

5. References

- Afolabi-Falola, J., Cline-Cole, R., Main, H.A.C., Mortimore, M., Nichol, J.E., Patrick, S. & O'Reilly, F.D. 1984. Fuelwood in contemporary Kano. 27th Annual Conference of the Nigerian Geographical Association, 25-27 March 1984, Nsukka.
- Allan, W. 1965. The African husbandman. Edinburgh: Oliver & Boyd.
- Altieri, M. 1985. Biological diversity necessary for pest management. *Ecoforum* 10 (4): 1,4.
- Balasubramanian, V. & Egli, A. 1986. The role of agroforestry in the farming systems in Rwanda with special reference to the Bugesera-Gisaka-Migongo (BGM) region. *Agroforestry Systems* 4: 271-289.
- Becker, B. 1984. Wildpflanzen in der Ernährung der Bevölkerung afrikanischer Trokengebiete: Drei Fallstudien aus Kenia und Senegal. Göttinger Beiträge zur Land- und Forstwirtschaft in den Tropen und Subtropen, Vol. 6. Universität Göttingen.
- Becker, H. 1985. Die Bedeutung der Partizipation im Rahmen grundbedürfnisorientierter ländlicher Entwicklung in afrikanischer Kleinbauerngesellschaften. (unpublished)
- Becker, H. 1986. Planung und Steuerung organisatorischer und technischer Innovationen im ländlichen Raum. In: *Schriften der Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaus e.V.*, Bd. 22, Münster.
- Beets, W.C. 1982. Multiple cropping and tropical farming systems. Boulder, Colorado: Westview.
- Beyer, J.L. 1980. Africa. In: G.A.Klee (ed), *World Systems of Traditional Resource Management*, London, Arnold, pp. 5-37.
- Biggs, S. 1980. Informal R & D. *Ceres* 76: 23-26.
- von Blanckenburg, P. 1982. Aktivierung der bäuerlichen Landwirtschaft durch Bildung und Beratung. In: *Handbuch der Landwirtschaft und Ernährung in den Entwicklungsländern*, Stuttgart, Ulmer, 2nd ed, Vol. 1, pp. 348 ff.
- Bourn, D. & Milligan, K. 1983. The dynamics of cattle distribution in the Nigerian sub-humid zone. Kaduna: International Livestock Centre for Africa.
- Brinkmann, T. 1914. Die Ökonomik des landwirtschaftlichen Betriebes. Reprinted in: *Grundriß der Sozialökonomik VII* (1922).
- Budowski, G. 1983. An attempt to quantify some current agroforestry practices in Costa Rica. In: P.A. Huxley (ed), *Plant research and agroforestry*, Nairobi, ICRAF, pp. 43-60.
- Bunch, R. 1985. Two ears of corn: A guide to people-centered agricultural improvement. Oklahoma City: World Neighbours.
- Carlier, H. & Carlier, A. 1985. People's knowledge is people's power. *ILEIA Newsletter* 4: 8-10.
- Chambers, R. & Jiggins, J. 1986. Agricultural research for resource poor farmers: a parsimonious paradigm. IDS Discussion Paper 220. Brighton: IDS.
- Chambers, R. & Longhurst, R. 1986. Trees, seasons and the poor. *IDS Bulletin* 17 (3): 44-50.
- Chavangi, N.A. & Ngugi, A.W. 1987. Innovatory participation in programme design: tree planting for increased fuelwood supply for rural households in Kenya. *IDS Workshop on Farmers and Agricultural Research: Complementary Methods*, 26-31 July 1987, University of Sussex, Brighton.
- Conway, G.R., Husain, T., Alam, Z. & Alim Mian, M. 1987. Rapid Rural Appraisal for sustainable development: experiences from the northern areas of Pakistan. Conference on Sustainable Development, 28-30 April 1987, International Institute for Environment and Development, London.
- Czygan, F.C. 1971. Der Stickstoff-Kreislauf in der Natur. *Biologie in unserer Zeit* 1: 101-110.
- Egger, K. 1979. Ökologie als Produktivkraft: Erfahrungen bei "Ecofarming" in Ostafrika. In: *Eisenhans, H. (ed), Agrarreform in der Dritten Welt*, Frankfurt, Campus, pp. 217-255.
- Farrington, J. & Martin, A. 1987. Farmer participatory research: a review of concepts and practices. *Agricultural Administration Network Discussion Paper* 19. London: ODI.
- Fernandes, E.C.M., Oktingati, A. & Maghembe, J. 1984. The Chagga homegardens: a multistoried agroforestry cropping system on Mount Kilimanjaro (Northern Tanzania). *Agroforestry Systems* 2: 73-86.
- Fernandez, M.E. 1986. Participatory action-research and the farming systems approach with highland peasants. *Small Ruminant Collaborative Research Support Program, Technical Report No. 75*. University of Missouri-Columbia.
- Fonzen, P.F. & Oberholzer, E. 1984. Use of multipurpose trees in hill farming systems in Western Nepal. *Agroforestry Systems* 2: 187-197.
- Freeman, P.H. & Fricke, T.B. 1980. Ecologically oriented agriculture. Unpublished report to The World Bank. (Excerpts published in: *Traditional agriculture in Sahella: a successful way to live. The Ecologist* 13: 208-212.)

