

ANNEX E

COLLECTED DATA

ANNEX E. COLLECTED DATA

In the courses of the phase-I, Phase-II and Phase-III field work, following data are collected by Study Team;

A. MAPS

1. Topographic Map, 1/250,000, Survey of Kenya
2. Topographic Map, 1/50,000, Survey of Kenya
3. Kenya Administrative Boundaries Map, 1/1,000,000, Survey of Kenya,
4. Agro-Ecological Zones in Highland Upland and Midland, 1/1,000,000, GTZ
5. Topographic Map of Model Areas, 1/5,000 prepared by JICA Study Team

B. REPORTS AND DATA WRITTEN IN ENGLISH

B-1 Office of the Vice-President, Ministry of Planning and National Development (OVP/MPND)

Statistic Data

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2. Economic Survey 1993, May 1993, OVP/MPND
3. Economic Survey 1995, May 1995, OVP/MPND
4. Economic Survey 1997, May 1997, OVP/MPND
5. Kenya Population Census 1989, Vol. I, II and III, Central Bureau of Statistic (CBS)
OVP/MPND
6. Kenya Population Census 1989, Analytical Report III, April 1996, CBS, OVP/MPND
7. Kenya Population Census 1989, Population Projection Analytical Report VII, April 1996,
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8. Statistical Abstract, 1994 OVP/MPND
9. Environmental Management & Coordination Bill, 1996, OVP/MPND
10. Statistical Abstract, 1995, Central Bureau of Statistics, OVP/MPND
11. Statistical Abstract, 1996, Central Bureau of Statistics, OVP/MPN
12. Welfare Monitoring Survey II, Basic Report 1994, May 1996, OVP/MPND
13. Agricultural Census of Large Farm, 1994, OVP/MPND
14. Leading Economic Indicator, July 1997, OVP/MPND
15. The Integrated Rural Survey, 1976-1979, CBS, OVP/MPND
16. Population Dynamics of Kenya, 1996, CBS, OVP/MPND
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2. Development & Employment in Kenya, A Strategy for the Transportation of the Economy,
January 1991, OVP/MPND
3. Development Plan 1994-1996, 1994, Government Printer
4. Development Plan 1997-2001, 1997, Government Printer

5. Sessional Paper No.1, Recovery & Sustainable Development to the Year 2020, 1994, Government Printer
6. Public Investment Programme, 1997/98-1999/2000, dec. 1996, Government Printer
7. Nyeri District Development Plan, 1997-2001, OVP/MPND
8. Kirinyaga District Development Plan, 1997-2001, OVP/MPND
9. Embu District Development Plan, 1997-2001, OVP/MPND
10. Mbeere District Development Plan, 1997-2001, OVP/MPND
11. Tharaka-Nithi District Development Plan, 1997-2001, OVP/MPND
12. Meru District Development Plan, 1997-2001, OVP/MPND
13. Nyambene District Development Plan, 1997-2001, OVP/MPND

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B-2 Ministry of Finance (MOF)

1. Programme Review and Forward Budget, 1995/96-1997/98, Recurrent Expenditures, Development Expenditures, January 1995

B-3 Ministry of Agriculture and Livestock Development (MOALD)

General

1. Agricultural Sector Development Strategy (ASIP), Governmental Sector Investment Programme, July 1997, MOALD
2. Agricultural Sector Development Strategy (ASIP), Agricultural Development Strategy, Part-I : Local Frame work for Analysis, July 1997, MOALD&M
3. Annual Work Plan, January 1996, Land Development Division (LDD), MOALD&M
4. Atlas of Irrigation of Drainage in Kenya, March 1990, IDB
5. Report on the Agricultural Sector Review and Outline of the Tentative Investment Strategy, October 1995, MOALD&M
6. Improved Sustainable Agricultural Productivity for Women Farmers, January 1997, Jomo Kenyatta University of Agriculture & Technology (JKUAT) / JICA
7. Public Investment Programme (PIP), 1996/97-1998/99, 1996
8. Strategies for Developing the Horticultural Industry, January 1991, MOALD&M
9. Working Paper 4, Eastern Province Horticultural & Traditional Food Crop Project, August 1997, International Fund for Agricultural Development (IFAD)
10. Pump-fed Irrigation Promotion, April 1997, MOALD&M-Belgian Administration for Development Cooperation (BADC)
11. Explanation of the Evaluation of the Natural Potential, Method of the Agro-Ecological Zone (AEZ).
12. Increasing Women Participation in Irrigation, December 1991, MOALD&M/Mutiso Consultants Ltd.
13. Agricultural Sector Review, 1995, MOA

Soil and Water

1. Catchment Planning of Implementation Assessment, 1993/94-1994/95-Soil and Water

Conservation Programme, July 1996, Soil and Water Conservation Branch, MOALD&M

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2. Progress Report (January 1990), March 1990, MOALD&M
3. Project Proposal for the Smallholder Irrigation Support Organization, March 1995, Smallholder Irrigation Support Organization (SISO)
4. Annual Report 1994, July 1995, Land Development Division (LDD)
5. Guideline on Smallholder Irrigation Projects for Implementation Agencies and Donors, April 1993, Irrigation and Drainage Branch (IDB)
6. Smallholder Irrigation Scheme Development Organization (SISDO) for Financial Assistance for Farmers for Smallholder Irrigation Development, October 1991, Netherlands
7. Evaluation of Small Scale Irrigation Development, Appendix B : Irrigation Policy, A Matter of Management, August 1990.IDB
8. Evaluation of Small Scale Irrigation Development, Appendix C.: Irrigation Design Technical and Social Progress, October 1990, M. Thairu, G. Diemer
9. Scheme Identification of Evaluation of Gravity-Fed Schemes with Basin Irrigation Operated by farmers: Section 2, Field Visits of Preliminary Report, 1986, SIDP
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11. Farmer Participation in Establishing New and Rehabilitating Existing Smallholder Irrigation Schemes, August 1990, MOA-COC
12. Smallholder Irrigation and Drainage Project (SIDP), Position Paper, Main and Annex, August 1993, MOALD&M
13. Proposal with Request for Funding for Ruungu Irrigation Project, January 1996, SISDO
14. Appraisal Report for Ruungu/Karocho Irrigation Project, September 1996, IDB
15. Scheme Design for Smallholder Irrigation Scheme, IDB
16. Structures, Part 6, weir design, Manual for Senior IDB Staff, AED/IDB
17. Scheme Identification and Evaluation, Section 2
18. Scheme Design, Manual for Senior IDB Staff

Horticulture

1. Horticulture and Traditional Food Crop Project, Preparation Report, Vol. 1 and 2, June 1993, MOALD&M-IFAD/FAO
2. Integration of Three Crops into Farming Systems Project, Semi Annual report No.3, September 1996, GTZ
3. Eastern Province Horticulture and Traditional Food Crops Project, Final Report (Main), April 1998, MOALD
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4. Mbeere District Annual Report, 1995, Mbeere District
5. Tharaka-Nithi District Annual Report, 1994, Tharaka Nithi District
6. Meru District Annual Report, 1995, Meru District
7. Nyambene District Annual Report, 1995, Nyambene District
8. District Profile-Kirinyaga District, Central Province, December 1993, IDB
9. District Profile-Tharaka Nithi District, Eastern Province, August 1994, IDB
10. District Profile-Meru/Nyambene District, Eastern Province, February 1994, IDB
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12. 1996 Annual Report, Department of Agriculture, Kirinyaga District
13. 1997 Annual Report, Department of Agriculture, Kirinyaga District
14. 1996 Annual Report, Department of Agriculture, Embu District
15. 1997 Annual Report, Department of Agriculture, Meru District
16. Farm Management Guideline, 1998, Kirinyaga District
17. Annual Report, 1997, Embu farmers Trading Center

Environment

1. Demand Study of Smallholder Rice Irrigation Scheme in District Bordering Lake Victoria (Environmental Impact Assessment Report), February 1995, Samez Consultants
2. Environmental Impact Assessment of Smallholder Irrigation Scheme, November, 1992, MOA.
3. National Soil and Water Conservation Programme, Annual Report 1995/96, Soil and Water Conservation Branch, MOALD
4. National Soil and Water Conservation Programme, Work Plan 1997/98, Soil and Water Conservation Branch, MOALD
5. Soil and Water Conservation Manual for Kenya, 1997, MOALD
6. A Guide to make Your Own Maendeleo One Pot Jiko, GTZ

B-4 Ministry of Land Reclamation, Regional and Water Development (MLRRWD)

Water Resources

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2. The Study on National Water Master Plan (Main Report Vol. I), Water Resources

- Development & Use Plan Toward 2010, July 1992, MLRRWD / JICA
3. The Study on National Water Master Plan (Main Report Vol. II), Action Plan Toward 2000, July 1992, MLRRWD / JICA
 4. The Study on National Water Master Plan (Main Report Vol. III), Master Action Plan Toward 2000, Part 2 Action Plan by Province/District, July 1992, MLRRWD / JICA
 5. The Study on National Water Master Plan (Sector Report), Hydrology, July 1992, MLRRWD / JICA
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 12. The Study on the Water Supply for Seven Town in Eastern Province in the Republic of Kenya, Draft Final Report, Vol. I & II (Supporting Report II), July 1997, MLRRWD / JICA
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 14. Meru District Water Development Study, 1993-2013, Part-1, Water Demand & Water Resources, June 1991, WRAP-TNO-Institute of Geoscience Delft, the Netherlands
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 16. Meru District Water Development Study, 1993-2013, Part-3, Guidelines & Recommendations for Investment Packages, June 1991, WRAP-TNO-Institute of Geoscience Delft, the Netherlands
 17. Meru District Water Resources Assessment Study, Main Report, June 1991, WRAP-TNO-Institute of Geoscience Delft, the Netherlands
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 25. Drawing for Ngandri-A Rural W/S & Karaba Rural W/S System

B-5 Ministry of Public Works and Housing (MPWH)

Roads

1. Rural Access Roads Programme (1974-1985), MPWH

2. Minor Roads Programme (1986-1987), MPWH
3. Rural Access Roads Project, Road Maps, Nov. 1986, Ministry of Transport and Communication (MTC)
4. Roads 2000, pilot Project-Final Report (Vol. I), December 1993, Roads Department (RD)
5. Roads 2000 Maintenance Programme 1997/98-1999/2000, Proposal to SIDA Funding in Neyri District, Oct. 1996,
6. Strategic Plan for the Roads Sector, July 1996, MPWH
7. Strategic Plan for the Roads Sector, March 1997, MPWH
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9. Road Design Manual, Nov. 1992, MPWH
10. Road Maintenance Manual, Nov. 1992, MPWH
11. Road technical Manual, Vol. 1, 1992, MPWH
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13. Headman's Handbook for Maintenance of Minor and Rural Access Roads, MPWH
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15. Consultancy Services for the Management of EC Roads 2000 project, June 1998
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B-6 Ministry of Environment and Natural Resources (MENR)

1. The Environmental Impact Assessment (EIA), Guideline of Administrative Procedures, October 1996, National Environmental Impact Plan (NEAP) Secretariat, MENR
2. The Environmental Management Coordination Bill, 1996, MENR
3. Kenya Forestry Master Plan, Development Plan, 1994, MENR
4. The Kenya National Environment Action Plan (NEAP), Summary and Report, June 1994, MERN
5. Conservation and Management of Indigenous Forest (COMIFOR), June 1997, MENR-EU
6. A Survey to Assess the Damage caused by Wild Animals to Farm Households adjacent to the Aberdares Forest reserve, 1992, KIFCON, Karua forest Station
7. Damage caused by Forest Animals to Farms adjacent to South Western side of Mt. Kenya Forest Reserve, 1993, KIFCON in Association with Kenya Forestry Research Institute
8. Environmental Impact Assessment for Model Areas, 1998, JICA Study Team

B-7 Ministry of Commerce and Industry (MOCI)

1. Sessional Paper No. 2 of 1996 on Industrial Transportation to the Year 2020, November, 1996, MOCI

B-8 The Non-Governmental Organizations Co-ordination Board

1. Directory of Non-Governmental Organization, September 1996,

B-9 Horticultural Crops Development Authority (HCDA)

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2. Farming Contract, Mboga Tuu Ltd., March 1997
3. Agreement between Mwihiko Horticultural Growers Group and Safari Horticultural Limited, April 1998
4. French Beans Growing/Supply Agreement, Peakside Horticulture Enterprises, April 1998
5. Farming Contract, Makindu Growers & Packers Ltd., July 1998
6. Contract for the Sale of Passion Fruit, Kakuzi Ltd., August 1996
7. Agreement to Supply French Beans, Merchants Express(K) Ltd., December 1996
8. Kilome and Neighboring Divisions Production Schemes (Contract Document), Kenya Horticultural Exporters Ltd., March 1997
9. Agreement between Life Exporters and Baricho Youth Self-Help Horticultural Growers, December 1996
10. The Theme "democracy and Development Towards the Next Millennium" Horticulture : Development and Marketing by HCDA, July 1998
11. Export Market Statistic Figures for Kenya Fruits, Vegetables, and Cut Flowers from Kenya.

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2. Request for Funding for Irrigation Development, December 1996, SISDO
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5. Kagati Irrigation Project (Nyeri District), Farmers Proposal with Request for Loan, June 1995, SISDO
6. Ciambaraga Irrigation Project Tender Document, April 1996, Services Ltd
7. Proposal with Request for Funding, Ruungu Irrigation Project (Tharaka-Nithi District), Eastern Province, January 1996, Orego/Kariuki
8. Smallholder Irrigation Scheme Development Organization, SISDO
9. Funding Irrigation Development in Kenya with A Special Reference to Funding by Smallholder Irrigation Scheme Development Organization, December 1996, SISDO
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11. Rules and Regulation of the NGO Council of Kenya

B-11 Others Organization

1. Kenya Poverty Assessment, March 1995, World bank/Population & Human Resources Division, Eastern Africa Department-Africa Region
2. Women Development Study in Smallholder Irrigation Scheme Netherlands Technical Aid Programme, June 1992, Institute for Development Studies, University of Nairobi
3. Kenya's Indigenous Forests, Status, Management and Conservation, 1995, IUCN-The World Conservation Union, Overseas Development Administration (UK)
4. National State of the Environment Report, Kenya, May 1987, National Environmental

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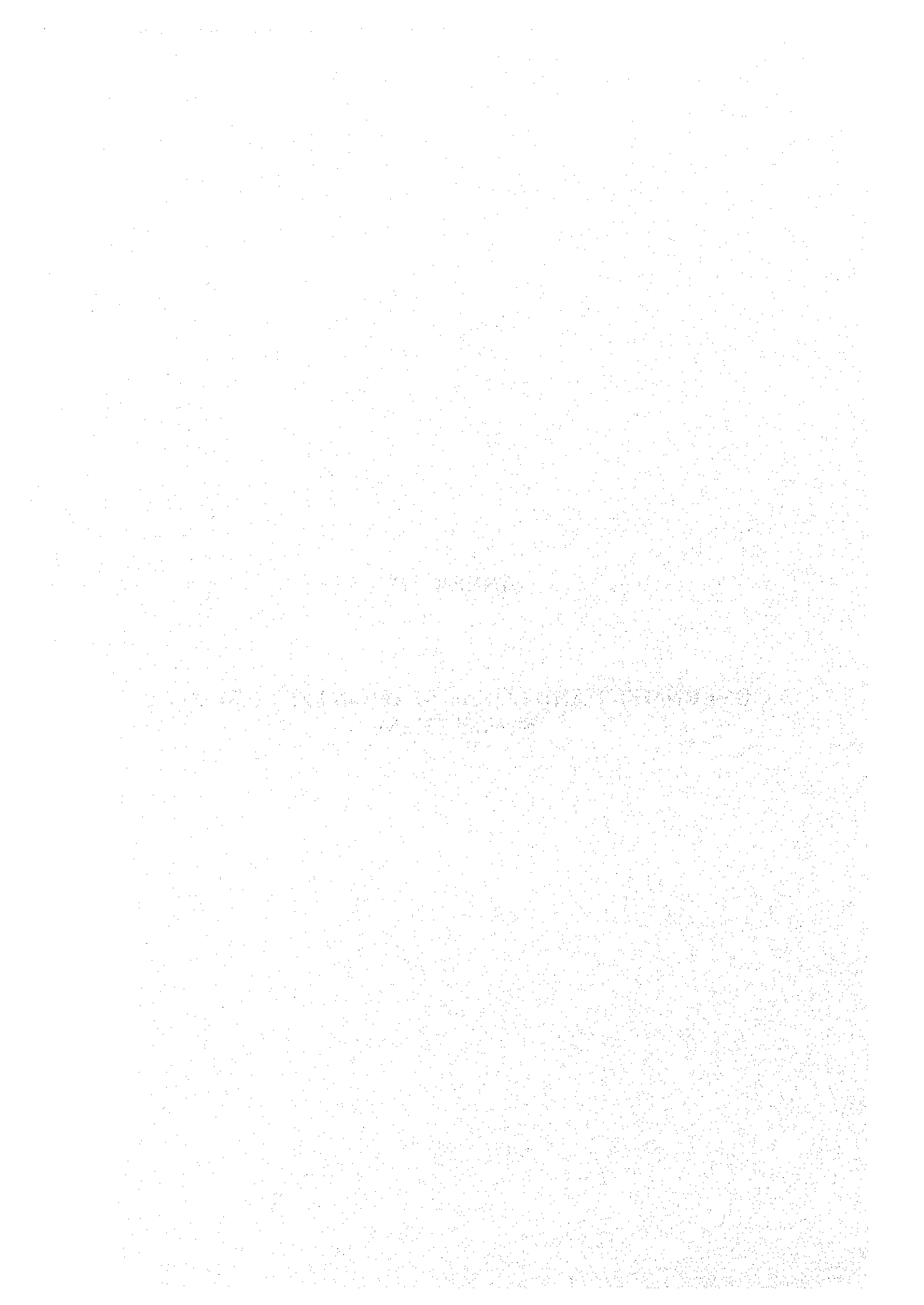
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7. Farm Management Handbook of Kenya, Vol. II, Natural Conditions & Farm Management Information, Part B, 1983, Helmut Schmidt, Farm Management Research Officer, German Agricultural Team
8. Country Portfolio Review, October 1995, Afriacn Division II, Programme Management Department, IFAD
9. Horticulture & Traditional Food Crop Project Preparation Report, Vol. II, June 1993, FAO/ADB
10. Explanation of the Evaluation of the Natural Potential Method of the Agro-Ecological Zanation, Raph Jaetzold
11. Horticultural and Traditional Food Crop Project, Preparation Report Vol. II, June 1993, FAO
12. Semiar on Integrated Water Resources Management in Kenya, Jan. 1996, Economic Development Institute, World Bank
13. Country Profile Study on Women in Development, September 1997, JICA
14. Country Profile Study on Women in Development (WID) in Kenya, August 1997, JICA
15. Second National Agricultural Extension Project, November 1990
16. Coffee Trade Statistic, 1991 to 1996, International Coffee Organization
17. Coffee Trade Statistic, 1997, International Coffee Organization
18. International Tea Committee Annual Bulletin of Statistic, 1997n International Trade Center

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2. ケニア第7次国家開発計画の概要(1994-1996年)、1994年、日本貿易振興会
3. ケニアの農業等－現状の開発と課題、1996年版、1996年3月、AICAF
4. 開発協力における社会的側面への取り組み、英国開発庁(ODA)の最近の援助動向、平成8年12月、国際協力事業団国際協力総合研究所

ANNEX F

**GOVERNMENT AND LOCAL STAFF INTERVIEWED BY
STUDY TEAM**



ANNEX F. GOVERNMENT AND LOCAL STAFF INTERVIEWED BY THE STUDY TEAM

Study Team interviewed the following Kenyan government and local staff in the courses of Phase-I, Phase-II and Phase-III field works.

