; McCracken et al 1991).

Several NGOs in India have been innovating by encouraging and enabling farmers and villagers to do more and more. They include Action Aid (Karnataka and elsewhere), Activists for Social Alternatives (Tiruchirapalli), the Aga Khan Rural Support Programme (Gujarat), the HIDA Social Forestry Network (Andhra Pradesh), Krishi Gram Vikas Kendra (Ranchi), MYRADA (Karnataka, Andhra Pradesh and Tamil Nadu), SPEECH (Madurai), and Youth for Action (Hyderabad). In watershed management in its fully participatory form, farmers now undertake their own transects, make their own maps and coloured models of their watersheds, and do their own analysis, planning, technology adaptation and development, and monitoring of progress. Just how far this process can go remains to be seen but indications to date are that participatory transects and mapping are a key starting point, empowering farmers through their own appraisal and knowledge right at the start. When they own the maps and the plans, they are then in a strong position to control and own the later process.

iii. group and community participation

The third stream of innovation is group and community participation. There are many traditions of community organisation and participation in resource management. The old experience with community development is relevant, as well as new approaches and techniques developed in many countries, including Australia (Chamala and Mortiss 1990). What is perhaps most new is the urgency and scope for group and community action for sustainable development and livelihoods. Any list of activities for community participation can include:

- managing resources of common interest: This includes the management of common property resources such as common lands, forests, rivers, and

bodies of water; the control of pests and diseases; and soil and water management where interests are linked, as so often in watersheds. Part of new thinking is that conservation rules and regulations should be developed and enforced by the communities in which they are to be applied (Douglas 1991a)

- managing funds and services: managing funds raised locally, or provided by government or NGOs, and providing services such as credit.

- trials, experiments and dissemination: selecting farmers for trials and as experimenters, monitoring and learning from their experiences, visiting innovators, and spreading good technology.

- acting as a pressure group: making demands on government agencies, including demands on extension to search for needed information and genetic material, and on research for work on farmers' priority problems and opportunities.

Participation and Sustainable Livelihoods

These three streams - farmer participatory research/farmer first, participatory rural appraisal, and community participation - are braided, interweaving and constantly changing. They mesh with a new paradigm for agricultural research and extension in which roles are reversed, in which farmers do more of the survey, mapping, data collection and analysis, make requests and demands, and then experiment with their own informal R and D to develop technology with a local fit.

Much of the significance of participatory approaches lies in their potential for generating sustainable livelihoods for future rural populations. Four aspects stand out.

The first concerns the intensification and complication of farming systems. The association of agricultural technology with population density is strong (Eoserup 1965). In general, as population to land ratios rise, and as farm sizes decline, so farming systems are intensified and complicated. New enterprises are added, and internal linkages multiplied, both to increase production and to reduce risk. Farmers' comparative advantage in analysis compared with scientists' rises with the complexity of the system. In the words of Sumberg and Okali (1989:112):

"...the farmers' role in technology development becomes more critical and increasingly cost-effective as the proposed technology becomes more multifaceted and complex...As we look to...more complex technologies such as agroforestry systems which can potentially produce crops, wood, fruit and fodder, it is obvious that a traditional experimental approach seeking to identify management treatments which maximize an output becomes unwieldy and unrealistic. It is the farmers themselves who hold the keys for developing, evaluating and validating these systems."

Thus the denser the population and the greater the intensification and complication, the more important participation becomes.

The second aspect concerns farmers' priorities. It is farmers who are the experts on their priorities, which can differ from those of scientists or officials (see e.g. Ashby et al 1989; Pimbert 1991). Unless farmers can express these, and through participation make demands on research and extension, the choices of technology provided to them are liable to be inappropriate or harmful.

The third aspect concerns security and the long term. Secure land and tree tenure, and access to other resources, can be preconditions for farmers taking a long view, and investing for sustainable future livelihoods. A virtuous circle can occur: the more secure they feel, the more they participate and the more labour they are willing to invest for

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the future; and the more they participate and invest, the more secure they are likely to feel, and the more they take a long-term view.