- Glover, N. & Beer, J. 1986. Nutrient cycling in two traditional Central American agroforestry systems. *Agroforestry Systems* 4: 77-87.
- GTZ. 1981. Landwirtschaftliche Beratung. Handbuchreihe Ländliche Entwicklung. Eschborn: GTZ.
- GTZ. 1983. Ländliche Regionalentwicklung. Schriftenreihe der GTZ, No. 128. Eschborn: GTZ.
- de Haen, H. 1982. Theorien ländlicher Entwicklung. In: *Handbuch der Landwirtschaft und Ernährung in den Entwicklungsländern*, Stuttgart, Ulmer, 2nd ed, Vol. 1, pp. 38 ff.
- Harrison, P. 1987. *The greening of Africa: Breaking through in the battle for land and food*. London: Paladin/Earthscan.
- Hartmann, M. 1973. Die methodischen Grundlagen der Biologie. *Ann. Philos.* 11: 235-261; quoted from H. Ellenberg (ed), *Ökosystemforschung*, Berlin & Heidelberg, Springer.
- Hatch, J. 1976. *The corn farmers of Motupe: a study of traditional farming practices in northern coastal Peru*. Land Tenure Center Monograph 1. Madison: University of Wisconsin.
- ILEIA. 1985. The possible role of trees in farming systems of the tropics. *ILEIA Newsletter* 3: 1, 3-4.
- Izard, T.A. 1926. Report on Mambila area. Adamawa Provincial Archives, Nigeria.
- Jama, B. 1987. Learning from the farmer: What is the role of agricultural research in Kenya? *IDS Workshop on Farmers and Agricultural Research: Complementary Methods*, 26-31 July 1987, University of Sussex, Brighton.
- Johnson, A.W. 1972. Individuality and experimentation in traditional agriculture. *Human Ecology* 1 (2): 149-159.
- Kotschi, J. 1981. Ökologischer Landbau als ein Instrument landwirtschaftlicher Entwicklung. *Entwicklung und ländlicher Raum* 15 (5): 7-10.
- Kotschi, J. & Adelhelm, R. 1984. Standortgerechte Landwirtschaft zur Entwicklung kleinbäuerlicher Betriebe in den Tropen und Subtropen. Eschborn: GTZ.
- Kotschi, J., Pfeiffer, J. & Grosser, E. 1983. A model of sustainable agriculture. *Applied Geography and Development* (Tübingen) 22: 108-127.
- Lagemann, J. 1977. *Traditional African farming systems in Eastern Nigeria*. Institut für Wirtschaftsforschung Afrika-Studien Nr. 98. München: Weltforum.
- Ledesma, A.J. n.d. *Participatory research for community-based agrarian reform: The Slay-BCC experience*. Manila: Human Development Research and Documentation.

- Lightfoot, C., de Guia Jr., O., Aliman, A. & Ocado, F. 1987. Letting farmers decide in on-farm research. *IDS Workshop on Farmers and Agricultural Research: Complementary Methods*, 26-31 July 1987, University of Sussex, Brighton.
- Ludwig, H.D. 1967. Ukara - Ein Sonderfall tropischer Bodennutzung im Raum des Viktoria-Sees. *Institut für Wirtschaftsforschung Afrika-Studien Nr. 22*. München: Weltforum.
- Manners, I.R. 1980. The Middle East. In: G.A. Klee (ed), *World Systems of Traditional Resource Management*, London, Arnold, pp. 39-65.
- McCown, R.L., Haaland, G. & de Haan, C. 1979. The interaction between cultivation and livestock production in semi-arid Africa. In: Hall, A.E., Cannel, G.H. & Lawton, H.W. (eds), *Agriculture in semi-arid environments*, Berlin, Springer, pp. 297-332.
- Mergen, F. 1987. Research opportunities to improve the production of homegardens. *Agroforestry Systems* 5: 57-67.
- Müller-Sämann, K.M. 1986. *Bodenfruchtbarkeit und standortgerechte Landwirtschaft: Maßnahmen und Methoden im Tropischen Pflanzenbau*. Schriftenreihe der GTZ, No. 195. Eschborn: GTZ.
- Munzinger, P. 1982. *Animal traction in Africa*. Eschborn: GTZ.
- Murton, B.J. 1980. South Asia. In: G.A. Klee (ed), *World Systems of Traditional Resource Management*, London, Arnold, pp. 67-99.
- NAS. 1984. *Leucaena: promising forage and tree crop for the tropics*. 2nd ed. Washington, D.C.: National Academy Press.
- Neugebauer, B. 1984. *Arbeitsbericht Projektteil Oxkutzcab: Grundlagenuntersuchungen zur Landnutzungsplanung*. Eschborn: GTZ (unpublished).
- Neumann, I. & Pietrowicz, P. 1983. *Projektbericht Nyabisindu*. Eschborn: GTZ (unpublished).
- Neumann, I. & Preißler, R. 1985. *Projektbericht Nyabisindu*. Eschborn: GTZ (unpublished).
- van Noordwijk, M. 1985. Soil fertility: possibilities for maintenance in low external input farming. *ILEIA Newsletter* 2: 1, 3-4.
- Norman, D.W., Simmons, E.B. & Hays, H.M. 1982. *Farming systems in the Nigerian savanna: research and strategies for development*. Boulder, Colorado: Westview.
- Olofson, H. 1985. *Traditional agroforestry, parcel management, and social forestry development in a pioneer agricultural community: the case of Jalajala, Rizal, Philippines*. *Agroforestry Systems* 3: 317-337.