<u>Name</u>	<u>Office Name/Position</u>
A. Central Government Office in Nairobi	
1) Ministry of Finance	
1. Mr. G. K. Arap Koech	Deputy Director
2. Mr. J. K. Kanithi	Desk Officer, Japanese Relation
3. Mr. J. M. Nyanumba	Assistant Desk Officer, Japan Relation
2) Office of the Vice-President, Ministry of Planning and National Development	
1. Mr. Peter Ochieng	Planning Officer in charge of IFAD Project
3) Ministry of Agriculture and Livestock Development (MOALD)	
1. Prof. K. Mutahi	Permanent Secretary
2. Mr. T. K. Tuei	Director of Agriculture
3. Mr. Johnnton Kinyua Kanjagua	Assistant Director of Agriculture/Horticultural Division
4. Mr. C. M. Osoro	Deputy Director, Land Development Division (LDD)
5. Dr. A. M. Muthee	Senior Advisor, MOALD
6. Mr. H. K. Mwathe	Head, Irrigation and Drainage Branch (IDB), Land Development Division (LDD)
7. Mr. N. R. Kamau	Senior Agricultural Officer, IDB, LDD
8. Ms. Zaweria Thuku	Agricultural Officer, Horticultural Division
9. Mr. Mosoti Andama	Senior Agri. Officer, Project Development, Monitoring, Evaluation Division (PDMED)
10. Mr. Ireoi Rashid	Economist, Development & Planning Division (DPD)
11. Mr. P. W. Muchangi	Irrigation Engineer, IDB
12. Mr. J. O. Nyaguti	Irrigation Engineer, IDB
13. Mr. Jacop Mutua	Head, Marketing Division
14. Mr. R. N. Rihanfa	Marketing Officer, Marketing Division
15. Mr. P. K. Ragwa	Extension and Farmer's Organization Officer
16. Ms. Isabella Gaiti Nkonge	Crop Development Division
17. Mr. Kenji Tsujishita	JICA Adviser, MOALD
18. Mr. Manabu Kita	JICA Adviser, MOALD
19. Ms. Teresa Ndingwa Muthui	Home Economic Branch, MOALD
4) Ministry of Land Reclamation, Regional and Water Development (MLRRWD)	
1. Mr. S. M. Kioni	Hydrologist
2. Mr. Katsuyoshi Kitagawa	JICA Adviser, MLRRWD
3. Mr. S. M. Maina	Assistant Director, Construction of Water Supply, MLRRWD
4. J. R. Nyaoro	Head, Register water Right
5) Ministry of Public Works and Housing (MPWH)	
1. Mr. P. Ilobi	Chief Superintending Engineer, Unpaved Roads,

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| 2. Mr. C. F. Kiringa | MPWH
Senior Superintending Engineer, Unpaved Roads,
MPWH |
| 3. Mr. Gabriel Mwangi | Senior Superintending Engineer, Unpaved Roads,
MPWH |
| 4. Mr. Patric Mwinzi | Senior Superintending Engineer, East Kenya,
MPWH |
| 5. Mr. F. D. Karanja | Senior Superintending Engineer, Roads 2000,
MPWH |
- 6) Ministry of Environment and Natural Resources (MENR)**
- | | |
|-----------------------------|--|
| 1. Mr. Anthony M. Maina | Conservator of Forests Monitoring & Evaluation,
Forestry Extension Services, Forestry Department
Head Quarters |
| 2. Ms. Elizabeth Mibey | Head of EIA, National Environmental Secretariat
(NES) |
| 3. Mr. Julius M. Muinde | EIA, NES |
| 4. Mr. Huniphrey M. Kiaburu | Environment Officer, National Environment
Secretariat |
- 7) Horticultural Crops Development Authority (HCDA)**
- | | |
|-----------------------------|-------------------|
| 1. Mr. Martin A. S. Mulandi | Managing Director |
| 2. Miss Margaret Nderitu | Technical Officer |

B. Provincial and District Office

B.1 Provincial Office

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|----------------------------|---|
| 1) Eastern Province | |
| 1. Mr. Peter T. Ibeere | Provincial Director of Agriculture |
| 2. Mr. B. K. Njoka | Provincial Irrigation Engineer |
| 3. Mr. Wai Thaka | Provincial Extension Coordinator |
| 4. Mr. James Muoki | Financial Officer, Provincial Local Government |
| 5. Mr. Samuel Njuguna | Provincial Crops Officer, |
| 6. Mr. G. M. Maithya | Irrigation Engineer |
| 7. Mr. Daniel K. Waithaka | Extension Engineer |
| 2) Central Province | |
| 1. Mr. F. M. Odok | Provincial Director of Agriculture |
| 2. Mr. J. K. Wairangu | Provincial Director Office, Irrigation Engineer |
| 3. Mr. J. K. Muracia | Office in Charge, Provincial Irrigation Unit |
| 4. Mr. P. Gatumu | Provincial Water Officer |

B.2 District Office

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|-------------------------------------|-------------------------------|
| 1) Nyeri District | |
| <u>District Office</u> | |
| 1. Mr. J. G. Makumi | District Commissioner |
| <u>District Agricultural Office</u> | |
| 1. Mr. S. M. Kambo | District Agricultural Officer |
| 2. Ms. Tedesia Kinyungu | Extension Coordinator |
| 3. Mr. P. O. Obimbo | Irrigation Engineer, |

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|---------------------------|--------------------------------|
| 4. Mr. Joseph K. Baru | Crop Officer |
| 5. Mr. Joseph N. Mwangi | District Horticultural Officer |
| 6. Mr. Raymond M. Murunai | Irrigation Officer |
| 7. Ms T. M. Irura | Irrigation Officer |

District Water Office

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|------------------------|------------------------|
| 1. Mr. Simon G. Mwangi | District Water Enginee |
| 2. Mr. J. P. Ngugi | Chemist II |
| 3. Mr. J. S. Mulika | Planning and Design |
| 4. Mr. John K. Mban | Water Bailiff |
| 5. Mr. Joseph K. Mubea | Assistant Hydrologist |

District Public Work Office

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|-------------------------|---|
| 1. Mr. S. M. Ntoiti | District Works Officer |
| 2. Mr. J. M. Mutury | District Road Engineer, Road 2000,/Minor Road |
| 3. Mr. Anthony K. Chira | District Road Engineer |
| 4. Mr. J. M. Wery | Assistant Works Officer |

District Forest Office

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|------------------------|------------------------------------|
| 1. Mr. Mwanzia Jerome | Assistant District Forest Officer |
| 2. Mr. Eunice W. Maina | Forest Extension Service Division, |

District Health Office

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|--------------------------|---|
| 1. Mr. Abok Samuel Awach | Environmental Health Officer, District
Public Health Officer |
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District Information and Development Center

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| 1. Mr. Njogu Ngariama | District Development Officer |
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2) **Kirinyaga District**

District Agricultural Office

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|--------------------------------|---|
| 1. Mr. M. N. Nduru | District Agricultural Officer |
| 2. Mr. S. Naati | Manager, Kibirigwi Irrigation Scheme |
| 3. Mr. J. W. Muriithi | Irrigation Officer, |
| 4. Mr. D. M. Nguru | District Soil Conservation Officer |
| 5. Mr. Geoge Kahuro | Irrigation Engineer |
| 6. Mr. D. G. Kibata | Extension Coordinator |
| 7. Mr. Stephen K. Thathi | Irrigation Officer, Mwea Division |
| 8. Ms. Ann Njoki | District Crop Officer |
| 9. Mr. Godfrey Mwangi | Horticulture Crop Officer, Mwea Division |
| 10. Mr. Peter Karanja Nduguin | District Agricultural Extension Officer, Mwea |
| Div. | |
| 11. Ms. Glasys Wambura Wachira | Acting Divisional Socio-Development Assistant,
Mwea Division |
| 12. Mr. Kariuki Warui Richard | Farm Management Officer, Mwea Division |
| 13. Mr. J.M. Rukenya | Irrigation Engineer |
| 14. Mr. John P. M. Kariuk | Farm Management Officer, |
| 15. Mr. Jacob Chumbe | Mechanization Extension Officer |
| 16. Mr. Henry M. Kiri | District Adaptive Research Officer, |

District Water Office

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|-------------------------|----------------------------------|
| 1. Mr. James I. Simon | Senior Inspector (Water) for O&M |
| 2. Mr. Thomas N. Kagiri | Water Engineer |
| 3. Mr. P. K. Gicheru | District Water Engineer |

4. Mr. Elind K. Wamwang	Deputy Water Engineer
5. Mr. S. K. Kagwi	Water Bailiff
6. Mr. G. Mwona	Assistant Hydrologist
<u>District Public Work Office</u>	
1. Mr. J. M. Magondu	District Works Officer
2. Mr. Joseph Ndiritu	District Road Engineer
<u>District Forest Office</u>	
1. Mr. Richard K. Mbusua	Assistant District Forest Officer
<u>Ministry of Culture and Social Services</u>	
1. Ms. Eunice M. Njiru	Community Development Assistant
<u>Kirinyaga County Council</u>	
1. Mr. Jeremiah Gateri	County Chairman
2. Mrs. Miano	Clerk
3. Mr. Richard Maina	Works Superintendent
3) Embu District	
<u>District Agricultural Office</u>	
1. Mr. D. M. Mwariki	District Agricultural Officer
2. Mr. Mwirigi Kirera	Extension Coordinator
3. Mr. Leonard J. Njiru	Irrigation and Drainage Officer
4. Mr. G. W. Kahuro	Irrigation Officer
5. Mr. Mary Njeri Mwaura	Divisional Extension Officer,
6. Mr. Lusigi Evance	Irrigation Engineer
7. Mr. Morris Makau	Irrigation Engineer
8. Mr. Francis N. Nthukuri	Surveyor
9. Mr. David Kaburu	Horticultural Officer, Manyatta division
<u>District Water Office</u>	
1. Mr. C. N. Gitahi	District Water Engineer
2. Ms. J. Magara	Water Bailiff
3. Mr. J. M. Thakun	Water Bailiff
<u>District Public Work Office</u>	
1. Mr. E. K. Kariuki	District Works Officer
2. Mr. J. K. Wanyiri	District Road Engineer
3. Mr. C. G. Kagigi	DMI Engineer
<u>District Forest Office</u>	
1. Mr. Anthony Mwangi	Assistant District Forest Officer
<u>District Health Office</u>	
1. Mr. S. K. Muthinji	District Public Health Officer
2. Mr. T. M. Omufwoko	Deputy District Public Health Officer
<u>District Land Office</u>	
1. Mr. Davis Gatumo	Provincial Survey Office, Ministry of Land
4) Mbeere District	
<u>District Agricultural Office</u>	
1. Mr. Jasper Nkanya	District Agricultural Officer

- | | |
|--|---|
| <ul style="list-style-type: none"> 2. Mr. J. M. Kariuki 3. Mr. Mathuko 4. Mr. Anthony Mbuthia | <ul style="list-style-type: none"> Extension Coordinator, Irrigation Officer Divisional Agricultural Officer |
|
 | |
| <u>District Water Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. J. M. Kamaru | <ul style="list-style-type: none"> District Water Engineer |
|
 | |
| <u>District Public Work Office</u> | |
| <ul style="list-style-type: none"> 1. Ms Jane Ndirangu | <ul style="list-style-type: none"> District Works Officer |
|
 | |
| <u>District Forest Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. Fransis M. Mathinji 2. Mr. Sinion M. Weru | <ul style="list-style-type: none"> District Forest Officer Assistant District Forest Officer |
|
 | |
| 5) Tharaka-Nithi District | |
| <u>District Agricultural Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. D. K. Mireri 2. Mr. Froncis Mwangi Gichuhi 3. Mr. George M. K. Mwai | <ul style="list-style-type: none"> District Agricultural Officer District Irrigation Engineer Assistant Agricultural Extension Coordinator |
|
 | |
| <u>District Water Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. A. M. Gikanga 2. Mr. Daniel Muasta 3. Mr. C. Ndegwa 4. Mr. Silas Rarama 5. Mrs. M. Gitari | <ul style="list-style-type: none"> Water Engineer Deputy Water Engineer District Water Engineer Senior Inspector, Ground water Water Bailiff |
|
 | |
| <u>District Public Work Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. S. K. Mwamba | <ul style="list-style-type: none"> District Works Officer |
|
 | |
| <u>District Forest Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. Gitonga J. M | <ul style="list-style-type: none"> District Forest Officer, |
|
 | |
| 6) Meru District | |
| <u>District Agricultural Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. John Nthiga 2. Mr. Stanley M. Mboroki 3. Mr. E. M Lusigi 4. Mr. J. M. Thuo 5. Mr. P. M. Nganga 6. Mr. Jamleek G. Mutegi 7. Mr. David Kariuki 8. Mr. Francis Muniki 9. Mr. Lusigi Evance | <ul style="list-style-type: none"> District Agricultural Officer Surveyor Irrigation Engineer, District Irrigation Unit District Soil Conservation Officer District Soil Conservation Officer Scheme Manager, Mitunguu Irrigation Scheme Marketing Officer Irrigation Engineer Irrigation Engineer |
|
 | |
| <u>District Water Office</u> | |
| <ul style="list-style-type: none"> 1. Mr. R. N. Gakubia 2. Mr. S. H. Mwangi 3. Mr. T. M. Mutie 4. Mr. Victory N. Njery 5. Mr. C. Ndegwa 6. Mrs. Wanyoko 7. Miss Jacinta Wamu | <ul style="list-style-type: none"> District Water Engineer Water Engineer Hydrologist Head, Planning & Design Water Engineer Water Bailiff Assistant Water Bailiff |

District Public Work Office

1. Mr. D. M. Mutuku
2. Mr. J. K. Marang

District Works Officer
Road Engineer

District Forest Office

1. Mr. Franud Odhiaonozo

Assistant District Forest Officer

District Health Office

1. Mr. Isaac Gikuwda

Public Health Technician

Ministry of Culture and Social Services

1. Mr. Okach Achuudho

Social Development Officer

Meru County Council

1. Mr. Joel Muriuki

Works Superintendent

7) **Nyambene District**

District Agricultural Office

1. Mr. J. N. Pwanali
2. Mr. Marangu Colling
3. Mr. Gitonga Mbijiwe
4. Mr. Amos Gathecha
5. Mr. Reuben Ratemo

District Agricultural Officer
Horticulture Expert
Irrigation Engineer
Divisional Officer
Divisional Officer

District Water Office

1. Dr. N. Shem Nderi
2. Mr. Nicholas Nyaga

District Water Engineer
Hydrologist

District Public Work Office

1. Mr. J. W. Wanyama

District Road Engineer

District Forest Office

1. Mr. G. M Anampiu

Assistant District Forest Officer,

Horticultural Crops Development Authority (HCDA)

1. Ms. Margaret Nderitu

Technical Officer

C. Non-Government Organizations (NGOs)

1) **Smallholder Irrigation Scheme Development Organization (SISDO)**

1. Mr. Cyprian Gabriel Kirimi
2. Mr. Paul Githumbi Ndirity
3. Mr. John Muthaura
4. Mr. Fred W. Khisah

General Manager
Operation Manager
Research, Monitoring and Extension Officer
Area Manager, Meru

2) **Catholic Diocese of Embu**

1. Mr. Fr Vincont Ileri
2. Ms. Anastasia W. Kithinje
3. Mr. Justin N. Wamuru

Development Co-ordinator
Administrative Assitant
Agricultural Programme Coordinator

3) **Plan International**

1. Mr. R. Subramanian

Programme Support Manager

- 4) **DIOCESS**
 1. Vicente G. Ireri Development Coordinator, Diocese of Embu
- D. Financial Agencies**
- | | |
|----------------------------|--|
| 1. Mr. David N. Thige | Chief Manager, Public Relation, the Co-operative Bank of Kenya |
| 2. Mr. A. N Malla | Manager, Small & Micro-Credit Unit, the Co-operative Bank of Kenya |
| 3. Ms. L. W. Murumba | Staff, Small & Micro-Credit Unit, the Co-operative Bank of Kenya |
| 4. Mr. J. M. Mwangi | Staff, Small & Micro-Credit Unit, the Co-operative Bank of Kenya |
| 5. Mr. Daniel Angweyi | Credit & Marketing Manager, Development Bank of Kenya |
| 6. Mr. Gideon K. Toroitich | Managing Director, Agricultural Finance |
| 7. Mr. Kogie V. N. | Agricultural Financial Corporation |
- E. United Nations Office for Project Services (UNOPS)**
 1. Mr. Ides Van der Doas de Willebois Project Management Officer, UNOPS
- F. Others**
- | | |
|--------------------------------|--|
| 1. Mr. Muteru Wathuta Njau-ini | Area worker, Kenya Wildlife Services, Embu |
| 2. Mr. M. K. Thondu | Area Partnership Officer, Kenya Wildlife Services, Meru |
| 3. Mr. Dadid Mason | Senior Technical Advisor, ILO/ASSIST |
| 4. Miss Annabel Chite | Information Officer, ILO Assistant |
| 5. Dr. M. V. Eckert | Project Co-ordinator, Integration of Tree Crops into Farming System Project, GTZ |
| 6. Mr. John W. Karuga | Director, Everest Enterprise Ltd. Corporation |
| 7. Mr. Hasit Shah | General Manger, Sunrise Ltd. |
| 8. Mr. Kamande E. Wainaina | Scheme Manager, Ngandri-A Rural W/S System, NWC&PC |
- G. Related Japanese Agencies**
- 1) **Embassy of Japan**
- | | |
|--------------------------|---------------------|
| 1. Dr. Shinsuke Horiuchi | Ambassador of Japan |
| 2. Mr. Ryuji Uematsu | Second Secretary |
- 2) **Kenya JICA Office**
- | | |
|--------------------------|--------------------------------|
| 1. Mr. Minoru Tagami | Resident Representative |
| 2. Mr. Atsushi Matsumoto | Deputy Resident Representative |
| 3. Mr. Atsushi Hanatani | Staff |
| 4. Mr. Masaaki Miyagawa | Staff |
- 3) **The Overseas Economic Cooperation Fund (OECF) of Japan, Nairobi Office**
- | | |
|-----------------------|----------------------|
| 1. Mr. Susumu Iwamoto | Chief Representative |
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ANNEX G

METEOROLOGY AND HYDROLOGY

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Station No. : 9036288
 Station Name : Nyeri Met. Station
 Location : latitude 0 26 S
 : longitude 36 58 E
 Period of Record : 1976-1980
 Altitude : 1815 m

Month	Temperature				Relative Humidity		Daily sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily Maximum (degree)	Daily Minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily Maximum (%)	Daily Minimum (%)					
Jan	24.7	10.3	28.8	5.7	76	54	7.3	88.5	127	103	8
Feb	25.7	11.0	30.3	4.7	77	50	8.0	94.6	137	68	7
Mar	25.8	11.8	31.4	5.5	77	51	7.2	105.0	143	91	11
Apr	24.0	14.0	28.0	11.5	85	64	5.5	81.5	117	93	14
May	22.6	14.1	26.2	9.5	88	65	6.7	81.8	123	213	16
Jun	21.2	12.5	24.0	8.7	85	65	5.6	72.5	94	41	6
Jul	20.0	11.9	24.5	8.3	90	66	3.9	72.3	79	20	6
Aug	20.6	11.8	25.3	6.3	90	68	4.3	77.5	94	31	7
Sep	23.3	12.4	29.1	7.3	82	50	5.1	92.0	136	19	4
Oct	24.5	13.1	27.4	8.0	79	50	7.1	89.6	161	120	10
Nov	23.0	12.4	27.0	6.7	82	65	5.8	55.9	109	152	14
Dec	23.5	11.4	28.8	4.1	79	64	6.7	68.4	118	72	10
Total	278.9	146.7	330.8	86.3	990	712	73.2	979.6	1438	1023	113
Max.	25.8	14.1	31.4	11.5	90	68	8.0	105.0	161	213	16
Min.	20.0	10.3	24.0	4.1	76	50	3.9	55.9	79	19	4
Ave.	23.2	12.2	27.6	7.2	82	59	6.1	81.6	119	85	9

Table G.1-2 Monthly Meteorological Data at Kirinyaga District

Station No. : 9037096
 Station Name : Sagana Fish Cultural Farm
 Location : latitude 0 40 S
 : longitude 37 12 E
 Period of Record : 1971-1980
 Altitude : 1220 m

Month	Temperature				Relative Humidity		Daily sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily Maximum (degree)	Daily Minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily Maximum (%)	Daily Minimum (%)					
Jan	27.6	14.3	32.6	9.8	67	51	7.6	62.2	159	36	5
Feb	28.6	14.9	31.9	9.0	67	45	8.2	66.0	165	46	3
Mar	28.5	15.7	32.8	8.5	68	49	7.5	69.7	181	86	9
Apr	27.6	17.2	35.4	10.4	80	57	6.1	47.0	146	397	17
May	26.7	17.0	29.9	12.0	80	60	7.1	44.7	149	213	18
Jun	25.5	15.4	35.0	9.1	82	61	5.5	40.1	112	26	5
Jul	24.5	14.7	32.8	9.5	81	60	3.2	41.4	107	14	4
Aug	24.9	14.4	32.5	7.0	81	58	4.4	47.9	114	18	4
Sep	26.9	14.8	30.6	5.5	77	51	6.0	66.3	152	26	4
Oct	28.0	15.8	32.2	6.2	75	49	7.2	65.1	183	134	11
Nov	26.7	15.6	31.2	11.4	79	59	6.6	48.8	162	267	15
Dec	26.8	15.1	33.0	10.2	73	59	7.6	60.1	146	77	7
Total	322.3	184.9	389.9	108.6	910	659	77.0	659.3	1776	1340	102
Max.	28.6	17.2	35.4	12.0	82	61	8.2	69.7	183	397	18
Min.	24.5	14.3	29.9	5.5	67	45	3.2	40.1	107	14	3
Ave.	26.9	15.4	32.5	9.0	75	54	6.4	54.9	148	111	8

Table G.1-3 Monthly Meteorological Data at Embu District

Station No. : 9072023
 Station Name : Embu Met. Station
 Location : latitude 0 30 S
 : longitude 37 27 E
 Period of Record : 1977-1980
 Altitude : 1508 m

Month	Temperature				Relative Humidity		Daily sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily Maximum (degree)	Daily Minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily Maximum (%)	Daily Minimum (%)					
Jan	24.4	12.1	28.4	9.0	71	61	8.5	76.0	158	65	7
Feb	26.0	13.1	29.7	7.9	74	54	9.0	89.3	159	60	4
Mar	26.3	14.0	31.4	10.5	78	52	8.1	87.4	163	111	11
Apr	24.8	15.4	29.3	12.7	88	68	6.6	69.5	143	322	20
May	23.7	14.9	27.5	11.2	85	63	6.2	57.1	131	189	15
Jun	22.2	13.3	25.8	9.5	86	60	4.3	63.6	96	25	4
Jul	20.8	12.6	25.0	9.4	85	64	2.4	77.1	77	38	9
Aug	21.7	12.1	25.8	8.5	88	61	3.8	71.5	93	44	10
Sep	24.7	12.7	28.9	8.6	83	46	5.4	64.5	128	40	4
Oct	25.8	13.9	29.5	9.4	82	48	7.1	65.6	146	157	12
Nov	23.6	13.6	26.4	8.5	83	66	6.9	85.7	134	259	17
Dec	23.8	12.8	26.9	8.7	75	65	8.4	73.9	145	54	10
Total	287.8	160.5	334.6	113.9	978	708	76.7	881.2	1573	1364	123
Max.	26.3	15.4	31.4	12.7	88	68	9.0	89.3	163	322	20
Min.	20.8	12.1	25.0	7.9	71	46	2.4	57.1	77	25	4
Ave.	24.0	13.4	27.9	9.5	81	59	6.4	73.4	131	113	10