The fourth aspect concerns dynamism and competence. Conditions are never static. Small farmers face a changing and unpredictable physical, social and economic environment. This includes climate, seasons, pests and diseases, household labour availability and market access and prices. To gain a sustainable livelihood, a farm household has to be alert, adaptable, and innovative. Participation here can enhance dynamism and competence, through individual and community action, communications and information, and participatory analysis.

Challenges for the 1990s: Methods, Quality and Scale

For the spread of these participatory approaches in the 1990s, three challenges stand out.

The first concerns methods. The paradox is that the frontier in soil and water conservation is not to be found where we look for it, in the small farm, or in the farm family, but in ourselves, the trained professionals. Our ignorance, short time horizons, reductionism, and power are much of the problem; and farmers' knowledge, long-term investments, systems thinking, and enhanced competence and participation are much of the solution. But one must not fall over backwards. It is not a question of either/or, of either professionals' knowledge and competence, or of farmers' knowledge and competence, but of a balanced mix. In the past the balance has overbalanced on the professionals' side. An optimal balance can only be achieved now by weighing heavily on the farmers' side; and as ~~and when~~ farming systems intensify, diversify and complicate, the optimal balance will shift even further and further towards the knowledge and analysis of farmers.

For this balance, and to enhance the competence of farmers, recent experience points to the primacy of outsiders' behaviour and attitudes. Training has a part to play here. There will be lessons to learn from approaches and innovations in different countries (for a Kenya example, see e.g. Pretty 1990). Reversals of learning will be critical. Much of the supposed ignorance and incapacity of rural people has been an artifact of dominant behaviour by professionals, not just in one country, not just in the South, but over the whole globe. Farmers' own technology and R and D have been largely overlooked. The transfer of technology has been one way, centre-outwards and top-down. "Extension" has prevented empowerment. By dominating not empowering, by lecturing not listening, by standing not sitting, by "holding the stick" not handing it over, outsiders have failed to enable rural people to express and enhance their knowledge, and to do their own analysis. For sustainable small farming systems in general, and for soil, water and nutrient husbandry in particular, new physical and biological technologies are surely needed. But the technology most needed now is not physical or biological but methodological. It concerns behaviour and attitudes. It is how to help professionals change.

The second challenge is quality. Quality assurance, as an approach and methods spread, can be sought in two main ways: through rules; and through self awareness.

Rules are the normal reflex in bureaucracies. Before launching a programme, a manual is drawn up detailing the steps to be taken. If the first draft is short, subsequent drafts become longer. The effect can be to standardise and stultify. Some large manuals of latter-day farming systems research intimidate and inhibit. They are liable to cramp creativity and constrain learning to confined channels. In the words of a leading business management analyst in the USA "Sad to say, rule books are only referred to in order to slow action, defend turf and assign blame" (Peters 1987:378-9). The danger is that long manuals and many rules and regulations contribute to a tyranny of imposed standard technologies

rather than the liberation of open-ended participation and choice, supporting farmers' priorities and strengthening and spreading their technologies. The question remains whether simple rules can be so designed and used that they legitimate, enable, and even enforce participatory approaches.

Self-awareness is an alternative or complementary means of assuring quality. The convergence here between advice to American business managers, and evolving NGO practice with PRA in India, is striking (See Peters 1987). The one sentence manual of the American Company Nordstrom "Use your own best judgement at all times" has been applied in India, and embodied in the KGVK training manual which prints this sentence on the first page, leaving all other pages blank. Responsibility then rests not in the written word, but in the individual. Quality assurance through critical self-awareness, through embracing and learning from error, and through continuous adaptation and invention of methods, is one way forward.

The third challenge is scale. The soil and water conservation programmes, and watershed programmes, of Government are far larger than those of NGOs, and are the main chance. There are obvious tensions here between bureaucratic standardisation and local diversity; between imposed blueprint and open-ended process; between scale and fit. These difficulties appear serious but not insuperable. The greatest obstacle, however, may lie in practical political economy, in who gains and who loses from change. In an analysis of gainers and losers from 20 recommended measures for lift irrigation and for trees, field level officials stand to gain from only 3 (Chambers, Saxena and Shah 1989:232). In many cases, they stand to lose from unofficial income, or "rents", foregone. With soil and water conservation, and with watershed management, if field level officials stand to lose income from participatory approaches, they are unlikely to implement them unless there are strong countervailing forces. For scaling up through Government, the challenge is to find combinations of methods, rules, self-awareness and rewards which encourage and induce field-level officials to behave differently, to appreciate farmers' practices and priorities and enable them to gain more of what they want and need. The great question for the 1990s and beyond is whether and how such combinations can be evolved, improved and spread.

