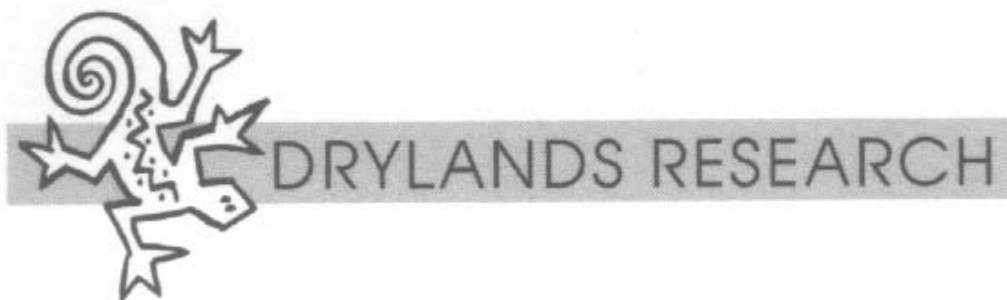




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MAKUENI DISTRICT PROFILE: CROP PRODUCTION AND MARKETING, 1988-1999

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Preface

Drylands Research Working Papers present, in preliminary form, research results of studies carried out in association with collaborating researchers and institutions.

This working paper is part of a study which aims to relate long-term environmental change, population growth and technological change, and to identify the policies and institutions which are conducive to sustainable development. The study builds upon an earlier project carried out by the Overseas Development Institute (ODI) in Machakos District, Kenya, whose preliminary results were published in a series of *ODI Working Papers* in 1990-91. This led to a book (Mary Tiffen, Michael Mortimore and Francis Gichuki, *More people, less erosion: environmental recovery in Kenya*, John Wiley, 1994), which was a synthesis and interpretation of the physical and social development path in Machakos. The book generated a set of hypotheses and policy recommendations which required testing in other African dryland environments. Using compatible methodologies, four linked studies are now being carried out in:

Kenya	Makueni District	
Senegal	Diourbel Region	
Niger	Maradi Department	(in association with ODI)
Nigeria	Kano Region	(in association with ODI)

For each of these study areas, there will be a series of working papers and a synthesis, which will be reviewed at country workshops. An overall synthesis will be discussed at an international workshop in London in 2000.

The Kenya series updates the previous study of Machakos District (which included the new Makueni District) and examines this more arid area in greater depth. The Research Leader for these studies is Michael Mortimore. The Leader of the Kenya Team is Francis Gichuki of the University of Nairobi. Michael Mortimore, Mary Tiffen or Francis Gichuki may be contacted at the following addresses.