Table G.1-4 Monthly Meteorological Data at Mbeere District

Station No. : 8937035
 Station Name : Archer's Post
 Location : latitude 0 37 N
 : longitude 37 40 E
 Period of Record : 1971-1980
 Altitude : 872 m

Month	Temperature				Relative Humidity		Daily sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily Maximum (degree)	Daily Minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily Maximum (%)	Daily Minimum (%)					
Jan	31.7	17.4	35.5	13.5	60	41	-	131.9	300	27	3
Feb	32.7	18.2	36.0	12.5	59	38	-	144.3	282	21	2
Mar	33.4	19.1	37.5	14.0	59	42	-	151.6	316	70	3
Apr	33.0	19.8	36.5	14.0	65	45	-	127.3	255	53	6
May	32.9	20.0	36.5	17.0	60	46	-	139.0	262	10	6
Jun	32.4	19.0	34.5	16.8	58	41	-	162.0	279	8	2
Jul	31.7	19.0	35.5	16.0	55	40	-	170.8	287	7	2
Aug	32.2	19.2	36.7	12.0	55	38	-	181.4	290	30	1
Sep	33.2	19.7	36.0	17.5	55	38	-	170.8	305	63	2
Oct	33.3	19.6	36.5	16.5	58	38	-	148.9	293	30	4
Nov	31.2	18.7	34.5	15.0	66	45	-	122.6	236	63	6
Dec	30.8	17.9	34.0	14.0	65	45	-	127.6	270	30	3
Total	388.5	227.6	429.7	178.8	715	497	-	1778.2	3375	412	40
Max.	33.4	20.0	37.5	17.5	66	46	-	181.4	316	70	6
Min.	30.8	17.4	34.0	12.0	55	38	-	122.6	236	7	1
Ave.	32.4	19.0	35.8	14.9	59	41	-	148.2	281	34	3

Table G.1-5 Monthly Meteorological Data at Tharaka Nithi District

Station No. : 9037160
 Station Name : Marimanti Met. Station
 Location : latitude 0 9 S
 : longitude 37 59 E
 Period of Record : 1971-1980
 Altitude : 587 m

Month	Temperature				Relative Humidity		Daily sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily Maximum (degree)	Daily Minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily Maximum (%)	Daily Minimum (%)					
Jan	31.9	18.4	36.9	13.9	75	52	-	53.3	159	50	4
Feb	33.8	19.8	37.4	12.6	72	49	-	68.0	177	21	3
Mar	34.6	20.9	38.2	17.0	71	46	-	69.8	225	68	4
Apr	33.1	21.4	37.8	17.4	75	59	-	55.5	181	272	12
May	32.2	20.8	39.5	17.0	74	54	-	56.4	166	112	6
Jun	31.7	19.2	35.6	14.5	64	46	-	67.1	168	7	2
Jul	31.0	19.4	35.5	14.5	64	44	-	84.9	180	4	2
Aug	31.3	19.5	35.2	15.5	60	40	-	100.6	208	4	1
Sep	33.2	20.0	36.6	14.6	57	41	-	111.3	242	11	1
Oct	34.2	21.2	36.9	17.2	64	42	-	103.1	254	70	4
Nov	30.0	20.3	36.6	16.4	81	59	-	55.0	173	223	12
Dec	30.9	18.9	35.1	14.1	80	61	-	50.8	154	5	6
Total	387.9	239.7	441.3	184.7	837	593	-	875.8	2287	847	57
Max.	34.6	21.4	39.5	17.4	81	61	-	111.3	254	272	12
Min.	30.0	18.4	35.1	12.6	57	40	-	50.8	154	4	1
Ave.	32.3	20.0	36.8	15.4	69	49	-	73.0	190	70	4

Table G.2.1-1 Meteorological Condition of Rupingazi Ngerwe Irrigation Scheme

Station No : 9037202
 Station Name : Embu Meteorological Station
 Location : latitude 0 30 S
 longitude 37 27 E
 Period of Record : 1977-1980
 Altitude : 1508 m

	Temperature				Relative Humidity		Daily Sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily maximum (degree)	Daily minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily maximum (%)	Daily maximum (%)					
Jan	24.4	12.1	28.4	9.0	71	61	8.5	76.0	158	65	7
Feb	26.0	13.1	29.7	7.9	74	54	9.0	89.3	159	60	4
Mar	26.3	14.0	31.4	10.5	78	52	8.1	87.4	163	111	11
Apr	24.8	15.4	29.3	12.7	88	68	6.6	69.5	143	322	20
May	23.7	14.9	27.5	11.2	85	63	6.2	57.1	131	189	15
Jun	22.2	13.3	25.8	9.5	86	60	4.3	63.6	96	25	4
Jul	20.8	12.6	25.0	9.4	85	54	2.4	77.1	77	38	9
Aug	21.7	12.1	25.8	8.5	88	61	3.8	71.5	93	44	10
Sep	24.7	12.7	28.9	8.6	83	46	5.4	64.5	128	40	4
Oct	25.8	13.9	29.5	9.4	82	48	7.1	65.6	146	157	12
Nov	23.6	13.6	26.4	8.5	83	66	6.9	85.7	134	259	17
Dec	23.8	12.8	26.9	8.7	75	65	8.4	73.9	145	54	10
Total									1573	1364	123
Max.	26.3	15.4	31.4	12.7	88	68	9.0	89.3	163	322	20
Min.	20.8	12.1	25.0	7.9	71	46	2.4	57.1	77	25	4
Ave.	24.0	13.4	27.9	9.5	82	58	6.4	73.4	131	114	10

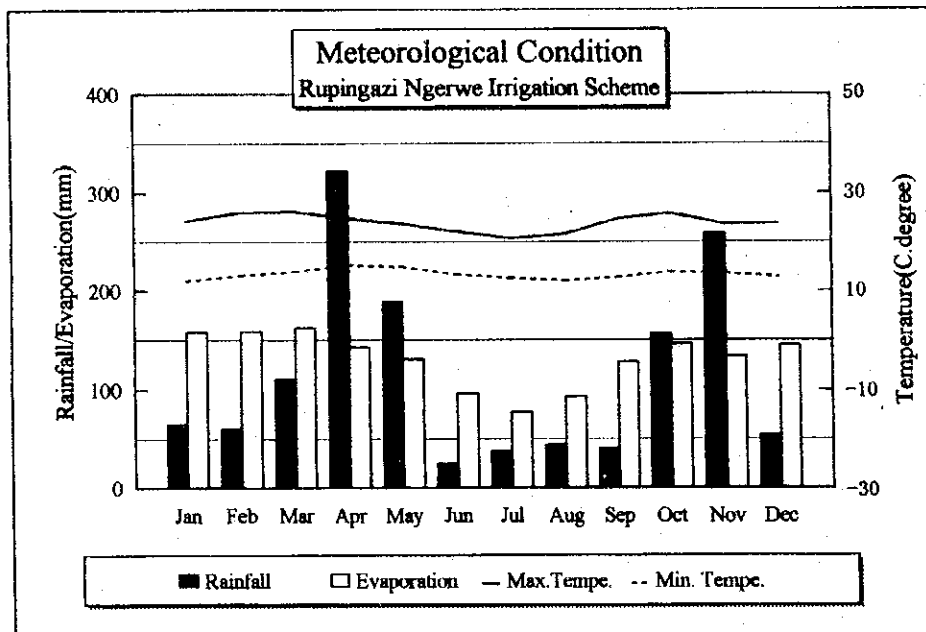


Table G.2.1-2 Monthly Minimum Runoff at RGS-4DC3

YEAR	ITEM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	MINI	1.42	1.08	1.00	2.02	5.05	3.24	2.48	1.71	2.60	2.25	2.60	1.61	1.00
1971	MINI	1.24	0.92	0.78	0.85	4.03	3.24	3.04	2.91	2.25	2.02	2.08	1.92	0.78
1972	MINI	1.08	1.08	0.85	0.85	1.47	2.79	2.02	1.00	1.42	1.92	7.03	3.38	0.85
1973	MINI	2.13	1.61	1.20	1.00	1.81	3.38	2.36	2.36	2.25	2.02	2.25	2.13	1.00
1974	MINI	1.33	1.00	0.78	1.33	1.29	1.42	2.36	2.68	2.25	1.61	2.02	1.42	0.78
1975	MINI	0.92	0.64	0.58	0.58	1.16	2.25	2.60	2.48	1.92	1.52	1.42	1.33	0.58
1976	MINI	0.92	0.78	0.58	0.58	1.00	1.61	1.42	1.16	1.00	1.08	1.04	1.33	0.58
1977	MINI	1.00	0.07	0.07	0.10	0.23	0.32	0.23	0.19	0.16	0.13	0.47	0.32	0.07
1978	MINI	1.92	0.13	0.19	0.27	1.01	1.15	1.02	0.89	0.77	0.66	0.89	0.77	0.13
1979	MINI	3.32	0.51	0.36	0.41	0.66	1.42	0.77	0.56	0.46	0.46	0.56	0.46	0.36
1980	MINI	2.02	0.20	0.20	0.20	0.83	0.56		2.18	2.18	1.79	4.60	3.04	
1981	MINI	1.86	1.42	1.28	5.03	6.95	6.14	3.99	3.80	3.23	2.60	3.80	2.69	1.28
1982	MINI				2.35	5.68	6.14		3.41	3.41	3.60	7.19	4.40	
1983	MINI	2.86	2.18	1.42	1.28	9.08	6.60	4.81	3.70	2.69	3.26	5.35	3.99	1.28
1984	MINI	2.34	1.56	1.02	1.28	1.28	1.15	1.02	0.77	0.77	1.21	3.99	2.51	0.77
1985	MINI	1.56	1.42	1.02	2.35	7.04	6.25	4.19	3.60	3.80	3.90	3.99	2.80	1.02
1986	MINI	1.64	1.02	0.68	0.66	5.57	6.60	3.99	2.86	2.02	1.56	3.41	2.34	0.66
1987	MINI	1.71	1.02	0.61	0.56	1.55	4.40	2.51	2.18	2.02	1.51	1.21	1.28	
1988	MINI	1.10	0.56	0.46	1.24	10.14	6.60	5.39	5.03	6.85	5.24	7.93		
1989	MINI		2.69	2.18	2.32	5.24	6.37	5.68	5.46	4.81	4.40	8.18	5.91	
1990	MINI	4.40	3.32	3.23	6.37	8.06	6.84	4.60	4.50	3.60	2.69	5.68	5.03	2.69
1991	MINI	3.23	1.86	1.56	1.49	2.69	5.91	4.19	3.41	2.34	1.86	2.43	2.18	1.49
1992	MINI	1.02	0.96	0.56	1.08	3.51	3.80	3.23		2.18	2.77	4.19	3.99	
1993	MINI	3.60	2.96	1.71	1.56	6.54	6.60	5.91	4.60	2.51	1.86	2.18	1.86	1.56
1994	MINI	0.77	0.36	0.28	1.86	10.14	6.83				2.86	12.67	6.95	
1995	MINI	3.99	2.86	2.18	2.34	11.66				4.89	4.61	9.87	5.91	
1996	MINI	3.99	3.04	2.52	2.18	2.18								
Average	MINI	2.06	1.35	1.05	1.56	4.29	4.06	3.08	2.64	2.51	2.28	4.12	2.78	2.65

(unit: m3/s)

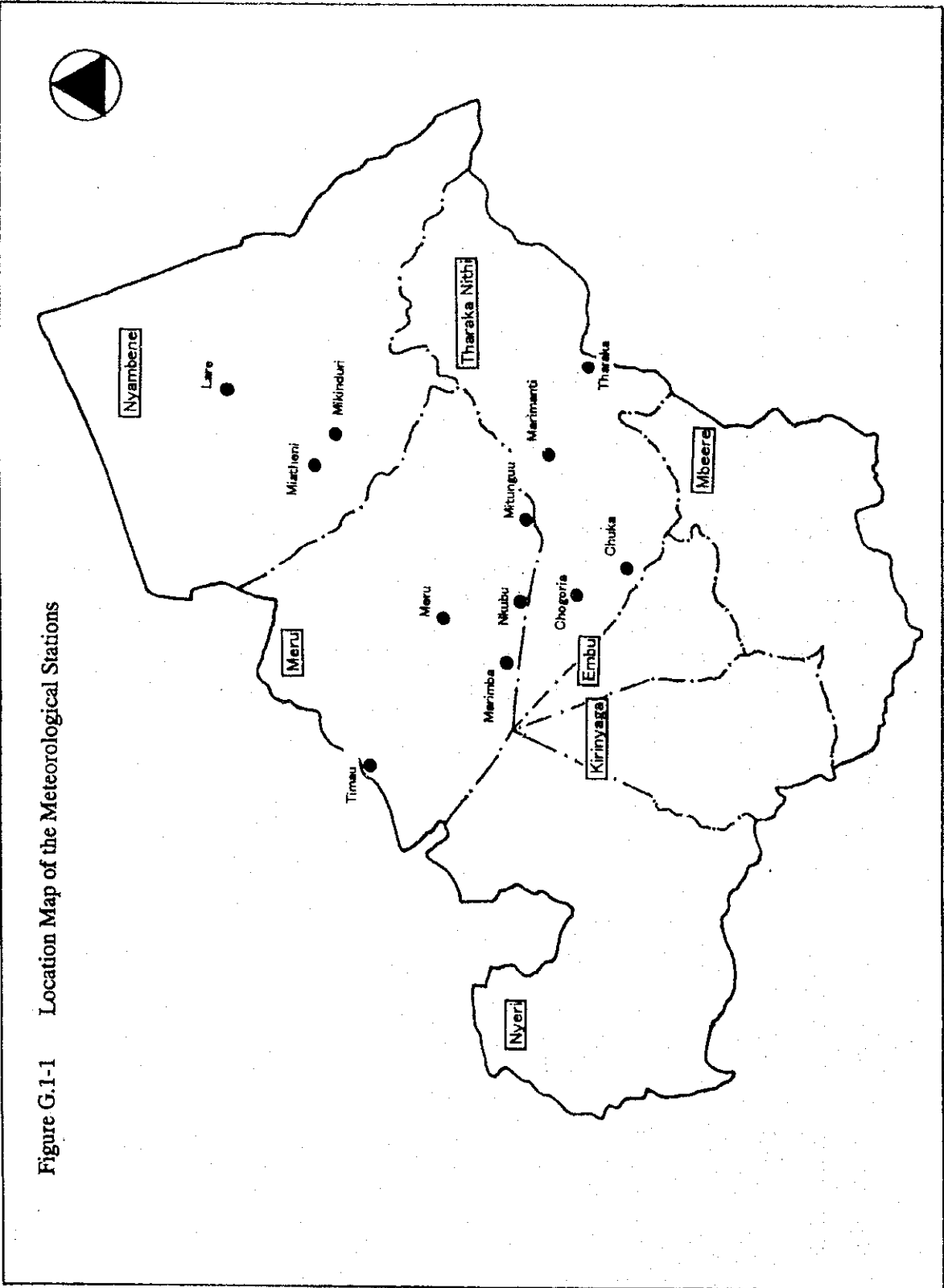
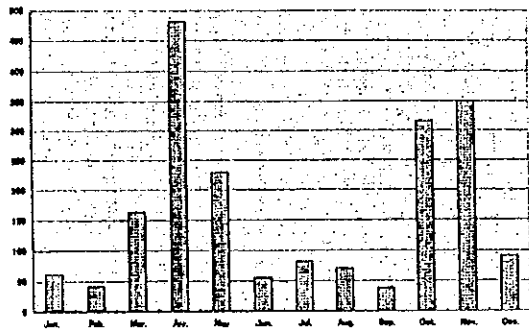
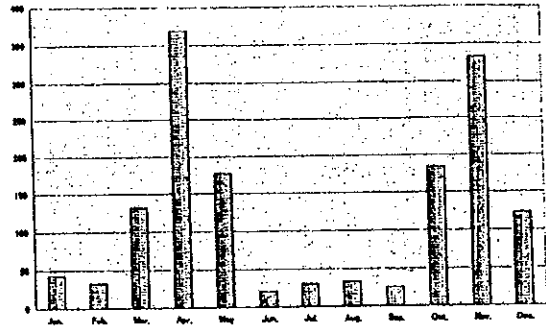


Figure G.1-1 Location Map of the Meteorological Stations

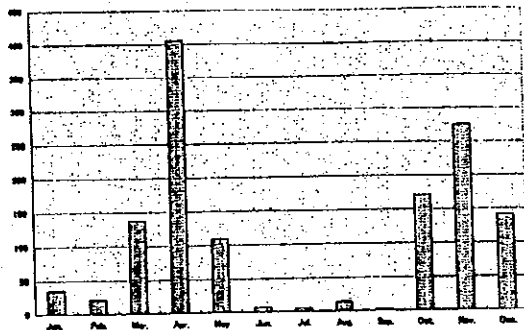
Figure G.1-2 Elevation and Annual Rainfall Pattern
Tharaka Nithi



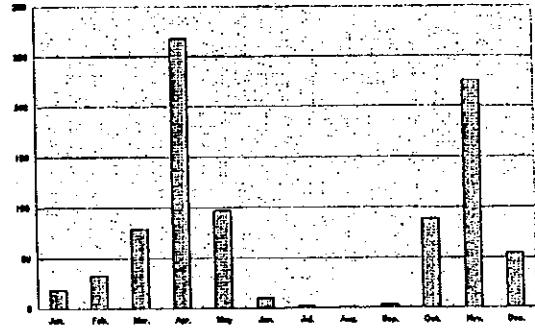
Chogoria 1,977mm EL= 1,372 m



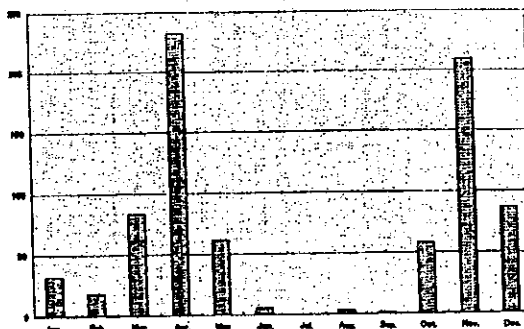
Chuka 1,499mm EL= 1,494 m



Magutuni 1,320mm EL= 1,158 m

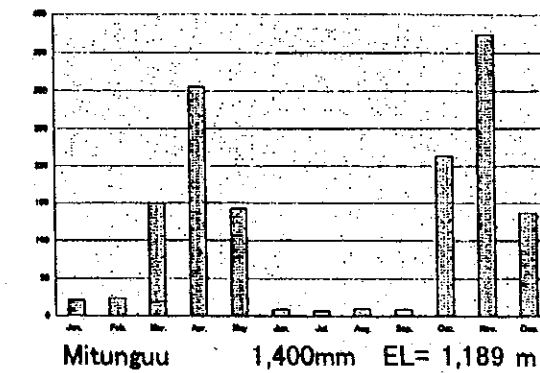
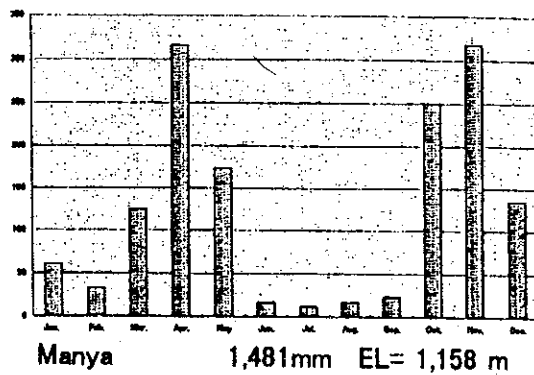
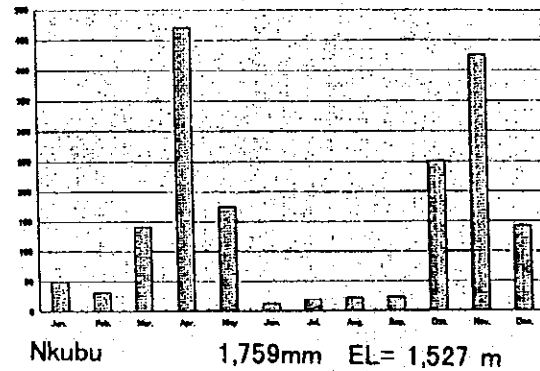
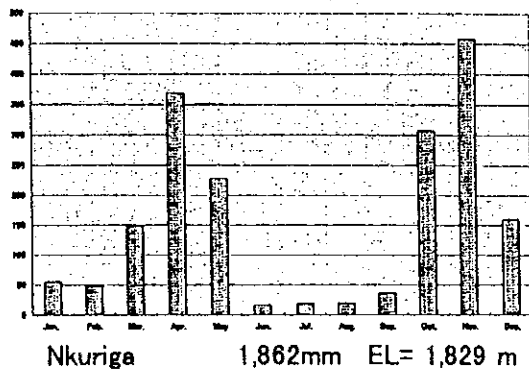
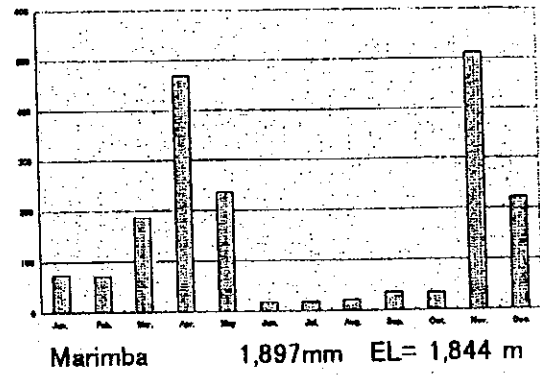
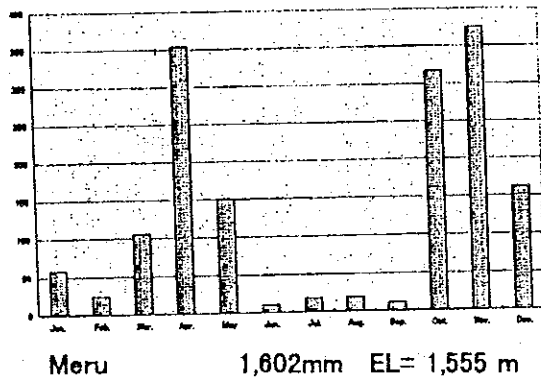
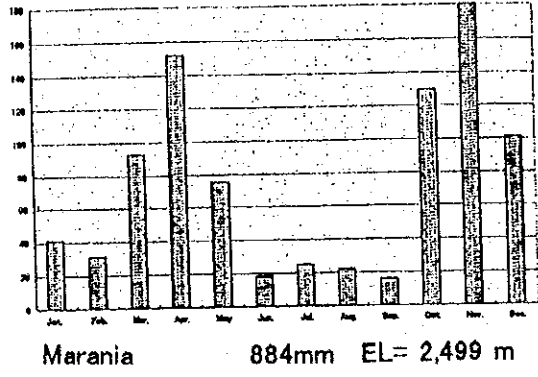
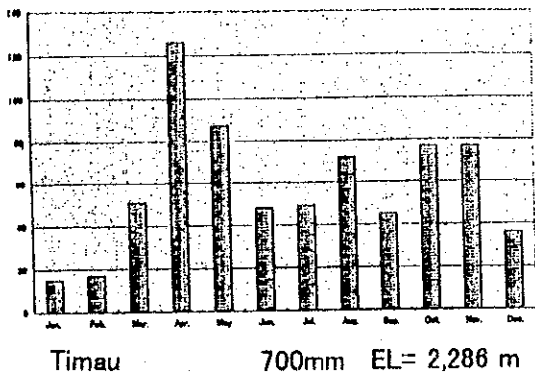