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FOOTNOTES

1. Part of this paper is derived from "Sustainable Small Farm Development: Frontiers in Participation", paper for the 1991 Workshop on Environment and the Poor: Soil and Water Management for Sustainable Smallholder Development, Arusha, Tanzania and Nyeri, Kenya, 2 to 11 June 1991. That paper has been adapted, updated and added to for this Workshop.
2. This paragraph is subject to confirmation or qualification by the farmers and others with relevant local knowledge present at this Workshop. The details reported are based only on a single visit and brief interview.

REFERENCES

- Adato, Michelle 1987 Runoff Agriculture for Arid and Semiarid Lands, Desert Runoff Farms Unit, Hebrew University of Jerusalem
- Amanor, Kojo 1989 340 Abstracts on Farmer Participatory Research, Network Paper 5, Agricultural Administration (Research and Extension) Network, Overseas Development Institute, London NW1 4NS
- Ashby, Jacqueline A, Carlos A Quiros and Yolanda M Rivers 1989 "Farmer participation in technology development: work with crop varieties", in Chambers, Pacey and Thrupp eds Farmer First pp 115 - 122
- Biggs, S.D. 1980 "Informal R and D" Ceres, 13 (4), pp 23-26
- Boserup, Ester 1965 The Conditions of Agricultural Growth: the economics of agrarian change under population pressure, Allen and Unwin, London
- Brokensha, David, Dennis Warren and Oswald Werner 1980 Indigenous Knowledge Systems and Development, University Press of America, Lanham, Maryland
- Bunch, Roland 1985 Two Ears of Corn: a guide to people centered agricultural improvement, World Neighbors, 5116 North Portland, Oklahoma City, Oklahoma 73112,
- Chamala, Shankariah and Peter D. Mortiss 1990 Working Together for Land Care: group management skills and strategies, Australian Academic Press, Brisbane
- Chambers, Robert, Arnold Pacey and Lori Ann Thrupp, eds, 1989 Farmer First: farmer innovation and agricultural research, Intermediate Technology Publications, 103 Southampton Row, London
- Chambers, Robert 1990 Microenvironments Unobserved, Gatekeeper Series No 22, IIED
- Chambers, Robert 1991 "Rapid and Participatory Rural Appraisal: past, present and future, paper for the Regional Workshop on Participatory Rural Appraisal, BAIF Development Research Foundation, Kamdhenu, Senapati Bapat Marg, Pune 411 016, 10 - 11 May 1991
- Conroy, Czech and Miles Litvinoff 1988 The Greening of Aid: sustainable livelihoods in practice, Earthscan Publications, London
- Conway, Gordon R. 1989 "Diagrams for Farmers", in Chambers, Pacey and Thrupp, eds, Farmer First pp 77-86
- Douglas, Malcolm 1991a "The Development of Conservation Farming Systems: Some policy and institutional considerations", paper for the International Workshop on Conservation Policies for Sustainable Hillside Farming, Solo, Indonesia 11 - 15 March 1991

Douglas, Malcolm, 1991b "Making Conservation 'Farmer Friendly'", paper for the WASWC/IIED Workshop on Soil and Water Management for Sustainable Smallholder Development, Tanzania and Kenya, 2 - 11 June 1991

ERCS 1988 Rapid Rural Appraisal: a closer look at rural life in Wollo, Ethiopian Red Cross Society, Addis Ababa and International Institute for Environment and Development, London

Farrington, John and Adrienne Martin 1988 Farmer Participation in Agricultural Research: a review of concepts and practices, AAU Occasional Paper 9, Overseas Development Institute, London NW1 4NS

Hudson, Norman W. 1987 Soil and water conservation in semi-arid areas, FAO Soils Bulletin 57, FAO, Rome