- Posey, D.A. 1985. Indigenous management of tropical forest ecosystems: the case of the Kayapo indians of the Brazilian Amazon. *Agroforestry Systems* 3: 139-158.
- Powell, J.M. & Waters-Bayer, A. 1985. Interactions between livestock husbandry and cropping in a West African savanna. In: Tothill, J.C. & Mott, J.J. (eds), *Ecology and management of the world's savannas*, Canberra, Australian Academy of Science, pp. 252-255.
- Prinz, D. 1986. Cropping techniques in the tropics for soil conservation and soil improvement. *Quarterly Journal of International Agriculture* 25 (2): 86-99.
- van Raay, H.G.T. 1975. *Rural planning in a savanna region*. Rotterdam: University Press.
- van Raay, H.G.T. & de Leeuw, P.N. 1974. Fodder resources and grazing management in a savanna environment: an ecosystem approach. Occasional Paper No. 45. The Hague: ISS.
- Ramaswamy, N.S. 1985. Draught animal power - socioeconomic aspects. In: Copland, J.W. (ed), *Draught animal power for production*, ACIAR Proceedings No. 10, Canberra, Australian Centre for International Agricultural Research, pp. 20-25.
- Reijntjes, C. 1986. Water and soil conservation by farmers. *ILEIA Newsletter* 5: 4-6.
- Richards, P. 1985. Indigenous agricultural revolution: ecology and food production in West Africa. London: Hutchinson.
- Rhoades, R.E. 1982. The art of the informal agricultural survey. Social Science Department Training Document 1982-2. Lima: CIP.
- Rhoades, R.E. 1987. The role of farmers in the creation and continuing development of agricultural technology and systems. *IDS Workshop on Farmers and Agricultural Research: Complementary Methods*, 26-31 July 1987, University of Sussex, Brighton.
- Ruthenberg, H. 1977. Ein Rahmen zur Planung und Beurteilung landwirtschaftlicher Entwicklungsprojekte. *Zeitschrift für Ausländische Landwirtschaft, Materialsammlung Heft 27*. Frankfurt/Main: DLG-Verlag.
- Ruthenberg, H. 1980. *Farming systems in the tropics*. 3rd ed. Oxford University Press.
- Schöningh, E. 1984. Teste de cobertura morta a adubacao sobre a produtividade de milho e feijão. In: *Relatório técnico anual do Centro de Pesquisa Agropecuária do Trópico 1983*, Belém, EMBRAPA-CPATU, pp. 115-117.
- Sharma, R. 1985. To develop sustainable agriculture - scientists cannot ignore farmers. *Ecoforum* 10 (4): 1, 12.

- Steiner, K.G. 1982. *Intercropping in tropical smallholder agriculture with special reference to West Africa*. Eschborn: GTZ.
- Steiner, R. 1975. *Geisteswissenschaftliche Grundlagen zum Gedeihen der Landwirtschaft*. In: *Landwirtschaftlicher Kurs*, Dornach, 5th ed, pp. 42 ff.
- Stoll, G. 1986. *Natural crop protection based on local farm resources in the tropics and subtropics*. Gaimersheim: Margraf.
- Stotz, D. 1983. *Production techniques and economics of smallholder livestock production systems in Kenya*. Farm Management Handbook of Kenya, Vol. IV. Nairobi: Ministry of Livestock Development.
- Thimm, H.U. & von Urrf, W. 1982. Strategien ländlicher Entwicklung. In: *Handbuch der Landwirtschaft und Ernährung in den Entwicklungsländern*, Stuttgart, Ulmer, 2nd ed, Vol. 1, pp. 387-403.
- Thrupp, L.A. 1987a. Building legitimacy of indigenous knowledge: empowerment for Third World people or "scientific packages" to be sold to development agencies. *IDS Workshop on Farmers and Agricultural Research: Complementary Methods*, 26-31 July 1987, University of Sussex, Brighton.
- Thrupp, L.A. (ed) 1987b. *Research methods: preliminary list of complementary methods in farmer-participatory/adaptive research*. Brighton: IDS.
- von Urrf, W. 1982. Die Rolle der Landwirtschaft in der wirtschaftlichen Entwicklung. In: *Handbuch der Landwirtschaft und Ernährung in den Entwicklungsländern*, Stuttgart, Ulmer, 2nd ed, Vol. 1, pp. 19 ff.
- Vierich, H. 1984. Accommodation or participation? Communication problems. In: Matlon, P., Cantrell, R., King, D. & Benoit-Cattin, M. (eds), *Coming full circle: Farmers' participation in the development of technology*, Ottawa, IDRC, pp. 17-26.
- Waters-Bayer, A. & Bayer, W. 1984. The Fulani of Abet: research for development of agropastoralism in the West African savannah. *Entwicklung und ländlicher Raum* 18 (5): 16-20.
- Webster, C.C. & Wilson, P.N. 1966. *Agriculture in the tropics*. London: Longman.
- Wolf, E. 1986. *Beyond the Green Revolution: new approaches for Third World agriculture*. Washington: Worldwatch.
- World Bank. 1981. *A handbook on monitoring and evaluation of agricultural and rural development projects*. Washington, D.C.: World Bank.
- Zehrer, W. 1985. Lassen sich traditionelle Verfahren des Pflanzenbaues für den integrierten Pflanzenschutz nutzen? In: Kranz, J. (ed), *Integrierter Pflanzenschutz in den Tropen*. Giessener Beiträge zur Entwicklungsforschung, Reihe I, Band 12. Hamburg: Weltarchiv, pp. 125-141.