Marimanti 879mm EL= 610 m

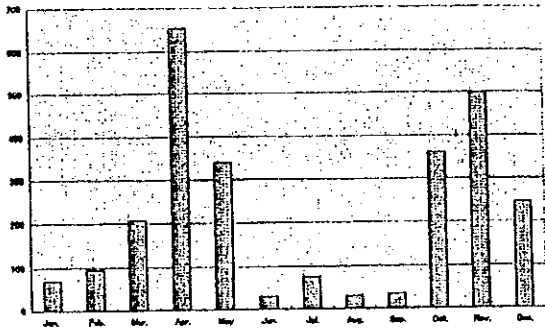


Tharaka 789mm EL= 914 m

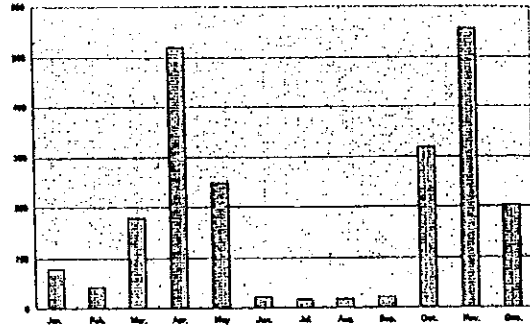
Meru



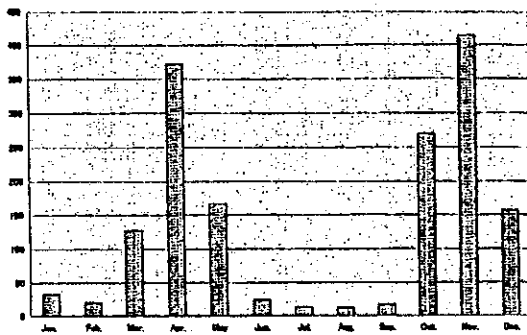
Nyambene



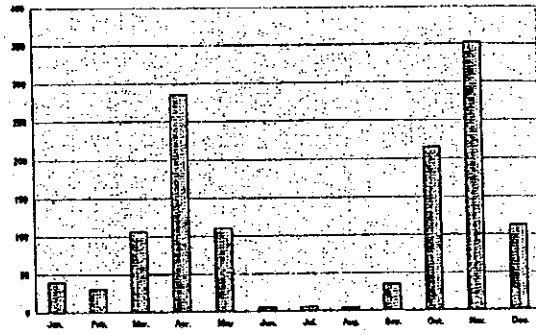
Lare 2,637mm EL= 1,775 m



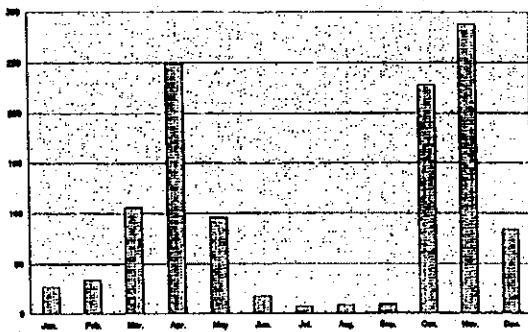
Mikinduri 2,221mm EL= 1,405 m



Miatheni 1,627mm EL= 1,433 m



Oringo 1,300mm EL= 1,430 m



Muthara 1,153mm EL= 1,478 m

Table G.2.2-1 Meteorological Condition of Ngomano/Nyangati Water Furrow Project

Station No : 9037179
 Station Name : Tabere Cotton Research Station, Kirinyaga
 Location : latitude 0 37 S
 longitude 37 20 E
 Period of Record : 1974-1980
 Altitude : 1159 m

	Temperature				Relative Humidity		Daily Sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation* (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily maximum (degree)	Daily minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily maximum (%)	Daily maximum (%)					
Jan	28.4	13.7	32.0	9.3	71	47	9.2	101.3	207	32	6
Feb	29.7	14.7	32.7	9.8	71	44	9.1	94.1	212	37	5
Mar	30.0	16.3	33.5	10.0	75	44	7.9	91.0	223	72	6
Apr	27.9	17.4	32.5	14.0	83	52	6.9	65.9	179	286	15
May	26.8	16.9	30.0	13.0	80	57	7.0	49.0	149	122	9
Jun	25.5	15.8	28.5	10.5	77	53	5.4	5.0	132	36	5
Jul	24.3	15.3	28.5	9.0	78	54	4.0	59.4	121	43	5
Aug	24.9	15.1	29.7	9.5	78	51	4.0	68.4	143	15	4
Sep	27.5	15.5	32.5	10.5	73	43	6.1	81.7	186	27	4
Oct	28.8	16.3	32.0	8.0	76	44	7.5	72.9	214	85	6
Nov	26.9	16.1	30.5	11.0	82	55	7.0	72.8	158	218	13
Dec	26.9	14.7	30.5	11.0	76	55	8.5	81.1	179	41	7
Total									2103	1014	85
Max.	30.0	17.4	33.5	14.0	83	57	9.2	101.3	223	286	15
Min.	24.3	13.7	28.5	8.0	71	43	4.0	5.0	121	15	4
Ave.	27.3	15.7	31.1	10.5	77	50	6.9	70.2	175	85	7

Note) * Mwea Experimental Station(1955-1977)

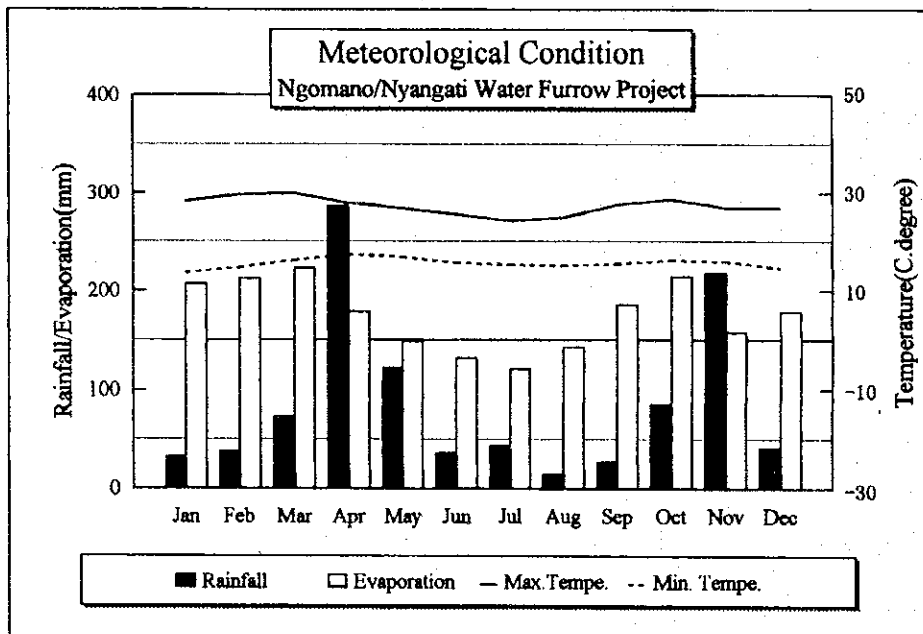


Table G.2.2-2 Monthly Minimum Runoff at RGS-4DA10

YEAR	ITEM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	MINI	4.11	3.90	3.69	5.85	24.43	14.30	9.73	8.91	8.15	7.45	6.30	4.54	3.69
1971	MINI	3.28	1.84	2.33			7.87	6.89	8.64	6.42	5.28	4.42	3.42	
1972	MINI	2.68	3.81	2.50	2.33	3.81	10.50	6.42	5.06	3.81	5.28	25.86	12.93	2.33
1973	MINI	8.15	6.53	4.32	3.90	7.68	12.93	9.18	8.63	7.68	5.74	6.42	6.30	3.90
1974	MINI	3.90	3.48	2.28	3.80	5.85	6.30	9.32	10.58	7.46	6.08	5.52	4.32	2.28
1975	MINI	3.28	2.48	2.00	1.90	4.54	10.44	8.91	7.68	5.74	5.63	4.32	3.69	1.90
1976	MINI	2.19	1.90	1.35	1.72	2.68	6.53	5.85	4.11	2.87	3.28	3.08	4.97	1.35
1977	MINI	4.32	2.68	2.68	2.48	19.94	10.58	8.15	7.45	4.75	4.54	13.84	8.15	2.48
1978	MINI	6.30	4.97	6.30	7.22	18.61	7.91	8.51	7.45	6.08	5.74	8.15	8.38	4.97
1979	MINI	5.74	7.91	6.08	6.30	11.74	17.63	10.87	8.38	6.08	5.41	6.08	5.63	5.41
1980	MINI	4.32	3.48	5.19	1.53	6.76	7.22	6.08	5.85	6.08	4.32	6.99	7.91	1.53
1981	MINI	5.85	5.41	4.97	8.38	8.15	12.63	8.63	6.76	6.53	6.08	7.91	6.99	4.97
1982	MINI				4.32	11.75	15.39	12.03	3.28	7.91	10.30	12.33	11.16	
1983	MINI	7.45	5.19	4.32	4.32	30.64	14.14	10.40	5.41	6.08	6.53	6.08	6.08	4.32
1984	MINI	4.32	4.11	2.87	3.48	3.69	2.68	2.98	3.48	3.48	3.48	5.63	7.91	2.68
1985	MINI	5.52	4.22	3.90	5.63	12.18	11.45	8.38	6.84	5.41	5.41	6.08	6.53	3.90
1986	MINI	3.90	3.08	2.28	2.28	16.66	13.53	8.15	6.08	4.11	3.90	5.63	6.08	2.28
1987	MINI	4.68	3.28	2.28	2.28	6.53	10.87	5.63	5.93	5.63	3.62	3.08	3.28	2.28
1988	MINI	2.54	1.53	1.53	5.21	30.26	18.75		14.45	14.45	10.01	12.03	11.89	
1989	MINI	7.91	6.30	4.75	7.16	15.70	12.03	9.73	9.46	8.63	8.38	12.93	10.87	
1990	MINI	8.38	6.30	6.53	7.16	22.75	13.23	9.73	7.91	6.30	5.19	9.46	8.63	5.19
1991	MINI	5.85	3.48	2.87	3.48	22.75	11.16	8.63			4.97	9.31	6.30	
1992	MINI	2.48	1.53	1.53	1.53	7.91	10.01	7.91	5.63	4.32	3.69	4.97	5.63	
1993	MINI	4.54	5.78	3.76	3.28	8.63	10.58	7.83	6.08	3.48	3.08	3.48	3.90	3.08
1994	MINI	1.35	1.35	0.84	3.99	16.66				3.69	3.28	18.01		
1995	MINI	5.41	3.69	4.11	1.53	14.76	10.58	6.76	6.30	6.76	7.45	12.67		
1996	MINI	4.74	3.94	3.42	4.02	12.67	11.19	8.15	6.78	6.08	5.54	8.48	6.89	6.82
Average	MINI	4.74	3.94	3.42	4.02	12.67	11.19	8.15	6.78	6.08	5.54	8.48	6.89	6.82

(unit: m³/s)

Table G.2.3-1 Meteorological Condition of Nkunjumo Water Project

Station No : 8937065
 Station Name : Meru Meteorological Station, Meru
 Location : latitude 0 05 N
 longitude 37 39 E
 Period of Record : 1975-1980
 Altitude : 1555 m

	Temperature				Relative Humidity		Daily Sunshine hours (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily maximum (degree)	Daily minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily maximum (%)	Daily maximum (%)					
Jan	23.4	11.4	26.0	6.4	79	67	8.1	66.8	120	80	7
Feb	24.7	11.9	28.3	6.9	78	50	8.6	67.7	129	39	6
Mar	25.7	13.0	29.8	9.2	78	55	8.3	63.5	157	126	8
Apr	24.1	14.3	28.6	10.6	81	67	7.5	53.6	134	282	17
May	22.8	13.7	25.5	8.9	83	71	8.1	62.9	117	86	10
Jun	22.1	12.0	25.2	7.0	81	63	7.5	58.1	115	5	3
Jul	21.5	11.9	24.6	7.5	84	61	6.1	62.1	115	10	3
Aug	22.1	12.0	26.2	8.5	83	56	6.5	75.2	133	8	3
Sep	24.4	12.3	28.7	7.8	78	49	7.7	82.7	148	16	4
Oct	25.1	13.5	30.0	9.0	79	49	7.9	75.3	170	140	9
Nov	22.8	13.1	25.7	9.2	83	71	6.4	50.9	110	328	17
Dec	22.7	12.0	25.7	8.0	81	73	7.0	50.8	11	139	12
Total									1459	1259	99
Max.	25.7	14.3	30.0	10.6	84	73	8.6	82.7	170	328	17
Min.	21.5	11.4	24.6	6.4	78	49	6.1	50.8	11	5	3
Ave.	23.5	12.6	27.0	8.3	81	61	7.5	64.1	122	105	8

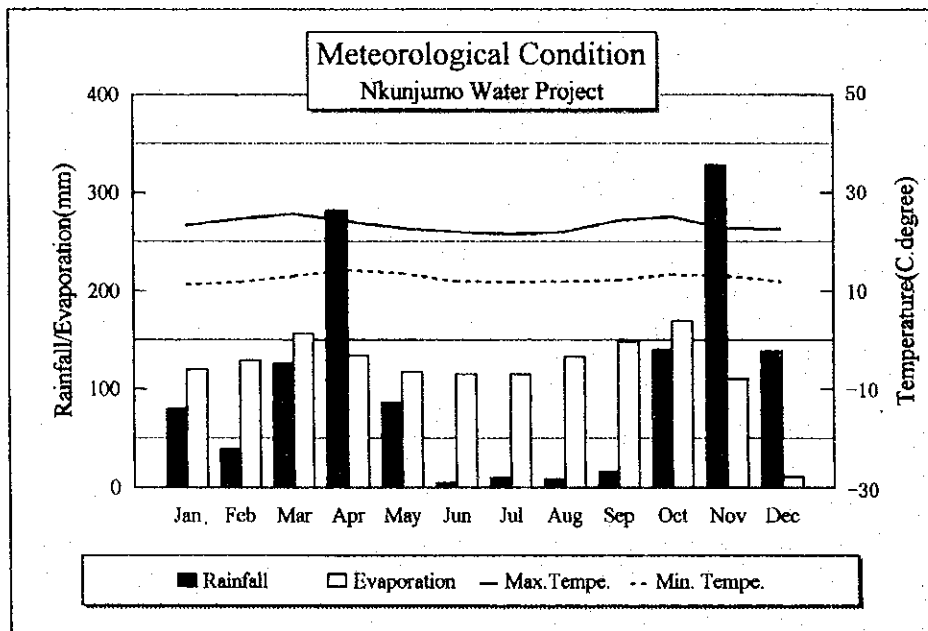


Table G.2.3-2 Monthly Minimum Runoff at RGS-4F5

(unit: m³/s)

YEAR	ITEM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	MINI	1.24	1.19	0.85	1.33	1.04	1.19	1.11	0.59	0.54	0.44	0.76	0.70	0.44
1971	MINI	0.65	0.52	0.44	0.59	1.27	0.76	0.59	0.54	0.44	0.40	0.59	0.65	0.40
1972	MINI	0.65	0.65	0.58	0.44	0.57	0.54	0.49	0.44	0.40			1.35	
1973	MINI	0.96	0.76	0.59			0.70							
1974	MINI													
1980	MINI													
1981	MINI	1.27	1.11	0.89	1.93	2.32	1.44	1.18	0.96	0.83	0.70	0.79	1.11	0.70
1982	MINI	1.27	1.03	0.76	1.00	2.44	1.44	1.18	0.96	0.76	0.76	2.09	2.14	0.76
1983	MINI	1.27	1.27	0.65	0.96	1.44	1.18	1.11	1.03		0.76	1.15	1.15	
1984	MINI	1.72	0.96	0.76	0.70	0.70	0.54	0.49	0.44	0.36	0.36	2.21	1.67	0.36
1985	MINI	1.18	0.96	0.70	1.11	2.26	1.53	1.03	0.89	0.76	0.54	1.00		
1986	MINI		0.83	0.70	0.70	1.62	1.18	0.83	0.70	0.34	0.54	0.70	1.68	
1987	MINI	1.18	0.89	0.70	0.70	0.89	0.96	0.83	0.76	0.59	0.49	0.49	0.96	0.49
1988	MINI	0.83	0.70	0.54	0.80	2.14	1.18	1.03	0.89	0.59	0.54	1.15	1.53	0.54
1989	MINI	1.93	1.44	0.65	1.18	1.15	0.96	0.89	0.76	0.59	0.70	1.48	3.68	0.59
1990	MINI	1.62	1.39	1.31	3.38	2.44	1.72	1.18	1.03	0.70	0.54	2.09	2.20	0.54
1991	MINI	1.67	1.18	0.76	1.03	1.18	1.44	1.18	0.96	0.76	0.59	1.00	1.82	0.59
1992	MINI	1.27	0.83	0.65	0.73	1.15	1.03	1.00	0.83	0.54	0.52	2.10	2.75	0.52
1993	MINI	3.03			1.15	1.82	1.15	0.89	0.65	0.49	0.44	0.93	2.26	
1994	MINI	0.96	0.70			1.62	1.18	1.03	0.83	0.49				
1995	MINI		1.18	1.00	0.96	1.75	1.44	1.27	0.89	0.59	0.44	2.44	3.23	
1996	MINI	3.68	1.27											
Average	MINI	1.46	0.99	0.74	1.10	1.54	1.14	0.96	0.79	0.59	0.62	1.34	1.80	1.09

Table G.2.4-1 Meteorological Condition of Ruungu/Karocho Irrigation Project

Station No : 9037160
 Station Name : Marimante Meteorological Station, Tharaka Nithi
 Location : latitude 0 09 S
 longitude 37 59 E
 Period of Record : 1971-1980
 Altitude : 587 m

	Temperature				Relative Humidity		Daily Sunshine hours* (hrs)	Daily wind run (km)	Daily Evaporation (mm)	Monthly mean rainfall (mm)	Nos. of Raindays (days)
	Daily maximum (degree)	Daily minimum (degree)	Extrem high (degree)	Extrem low (degree)	Daily maximum (%)	Daily maximum (%)					
Jan	31.9	18.4	36.9	13.9	75	52	8.1	53.3	159	50	4
Feb	33.8	19.8	37.4	12.6	72	49	8.6	68.0	177	21	3
Mar	34.6	20.9	38.2	17.0	71	46	8.3	69.8	225	68	4
Apr	33.1	21.4	37.8	17.4	75	59	7.5	55.5	181	272	12
May	32.2	20.8	39.5	17.0	74	54	8.1	56.4	166	112	6
Jun	31.7	19.2	35.6	14.5	64	46	7.5	67.1	168	7	2
Jul	31.0	19.4	35.5	14.5	64	44	6.1	84.9	180	4	2
Aug	31.3	19.5	35.2	15.5	60	40	6.5	100.6	208	4	1
Sep	33.2	20.0	36.6	14.6	57	41	7.7	111.3	242	11	1
Oct	34.2	21.1	36.9	17.2	64	42	7.9	103.1	254	70	4
Nov	30.0	20.3	36.6	16.4	81	59	6.4	55.0	173	223	12
Dec	30.9	18.9	35.1	14.1	80	61	7.0	50.8	154	5	6
Total									2287	847	57
Max.	34.6	21.4	39.5	17.4	81	61	8.6	111.3	254	272	12
Min.	30.0	18.4	35.1	12.6	57	40	6.1	50.8	154	4	1
Ave.	32.3	20.0	36.8	15.4	70	49	7.5	73.0	191	71	5