Hudson, Norman 1988 "Soil Conservation Programme, Kenya", in Conroy and Litvinoff eds The Greening of Aid, pp 64-68

IBSRAM 1990 IBSRAM Newsletter, International Board for Soil Research and Management, Number 17, September

ILEIA 1989 Participatory Technology Development in Sustainable Agriculture, Information centre for Low External Input and Sustainable Agriculture, P.O.Box 64, 3830 AB Leusden, Netherlands

Juma, Calestous 1989 Biological Diversity and Innovation: conserving and utilizing genetic resources in Kenya, African Centre for Technology Studies, P.O.Box 45917, Nairobi

Kabutha, Charity and Richard Ford 1988 "Using RRA to formulate a village resources management plan, Mbusanyi, Kenya", RRA Notes, 2, IIED, London

Kolarkar, A.S., K.N.K.Murthy and N. Singh 1983 "'Khadin' - A method of harvesting water on agriculture in the Thar Desert", Journal of Arid Environments, vol 6, pp 59-66

Khon Kaen University 1987 Proceedings of the 1985 International Conference on Rapid Rural Appraisal, Rural Systems Research and Farming Systems Research Projects, Khon Kaen, Thailand

Lightfoot, C., D. de Guia Jr, A. Aliman and F. Ocado 1989 "Systems diagrams to help farmers decide in on-farm research", in Chambers, Pacey and Thrupp eds Farmer First pp 93-100

Lightfoot, Clive, Shelley Feldman and Zainul Abedin 1991 Households, Agroecosystems and Rural Resources Management, (Exercises for broadening the concepts of gender and farming systems), (DRAFT), Bangladesh Agricultural Research Institute (BARI), Joydebpur, Bangladesh, and International Center for Living Aquatic Resources Management (ICLARM), Manila, Philippines

Mascarenhas, James and P.D.Prem Kumar 1991 Participatory Mapping and Modelling: a Users Note, mimeo, MYRADA, Kamalapur, Gulbarga District, Karnataka, India

McCracken, Jennifer A. 1988 Participatory Rapid Rural Appraisal in Gujarat: a trial model for the Aqa Khan Rural Support Programme (India), IIED, 3 Endsleigh Street, London WC1H 0DD, November

McCracken, Jennifer A, Ian Scoones, Jules N Pretty and Irene Guijt 1991 Diagrams for Participatory Analysis and Learning, typescript draft, IIED, 11 February 1991

MYRADA 1990- PRA/PALM Series 1-, MYRADA, 2 Service Road, Domlur Layout, Bangalore 560 071, India

NES et al 1990 Participatory Rural Appraisal Handbook: conducting PRAs in Kenya, National Environment Secretariat, Kenya, Egerton University, Kenya, Clark University, USA, and World Resources Institute, USA

Facey, Arnold and Adrian Cullis 1986 Rainwater Harvesting: the collection of rainfall and runoff in rural areas, Intermediate Technology Publications, London

Peters, Tom 1987 Thriving on Chaos: Handbook for a Management Revolution, Alfred Knopf (also Macmillan, London, and Pan Books, London)

Pimbert, Michel 1991 "Farmer Participation in On-farm Varietal Trials: multilocal testing under resource-poor conditions", RRA Notes 10, pp 3 - 8

Pretty, Jules N. 1990 Rapid Catchment Analysis for Extension Agents: Notes on the 1990 Kericho Training Workshop for the Ministry of Agriculture, Kenya, IIED, 3 Endsleigh Street, London, November

Reij, Chris 1990 Indigenous Soil and Water Conservation in Africa: an assessment of current knowledge, paper to the workshop on Conservation in Africa: indigenous knowledge and conservation strategies, Harare, December 2 - 7 1990

Rhoades, Robert and Robert Booth 1982 "Farmer-back-to-farmer: a model for generating acceptable agricultural technology", Agricultural Administration vol 11, pp 127 - 137

Rhoades, Robert 1989 "The role of farmers in the creation of agricultural technology", in Chambers, Facey and Thrupp eds, Farmer First, pp 3-9