ANNEX 1: GTZ survey of ecofarming activities in Technical Cooperation

In 1982, GTZ made a worldwide survey of organizations, groups and individuals involved in development work, including GTZ projects, with the aims of:

- gaining an overview of ecofarming activities within Technical Cooperation,
- improving the exchange of information,
- making existing knowledge more widely available, and
- identifying gaps in knowledge.

Because a survey by mail can include only questions on specific points which are formulated briefly and can be answered briefly, the definition of ecofarming (Table 8) sent together with the question-

Table 8: GTZ definition of sustainable agriculture with low external inputs ("ecofarming")

Ecofarming aims to achieve high and lasting productivity while maintaining or restoring a balanced ecosystem at a given site. Major ways of achieving this aim in the Third World include:

- **agroforestry and multi-storey farming**
- **multiple cropping**
- **horticulture and vegetable-growing**
- **green manuring**
- **biological nitrogen fixation**
- **composting**
- **mulching**
- **integrated animal husbandry**
- **integrated plant protection**
- **aquaculture.**

Table 9: GTZ questionnaire on ecofarming

1. I am/We are interested in the results of your work and would like to use the planned documentation. Yes No
2. I/We can provide information about existing projects and/or activities concerned with this subject. Yes No
3. Information on own projects (address, location, aims, measures relating to the ten areas listed in enclosed definition of ecofarming); please give details overleaf.
4. Information on projects implemented by others (addresses, aims, measures relating to the ten areas listed in enclosed definition of ecofarming); please give details overleaf.
5. Other suggestions (please give details overleaf).
6. Contacts:

Name
Address
Tel.
Date

Signature

naire (Table 9) was confined to a few areas related to production techniques.

Of the total of 600 questionnaires in German, French, English and Spanish which were mailed worldwide in 1982, 45% were completed and returned. In all replies, great interest was expressed in the survey and the results of its evaluation. However, only the 171 responses (63% of the return) which referred to ecofarming activities could be included in the evaluation. Few responses included more detailed information such as project descriptions, annual reports, publications etc. Mere mention of the fact that multiple crop-

ping has been successfully tested, for example, gives little indication of the knowledge thus gained. On the other hand, project or research results were sometimes provided which were so site-specific that they could not be included in this general evaluation.

No claims can be made to complete coverage of all ecofarming activities in Technical Cooperation since only few addresses were known in, e.g., the Eastern Bloc countries and the People's Republic of China. Activities in North America and Europe were included only insofar as they were clearly related to developing countries; these were primarily information offices, training centres and a few research programmes.

The activities mentioned in the survey responses were classified according to:

- type of ecofarming activity (referring to the ten areas mentioned in the GTZ definition of ecofarming),
- function (research, development/implementation project, information service, extension/training),
- geographic region (as indicated in Table 11), and
- agroclimatic zone as defined in Table 10, plus the Mediterranean climatic zone. Zones I, II, III and VI are referred to hereafter as relatively favourable, in contrast to the arid and semiarid zones.

Difficulties were often encountered in differentiating development

Table 10: Zonal classification of tropical locations according to agroclimate

Zone	Principle characteristics
I. Equatorial rainforest	> 2000 mm, 10-12 humid months
II. Humid forest/derived savanna	1500-2000 mm, 8-10 humid months
III. Subhumid woodland savanna	1000-1500 mm, 6-8 humid months
IV. Semiarid grass savanna	500-1000 mm, 4-6 humid months
V. Arid thornbush savanna/desert	< 500 mm, 0-4 humid months
VI. Tropical highlands	> 1000 m above sea level

activities from research activities; this reflects a close linkage - frequently demanded of late - between extension work and applied research. As many of the 171 survey responses referred to more than one type of ecofarming activity, function, geographic region and/or climatic zone, the total number of activities was far greater than the total number of responses. Since the preliminary evaluation of the survey results (KOTSCHI & ADELHELM 1984), a more detailed classification of the individual responses has led to revisions of the figures published in the earlier report.