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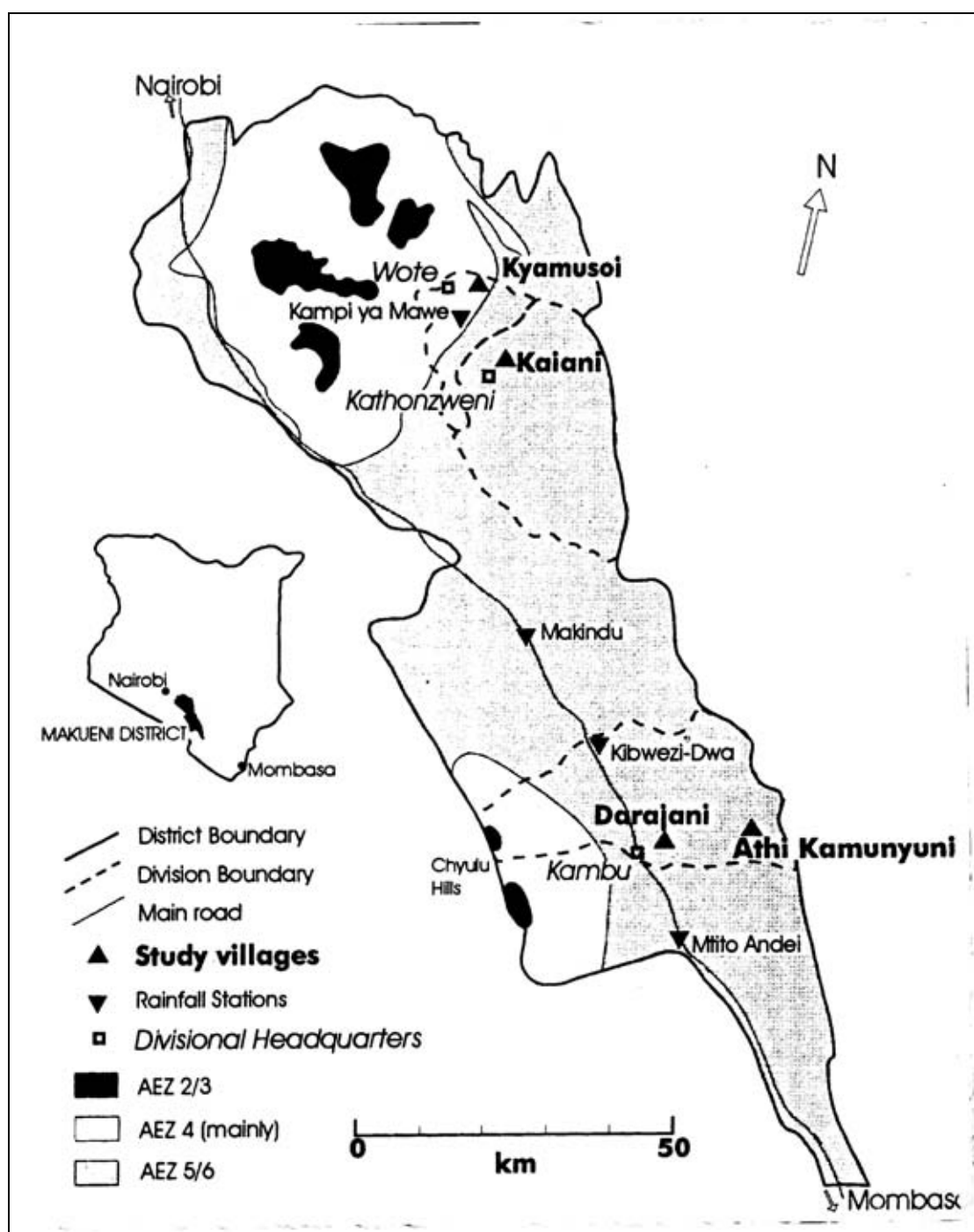
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Preface Map



Abstract

This profile describes the changes in policies affecting marketing and crop production in Makueni District since 1988. The creation of the district led to a larger market for milk and vegetables around Wote, but as yet there have been no substantial improvements in infrastructure. Liberalisation has freed up the trade in milk, grains and agricultural inputs, though the price effects are difficult to discern, due to loss of control over money supply and inflation during the 1990s. Most effects seem positive, the exception being the collapse of Makueni cotton ginnery. Operations of government departments are handicapped by small recurrent budgets, unless foreign aid is available, leading, for example, to the collapse of the Training and Visit Extension system.

Crop production varies hugely and erratically from year to year, depending on the rains. Trends are difficult to analyse, as the recorded statistics amalgamate the results of both seasons. Maize and pulses remain the main crops, but those farmers who can go into fruit and vegetable production find them profitable. Farmers sell their produce in the most accessible large market. About half to two thirds aim to feed their families from their own crops in good years, but during the last five years they have often had to purchase much more food than planned. Most have received food aid, and regard it as essential to maintain their capacity to work when the rains return. However, relief food was not found to be internalised as a survival strategy because, as a general rule, government policy discourages dependency on relief food. Most farmers have plans to increase their marketed output. They were able to make essential purchases (tools, carts, and granaries) for this purpose in years when they had a good harvest, although many drew necessary capital from their non-farm income. Educational costs also constrain investment, but weighing equally heavily in preventing investment is the awareness of climatic risk, especially with respect to high value crops. They are not particularly conscious of changes in government policy.