Note) * Meru Meteorological Station(1975-1980)

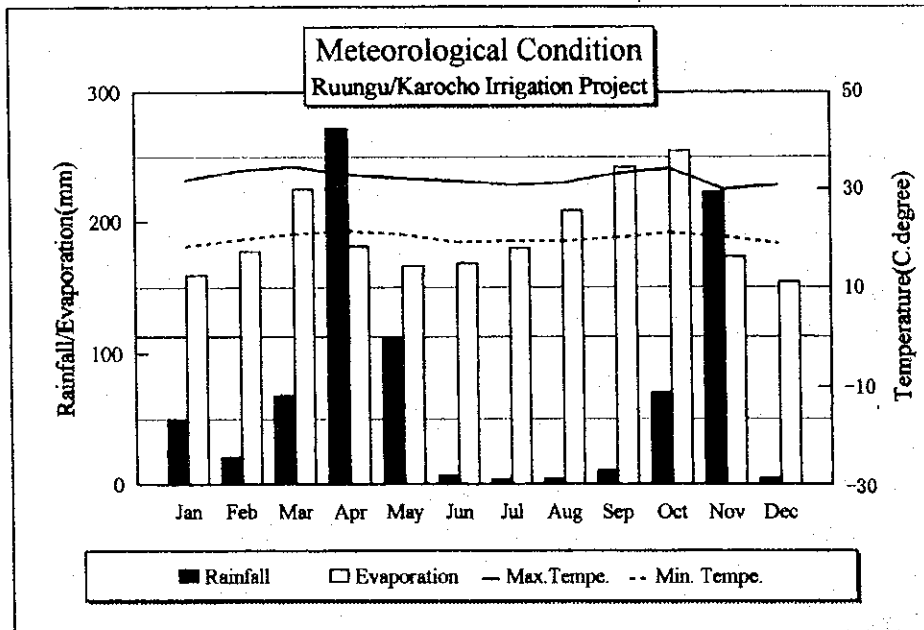


Table G.2.4-2 Monthly Minimum Runoff at RGS-4F17

(unit: m³/s)

YEAR	ITEM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	MINI	1.24	1.19	0.85	1.33	1.04	1.19	1.11	0.59	0.54	0.44	0.76	0.70	0.44
1971	MINI	0.65	0.52	0.44	0.59	1.27	0.76	0.59	0.54	0.44	0.40	0.59	0.65	0.40
1972	MINI	0.65	0.65	0.58	0.44	0.57	0.54	0.49	0.44	0.40			1.35	
1973	MINI	0.96	0.76	0.59			0.70							
1974	MINI													
1980	MINI													
1981	MINI	1.27	1.11	0.89	1.93	2.32	1.44	1.18	0.96	0.83	0.70	0.79	1.11	0.70
1982	MINI	1.27	1.03	0.76	1.00	2.44	1.44	1.18	0.96	0.76	0.76	2.09	2.14	0.76
1983	MINI	1.27	1.27	0.65	0.96	1.44	1.18	1.11	1.03	0.36	0.76	1.15	1.15	
1984	MINI	1.72	0.96	0.76	0.70	0.70	0.54	0.49	0.44	0.36	0.36	2.21	1.67	0.36
1985	MINI	1.18	0.96	0.70	1.11	2.26	1.53	1.03	0.89	0.76	0.54	1.00		
1986	MINI		0.83	0.70	0.70	1.62	1.18	0.83	0.70	0.34	0.54	0.70	1.68	
1987	MINI	1.18	0.89	0.70	0.70	0.89	0.96	0.83	0.76	0.59	0.49	0.49	0.96	0.49
1988	MINI	0.83	0.70	0.54	0.80	2.14	1.18	1.03	0.89	0.59	0.54	1.15	1.53	0.54
1989	MINI	1.93	1.44	0.65	1.18	1.15	0.96	0.89	0.76	0.59	0.70	1.48	3.68	0.59
1990	MINI	1.62	1.39	1.31	3.38	2.44	1.72	1.18	1.03	0.70	0.54	2.09	2.20	0.54
1991	MINI	1.67	1.18	0.76	1.03	1.18	1.44	1.18	0.96	0.76	0.59	1.00	1.82	0.59
1992	MINI	1.27	0.83	0.65	0.73	1.15	1.03	1.00	0.83	0.54	0.52	2.10	2.75	0.52
1993	MINI	3.03			1.15	1.82	1.15	0.89	0.65	0.49	0.44	0.93	2.26	
1994	MINI	0.96	0.70			1.62	1.18	1.03	0.83	0.49				
1995	MINI	1.18	1.18	1.00	0.96	1.75	1.44	1.27	0.89	0.59	0.44	2.44	3.23	
1996	MINI	3.68	1.27											
Average	MINI	1.46	0.99	0.74	1.10	1.54	1.14	0.96	0.79	0.59	0.62	1.34	1.80	1.09

ANNEX H

SOIL, LAND-USE AND HORTICULTURE

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H.2 Feasibility Study

PRELIMINARY SOIL SURVEY FOR MODEL AREAS

Table H.1-1 Rainfall Data (mm.) from Various Stations in the Project Area, (Nyeri, Kirinyaga, Embu, Mbeere).

Station	Altitude	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Kiandongoro	2,377	94	80	99	358	333	88	88	87	67	178	205	127	1,795
Naro Moru	2,057	38	107	111	161	58	9	31	30	24	80	141	67	855
Mweiga	1,890	65	52	70	159	103	28	41	40	24	97	129	91	898
Nyeri	1,829	51	46	68	167	157	30	37	38	33	92	109	77	904
Othaya	1,829	42	37	74	320	293	57	52	63	53	169	172	70	1,401
Karatina	1,814	31	22	74	275	251	37	29	35	38	138	154	68	1,152
Ragati F.S.	2,012	64	72	95	272	228	67	47	43	44	137	211	127	1,406
Kamweti	2,438	111	95	140	326	492	180	189	194	139	303	238	142	2,549
Kerugoya	1,570	32	30	101	359	317	52	54	69	50	170	185	69	1,485
Molinduko	1,378	26	32	98	237	182	11	19	21	13	110	212	53	1,012
Tebere	1,200	27	23	75	248	155	21	28	21	18	117	194	49	977
Muranga	1,219	25	29	141	281	179	18	8	1	2	72	152	48	955
Murubaru	1,219	18	43	122	232	180	32	11	14	5	87	175	34	953
Mwea	1,158	38	33	77	224	145	10	12	11	11	82	195	52	890
Embu F.S.	1,936	42	43	135	381	336	70	139	128	77	250	291	103	1,992
Kevote	1,524	27	31	120	383	264	37	48	67	46	186	268	84	1,559
Runyejes	1,478	25	40	146	396	218	25	41	42	21	284	321	73	1,547
Embu Ag.Co	1,494	22	25	91	301	224	28	45	43	42	147	203	59	1,230
Embu D.O.	1,433	24	25	98	277	163	31	24	30	23	123	192	55	1,065
Kanyuambora	1,265	27	49	161	359	127	6	4	16	7	109	318	75	1,264
Kiambere	1,189	43	26	118	198	69	13	1	3	6	55	244	67	834
Kiritiri	1,143	20	21	121	227	68	4	2	5	7	75	209	91	849
Machanga	1,219	35	25	102	161	85	6	3	4	24	85	213	89	830
Kindaruma	793	19	20	96	151	58	3	0	4	7	44	211	31	644

Table H.1-2 Rainfall Data (mm.) from Various Stations in the Project Area, (Tharaka-Nithi, Meru, Nyambene).

Station	Altitude	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Chogoria	1,372	61	41	163	482	229	55	82	71	37	315	350	91	1,979
Chuka	1,494	43	32	132	369	177	20	30	32	25	184	332	123	1,500
Magutuni	1,158	34	20	137	405	109	7	5	13	2	171	275	142	1,323
Marimanti	610	19	33	79	268	97	10	2	1	3	88	225	54	879
Tharaka	914	32	18	83	232	61	5	0	3	1	58	209	87	787
Timau	2,286	15	17	51	126	87	48	49	72	45	77	77	36	698
Marania	2,499	41	31	93	152	75	18	25	22	16	130	180	101	884
Meru	1,555	58	24	106	353	150	10	18	19	11	317	375	161	1,602
Marimba	1,844	75	72	187	469	236	18	18	21	35	34	511	221	2,208
Nkuriga	1,829	55	48	148	369	228	16	18	19	36	307	458	160	1,859
Nkubu	1,527	49	31	141	470	174	12	19	22	23	251	425	142	1,765
Manya	1,158	61	33	125	316	174	17	12	17	23	250	318	135	1,479
Mitunguu	1,189	21	24	149	305	142	9	7	10	9	213	374	137	1,401
Lare	1,775	69	94	207	653	340	30	75	30	35	361	498	245	2,640
Mikinduri	1,405	79	43	179	520	247	22	16	17	21	318	557	202	2,221
Miathemi	1,433	33	20	127	372	167	24	13	12	17	270	415	157	1,624
Oringo	1,430	40	31	106	285	110	5	6	3	35	215	352	112	1,300
Muthara	1,478	27	34	106	249	96	17	7	8	9	228	288	84	1,164

Table H.11-3 Main Soil Categories Found in the Project Area

Soil	Texture Subsoil	Texture Topsoil	O.M. Topsoil	Drainage	Fertility	Water Holding	Remarks
Acrisols	Clay	Varies	Varies	Moderate	Low	Moderate	Acid (Utisols)
Andosols	Clay	Clay	Medium	Good	High	High	Volcanic ash soils
Arenosols	Sand	Sand	Low	Good	Low	Low	Sands
Cambisols	Varies	Varies	Varies	Moderate	Moderate	Varies	Young soils
Ferralsols	Clay	Clay	Varies	Good	Low	Moderate	(Oxisols)
Nitisols	Clay	Clay	Medium	Good	Moderate	Moderate	Kikuyu red loam
Phaeozems	Clay	Varies	High	Good	High	High	Praire soils
Vertisols	Clay	Clay	Low	Poor	Moderate	High	Black Cotton

FAO/Unesco, Kenya Soil Survey

Table H.1-4 Crop Area, Yields and Production, 1995: Nyeri District

Crop area, yields and production, 1995: Nyeri District				
Crop	Area (ha.)	% Cropped Area	Production (tonne)	Average Yield (kg/ha)
Coffee	13,805	15.7%	48,800	3,534 (cherry)
Pyrethrum	282	0.3%	169.2	600
Tobacco	42.5	<0.1%	416.5	9,800
French beans	90	0.1%	540	6,000
Snow peas	420	0.5%	1,470	3,500
Macadamia	124.5	0.1%	435	3,500
Wheat	5,500	6.2%	3,850	700
Maize	21,690	24.7%	26,028	1,200
Beans	23,754	27%	15,915	670
Irish Potatoes	15,450	17.6%	154,500	10,000
Cassava	14.5	<0.1%	203	14,000
Yam	8.5	<0.1%	127.5	15,000
Arrowroot	100	0.1%	1,000	10,000
Sweet Potato	320	0.4%	4,480	14,000
Field Peas	220	0.2%	1,144	5,200
Onions	312	0.4%	2,184	7,000
Tomatoes	780	0.9%	14,040	18,000
Cabbage	2,000	2.3%	36,000	18,000
Kale	260	0.3%	2,730	10,500
Carrots	400	0.5%	4,000	10,000
Peppers	45	<0.1%	270	6,000
Banana	1,417	1.6%	7,935	5,600
Mango	31.5	<0.1%	346.5	11,000
Avocado	680	0.8%	13,600	20,000
Passion fruit	25	<0.1%	250	10,000
Pineapples	25.5	<0.1%	216.75	8,500
Pawpaw	25	<0.1%	325	13,000
TOTAL	87,822 ha.			

Source: MOALM Annual Report 1995, Nyeri District.

Table H.1-5 Crop Area, Yields and Production, 1995: Kirinyaga District

Crop area, yields and production, 1995: Kirinyaga District				
Crop	Area (ha.)	% Cropped Area	Production (tonne)	Average Yield (kg/ha)
Coffee 94	14,665	17.2%	51,460	3,509
Tea	4,607	5.4%	38,234	8,299
Tobacco	250	0.3%	250	1,000
French beans	1,150	1.3%	4,600	4,000
Snow peas	16	<0.1%	72	4,500
Macadamia	230	0.3%	641	2,787
Maize	25,596	30%	41,465	1,620
Rice	5,820	6.8%	29,100	5,000
Sorghum	170	0.2%	91.8	540
Millet	140	0.2%	63	450
Beans	25,731	30.1%	11,579	450
Grams	185	0.2%	99.9	540
Soybeans	175	0.2%	78.75	450
Cowpeas	230	0.3%	103.5	450
Chickpeas	180	0.2%	97.2	540
Pigeon Peas	230	0.3%	165.6	720
Irish Potatoes	1,675	2%	11,725	7,000
Cassava	10	<0.1%	100	10,000
Yams	45	<0.1%	450	10,000
Arrowroot	137	0.2%	1,370	10,000
Sweet Potato	285	0.3%	2,850	10,000
Onions	260	0.3%	3,120	12,000
Tomatoes	1,350	1.6%	16,200	12,000
Cabbage	170	0.2%	1,870	11,000
Kale	280	0.3%	3,360	12,000
Carrots	35	<0.1%	280	8,000
Capsicums	145	0.2%	580	4,000
Banana	1,364	1.6%	13,640	10,000
Mangoes	60	<0.1%	600	10,000
Avocado	65	<0.1%	975	15,000
Passion Fruit	45	<0.1%	495	11,000
PawPaw	65	<0.1%	845	13,000
TOTAL	85,366 ha.			

Source: MOALM Annual Report 1995, Kirinyaga District. 1995 wet year, esp. 1st rains. Farm Management District Guidelines, 1995/96 Kirinyaga District-tea

Table H.1-6 Crop Area, Yields and Production, 1995: Old Embu District

Crop area, yields and production, 1995: Old Embu District				
Crop	Area (ha.)	% Cropped Area	Production (tonne)	Average Yield (kg/ha)
Coffee	8,925	5.5%	42,000	4,706
Tea	4,580	2.8%	31,444	6,865
Cotton	800	0.5%	1,200	1,500
Tobacco	1,000	0.6%	800	800
Sunflower	140	<0.1%	168	1,080
Castor	140	<0.1%	84	5,000
French beans	85	<0.1%	652	7,670
Macadamia	603	0.4%	1,040	1,725
Brinjals	26	<0.1%	78	3,000
Okra	36	<0.1%	324	9,000
Karella	19	<0.1%	152	8,000
Others	25	<0.1%	176	7,000
Chillies	23	<0.1%	69	3,000
Maize	53,600	33%	62,712	1,170
Sorghum	17,400	10.7%	12,528	720
Millet	5,350	3.3%	3,852	720
Beans	29,700	18%	24,057	810
Grams	6,420	3.9%	4,045	630
Cowpeas	10,950	6.7%	6,899	630
Chickpeas	5,550	3.4%	3,996	720
Pigeon Peas	5,150	3.2%	3,708	720
Dolichos/Njahi	130	<0.1%	936	720
Irish Potatoes	2,670	1.6%	24,030	9,000
Cassava	895	0.5%	8,055	9,000
Yams	105	<0.1%	840	8,000
Arrowroot	131	<0.1%	1,048	8,000
Sweet Potato	1,095	0.6%	9,855	9,000
Onions	56	<0.1%	392	7,000
Tomatoes	132	<0.1%	1,056	8,000
Cabbage	94	<0.1%	1,410	15,000
Kale	285	0.2%	4,275	15,000
Carrots	48	<0.1%	384	8,000
Banana	4,267	2.6%	36,800	8,625
Mangoes	571	0.3%	4,570	8,000
Avocado	314	0.2%	3,100	8,873
Passion Fruit	161	0.1%	1,288	8,000
PawPaw	478	0.3%	3,690	7,720
Melons	13	<0.1%	104	8,000
TOTAL	161,967 ha.			

Source: MOALM Annual Report 1995, Embu District.

Table H.1-7 Crop Area, Yields and Production, 1994: Tharaka-Nithi District

Crop area, yields and production, 1994: Tharaka-Nithi District				
Crop	Area (ha.)	% Cropped Area	Production (tonne)	Average Yield (kg/ha)
Coffee	9,252	8.5%	16,155	1,746
Tea	1,407	1.3%	484	343
Cotton	15,000	13.8%	4,500	300
Tobacco	1,740	1.6%	696	400
Sunflower	3,000	2.7%	540	180
French beans	25	<0.1%	100	4,000
Brinjals	6	<0.1%	36	6,000
Okra	6	<0.1%	36	6,000
Karella	10	<0.1%	25	2,500
Chillies	6	<0.1%	3.9	650
Karcade	2.5	<0.1%	3.75	1,500
Maize	24,000	22%	21,600	900
Sorghum	5,468	5%	3,445	630
Millet	16,231	15%	10,226	630
Beans	13,512	12.4%	5,472	400
Grams	6,837	6.3%	3,077	450
Cowpea	4,130	3.8%	1,115	270
Pigeon Pea	4,130	3.8%	1,673	405
Groundnut	370	0.3%	1,665	450
Njahi	523	0.4%	1,419	270
Irish Potatoes	630	0.5%	6,300	10,000
Cassava	138	0.1%	2,070	15,000
Yams	65	<0.1%	1,600	7,000
Arrowroot	75	<0.1%	600	8,000
Sweet Potato	222	0.2%	3,330	15,000
Onions	15	<0.1%	112.5	7,500
Tomatoes	55	<0.1%	550	10,000
Cabbage	16	<0.1%	135	8,437
Kale	160	0.1%	1,920	12,000
Carrots	2.5	<0.1%	17.5	7,000
Banana	865	12.8%	9,947	11,500
Mango	126	0.1%	1,191	9,500
Avocado	35	<0.1%	420	12,000
Passion Fruit	13	<0.1%	78	6,000
PawPaw	60	<0.1%	300	5,000
Guavas	16.5	<0.1%	9.9	600
TOTAL	108,149 ha.	100%		

Source: MOALM Annual Report 1994, Tharaka Nithi District.

Table H.1-8 Crop Area, Yields and Production, 1995: Meru District

Crop area, yields and production, 1995: Meru District				
Crop	Area (ha.)	% Cropped Area	Production (tonne)	Average Yield (kg/ha)
Coffee	17,795	12.9%	38,739	2,177
Tea	3,043	2.2%	41,729	13,000
Pyrethrum	62	<0.1%	31	500
Cotton	2,824	2.0%	1,412	500
Tobacco	865	0.6%	1,038	1,200
Sunflower	1,466	1.0%	879	600
French beans	400	0.3%	800	2,000
Snow peas	180	0.1%	360	2,000
Macadamia	338	0.2%	1,690	5,000
Asian Veggies.	217	0.1%	1,640	av. 7,500
Chillies	54	<0.1%	216	4,000
Wheat	13,300	9.6%	35,910	2,700
Barley	3,305	2.4%	8,923	2,700
Maize	34,300	24.8%	61,740	1,800
Sorghum	4,160	3%	2,620	630
Millet	815	0.6%	513	630
Beans	33,850	24.5%	30,465	900
Grams	281	0.2%	152	540
Cowpea	644	0.4%	348	540
Pigeon Pea	781	0.6%	492	630
Groundnut	1,756	1.3%	2,107	1,200
Njahi	611	0.4%	439	720
Irish Potatoes	13,369	9.7%	133,690	10,000
Cassava	338	0.2%	2,704	8,000
Yams	350	0.2%	2,800	8,000
Arrowroot	337	0.2%	2,696	8,000
Sweet Potato	262	0.1%	2,620	10,000
Onions	200	0.1%	1,600	8,000
Tomatoes	300	0.2%	2,400	8,000
Cabbage	400	0.3%	4,000	10,000
Kale	123	<0.1%	246	2,000
Carrot	109	<0.1%	545	5,000
Garlic	98	<0.1%	686	7,000
Banana	650	0.5%	8,450	13,000
Mango	213	0.1%	1,917	9,000
Avocado	288	0.2%	4,608	16,000
Passion Fruit	88	<0.1%	440	5,000
PawPaw	165	0.1%	1,650	10,000
TOTAL	138,337 ha.	100%		

Source: MOALM Annual Report 1995, Meru District. Doesn't include 400 ha citrus.