The respondents included 34 GTZ projects which were working in at least one of the areas of ecofarming mentioned in Table 8. About 2/3 of these activities were in relatively favourable climatic zones and only 1/3 in arid or semiarid areas. Techniques involving vegetation design (agroforestry, multiple cropping) and soil fertility improvement were most frequently mentioned. In terms of regional distribution, the emphasis was on Africa, which accounted for ca. 2/5 of the activities reported. Research work was a component of 64% of the projects.

Classification of the ecofarming activities reported by the 138 non-GTZ respondents according to climatic zone revealed that the proportion reported from relatively favourable climates (ca. 80%) was much higher than in the case of the GTZ projects. The geographic emphasis was clearly in Central and South America. The most frequently mentioned techniques were those involving agroforestry, multiple cropping, integrated animal husbandry, biological nitrogen fixation, composting and mulching. Classification according to development functions revealed an exceptionally high proportion (81%) of the respondents involved in research.

In the following, the activities of the various projects, groups and individuals are subdivided according to the major types of ecofarming activities. No attempt is made here to evaluate their site-appropriateness, as this would have required considerably more background information and must be done on a case-to-case basis. The most interesting details about methods and research emphases are mentioned in the section 'Ecofarming research activities'. Here, the

evaluation results are confined to a brief description of regional and climatic emphases, followed by references to contact addresses where further information can be obtained about the specific eco-farming activities. The figures in the tables of contact references correspond to those in the address lists in Annex 2 (non-GTZ respondents) and Annex 3 (GTZ respondents).

Agroforestry. Of the 171 survey responses which could be evaluated with respect to ecofarming activities, 58% referred to work in agroforestry. The activities were concentrated in climatic zones II and VI; relatively few were reported from arid and semiarid areas. In many cases, forestry and agroforestry activities could not be separated. The respondents gave few details about methods and research emphases; therefore, highlights could not be mentioned in the section 'Ecofarming research activities'. References to contact addresses are given in Table 11.

Multiple cropping. Of the survey responses evaluated, 56% referred to multiple cropping activities. These were concentrated in climatic zones II and VI; even less were in the arid and semiarid zones than in the case of agroforestry. References to contact addresses are given in Table 12.

Horticulture and vegetable growing. The fact that relatively few (28%) of the evaluated responses referred to these activities indicates the comparatively low priority attached to the promotion of gardening in Technical Cooperation. The activities were fairly evenly distributed across climatic zones. References to contact addresses are given in Table 13.

Green manuring. Activities involving green manuring were mentioned in only 28% of the responses. They tended to be concentrated in the more favourable climatic zones. References to contact addresses are given in Table 14.

Biological nitrogen fixation. Activities in this field were reported by 53% of the responses evaluated; the large majority of these involved research. Almost half of the activities were being carried out

in the humid/subhumid climatic zones I-III and 15% in tropical highland areas. References to contact addresses are given in Table 15.

Mulching. Of the respondents involved in ecofarming activities, 43% were working with mulching techniques. The distribution with respect to climatic zones was almost identical to that of the activities involving biological nitrogen fixation. References to contact addresses are given in Table 16.

Composting. Of the responses evaluated, 50% referred to activities related to composting. The distribution with respect to climatic zones was almost identical to that of the activities involving biological nitrogen fixation and mulching. References to contact addresses are given in Table 17.

Integrated plant protection. Activities related to integrated plant protection were mentioned by 35% of the respondents. Almost half of these involved research work; 43% of the activities were reported from climatic zones I-III and 15% from the tropical highlands. References to contact addresses are given in Table 18.

Integrated animal husbandry. Activities related to integrated animal husbandry were reported by 46% of the respondents. Over half of these involved research work and half were development projects; about 20% also included training and information activities. The activities were concentrated in the humid, subhumid and highland zones. References to contact addresses are given in Table 19.

Aquaculture. Of the responses, 23% referred to aquaculture activities. The majority involved research, about 40% were projects, and 1/3 also included training and/or information activities. The regional emphasis was in the Near, Middle and Far East, mainly in humid and subhumid areas. References to contact addresses are given in Table 20.