Résumé

Cette étude est consacrée à l'évolution des politiques affectant la production et la commercialisation de végétaux dans le district de Makueni depuis 1988, une évolution marquée par deux grandes étapes :

- la création de nouveaux districts et autres unités régionales par la subdivision des zones administratives existantes afin de rapprocher le gouvernement des populations ;
- la libéralisation des marchés des céréales, du coton et du lait au cours des années 1990.

La création du district de Makueni à la place de l'ancien district de Machakos a permis d'élargir le marché du lait et des légumes aux alentours du nouveau chef-lieu, Wote, en raison surtout de l'afflux de fonctionnaires. La libéralisation du marché a permis une ouverture du commerce du lait, des céréales et des intrants agricoles, bien que les effets de prix soient difficiles à cerner en raison de l'inflation persistante qui a commencé dans les années 1970 et s'est aggravée au cours des années 1990 (tableau 2). Cette inflation est attribuée surtout aux importants déficits budgétaires, à une masse monétaire excédentaire, à la position constamment déficitaire de la balance des paiements et, au

cours des années 1990, à la perte du contrôle des prix par le gouvernement sous l'effet du programme de libéralisation du marché. Ces facteurs ont affecté l'appui financier fourni par le gouvernement au secteur agricole, et au cours de la dernière décennie aucune amélioration importante n'a été apportée aux infrastructures de la région, et notamment à son réseau routier.

Les récoltes varient énormément d'une année à l'autre dans le district de Makueni, surtout en raison de la variabilité de la pluviométrie. Les tendances de la production sont difficiles à analyser car les statistiques annuelles officielles combinent les résultats de deux campagnes agricoles couvrant deux saisons des pluies distinctes. Les données disponibles sur la production, les zones cultivées et les rendements des cultures principales sont présentées aux tableaux 4 et 5 et aux figures 1 et 2. Elles montrent que le maïs et les légumineuses ont toujours constitué les cultures principales. Elles montrent également la haute variabilité interannuelle de la production ainsi qu'une baisse possible des rendements par rapport à la décennie précédente, mais en raison des limites de la période étudiée il conviendrait de prolonger l'analyse. L'étude a également montré que la production de fruits et légumes a été lucrative pour les agriculteurs qui ont pu exploiter ce créneau. Les données sur les prix du maïs et des haricots montrent une haute variabilité interannuelle et intersaisonnière (figure 4).

Dans le cadre de cette étude, des enquêtes ont été menées dans quatre villages du district. Elles montrent que les agriculteurs écoulent leur production sur le plus grand marché auquel ils ont accès, par l'intermédiaire de commerçants privés plutôt que de coopératives, contrairement à ce que l'on aurait pu prévoir en raison de l'appui financier fourni récemment par le gouvernement à ces institutions (tableaux 11 et 12). Entre la moitié et les deux tiers environ des ménages agricoles cherchent à survenir à leurs besoins alimentaires par leur propre production les bonnes années, mais au cours des cinq dernières années beaucoup d'entre eux ont dû acheter beaucoup plus de nourriture que prévu. La plupart des ménages ont reçu par le passé une aide alimentaire, et ils estiment ces apports essentiels pour le maintien de leur capacité de travail une fois les pluies revenues. Toutefois, la politique gouvernementale a permis en règle générale d'éviter toute dépendance à l'égard de cette aide.

La plupart des agriculteurs prévoient d'augmenter la production qu'ils commercialisent. Au cours de la dernière décennie, les ménages agricoles ont pu effectuer dans ce but des achats essentiels (outils, chariots et greniers) les années de bonnes récoltes, bien que pour beaucoup d'entre eux les fonds nécessaires aient provenu de revenus non agricoles (tableau 20). Les dépenses de scolarisation et les investissements agricoles constituent deux priorités concurrentielles pour le budget du ménage, mais les risques climatiques constituent le plus gros obstacle à l'investissement dans la production de cultures de haute valeur (tableaux 21 et 22). Les paysans ne sont pas particulièrement conscients de l'impact de l'évolution des politiques gouvernementales.