Table H.1-9 Crop Area, Yields and Production, 1995: Nyambene District

Crop area, yields and production, 1995: Nyambene District				
Crop	Area (ha.)	% Cropped		Production tonne
		Area		
Coffee	4,034	3.2 %		4,045
Tea	3,260	2.6 %		22,026
Cotton	2,500	2.0 %		1,000
Tobacco	1,280	1.0 %		5,120
Sunflower	60	<0.1%		60
Caster Seed	30	<0.1%		15
Macadamia	290	0.2 %		413.8
Brinjals	20	<0.1%		93
Okra	35	<0.1%		244
Karella	15	<0.1%		23
Turia	10	<0.1%		6
Chillies	70	<0.1%		192
Maize	50,100	39.7%		112,725
Sorghum	500	0.4 %		450
Millet	4,500	3.6 %		4,050
Beans	38,400	30.4%		34,560
Grams	3,000	2.4 %		2,160
Cowpea	1,900	1.5 %		1,539
Pigeon Pea	4,900	3.8 %		5,292
Groundnut	320	0.2 %		256
Njahi	3,500	2.8 %		1,890
Irish Potatoes	2,720	2.1 %		48,960
Cassava	782	0.6 %		14,076
Arrowroot	645	0.5 %		8,385
Sweet Potato	997	0.7 %		19,940
Onions	80	<0.1%		640
Tomatoes	100	<0.1%		2,000
Cabbage	100	<0.1%		3,000
Kale	120	<0.1%		3,600
Carrot	15	<0.1%		225
Banana	1,610	1.2 %		16,275
Mango	110	<0.1%		712.5
Avocado	35	<0.1%		225
Passion Fruit	17	<0.1%		75
PawPaw	74	<0.1%		576
TOTAL	126,129 ha.	100%		

Source: MOALM Annual Report 1995, Nyambene District.

Table H.1-10 Areas under Different Crop Types in the Study Area

Agricultural land use in Nyeri District in 1995		
Crop type	Area in hectares	Total Area in %
Food	51,387	58.5%
Industrial	14,130	16.1%
Export Horticulture	635	0.7%
Irish Potatoes	15,450	17.6%
Bananas	1,417	1.6%
Other Vegetables	4,017	4.6%
Other Fruits	787	0.9%
Total	87,822 ha.	100%
Agricultural land use in Kirinyaga District in 1995		
Crop type	Area in hectares	Total Area in %
Food	58,934	69.0%
Industrial	19,522	22.9%
Export Horticulture	1,396	1.6%
Irish Potatoes	1,675	2.0%
Bananas	1,364	1.6%
Other Vegetables	2,240	2.6%
Other Fruits	235	0.3%
Total	85,366 ha.	100%
Agricultural land use in Old Embu District in 1995		
Crop type	Area in hectares	Total Area in %
Food	136,476	84.3%
Industrial	15,585	9.6%
Export Horticulture	817	0.5%
Irish Potatoes	2,670	1.6%
Bananas	4,267	2.6%
Other Vegetables	615	0.4%
Other Fruits	1,537	0.9%
Total	161,967 ha.	100%
Agricultural land use in Tharaka Nithi District in 1994		
Crop type	Area in hectares	Total Area in %
Food	75,701	70.0%
Industrial	30,399	28.1%
Export Horticulture	56	0.1%
Irish Potatoes	630	0.6%
Bananas	865	0.8%
Other Vegetables	249	0.2%
Other Fruits	251	0.2%
Total	108,150 ha.	100%

Source: Calculated from data provided by District Offices

Agricultural land use in Meru District in 1995		
Crop type	Area in hectares	Total Area in %
Food	95,090	68.7%
Industrial	26,055	18.8%
Export Horticulture	1,189	0.9%
Irish Potatoes	13,369	9.7%
Bananas	650	0.5%
Other Vegetables	1,230	0.9%
Other Fruits	754	0.5%
Total	138,337 ha.	100%
Agricultural land use in Nyambene District in 1995		
Crop type	Area in hectares	Total Area in %
Food	109,544	86.9%
Industrial	11,164	8.9%
Export Horticulture	440	0.3%
Irish Potatoes	2,720	2.2%
Bananas	1,610	1.3%
Other Vegetables	415	0.3%
Other Fruits	236	0.2%
Total	126,129 ha.	100%
Agricultural land use in the whole of the study area		
Crop type	Area in hectares	Total Area in %
Food	527,132	74.5%
Industrial	116,855	16.5%
Export Horticulture	4,532	0.6%
Irish Potatoes	36,514	5.2%
Bananas	10,173	1.4%
Other Vegetables	8,766	1.2%
Other Fruits	3,800	0.5%
Total	707,771 ha.	100%

Source: Calculated from data provided by District Offices

The crops have been grouped into food (wheat, maize, beans, root crops etc.), industrial (coffee, tea, pyrethrum, tobacco etc.), export horticulture (French beans, snow peas, macadamia, Asian vegetables, etc.) Irish potatoes, other vegetables, (onions, tomatoes, kale, cabbage, carrots etc.) bananas, and other fruit, (mangoes, avocado, pawpaw etc., but excluding citrus).

Table H.1.1-11 Farming Activities (District Nyeri)

		Farming Activities											
Activity	Crop												
	January	February	March	April	May	June	July	August	September	October	November	December	
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p	
Weeding	w	w	w	w	w	w	w	w	w	w	w	w	
Pruning	c	c	c	c	c	c	c	c	c	c	c	c	
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	
Transport	t	t	t	t	t	t	t	t	t	t	t	t	
Activity	Maize and beans												
Land Preparation	l	l	l	l	l	l	l	l	l	l	l	l	
Sowing	s	s	s	s	s	s	s	s	s	s	s	s	
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p	
Weeding	w	w	w	w	w	w	w	w	w	w	w	w	
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	
Transport	t	t	t	t	t	t	t	t	t	t	t	t	
Activity	Irish Potatoes												
Land Preparation	l	l	l	l	l	l	l	l	l	l	l	l	
Sowing	s	s	s	s	s	s	s	s	s	s	s	s	
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p	
Weeding	w	w	w	w	w	w	w	w	w	w	w	w	
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	
Transport	t	t	t	t	t	t	t	t	t	t	t	t	
Activity	Cabbage												
Land Preparation	l	l	l	l	l	l	l	l	l	l	l	l	
Sowing	s	s	s	s	s	s	s	s	s	s	s	s	
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	
Weeding	w	w	w	w	w	w	w	w	w	w	w	w	
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	
Transport	t	t	t	t	t	t	t	t	t	t	t	t	
Rainfall by month	31	22	74	275	251	37	29	35	38	138	154	68	
Tumu Turmu, 1814 m.	49	53	103	235	194	35	30	33	32	185	189	104	
Kagochi, 1981 m.	63	37	84	159	76	21	36	36	85	104	148	90	

Table H.1-12 Farming Activities (District Kirinyaga)

Farming Activities												
Activity	Coffee			Maize and beans			Bananas			Irish Potatoes		
	January	February	March	April	May	June	July	August	September	October	November	December
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p
Weeding	w	w	w	w	w	w	w	w	w	w	w	w
Pruning	c	c	c	c	c	c	c	c	c	c	c	c
Harvest	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t
Activity	January	February	March	April	May	June	July	August	September	October	November	December
Land Preparation	l	l	l	l	l	l	l	l	l	l	l	l
Sowing	s	s	s	s	s	s	s	s	s	s	s	s
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p
Weeding	w	w	w	w	w	w	w	w	w	w	w	w
Harvest	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t
Activity	January	February	March	April	May	June	July	August	September	October	November	December
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f
Weeding	w	w	w	w	w	w	w	w	w	w	w	w
Pruning	c	c	c	c	c	c	c	c	c	c	c	c
Harvest	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t
Activity	January	February	March	April	May	June	July	August	September	October	November	December
Land Preparation	l	l	l	l	l	l	l	l	l	l	l	l
Seeding	s	s	s	s	s	s	s	s	s	s	s	s
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p
Weeding	w	w	w	w	w	w	w	w	w	w	w	w
Harvest	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t
Rainfall by month	25	29	141	261	179	18	8	1	2	72	152	48
Wamumu, 1219 m.	27	23	75	248	155	21	28	21	18	117	194	49
Tebere, 1200 m.	26	32	98	237	182	11	19	21	13	110	212	53
Molinduko, 1,378 m.												

Table H.1-13 Farming Activities (District Embu)

Farming Activities													
Activity	Coffee				Maize and beans				Bananas				November December
	January	February	March	April	May	June	July	August	September	October	November	December	
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p	p
Weeding	w	w	w	w	w	w	w	w	w	w	w	w	w
Pruning	c	c	c	c	c	c	c	c	c	c	c	c	c
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t	t
Activity	January	February	March	April	May	June	July	August	September <td>October</td> <td>November</td> <td>December</td> <td></td>	October	November	December	
Land Preparation	l	l	l	l	l	l	l	l	l	l	l	l	l
Sowing	s	s	s	s	s	s	s	s	s	s	s	s	s
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	f
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p	p
Weeding	w	w	w	w	w	w	w	w	w	w	w	w	w
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t	t
Activity	January	February	March	April	May	June	July	August	September <td>October</td> <td>November</td> <td>December</td> <td></td>	October	November	December	
Fertilizing	w	w	w	w	w	w	w	w	w	w	w	w	w
Weeding	c	c	c	c	c	c	c	c	c	c	c	c	c
Pruning	h	h	h	h	h	h	h	h	h	h	h	h	h
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t	t
Activity	January	February	March	April	May	June	July	August	September <td>October</td> <td>November</td> <td>December</td> <td></td>	October	November	December	
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	f
Pest Control	w	w	w	w	w	w	w	w	w	w	w	w	w
Weeding	c	c	c	c	c	c	c	c	c	c	c	c	c
Pruning	h	h	h	h	h	h	h	h	h	h	h	h	h
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	h
Transport	t	t	t	t	t	t	t	t	t	t	t	t	t
Rainfall by month	42	43	135	381	336	70	139	128	77	250	291	103	
Embu Forest 1,936 m.	25	40	146	396	218	25	41	42	21	284	321	73	
Runyejes, 1,478 m.	24	25	98	277	163	31	24	30	23	123	192	55	
Embu, 1,433 m.													

Table H.1-14 Farming Activities (District Mbeere)

Farming Activities												
Activity	Cotton			Millet			Beans			Rainfall by month		
	January	February	March	April	May	June	July	August	September	October	November	December
Land Preparation												
Sowing												
Pest Control												
Weeding												
Harvest												
Transport												
Activity												
Sowing												
Fertilizing												
Pest Control												
Weeding												
Harvest												
Transport												
Activity												
Land Preparation												
Sowing												
Fertilizing												
Weeding												
Harvest												
Transport												
Activity												
Fertilizing												
Pest Control												
Weeding												
Pruning												
Harvest												
Transport												
Rainfall by month												
Kanyuambora, 1,265 m.	27	49	161	359	127	6	4	16	7	109	318	75
Kiambere, 1,189 m.	43	26	118	198	89	13	1	3	6	55	244	67
Kindaruma, 793 m.	19	20	96	151	58	3	0	4	7	44	211	31

Table H.1-15 Farming Activities (District Tharaka Nithi)

Activity		Farming Activities												November	December										
		Crop		Coffee		Maize and Beans		Bananas		Cotton		January	February			March	April	May	June	July	August	September	October	November	December
January	February	January	February	January	February	January	February	January	February	January	February			January	February										
Fertilizing	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	
Pest Control	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	p	
Weeding	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	
Pruning	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	
Harvest	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	h	
Transport	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	
Crop		369	369	177	177	20	20	30	30	32	32	25	25	184	184	332	332	123	123	137	137	87	87	54	54
Maize and Beans		305	305	142	142	9	9	7	7	10	10	9	9	213	213	374	374	137	137	197	197	137	137	87	87
Bananas		232	232	61	61	5	5	0	0	3	3	1	1	58	58	209	209	87	87	54	54	87	87	54	54
Cotton		268	268	97	97	10	10	2	2	1	1	3	3	88	88	225	225	54	54	54	54	54	54	54	54
Activity	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	
Land Preparation																									
Sowing																									
Pest Control																									
Weeding																									
Harvest																									
Transport																									
Activity	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	
Pruning																									
Fertilizing																									
Weeding																									
Harvest																									
Transport																									
Activity	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	
Land Preparation																									
Sowing																									
Fertilizing																									
Weeding																									
Harvest																									
Transport																									
Rainfall by month																									
Chuka, 1,494 m.	43	32	134	369	177	20	20	30	32	25	184	332	123	137	87	54	54	54	54	54	54	54	54	54	54
Mitunguu, 1,189 m.	21	24	49	305	142	9	9	7	10	9	213	374	197	137	87	54	54	54	54	54	54	54	54	54	54
Tharaka, 914 m.	32	18	83	232	61	5	5	0	3	1	58	209	87	54	54	54	54	54	54	54	54	54	54	54	54
Marimanti, 610 m.	19	33	79	268	97	10	10	2	1	3	88	225	54	54	54	54	54	54	54	54	54	54	54	54	54

Table H.1-16 Farming Activities (District Meru)

Farming Activities																									
Activity	Crop			Coffee			Bananas			Maize and Beans			Irish Potatoes												
	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	
Fertilizing	f	p	p	f	f	f	f	f	f	f	f	f													
Pest Control	w	w	w	w	w	w	w	w	w	w	w	w													
Weeding	c	c	c	c	c	c	c	c	c	c	c	c													
Pruning	h	h	h	h	h	h	h	h	h	h	h	h													
Harvest	t	t	t	t	t	t	t	t	t	t	t	t													
Transport	t	t	t	t	t	t	t	t	t	t	t	t													
Activity																									
Fertilizing		w	w	w	w	w	w	w	w	w	w	w													
Weeding				c	c	c	c	c	c	c	c	c													
Pruning	h	h	h	h	h	h	h	h	h	h	h	h													
Harvest	t	t	t	t	t	t	t	t	t	t	t	t													
Transport	t	t	t	t	t	t	t	t	t	t	t	t													
Activity																									
Land Preparation																									
Sowing																									
Fertilizing																									
Weeding																									
Harvest																									
Transport																									
Activity																									
Land Preparation																									
Sowing																									
Fertilizing																									
Pest Control																									
Weeding																									
Harvest																									
Transport																									
Rainfall by month	15	17	51	126	87	49	72	45	77	77	36														
Timau, 2,286 m.	55	48	148	369	228	18	19	36	307	458	160														
Nkuriga, 1,829 m.	21	24	49	305	142	9	10	9	213	374	137														
Mitunguu, 1,189 m.																									

Table H.1-17 Farming Activities (District Nyambene)

		Farming Activities											
		Tea			Cabbage			Maize and Beans			Irish Potatoes		
Activity	Crop	January	February	March	April	May	June	July	August	September	October	November	December
Fertilizing			f					f			f		f
Weeding		w	w	w	w			w	w			w	w
Pruning			c		c	c	c	c			c		c
Harvest		h	h	h	h	h	h	h	h	h	h	h	h
Transport		t	t	t	t	t	t	t	t	t	t	t	t
Activity													
Land Preparation													
Sowing			s	s		s		s		s	s	s	s
Fertilizing			f					f			f		f
Weeding		w	w	w	w	w	w	w	w	w	w	w	w
Harvest		h	h	h	h	h	h	h	h	h	h	h	h
Transport		t	t	t	t	t	t	t	t	t	t	t	t
Activity													
Land Preparation													
Sowing									s	s	s	s	s
Fertilizing													
Pest Control													
Weeding		w	w	w	w	w	w	w	w	w	w	w	w
Harvest		h	h	h	h	h	h	h	h	h	h	h	h
Transport		t	t	t	t	t	t	t	t	t	t	t	t
Activity													
Land Preparation													
Sowing													
Fertilizing													
Pest Control													
Weeding		w	w	w	w	w	w	w	w	w	w	w	w
Harvest		h	h	h	h	h	h	h	h	h	h	h	h
Transport		t	t	t	t	t	t	t	t	t	t	t	t
Rainfall by month													
Mikinduri, 1,405 m.		79	43	179	520	47	22	16	17	21	318	557	202
Miatheni, 1,433 m.		33	20	127	372	167	24	13	12	17	270	415	157
Muthara, 1,478 m.		27	34	106	249	98	17	7	8	9	228	288	84

Table H.1-18 Definitions of Soil Terms Used

Acrisols: Acid clay soils, argillic horizon less than 50% base saturated.

Ando-humic: dark in colour and rich in organic matter.

Andosols: dark, free-draining soils developed on volcanic ash.

Arenosols: soils developed in over 50 cm of loose sand, (not recent alluvium).

Cambisols: Slightly weathered soils with a changed B horizon.

Chromluvic: coloured soils with an illuvial clay layer.

Ferralic: high iron and aluminium (sesquioxide) content.

Ferralsols: Highly weathered soils, high in sesquioxides.

Mollic: good surface structure.

Nito-chromic: Bright coloured clays

Nito-rhodic: shining, red clay soils

Nitosols: clay soils developed from lava, with no plinthite within 125 cm of the surface.

Phaeozems: soils rich in organic matter with a well structured A horizon.

Vertisols: Swelling and shrinking soils, over 30% clay to 50cm

Verto-eutric: swelling/shrinking-fertile.

Table H.1-19 Horticultural Crops & Horticultural Cropping Pattern (Nyeri District)

CROP	Nyeri District Data : Horticultural crops				Nyeri District Data : Horticultural crops			
	Areas in ha		Yields in tonnes/ha		Production in tonnes		Yields in tonnes/ha	
	1994	1995	1996	%	1994	1995	1996	1996
	Area	Area	Area	%	Production	Production	Production	Yield
	%	%	%	%				Yield
Total Vegetables	3,851	4,017	3,711	58%	44,309	60,324	51,403	5.5
Tomato	710	780	760	11.32%	9,940	14,040	11,400	14.0
Cabbage	1,520	2,000	2,000	29.04%	22,800	36,000	30,600	15.0
Kale	250	260	200	3.77%	2,500	2,790	1,200	10.0
Carrot	410	400	380	5.81%	4,100	4,000	3,800	10.0
B.Onion	580	312	460	4.53%	3,480	2,184	3,220	7.0
Field Pea	350	220	185	3.19%	1,225	1,100	962	3.5
Garlic	-	-	-	0.00%	-	-	-	-
Peppers	31	45	26	0.65%	264	270	221	8.5
Total Fruit	2,175	2,237	2,231	33%	21,333	22,767	22,669	6.0
Banana	1,415	1,417	1,420	21.04%	7,782	7,935	7,810	5.5
Mango	31	32	38	0.56%	325	346	456	10.5
Apples	3	4	2	0.03%	20	14	8	4.0
Citrus	25	24	12	0.35%	50	60	42	2.5
Papaya	20	25	25	0.37%	260	325	300	13.0
Passion Fruit	30	25	31	0.46%	265	250	279	8.5
Pineapple	26	26	18	0.27%	221	217	144	8.5
Avocado	520	680	680	10.08%	12,400	13,600	13,600	20.0
Plums	5	5	5	0.07%	20	20	30	4.0
Melons	-	-	-	0.00%	-	-	-	-
Total Export Hort.	576	635	806	12%	2,303	2,445	3,020	3.5
TOTAL	6,601	6,888	6,748	100%	67,945	85,536	77,092	-

NYERI District Horticultural Cropping Pattern										
CROP	w/o Project		With Project		w/o Project		With Project		With Project	
	Hectares	%	Hectares	%	Yield kg/dec	%	Yield kg/dec	%	Prod. tons	Prod. tons
Potato	15,540	69.7%	16,120	68.1%	1,000	1100	155,400	177,320	17,000	17,000
Tomato	750	3.4%	1,000	4.2%	1,572	1,700	29,800	37,000	2,375	2,375
Cabbage	1,740	7.8%	2,000	8.4%	1,713	950	3,967	4,200	3,750	3,750
Kale	237	1.1%	250	1.1%	906	1,200	2,961	1,375	0	0
Carrot	397	1.8%	350	1.5%	1,000	750	1,096	0	252	255
B.Onion	451	2.0%	500	2.1%	657	550	0	0	0	0
Field Pea	252	1.1%	250	1.1%	435	0	0	0	0	0
Garlic	0	0.0%	0	0.0%	740	850	0	0	0	0
Peppers	34	0.2%	30	0.1%	0	0	0	0	0	0
Total Vegetables	19,400	87.1%	20,500	86.6%	553	600	7,842	8,400	425	425
Banana	1,417	6.4%	1,400	5.9%	1,121	1,250	376	18	0	0
Mango	34	0.2%	34	0.1%	525	600	14	0	0	0
Apples	3	0.0%	3	0.0%	249	300	51	0	0	0
Citrus	20	0.1%	0	0.0%	1,264	1,400	295	280	0	0
Papaya	23	0.1%	20	0.1%	912	1,000	261	300	0	0
Passion Fruit	29	0.1%	30	0.1%	837	950	194	190	0	0
Pineapple	23	0.1%	20	0.1%	2,000	2,250	13,200	14,850	0	0
Avocado	660	3.0%	660	2.8%	467	500	23	25	0	0
Plums	5	0.0%	5	0.0%	0	0	0	0	0	0
Melons	0	0.0%	0	0.0%	0	0	0	0	0	0
Total Fruit	2,214	9.9%	2,172	9.2%	600	750	680	825	0	0
French Bean	113	0.5%	110	0.5%	340	450	1,471	3,375	0	0
Snowpea	433	1.9%	750	3.2%	0	0	0	0	0	0
Brinjal	0	0.0%	0	0.0%	0	0	0	0	0	0
Karela	0	0.0%	0	0.0%	0	0	0	0	0	0
Dudhi	0	0.0%	0	0.0%	0	0	0	0	0	0
Okra	0	0.0%	0	0.0%	0	0	0	0	0	0
Valore	0	0.0%	0	0.0%	0	0	0	0	0	0
Turlia	0	0.0%	0	0.0%	0	0	0	0	0	0
Chillies	0	0.0%	0	0.0%	0	0	0	0	0	0
Macadamia	125	0.6%	140	0.6%	350	400	438	560	0	0
Total Export Hort.	672	3.0%	1,000	4.2%	0	0	0	0	0	0
Other crops	0	0.0%	0	0.0%	0	0	232,257	272,523	0	0
TOTAL	22,286	100.0%	23,672	100.0%	0	0	0	0	0	0