Rhoades, Robert 1990 The Coming Revolution in Methods for Rural Development Research, User's Perspective Network (UPWARD). International Potato Center, Box 933, Manila

Richards, Paul 1985 Indigenous Agricultural Revolution: ecology and food production in West Africa, Hutchinson, London

Rocheleau, Dianne, Fred Weber and Alison Field-Juma 1988 Agroforestry in Dryland Africa, ICRAF, P.O.Box 30677, Nairobi

Sanghi, N.K. and John Kerr 1991 "The Logic of Indigenous and Recommended Technologies", paper for the Workshop on Farmers' Practices and Soil and Water Conservation Programmes, ICRISAT Centre, 19-21 June 1991

Scoones, Ian 1990 Wetlands in Drylands: the agroecology of savanna systems in Africa. Part 1, IIED, London

Shah, Parmesh 1991 Notes on Applications of PRA [Participatory Rural Appraisal] to Watershed Planning, mimeo, Aga Khan Rural Support Programme, Choice Premises, Swastik Crossroads, Navrangpura, Ahmedabad 380 089, India

Srinivasan, Lyra 1990 Tools for Community Participation: a manual for training trainers in participatory techniques, PROWESS/UNDP, 304 East 45 street, New York 10017

WCED 1987 Food 2000: global policies for sustainable agriculture, a Report of the Advisory Panel on Food Security, Agriculture, Forestry and Environment to the World Commission on Environment and Development, ZED Books Ltd, London and New Jersey

WDR 1990 World Development Report 1990, Oxford University press for the World Bank

14.

Wilken, Gene C. 1987 Good Farmers: traditional agricultural resource management in Mexico and Central America. University of California Press, Berkeley and Los Angeles.

Appendix: A Note on Free Sources

There is now a rapidly growing literature, most of it available free, which reports on and explores participatory approaches and methods. Some sources known or believed to be free include:

CIKARD News Center for Indigenous Knowledge for Agriculture and Rural Development, Iowa State University, 319 Curtiss Hall, Ames IA 50011, USA

ILEIA Newsletter Information Centre for Sustainable and Low External Input Agriculture, PO Box 64, 3830 AB Leusden, Netherlands

ODI Network Papers Overseas Development Institute, Regent's College Regent's Park, London NW1 4NS, UK (4 networks covering 1. agriculture (research and extension), 2. irrigation management, 3. pastoral development, and 4. social forestry)

FRA/PALM Series MYRADA, 2 Service Road, Domlur Layout, Bangalore 560 071, India (PALM = participatory learning methods)

RRA Notes IIED, 3 Endsleigh Street, London WC1H 0DD, UK

Various manuals have been produced (e.g. Srinivasan 1990), and others are in preparation, including a set of six by IIED which promise to be useful sources. But a danger in the explosion of interest and documentation is over-formalisation and consequent inhibition, a sense that one has to learn how to apply a method "correctly". Manuals can provide ideas, and a menu. But the "cooking" best takes a different, relaxed, creative, inventive and adaptive form each time.

Dr John Kerr
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7 August 1991

Dear John

Amendments to Workshop Paper - Farmers' Practices, Professionals and
Participation: Challenges for Soil and Water Management

I hope it is not too late to make a few minor changes:

A. page 4 para 1 about line 15

Delete from "When I saw this....

and substitute

Reportedly, they give three reasons for this practice: it consolidates the other stones: it breaks the streamflow and so reduces erosion immediately downstream; and, significantly, it provides support for the next layer of stones to be placed on the apron. This third reason indicates the intention to build up the wall gradually over the years..... (continues as in original)

B. page 4 para 2 insert reference as follows

"..have been relatively neglected in the literature (but see Chleq and Dupriez 1988: 42-3 and 55-8). they are easy for visitors to overlook...

C. Delete footnote 2, and also the (2) at the top of page 4

D. To the references add:

Chleq, Jean-Louis and Hugues Dupriez 1988 Vanishing Land and Water: Soil and water conservation in dry lands, translated by Bridaine O'Meara, Macmillan Publishers, London and Basingstoke in association with Terres et Vie

I hope this is not too late.

Yours sincerely,

Robert Chambers