Table 11: Contact addresses - agroforestry
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	27, 36, 47, 56, 62, 66, 72, 74, 89, 113, 118, 138, 160, 161
South/Central America	5, 20, 24, 27, 28, 31, 33, 36, 56, 58, 62, 65, 69, 72, 76, 77, 78, 110, 113, 114, 125, 147, 159
Near/Middle East	6, 36, 56, 70, 75, 108, 113
Far East	6, 22, 27, 36, 39, 56, 87, 94, 100, 101, 105, 113, 118
Supraregional	3, 20, 22, 25, 44, 54, 56, 62, 64, 78, 81, 88, 89, 91, 96, 105, 120, 124

projects:

Africa	11, 13, 19, 36, 55, 56, 57, 82, 92, 97, 102, 121, 137, 138, 139, 140, 163, 164, 167
South/Central America	24, 29, 36, 43, 48, 52, 56, 76, 78, 95, 102, 110, 114, 117, 132, 141, 165
Near/Middle East	7, 36, 56, 99, 102, 121, 130, 134, 135
Far East	36, 56, 84, 99, 102, 166
Supraregional	43, 56, 78, 80, 102

extension/training:

Africa	42, 56, 102, 118, 138, 139, 140, 160, 161, 162, 163
South/Central America	43, 52, 56, 102
Near/Middle East	7, 53, 56, 99, 102, 135
Far East	56, 84, 99, 102, 104, 105, 118
Supraregional	43, 56, 67, 80, 102, 105

information:

Africa	19, 56, 126, 133, 160
South/Central America	56, 110, 126, 129, 133
Near/Middle East	56, 126, 133
Far East	9, 46, 56, 103, 104, 105, 126, 133
Supraregional	3, 56, 67, 80, 103, 105, 126, 133

Table 12: Contact addresses - multiple cropping
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	36, 47, 56, 62, 66, 72, 74, 116, 118, 138, 144, 146, 161
South/Central America	4, 20, 23, 24, 28, 33, 36, 56, 58, 62, 65, 72, 76, 78, 110, 112, 114, 115, 116, 127, 147
Near/Middle East	6, 36, 56, 75
Far East	6, 10, 22, 36, 39, 56, 63, 87, 94, 100, 101, 105, 118
Supraregional	3, 12, 14, 20, 22, 25, 41, 44, 45, 50, 54, 56, 62, 64, 78, 81, 88, 105, 109, 112, 116, 124

projects:

Africa	11, 13, 19, 36, 51, 55, 56, 57, 71, 93, 97, 102, 131, 137, 138, 140, 167
South/Central America	4, 24, 36, 43, 48, 51, 52, 56, 76, 78, 93, 95, 102, 110, 112, 114, 117, 119, 132, 141
Near/Middle East	7, 36, 56, 93, 102, 135
Far East	36, 56, 93, 102, 111
Supraregional	43, 56, 78, 79, 80, 93, 102, 112

extension/training:

Africa	42, 56, 93, 98, 102, 118, 138, 140, 161, 162, 167
South/Central America	4, 43, 52, 56, 93, 98, 102, 112
Near/Middle East	7, 53, 56, 93, 98, 102, 135
Far East	56, 93, 98, 102, 104, 105, 118
Supraregional	43, 50, 56, 67, 80, 93, 98, 102, 105, 112

information:

Africa	19, 56, 93, 126, 133
South/Central America	4, 56, 93, 110, 126, 133
Near/Middle East	56, 93, 126, 133
Far East	46, 56, 93, 103, 104, 105, 126, 133
Supraregional	3, 49, 56, 59, 67, 79, 80, 93, 103, 105, 109, 123, 126, 133

Table 13: Contact addresses - horticulture and vegetable growing
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	36, 56, 118, 138
South/Central America	20, 30, 33, 36, 37, 56, 65, 69, 76, 127
Near/Middle East	36, 56
Far East	10, 36, 37, 39, 56, 105, 118
Supraregional	3, 20, 50, 54, 56, 88, 105, 109

projects:

Africa	19, 36, 51, 55, 56, 93, 102, 121, 138, 140, 167
South/Central America	29, 36, 43, 48, 51, 56, 76, 93, 102, 119, 141
Near/Middle East	36, 56, 93, 102, 121
Far East	36, 56, 93, 102, 111
Supraregional	43, 56, 79, 93, 102

extension/training:

Africa	56, 93, 102, 118, 138, 140, 167
South/Central America	30, 43, 56, 93, 102
Near/Middle East	53, 56, 93, 102
Far East	56, 93, 102, 104, 105, 118
Supraregional	16, 43, 50, 56, 67, 93, 102, 105

information:

Africa	19, 56, 93, 126, 133
South/Central America	32, 56, 93, 126, 129, 133
Near/Middle East	56, 93, 126, 133
Far East	56, 93, 103, 104, 105, 126, 133
Supraregional	3, 49, 56, 59, 67, 79, 93, 103, 105, 109, 123, 126, 133

Table 14: Contact addresses - green manuring
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	36, 56, 62, 72, 85, 116, 138
South/Central America	30, 36, 56, 62, 65, 72, 76, 112, 115, 116, 147
Near/Middle East	36, 56
Far East	36, 39, 56, 105
Supraregional	3, 41, 44, 54, 56, 62, 85, 88, 96, 105, 109, 112, 116, 124

projects:

Africa	19, 36, 56, 93, 102, 138, 139, 140, 167
South/Central America	36, 43, 48, 52, 56, 76, 93, 102, 112, 117, 119, 132, 141
Near/Middle East	36, 56, 93, 102
Far East	36, 56, 93, 102, 111
Supraregional	43, 56, 79, 80, 93, 102, 112

extension/training:

Africa	56, 93, 102, 138, 139, 140, 167
South/Central America	30, 43, 52, 56, 93, 102, 112
Near/Middle East	53, 56, 93, 102
Far East	56, 93, 102, 104, 105
Supraregional	43, 56, 80, 93, 102, 105, 112

information:

Africa	19, 56, 93, 126, 133
South/Central America	56, 93, 126, 133
Near/Middle East	56, 93, 126, 133
Far East	56, 93, 103, 104, 105, 126, 133
Supraregional	3, 49, 56, 79, 80, 93, 103, 105, 109, 123, 126, 133

Table 15: Contact addresses - biological nitrogen fixation
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	18, 21, 36, 47, 56, 62, 66, 72, 74, 85, 89, 113, 116, 138, 146
South/Central America	4, 20, 21, 24, 28, 31, 33, 36, 56, 58, 62, 65, 72, 76, 77, 78, 110, 112, 113, 114, 115, 116, 125, 148, 149, 150
Near/Middle East	6, 36, 56, 90, 113
Far East	6, 22, 36, 39, 56, 63, 87, 100, 101, 105, 113
Supraregional	3, 14, 20, 22, 25, 41, 44, 45, 54, 56, 62, 78, 81, 85, 88, 89, 96, 105, 109, 112, 116, 120, 142

projects:

Africa	36, 51, 55, 56, 57, 71, 93, 97, 102, 138, 139, 140
South/Central America	4, 24, 36, 43, 48, 51, 52, 56, 76, 78, 93, 95, 102, 110, 112, 114, 119, 132, 141
Near/Middle East	7, 36, 56, 93, 102, 135
Far East	36, 56, 93, 102, 111
Supraregional	43, 56, 78, 79, 80, 93, 102, 112

extension/training:

Africa	42, 56, 93, 98, 102, 138, 139, 140
South/Central America	4, 43, 52, 56, 93, 98, 102, 112
Near/Middle East	7, 40, 53, 56, 93, 98, 102, 135
Far East	56, 93, 98, 102, 104, 105
Supraregional	43, 56, 67, 80, 93, 98, 102, 105, 112

information:

Africa	56, 93, 126, 133
South/Central America	4, 56, 93, 110, 126, 129, 133
Near/Middle East	56, 93, 126, 133
Far East	56, 93, 103, 104, 105, 126, 133
Supraregional	3, 49, 56, 67, 79, 80, 93, 103, 105, 109, 123, 126, 133

Table 16: Contact addresses - mulching
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	36, 56, 66, 68, 72, 74, 116, 118, 138
South/Central America	4, 20, 24, 30, 31, 36, 37, 56, 65, 69, 72, 76, 77, 78, 110, 112, 114, 115, 116, 127, 149
Near/Middle East	6, 36, 56, 75
Far East	6, 10, 22, 36, 37, 56, 87, 100, 105, 118
Supraregional	3, 8, 20, 22, 25, 41, 44, 45, 50, 54, 56, 78, 81, 88, 96, 105, 109, 112, 116, 120, 124

projects:

Africa	11, 19, 36, 55, 56, 71, 93, 102, 131, 138
South/Central America	1, 4, 24, 36, 48, 52, 56, 76, 78, 93, 95, 102, 110, 112, 114, 119, 132
Near/Middle East	7, 36, 56, 93, 102
Far East	36, 56, 93, 102, 111
Supraregional	8, 56, 78, 80, 93, 102, 112

extension/training:

Africa	42, 56, 93, 98, 102, 118, 138
South/Central America	1, 4, 30, 52, 56, 93, 98, 102, 112
Near/Middle East	7, 56, 93, 98, 102
Far East	56, 93, 98, 102, 104, 105, 118
Supraregional	50, 56, 80, 93, 98, 102, 105, 112

information:

Africa	19, 56, 93, 126, 133
South/Central America	4, 56, 93, 110, 126, 133
Near/Middle East	56, 93, 126, 133
Far East	46, 56, 93, 103, 104, 105, 126, 133
Supraregional	3, 49, 56, 80, 93, 103, 105, 109, 126, 133

Table 17: Contact addresses - composting
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	36, 56, 66, 72, 74, 116, 118, 138, 151, 152, 161
South/Central America	4, 5, 20, 24, 28, 30, 31, 33, 36, 37, 56, 65, 69, 72, 76, 77, 78, 110, 112, 114, 116, 127
Near/Middle East	6, 26, 36, 56, 60, 75
Far East	6, 10, 16, 22, 36, 37, 39, 56, 87, 100, 105, 118
Supraregional	3, 8, 20, 22, 25, 45, 50, 54, 56, 78, 81, 88, 105, 109, 112, 116, 120

projects:

Africa	11, 19, 36, 55, 56, 71, 93, 102, 121, 131, 138, 140
South/Central America	1, 4, 24, 29, 36, 48, 52, 56, 76, 78, 93, 95, 102, 110, 112, 114, 117, 119, 132, 141
Near/Middle East	7, 36, 56, 93, 102, 121, 135
Far East	36, 56, 93, 102, 111
Supraregional	8, 56, 78, 79, 93, 102, 112

extension/training:

Africa	42, 56, 93, 98, 102, 118, 138, 140, 161
South/Central America	1, 4, 30, 52, 56, 93, 98, 102, 112
Near/Middle East	7, 56, 93, 98, 102, 135
Far East	56, 93, 98, 102, 104, 105, 118
Supraregional	16, 50, 56, 67, 93, 98, 102, 105, 112

information:

Africa	19, 56, 93, 126, 133
South/Central America	4, 32, 56, 93, 110, 126, 129, 133
Near/Middle East	56, 93, 126, 133
Far East	46, 56, 93, 103, 104, 105, 126, 133
Supraregional	3, 49, 56, 67, 79, 93, 103, 105, 109, 123, 126, 133

Table 18: Contact addresses - integrated plant protection
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	36, 38, 56, 66, 72, 73, 74, 145, 155, 156
South/Central America	23, 24, 30, 33, 34, 35, 36, 38, 56, 65, 72, 73, 76, 78, 112, 158
Near/Middle East	6, 36, 56
Far East	6, 10, 36, 56, 94, 105, 157
Supraregional	12, 25, 41, 44, 45, 54, 56, 78, 81, 88, 105, 106, 109, 112, 153, 154

projects:

Africa	36, 55, 56, 57, 71, 93, 102, 131
South/Central America	24, 36, 48, 52, 56, 76, 78, 93, 102, 112, 117, 119
Near/Middle East	36, 56, 93, 102
Far East	36, 56, 93, 102, 111
Supraregional	56, 78, 93, 102, 112

extension/training:

Africa	42, 56, 93, 102, 145, 155
South/Central America	30, 34, 52, 56, 93, 102, 112
Near/Middle East	56, 93, 102
Far East	56, 93, 102, 105
Supraregional	16, 56, 67, 93, 102, 105, 112

information:

Africa	56, 93, 122, 126, 133
South/Central America	56, 93, 126, 133
Near/Middle East	56, 93, 126, 133
Far East	9, 46, 56, 93, 105, 126, 133
Supraregional	3, 49, 56, 67, 93, 105, 109, 126, 133

Table 19: Contact addresses - integrated animal husbandry
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	21, 36, 56, 62, 72, 74, 83, 85, 86, 107, 116, 118, 128, 138, 152
South/Central America	4, 20, 21, 24, 28, 30, 33, 36, 37, 56, 58, 62, 65, 69, 72, 76, 77, 112, 114, 115, 116
Near/Middle East	6, 36, 56, 75
Far East	6, 22, 36, 37, 39, 56, 100, 105, 118
Supraregional	3, 20, 22, 25, 45, 50, 54, 56, 62, 83, 85, 88, 105, 109, 112, 116, 124, 142

projects:

Africa	11, 13, 19, 36, 51, 55, 56, 71, 82, 93, 102, 131, 137, 138, 140,
South/Central America	4, 24, 36, 48, 51, 52, 56, 76, 93, 95, 102, 112, 114, 119
Near/Middle East	2, 7, 36, 56, 93, 102
Far East	36, 56, 93, 102, 111
Supraregional	56, 93, 102, 112

extension/training:

Africa	42, 56, 93, 98, 102, 118, 138, 140, 162
South/Central America	4, 30, 52, 56, 93, 98, 102, 112
Near/Middle East	7, 53, 56, 93, 98, 102
Far East	56, 93, 98, 102, 104, 105, 118
Supraregional	50, 56, 67, 93, 98, 102, 105, 112

information:

Africa	19, 56, 93, 126, 133
South/Central America	4, 56, 93, 126, 129, 133
Near/Middle East	56, 93, 126, 133
Far East	9, 46, 56, 93, 103, 104, 105, 126, 133
Supraregional	3, 49, 56, 67, 93, 103, 105, 109, 126, 133

Table 20: Contact addresses - aquaculture
(figures refer to those in the address lists in Annexes 2 and 3)

research:

Africa	27, 56, 74, 89, 118
South/Central America	4, 20, 27, 37, 56, 65, 114
Near/Middle East	6, 56, 90, 108
Far East	6, 27, 37, 39, 56, 61, 105, 118, 136, 143
Supraregional	3, 8, 20, 54, 56, 61, 64, 89, 105, 109

projects:

Africa	17, 19, 55, 56, 57, 102
South/Central America	4, 17, 52, 56, 102, 114, 119
Near/Middle East	7, 56, 102
Far East	17, 56, 102, 111
Supraregional	8, 56, 102

extension/training:

Africa	42, 56, 98, 102, 118
South/Central America	4, 52, 56, 98, 102
Near/Middle East	7, 53, 56, 98, 102
Far East	56, 98, 102, 104, 105, 118
Supraregional	56, 67, 98, 102, 105

information:

Africa	19, 56, 126
South/Central America	4, 56, 126, 129
Near/Middle East	56, 126
Far East	46, 56, 103, 104, 105, 126
Supraregional	3, 56, 67, 103, 105, 109, 126