Table H.1-20 Horticultural Crops & Horticultural Cropping Pattern (Kirinyaga District)

TABLE H-20	Kirinyaga District Data : Horticultural crops				Kirinyaga District Data : Horticultural crops				Kirinyaga District Data : Horticultural crops					
	Areas in ha		Areas in ha		Production in tonnes		Production in tonnes		Yields in tonnes/ha		Yields in tonnes/ha			
	1994	1995	1996	%	1994	1995	1996	%	1994	1995	1996	%		
CROP	Area	%	Area	%	Area	%	Area	%	Production	Production	Production	Yield	Yield	Yield
Tomato	1,285	26.40%	1,350	25.78%	1,945	26.22%	15,420	26.22%	15,420	16,200	32,900	12.0	12.0	20.0
Cabbage	150	3.08%	170	3.25%	193	3.08%	2,250	3.08%	2,250	2,550	2,895	15.0	15.0	15.0
Kale	230	4.72%	280	5.35%	360	5.74%	3,440	5.74%	3,440	4,200	5,400	15.0	15.0	15.0
Carrot	30	0.62%	35	0.67%	37	0.59%	300	0.59%	300	350	370	10.0	10.0	10.0
B.Onion	250	5.14%	260	4.97%	220	3.51%	3,000	3.51%	3,000	3,120	3,300	12.0	12.0	15.0
Field Pea	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Garlic	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Peppers	140	2.88%	145	2.77%	0	0.00%	560	0.00%	560	580	0	4.0	4.0	0.0
Total Vegetables	2,085	43%	2,240	43%	2,455	39%	24,970	39%	24,970	27,000	44,865			
Banana	1,320	27.12%	1,364	26.05%	700	11.16%	13,200	11.16%	13,200	13,640	10,500	10.0	10.0	15.0
Mango	60	1.23%	60	1.15%	60	0.96%	600	0.96%	600	600	800	10.0	10.0	10.0
Apples	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Citrus	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Papaya	65	1.34%	66	1.26%	0	0.00%	845	0.00%	845	858	0	13.0	13.0	0.0
Passion Fruit	45	0.92%	45	0.86%	50	0.80%	450	0.80%	450	450	500	10.0	10.0	10.0
Pineapple	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Avocado	55	1.13%	65	1.24%	70	1.12%	825	1.12%	825	975	1,050	15.0	15.0	15.0
Plums	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Melons	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Total Fruit	1,545	32%	1,600	31%	880	14%	15,920	14%	15,920	16,523	12,650			
French Bean	1,000	20.54%	1,150	21.96%	2,940	46.85%	8,000	46.85%	8,000	9,200	23,520	8.0	8.0	8.0
Snowpea	18	0.37%	16	0.31%	0	0.00%	72	0.00%	72	72	0	4.0	4.0	0.0
Brinjal	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Karela	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Dudhi	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Okra	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Valore	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Turika	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Chillies	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
Macadamia	220	4.52%	230	4.39%	0	0.00%	633	0.00%	633	641	0	2.9	2.8	0.0
Total Export Hort.	1,238	25%	1,396	27%	2,940	47%	8,706	47%	8,706	9,913	23,520			
Other crops	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0.0	0.0	0.0
TOTAL	4,868	100%	5,236	100%	6,275	100%	49,596	100%	49,596	53,436	81,035			

KIRINYAGA District Horticultural Cropping Pattern									
	w/o Project Hectares	%	With Project Hectares	%	w/o Project Yield kg/dec	With Project Yield kg/dec	w/o Project Prod. tons	With Project Prod. tons	
CROP	1,675	23.5%	1,700		700	800	11,725	13,600	
Potato	1,427	20.0%	1,750	21.2%	1,200	1,700	17,120	29,750	
Tomato	171	2.4%	150	1.8%	1,500	1,850	2,565	2,775	
Cabbage	290	4.1%	270	3.3%	1,498	1,750	4,344	4,725	
Kale	34	0.5%	35	0.4%	1,000	1,200	340	420	
Carrot	243	3.4%	300	3.6%	1,200	1,800	2,920	5,400	
B.Onion	0	0.0%	0	0.0%	0	0	0	0	
Field Pea	0	0.0%	0	0.0%	0	0	0	0	
Garlic	0	0.0%	0	0.0%	0	0	0	0	
Peppers	95	1.3%	95	1.2%	400	500	380	475	
Total Vegetables	3,935	55.2%	4,300	52.2%	1,000	1,250	11,280	18,125	
Banana	1,128	15.8%	1,450	17.6%	1,000	1,350	600	810	
Mango	60	0.8%	60	0.7%	1,000	1,000	0	0	
Apples	0	0.0%	0	0.0%	0	0	0	0	
Citrus	0	0.0%	0	0.0%	0	0	0	0	
Papaya	44	0.6%	20	0.2%	1,300	1,500	568	300	
Passion Fruit	47	0.7%	150	1.8%	1,000	1,200	467	1,800	
Pineapple	0	0.0%	0	0.0%	0	0	0	0	
Avocado	63	0.9%	60	0.7%	1,500	1,750	950	1,050	
Plums	0	0.0%	0	0.0%	0	0	0	0	
Meilons	0	0.0%	40	0.5%	0	1,200	0	480	
Total Fruit	1,342	18.8%	1,780	21.6%	0	0	0	0	
French Bean	1,697	23.8%	2,000	24.3%	800	1,000	13,573	20,000	
Snowpea	11	0.2%	10	0.1%	424	450	48	45	
Brinjal	0	0.0%	0	0.0%	0	0	0	0	
Karella	0	0.0%	0	0.0%	0	0	0	0	
Dudhi	0	0.0%	0	0.0%	0	0	0	0	
Okra	0	0.0%	0	0.0%	0	0	0	0	
Valore	0	0.0%	0	0.0%	0	0	0	0	
Turia	0	0.0%	0	0.0%	0	0	0	0	
Chillies	0	0.0%	0	0.0%	0	0	0	0	
Macadamia	150	2.1%	150	1.8%	283	300	425	450	
Total Export Hort.	1,858	26.0%	2,160	26.2%	0	0	0	0	
Other crops	0	0.0%	0	0.0%	0	0	0	0	
TOTAL	7,135	100.0%	8,240	79.4%			67,305	100,205	

Table H.1-21 Horticultural Crops & Horticultural Cropping Pattern (Mbeere District)

CROP	Mbeere District Data : Horticultural crops				Mbeere District Data : Horticultural crops				Mbeere District Data : Horticultural crops			
	1994		1995		1996		1994		1995		1996	
	Area	%	Area	%	Area	%	Production	Yield	Production	Yield	Production	Yield
Tomato	88	0.00%	42	2.07%	N.A.	N.A.	1,020	12	300	0	N.A.	7
Cabbage	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Kale	100	5.20%	30	6.45%	N.A.	N.A.	1,535	15	603	0	N.A.	20
Carrot	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
B.Onion	0	0.00%	16	1.38%	N.A.	N.A.	0	0	128	0	N.A.	8
Field Pea	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Garlic	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Peppers	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Total Vegetables	188	10%	88	11%	N.A.	N.A.	1,948		1,929		N.A.	
Banana	943	49.01%	1,200	59.08%	N.A.	N.A.	8,012	8	10,349	8	N.A.	9
Mango	110	5.72%	110	5.42%	N.A.	N.A.	770	7	880	7	N.A.	8
Apples	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Citrus	30	1.56%	33	1.62%	N.A.	N.A.	150	5	148	5	N.A.	4
Papaya	238	12.37%	238	11.72%	N.A.	N.A.	2,142	9	1,837	8	N.A.	8
Passion Fruit	15	0.78%	1	0.10%	N.A.	N.A.	120	8	8	8	N.A.	8
Pineapple	4	0.21%	5	0.25%	N.A.	N.A.	40	10	41	10	N.A.	8
Avocado	21	1.09%	20	4.23%	N.A.	N.A.	195	9	197	10	N.A.	10
Plums	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Melons	21	0.00%	13	0.84%	N.A.	N.A.	168	8	104	8	N.A.	8
Total Fruit	1,382	71%	1,620	83%	N.A.	N.A.	10,034		12,860		N.A.	
French Bean	129	6.70%	55	2.71%	N.A.	N.A.	659	5	514	5	N.A.	9
Snowpea	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Brinjal	40	2.08%	26	1.28%	N.A.	N.A.	120	3	78	3	N.A.	3
Karela	43	2.23%	19	0.94%	N.A.	N.A.	430	10	152	8	N.A.	8
Dudhi	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Okra	69	3.59%	36	0.30%	N.A.	N.A.	1,020	15	324	9	N.A.	9
Valore	8	0.00%	6	0.00%	N.A.	N.A.	24	3	12	2	N.A.	2
Turria	2	0.00%	4	0.00%	N.A.	N.A.	2	1	4	1	N.A.	1
Chillies	69	3.59%	23	1.13%	N.A.	N.A.	207	3	69	3	N.A.	3
Macadamia	0	0.00%	0	0.00%	N.A.	N.A.	0	0	0	0	N.A.	0
Total Export Hort.	360	18%	169	6%	N.A.	N.A.	452		193		N.A.	
Other crops	25	1.30%	27	0.00%	N.A.	N.A.	204	8	128	8	N.A.	5
TOTAL	1,955	100%	1,904	100%	N.A.	N.A.	12,433		14,981		N.A.	

MBEERE District Horticultural Cropping Pattern										
CROP	w/o Project		With Project		w/o Project		With Project		With Project	
	Hectares	%	Hectares	%	Yield kg/dec	%	Yield kg/dec	Yield kg/dec	Prod. tons	Prod. tons
Potato	550	22.2%	600	16.3%	650	750	1,015	1,100	660	4,500
Tomato	65	2.6%	225	6.1%	0	0	0	0	0	2,475
Cabbage	0	0.0%	25	0.7%	100	2.7%	1,645	2,000	1,069	2,000
Kale	65	2.6%	0	0.0%	0	0.0%	0	0	0	0
Carrot	0	0.0%	30	0.8%	800	0.8%	800	650	64	195
B.Onion	8	0.3%	0	0.0%	0	0.0%	0	0	0	0
Field Pea	0	0.0%	5	0.1%	0	0.1%	0	750	0	38
Garlic	0	0.0%	0	0.0%	0	0.0%	0	0	0	0
Peppers	688	27.8%	985	26.7%						
Total Vegetables	1,072	43.2%	1,750	47.5%	857	1,000	857	1,000	9180	17,500
Banana	110	4.4%	200	5.4%	750	5.4%	750	1,100	825	2,200
Mango	0	0.0%	0	0.0%	0	0.0%	0	0	0	0
Apples	32	1.3%	0	0.0%	473	0.0%	473	850	149	0
Citrus	238	9.6%	230	6.2%	836	6.2%	836	1,000	1,990	2,300
Papaya	8	0.3%	25	0.7%	800	0.7%	800	1,200	64	300
Passion Fruit	5	0.2%	25	0.7%	900	0.7%	900	1,100	41	275
Pineapple	21	0.8%	25	0.7%	958	0.7%	958	1,100	196	275
Avocado	0	0.0%	0	0.0%	0	0.0%	0	0	0	0
Plums	17	0.7%	35	0.9%	800	0.9%	800	1,200	136	420
Melons	1,501	60.5%	2,290	62.1%						
Total Fruit	92	3.7%	150	4.1%	638	4.1%	638	900	587	1,350
French Bean	0	0.0%	0	0.0%	0	0.0%	0	0	0	0
Snowpea	33	1.3%	50	1.4%	300	1.4%	300	450	99	225
Brinjal	31	1.3%	45	1.2%	939	1.2%	939	1,100	291	495
Karella	0	0.0%	0	0.0%	0	0.0%	0	0	0	0
Dudhi	53	2.1%	60	1.6%	1,280	1.6%	1,280	1,400	672	840
Okra	7	0.3%	15	0.4%	257	0.4%	257	350	18	53
Valore	3	0.1%	10	0.3%	90	0.3%	90	100	3	10
Tuna	46	1.9%	55	1.5%	300	1.5%	300	450	138	248
Chillies	0	0.0%	0	0.0%	86	0.0%	86	150	0	0
Macadamia	265	10.7%	385	10.4%						
Total Export Hort.	26	1.0%	25	0.7%	645	1.0%	645	750	166	188
Other crops	2,479	77.8%	3,685	100.0%					19,923	35,885
TOTAL										

Table H.1-22 Horticultural Crops & Horticultural Cropping Pattern (Embu District)

TABLE H-22				Embu District Data : Horticultural crops				Embu District Data : Horticultural crops				Embu District Data : Horticultural crops			
		Areas in ha		Areas in ha		Areas in ha		Production in tonnes		Production in tonnes		Production in tonnes		Yields in tonnes/ha	
		1994		1995		1996		1994		1995		1996		1994	
CROP	Area	%	Area	%	Area	%	CROP	Production	Production	Production	Yield	Yield	Yield	Yield	Yield
Tomato	90	1.92%	90	1.66%	82	1.49%	Tomato	760	756	1,016	8.4	8.4	8.4	12.4	12.4
Cabbage	73	1.56%	34	1.74%	63	1.15%	Cabbage	1,080	1,353	962	14.8	14.4	14.4	15.3	15.3
Kale	167	3.56%	255	4.71%	175	3.19%	Kale	2,470	3,672	2,590	14.8	14.4	14.4	14.8	14.8
Carrot	22	0.47%	48	0.89%	20	0.36%	Carrot	186	364	152	7.5	7.6	7.6	7.6	7.6
B.Onion	35	0.75%	40	0.74%	24	0.44%	B.Onion	230	264	156	6.6	6.6	6.6	6.5	6.5
Field Pea	0	0.00%	0	0.00%	0	0.00%	Field Pea	0	0	0	0.0	0.0	0.0	0.0	0.0
Garlic	0	0.00%	0	0.00%	0	0.00%	Garlic	0	0	0	0.0	0.0	0.0	0.0	0.0
Peppers	0	0.00%	0	0.00%	0	0.00%	Peppers	0	0	0	0.0	0.0	0.0	0.0	0.0
Total Vegetables	387	8%	527	10%	364	7%	Total Vegetables	4,706	6,409	4,876					
Banana	2,800	59.66%	3,067	56.87%	3,192	58.18%	Banana	23,788	26,451	31,500	8.5	8.6	8.6	9.9	9.9
Mango	347	7.39%	461	8.52%	488	8.89%	Mango	2,430	3,690	4,900	7.0	8.0	8.0	10.0	10.0
Apples	0	0.00%	0	0.00%	0	0.00%	Apples	0	0	0	0.0	0.0	0.0	0.0	0.0
Citrus	33	0.70%	30	0.55%	25	0.46%	Citrus	165	135	90	5.0	4.5	4.5	3.6	3.6
Papaya	160	3.41%	240	4.43%	280	5.10%	Papaya	1,440	1,853	2,450	9.0	7.7	7.7	8.8	8.8
Passion Fruit	130	2.77%	160	2.96%	159	2.88%	Passion Fruit	1,160	1,288	1,320	8.9	8.1	8.1	8.3	8.3
Pineapple	0	0.00%	0	0.00%	0	0.00%	Pineapple	0	0	0	0.0	0.0	0.0	0.0	0.0
Avocado	280	5.97%	294	5.43%	311	5.67%	Avocado	2,704	2,903	2,800	9.7	9.9	9.9	9.0	9.0
Plums	0	0.00%	0	0.00%	0	0.00%	Plums	0	0	0	0.0	0.0	0.0	0.0	0.0
Melons	0	0.00%	0	0.00%	0	0.00%	Melons	0	0	0	0.0	0.0	0.0	0.0	0.0
Total Fruit	3,750	80%	4,252	79%	4,455	81%	Total Fruit	31,687	36,318	43,060					
French Bean	34	0.72%	30	0.55%	27	0.49%	French Bean	158	138	152	4.6	4.6	4.6	5.6	5.6
Snowpea	0	0.00%	0	0.00%	0	0.00%	Snowpea	0	0	0	0.0	0.0	0.0	0.0	0.0
Brijjal	0	0.00%	0	0.00%	0	0.00%	Brijjal	0	0	0	0.0	0.0	0.0	0.0	0.0
Karella	0	0.00%	0	0.00%	0	0.00%	Karella	0	0	0	0.0	0.0	0.0	0.0	0.0
Dudhi	0	0.00%	0	0.00%	0	0.00%	Dudhi	0	0	0	0.0	0.0	0.0	0.0	0.0
Okra	0	0.00%	0	0.00%	0	0.00%	Okra	0	0	0	0.0	0.0	0.0	0.0	0.0
Valore	0	0.00%	0	0.00%	0	0.00%	Valore	0	0	0	0.0	0.0	0.0	0.0	0.0
Turia	0	0.00%	0	0.00%	0	0.00%	Turia	0	0	0	0.0	0.0	0.0	0.0	0.0
Chillies	0	0.00%	0	0.00%	0	0.00%	Chillies	0	0	0	0.0	0.0	0.0	0.0	0.0
Macadamia	522	11.12%	603	11.14%	641	11.68%	Macadamia	984	1,040	1,850	1.9	1.7	1.7	2.9	2.9
Total Export Hort.	556	12%	633	12%	668	12%	Total Export Hort.	1,140	1,178	2,002					
Other crops	0	0.00%	0	0.00%	0	0.00%	Other crops	0	0	0	0.0	0.0	0.0	0.0	0.0
TOTAL	4,693	100%	5,412	100%	5,487	100%	TOTAL	37,533	43,905	49,938					

TABLE H-22 (Sheet 3)		EMBU District Horticultural Cropping Pattern									
		w/o Project	With Project			w/o Project	With Project			w/o Project	With Project
		Hectares	Hectares	%	%	Yield kg/dec	Yield kg/dec	%	%	Prod. tons	Prod. tons
CROP											
Potato	2,125	2,150	29.0%	26.1%	750	850	15,938	18,275			
Tomato	87	90	1.2%	1.1%	966	1,700	844	1,530			
Cabbage	77	150	1.0%	1.8%	1,476	1,850	1,132	2,775			
Kale	199	200	2.7%	2.4%	1,463	1,750	2,911	3,500			
Carrot	30	35	0.4%	0.4%	758	1,200	227	420			
B.Onion	33	30	0.5%	0.4%	657	1,800	217	540			
Field Pea	0	0	0.0%	0.0%	0	0	0	0			
Garlic	0	0	0.0%	0.0%	0	0	0	0			
Peppers	0	0	0.0%	0.0%	0	0	0	0			
Total Vegetables	2,551	2,655	34.8%	32.3%							
Banana	3,020	3,700	41.2%	45.0%	902	1,200	27,246	44,400			
Mango	432	500	5.9%	6.1%	850	1,350	3,673	6,750			
Apples	0	0	0.0%	0.0%	0	0	0	0			
Citrus	29	0	0.4%	0.0%	443	0	130	0			
Papaya	227	230	3.1%	2.8%	845	950	1,914	2,185			
Passion Fruit	150	150	2.0%	1.8%	840	1,200	1,256	1,800			
Pineapple	0	0	0.0%	0.0%	0	0	0	0			
Avocado	295	295	4.0%	3.6%	950	1,750	2,802	5,163			
Plums	0	0	0.0%	0.0%	0	0	0	0			
Melons	0	0	0.0%	0.0%	0	0	0	0			
Total Fruit	4,152	4,875	56.7%	59.2%							
French Bean	30	100	0.4%	1.2%	490	1,000	149	1,000			
Snowpea	0	0	0.0%	0.0%	0	0	0	0			
Brinjal	0	0	0.0%	0.0%	0	0	0	0			
Karela	0	0	0.0%	0.0%	0	0	0	0			
Dudhi	0	0	0.0%	0.0%	0	0	0	0			
Okra	0	0	0.0%	0.0%	0	0	0	0			
Valore	0	0	0.0%	0.0%	0	0	0	0			
Turia	0	0	0.0%	0.0%	0	0	0	0			
Chillies	0	0	0.0%	0.0%	0	0	0	0			
Macadamia	589	600	8.0%	7.3%	219	300	1,291	1,800			
Total Export Hort.	619	700	8.5%	8.5%	0	0	0	0			
Other crops	0	0	0.0%	0.0%	0	0	0	0			
TOTAL	7,322	8,230	100.0%	100.0%			59,730	90,138			

Table H.1-23 Horticultural Crops & Horticultural Cropping Pattern (Tharaka Nithi District)

TABLE H-23			Tharaka Nithi District Data : Horticultural crops			TABLE H-23 (Sheet 2)			Tharaka Nithi District Data : Horticultural crops		
CROP	1994		1995		1996	CROP	1994		1995		1996
	Area	%	Area	%			Area	%	Production	Yield	
Tomato	55	3.85%	65	4.25%	55	Tomato	550	550	650	550	10.0
Cabbage	16	1.12%	25	1.64%	35	Cabbage	136	136	225	280	8.5
Kale	160	11.20%	180	11.78%	160	Kale	1,800	1,800	2,160	1,920	11.3
Carrot	3	0.18%	0	0.00%	0	Carrot	18	18	0	0	7.0
B.Onion	15	1.05%	20	1.31%	18	B.Onion	113	113	140	126	7.5
Field Pea	0	0.00%	0	0.00%	0	Field Pea	0	0	0	0	0.0
Garlic	0	0.00%	0	0.00%	0	Garlic	0	0	0	0	0.0
Peppers	0	0.00%	0	0.00%	0	Peppers	0	0	0	0	0.0
Total Vegetables	249	17%	290	19%	268	Total Vegetables	2,616	2,616	3,175	2,876	
Banana	865	60.55%	880	57.57%	920	Banana	10,320	10,320	10,560	11,040	11.9
Mango	126	8.82%	127	8.28%	132	Mango	1,197	1,197	1,139	1,320	9.5
Apples	0	0.00%	0	0.00%	0	Apples	0	0	0	0	0.0
Citrus	9	0.63%	0	0.00%	0	Citrus	0	0	0	0	0.0
Papaya	60	4.20%	64	4.19%	68	Papaya	300	300	320	340	5.0
Passion Fruit	13	0.91%	0	0.00%	0	Passion Fruit	78	78	0	0	6.0
Pineapple	0	0.00%	0	0.00%	0	Pineapple	0	0	0	0	0.0
Avocado	35	2.45%	0	0.00%	0	Avocado	420	420	0	0	12.0
Guavas	17	1.16%	0	0.00%	0	Guavas	10	10	0	0	0.6
Melons	0	0.00%	0	0.00%	0	Melons	0	0	0	0	0.0
Total Fruit	1,125	79%	1,071	70%	1,120	Total Fruit	12,325	12,325	12,019	12,700	
French Bean	25	1.75%	5	0.33%	3	French Bean	100	100	15	9	0.0
Snowpea	0	0.00%	0	0.00%	0	Snowpea	0	0	0	0	0.0
Brinjal	6	0.42%	0	0.00%	0	Brinjal	36	36	0	0	0.0
Karela	10	0.70%	15	0.98%	10	Karela	25	25	45	30	0.0
Dudhi	0	0.00%	0	0.00%	0	Dudhi	0	0	0	0	0.0
Okra	6	0.42%	100	6.54%	80	Okra	36	36	600	480	6.0
Valore	0	0.00%	0	0.00%	0	Valore	0	0	0	0	0.0
Turja	0	0.00%	0	0.00%	0	Turja	0	0	0	0	0.0
Chillies	6	0.42%	18	1.18%	28	Chillies	4	4	13	20	0.0
Macadamia	0	0.00%	0	0.00%	0	Macadamia	0	0	0	0	0.0
Total Export Hort.	53	4%	138	9%	121	Total Export Hort.	201	201	673	539	
Other crops	3	0.18%	30	1.96%	31	Other crops	0	0	0	0	0.0
TOTAL	1,429	100%	1,529	100%	1,540	TOTAL	14,592	14,592	15,216	15,565	

THARAKA NITHI District Horticultural Cropping Pattern									
CROP	w/o Project		With Project		w/o Project		With Project		With Project Prod. tons
	Hectares	%	Hectares	%	Yield kg/dec	Yield kg/dec	Yield kg/dec	Yield kg/dec	
Potato	650	30.2%	1,500	40.2%	750	850	4,875	12,750	900
Tomato	58	2.7%	60	1.6%	1,000	1,500	583	2,250	2,250
Cabbage	25	1.2%	225	6.0%	843	1,000	214	2,450	2,450
Kale	167	7.8%	175	4.7%	1,176	1,400	1,960	6	0
Carrot	1	0.0%	0	0.0%	700	0	0	1,350	0
B.Onion	18	0.8%	75	2.0%	714	1,800	126	0	0
Field Pea	0	0.0%	0	0.0%	0	0	0	0	0
Garlic	0	0.0%	0	0.0%	0	0	0	0	0
Peppers	0	0.0%	0	0.0%	0	0	0	0	0
Total Vegetables	919	42.8%	2,035	54.5%	1,198	1,250	10,640	15,625	15,625
Banana	888	41.3%	1,250	33.5%	951	1,350	1,219	1,688	1,688
Mango	128	6.0%	125	3.3%	0	0	0	0	0
Apples	0	0.0%	0	0.0%	0	0	0	0	0
Citrus	3	0.1%	0	0.0%	2	0	0	0	0
Papaya	64	3.0%	85	1.7%	500	950	320	618	618
Passion Fruit	4	0.2%	125	3.3%	600	0	26	0	0
Pineapple	0	0.0%	0	0.0%	0	0	0	0	0
Avocado	12	0.5%	0	0.0%	1,200	0	140	0	0
Guavas	6	0.3%	6	0.2%	60	65	3	4	4
Melons	0	0.0%	0	0.0%	0	0	0	0	0
Total Fruit	1,105	51.4%	1,571	42.1%	376	500	41	0	0
French Bean	11	0.5%	0	0.0%	0	0	0	0	0
Snowpea	0	0.0%	0	0.0%	0	0	0	0	0
Brinjal	2	0.1%	4	0.1%	600	0	12	0	0
Karela	12	0.5%	15	0.4%	286	0	33	0	0
Dudhi	0	0.0%	0	0.0%	0	0	0	0	0
Okra	62	2.9%	65	1.7%	600	750	372	488	488
Valore	0	0.0%	0	0.0%	0	0	0	0	0
Turia	0	0.0%	0	0.0%	0	0	0	0	0
Chillies	17	0.8%	20	0.5%	69	0	12	0	0
Macadamia	0	0.0%	0	0.0%	0	0	0	0	0
Total Export Hort.	104	4.8%	104	2.8%	0	0	0	0	0
Other crops	21	1.0%	25	0.7%	0	0	0	0	0
TOTAL	2,149	100.0%	3,735	100.0%			20,583	38,121	

Table H.1-24 Horticultural Crops & Horticultural Cropping Pattern (Meru District)

CROP	Meru District Data : Horticultural crops				Meru District Data : Horticultural crops				Meru District Data : Horticultural crops			
	1994		1995		1996		1994		1995		1996	
	Area	%	Area	%	Area	%	Production	Yield	Production	Yield	Production	Yield
Tomato	284	6.36%	300	7.10%	380	8.90%	1,988	7.0	2,400	3,420	8.0	
Cabbage	519	11.63%	400	9.47%	360	8.43%	5,190	10.0	4,000	3,600	10.0	
Kale	139	3.11%	123	2.91%	75	1.76%	278	2.0	246	300	2.0	
Carrot	86	1.93%	109	2.58%	90	2.11%	344	4.0	545	720	5.0	
B.Onion	254	5.69%	200	4.73%	240	5.62%	1,270	5.0	1,600	1,920	8.0	
Field Pea	0	0.00%	0	0.00%	0	0.00%	0	0.0	0	0	0.0	
Garlic	18	0.40%	98	2.32%	100	2.34%	72	4.0	686	800	7.0	
Peppers	0	0.00%	0	0.00%	0	0.00%	0	0.0	0	0	0.0	
Total Vegetables	1,300	29%	1,230	29%	1,245	29%	9,142	9.477	9,477	10,760		
Banana	641	14.36%	650	15.38%	617	14.44%	7,692	12.0	8,450	7,404	13.0	
Mango	202	4.53%	213	5.04%	228	5.34%	1,616	8.0	1,917	3,420	9.0	
Apples	0	0.00%	0	0.00%	0	0.00%	0	0.0	0	0	0.0	
Citrus	401	8.98%	400	9.47%	395	9.25%	2,807	7.0	2,400	2,370	6.0	
Papaya	180	3.59%	165	3.91%	175	4.10%	1,600	10.0	1,650	2,450	14.0	
Passion Fruit	108	2.42%	88	2.08%	94	2.20%	648	6.0	440	564	5.0	
Pineapple	2	0.03%	2	0.05%	0	0.00%	0	0.0	0	0	0.0	
Avocado	286	6.41%	288	6.82%	300	7.02%	4,576	16.0	4,608	5,400	18.0	
Plums	0	0.00%	0	0.00%	0	0.00%	0	0.0	0	0	0.0	
Melons	0	0.00%	0	0.00%	0	0.00%	0	0.0	0	0	0.0	
Total Fruit	1,800	40%	1,806	43%	1,809	42%	18,939	19.465	19,465	21,608		
French Bean	600	13.45%	400	9.47%	380	8.90%	1,500	2.5	800	1,140	2.0	
Snowpea	150	3.36%	180	4.26%	280	6.55%	300	2.0	360	980	2.0	
Brijjal	70	1.57%	57	1.35%	33	0.77%	455	6.5	296	264	5.2	
Karella	78	1.75%	87	2.06%	50	1.17%	624	8.0	609	400	7.0	
Dudhi	11	0.25%	18	0.43%	15	0.35%	150	13.6	162	150	10.0	
Okra	76	1.70%	43	1.02%	50	1.17%	480	6.3	366	450	8.5	
Valore	15	0.34%	12	0.28%	20	0.47%	75	5.0	48	100	5.0	
Turia	0	0.00%	0	0.00%	0	0.00%	0	0.0	0	0	0.0	
Chillies	31	0.69%	54	1.28%	50	1.17%	93	3.0	216	200	4.0	
Macadamia	332	7.44%	338	8.00%	340	7.96%	1,660	5.0	1,690	2,040	5.0	
Total Export Hort.	1,363	31%	1,189	28%	1,218	29%	5,337	4.547	4,547	5,724		
Other crops	0	0.00%	0	0.00%	0	0.00%	0	0.0	0	0	0.0	
TOTAL	4,463	100%	4,225	100%	4,272	100%	31,430	31.089	31,089	34,672		

CROP	With Project				w/o Project				MERU District Horticultural Cropping Pattern							
	Hectares	%	Yield kg/dec	Prod. tons	Hectares	%	Yield kg/dec	Prod. tons	Hectares	%	Yield kg/dec	Prod. tons	Hectares	%	Yield kg/dec	Prod. tons
Potato	14,000	76.4%	14,000	14,000	14,000	75.6%	1,000	140,000	1,000	1,000	1,050	140,000	147,000	147,000	147,000	147,000
Tomato	321	1.8%	325	325	325	1.8%	810	2,603	810	810	1,500	2,603	4,875	4,875	4,875	4,875
Cabbage	426	2.3%	500	500	500	2.7%	1,000	4,283	1,000	1,000	1,200	4,283	6,000	6,000	6,000	6,000
Kale	112	0.6%	110	110	110	0.6%	245	275	110	110	500	275	550	550	550	550
Carrot	95	0.5%	125	125	125	0.7%	565	536	125	125	800	536	1,000	1,000	1,000	1,000
B.Onion	231	1.3%	230	230	230	1.2%	690	1,597	230	230	1,800	1,597	4,140	4,140	4,140	4,140
Field Pea	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
Garlic	72	0.4%	75	75	75	0.4%	721	519	75	75	750	519	563	563	563	563
Peppers	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
Total Vegetables	15,258	83.3%	15,365	15,365	15,365	83.0%			15,365	15,365			8,750	8,750	8,750	8,750
Banana	636	3.5%	700	700	700	3.8%	1,234	7,849	700	700	1,250	7,849	8,750	8,750	8,750	8,750
Mango	214	1.2%	215	215	215	1.2%	1,081	2,318	215	215	1,350	2,318	2,903	2,903	2,903	2,903
Apples	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
Citrus	399	2.2%	399	399	399	2.2%	634	2,526	399	399	634	2,526	2,526	2,526	2,526	2,526
Papaya	167	0.9%	165	165	165	0.9%	1,140	1,900	165	165	1,200	1,900	1,980	1,980	1,980	1,980
Passion Fruit	97	0.5%	100	100	100	0.5%	570	600	100	100	600	600	600	600	600	600
Pineapple	1	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
Avocado	291	1.6%	290	290	290	1.6%	1,669	4,861	290	290	1,700	4,861	4,930	4,930	4,930	4,930
Plums	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
Melons	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
Total Fruit	1,805	9.9%	1,869	1,869	1,869	10.1%			1,869	1,869			4,930	4,930	4,930	4,930
French Bean	460	2.5%	450	450	450	2.4%	249	1,147	450	450	500	1,147	2,250	2,250	2,250	2,250
Snowpea	203	1.1%	250	250	250	1.3%	269	547	250	250	500	547	1,250	1,250	1,250	1,250
Brinjal	53	0.3%	45	45	45	0.2%	634	338	45	45	800	338	360	360	360	360
Karella	72	0.4%	75	75	75	0.4%	760	544	75	75	850	544	638	638	638	638
Dudhi	15	0.1%	15	15	15	0.1%	1,050	154	15	15	1,100	154	165	165	165	165
Okra	56	0.3%	50	50	50	0.3%	767	432	50	50	950	432	475	475	475	475
Valore	16	0.1%	15	15	15	0.1%	474	74	15	15	500	74	75	75	75	75
Turia	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
Chillies	45	0.2%	45	45	45	0.2%	377	170	45	45	400	170	180	180	180	180
Macadamia	337	1.8%	340	340	340	1.8%	534	1,797	340	340	600	1,797	2,040	2,040	2,040	2,040
Total Export Hort.	1,257	6.9%	1,285	1,285	1,285	6.9%			1,285	1,285						
Other crops	0	0.0%	0	0	0	0.0%	0	0	0	0	0	0	0	0	0	0
TOTAL	18,320	100.0%	18,519	18,519	18,519	100.0%			18,519	18,519		175,000	190,723	190,723	190,723	190,723

Table H.1-25 Horticultural Crops & Horticultural Cropping Pattern (Nyambene District)

TABLE H-25	Nyambene District Data : Horticultural crops				TABLE H-25 (2)				Nyambene District Data : Horticultural crops				Nyambene District Data : Horticultural crops						
	1,994		1,995		1,996		CROP	1,994		1,995		1,996		1,994		1,995		1,996	
	Area	%	Area	%	Area	%		Production	Yield	Production	Yield	Production	Yield	Production	Yield	Production	Yield	Production	Yield
CROP																			
Tomato	95	3.11%	100	3.54%	200	6.47%	Tomato	1,710	2,000	3,500	18.0	18.0	20.0	17.5					
Cabbage	170	5.56%	100	3.54%	100	3.24%	Cabbage	4,250	3,000	1,750	25.0	25.0	30.0	17.5					
Kale	500	16.36%	120	4.25%	200	6.47%	Kale	12,500	3,600	3,000	25.0	25.0	30.0	15.0					
Carrot	30	0.98%	15	0.53%	25	0.81%	Carrot	450	225	430	15.0	15.0	15.0	17.2					
B.Onion	47	1.54%	80	2.83%	50	1.62%	B.Onion	235	640	240	5.0	5.0	8.0	4.8					
Field Pea	0	0.00%	0	0.00%	0	0.00%	Field Pea	0	0	0	0.0	0.0	0.0	0.0					
Garlic	0	0.00%	0	0.00%	0	0.00%	Garlic	0	0	0	0.0	0.0	0.0	0.0					
Peppers	40	1.31%	70	2.48%	50	1.62%	Peppers	22	27	65	0.6	0.6	0.4	1.3					
Total Vegetables	882	29%	485	17%	625	20%	Total Vegetables	19,167	9,492	8,985									
Banana	1,550	50.72%	1,610	57.05%	1,700	55.00%	Banana	12,000	16,275	9,860	7.7	10.1	5.8	5.8					
Mango	95	3.11%	110	3.90%	114	3.69%	Mango	609	712	730	6.4	6.5	6.4	6.4					
Apples	0	0.00%	0	0.00%	0	0.00%	Apples	0	0	0	0.0	0.0	0.0	0.0					
Citrus	0	0.00%	0	0.00%	0	0.00%	Citrus	0	0	0	0.0	0.0	0.0	0.0					
Papaya	64	2.09%	74	2.62%	80	2.59%	Papaya	420	576	960	6.6	7.8	12.0	12.0					
Passion Fruit	12	0.39%	17	0.60%	30	0.97%	Passion Fruit	25	75	150	2.1	2.1	4.4	5.0					
Pineapple	20	0.65%	30	1.06%	40	1.29%	Pineapple	50	340	160	2.5	11.3	4.0	4.0					
Avocado	30	0.98%	35	1.24%	45	1.46%	Avocado	180	225	200	6.0	6.0	6.4	4.4					
Guavas	10	0.33%	11	0.39%	12	0.39%	Guavas	40	75	60	4.0	4.0	6.8	5.0					
Melons	0	0.00%	0	0.00%	0	0.00%	Melons	0	0	0	0.0	0.0	0.0	0.0					
Total Fruit	1,781	58%	1,887	67%	2,021	65%	Total Fruit	13,284	18,203	12,060									
French Bean	0	0.00%	0	0.00%	0	0.00%	French Bean	0	0	0	0.0	0.0	0.0	0.0					
Snowpea	0	0.00%	0	0.00%	0	0.00%	Snowpea	0	0	0	0.0	0.0	0.0	0.0					
Brinjal	30	0.98%	30	1.06%	35	1.13%	Brinjal	91	93	110	3.0	3.0	3.1	3.1					
Karela	30	0.98%	25	0.89%	25	0.81%	Karela	21	23	20	0.7	0.7	0.9	0.8					
Dudhi	0	0.00%	0	0.00%	0	0.00%	Dudhi	0	0	0	0.0	0.0	0.0	0.0					
Okra	35	1.15%	50	1.77%	30	0.97%	Okra	174	244	180	5.0	5.0	4.9	6.0					
Valore	0	0.00%	0	0.00%	0	0.00%	Valore	0	0	0	0.0	0.0	0.0	0.0					
Turia	15	0.49%	15	0.53%	10	0.32%	Turia	6	6	8	0.4	0.4	0.4	0.8					
Chillies	25	0.82%	30	1.06%	30	0.97%	Chillies	60	65	70	2.4	2.4	2.2	2.3					
Macadamia	250	8.18%	290	10.28%	290	9.38%	Macadamia	358	413	413	1.4	1.4	1.4	1.4					
Total Export Hort	385	13%	440	16%	420	14%	Total Export Hort.	351	431	388									
Other crops	8	0.26%	10	0.35%	25	0.81%	Other crops	75	92	10	9.4	9.4	9.2	0.4					
TOTAL	3,056	100%	2,822	100%	3,091	100%	TOTAL	33,552	29,045	22,294									

TABLE H-25 (Sheet 3)		Nyambene District Horticultural Cropping Pattern										
CROP	w/o Project		With Project		w/o Project		With Project		w/o Project		With Project	
	Hectares	%	Hectares	%	Yield kg/dec	Yield kg/dec	Yield kg/dec	Yield kg/dec	Prod. tons	Prod. tons	Prod. tons	Prod. tons
Potato	2,750	47.9%	2,750	47.4%	1,000	1,150	27,500	31,625	2,500	2,403	2,600	2,600
Tomato	132	2.3%	130	2.2%	1,825	2,000	3,000	3,250	3,000	3,000	3,250	3,250
Cabbage	123	2.1%	125	2.2%	2,432	2,600	6,367	6,600	6,367	6,367	6,600	6,600
Kale	273	4.8%	275	4.7%	2,329	2,400	368	350	368	368	350	350
Carrot	23	0.4%	20	0.3%	1,579	1,750	372	600	372	372	600	600
B.Onion	59	1.0%	80	1.4%	630	750	0	0	0	0	0	0
Field Pea	0	0.0%	0	0.0%	0	0	0	188	0	0	0	188
Garlic	0	0.0%	25	0.4%	0	750	0	175	0	0	0	175
Peppers	53	0.9%	50	0.9%	71	350	38	0	38	38	0	0
Total Vegetables	3,414	59.5%	3,455	59.6%	785	1,000	12,712	16,000	12,712	12,712	16,000	16,000
Banana	1,620	28.2%	1,600	27.6%	643	650	684	650	684	684	650	650
Mango	106	1.9%	100	1.7%	0	0	0	0	0	0	0	0
Apples	0	0.0%	0	0.0%	0	0	0	0	0	0	0	0
Citrus	0	0.0%	0	0.0%	0	0	0	0	0	0	0	0
Papaya	73	1.3%	75	1.3%	897	1,000	652	750	652	652	750	750
Passion Fruit	20	0.3%	20	0.3%	424	850	83	170	83	83	170	170
Pineapple	30	0.5%	30	0.5%	611	625	183	188	183	183	188	188
Avocado	37	0.6%	35	0.6%	550	750	202	263	202	202	263	263
Guavas	11	0.2%	11	0.2%	530	550	58	61	58	58	61	61
Melons	0	0.0%	0	0.0%	0	0	0	0	0	0	0	0
Total Fruit	1,896	33.0%	1,871	32.3%	0	0	0	0	0	0	0	0
French Bean	0	0.0%	0	0.0%	0	0	0	0	0	0	0	0
Snowpea	0	0.0%	0	0.0%	0	0	0	0	0	0	0	0
Brinjal	32	0.6%	30	0.5%	309	500	98	150	98	98	150	150
Kareila	27	0.5%	25	0.4%	80	500	21	125	21	21	125	125
Dudhi	0	0.0%	0	0.0%	0	0	0	0	0	0	0	0
Okra	38	0.7%	40	0.7%	520	650	199	260	199	199	260	260
Valore	0	0.0%	0	0.0%	0	0	0	0	0	0	0	0
Turpia	13	0.2%	10	0.2%	50	85	7	9	7	7	9	9
Chillies	28	0.5%	30	0.5%	229	300	65	90	65	65	90	90
Macadamia	277	4.8%	300	5.2%	143	150	395	450	395	395	450	450
Total Export Hort.	415	7.2%	435	7.5%	412	500	59	175	59	59	175	175
Other crops	14	0.2%	35	0.6%	0	0	0	0	0	0	0	0
TOTAL	5,740	100.0%	5,796	100.0%	412	500	55,466	64,727	55,466	55,466	64,727	64,727