CONTENTS

1	INTRODUCTION	1
1.1	Goals of the study	1
1.2	Goals of this profile	1
1.3	Study methodology	1
1.4	Organisation of this profile	2
2	POLICY REVIEW	3
2.1	Creation of new districts, divisions and locations	3
2.2	Liberalisation of markets	4
3	DISTRICT AND DRY DIVISION PRODUCTION	15
3.1	Data collection methods used	15
3.2	Makueni District	15
4	DISTRICT LEVEL PRICE DATA	21
5	VILLAGE MARKETING STRATEGIES	22
5.1	Choice of enterprise	22
5.2	Choice of market outlets	27
5.3	Conclusion	28
6	HOUSEHOLD FOOD STRATEGIES AND GOVERNMENTAL RELIEF POLICIES	28
6.1	Food self-sufficiency and food security in survey areas	28
6.2	The role of food aid in household planning	31
6.3	Government policy on food aid	32
7	HOUSEHOLD FARM INVESTMENT	34
7.1	Farm investments made since 1989	34
7.2	Constraints on investments	35
8	POLICY IMPACTS AND RECOMMENDATIONS	37
	ANNEX: RECOMMENDATIONS OF THE WOTE WORKSHOP, NOVEMBER, 1999	41
	REFERENCES	43

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List of acronyms and abbreviations

AEZ:	Agro-Ecological Zone
AI:	Artificial Insemination
AMREF:	African Medical and Research Foundation
CBPP:	Contagious Bovine Pleuropneumonia
CSRP:	Cereal Sector Reform Programme
CLSMB:	Cotton Lint and Seed Marketing Board
CBS:	Central Bureau of Statistics
CPI:	Consumer Price Index
DC:	District Commissioner
DO/DOs:	Divisional Officer(s)
DANIDA (DND):	Danish Agency for International Development
DDC:	District Development Committee
DLC:	Drylands Composite Seed Maize
FAO:	Food and Agriculture Organisation of the United Nations
FRRP:	Famine Relief and Rehabilitation Programme
GAA:	German Agro-Action
GTZ:	German Technical Agency for International Development
GOK:	Government of Kenya
GDP:	Gross Domestic Product
KCC:	Kenya Co-operative Creameries
KANU:	Kenya African National Union
KCB:	Katumani Composite “B” Seed Maize
KFC:	Kenya Freedom from Hunger Council
KDB:	Kenya Dairy Board
KSC:	Kenya Seed Company
MoALDM:	Ministry of Agriculture, Livestock Development and Marketing
MSIP:	Makueni Small Scale Irrigation Programme
MAP:	Makueni Agricultural Programme
MIDP:	Machakos Integrated Development Programme
MT:	Metric Tonne
NCPB:	National Cereals and Produce Board
NEP:	National Extension Project
NGO:	Non-Governmental Organisation
OP:	Office of the President
SMS/SMS(s):	Subject Matter Specialist(s)
T&V:	Training and Visit Extension Approach
WFP:	World Food Programme of the United Nations
WV:	World Vision

1 INTRODUCTION

1.1 Goals of the study

The overall study objectives are to identify policy requirements for sustainable farm investment by smallholders in semi-arid Sub-Saharan Africa, using Makueni District in Kenya as a case study. This requires understanding the investments that farmers have made in Kenya farming, the incentives that lie behind these (both infrastructural and marketing) and the competition for funds they face: capital investments in land, or in non-farm business; working capital requirements; educational investments for their children; consumption needs given climatic variability; and housing needs. Their marketing and investment choices will sometimes be affected by government policies, sometimes by other constraints, such as climatic risk.

In Kenya, Makueni District was chosen in order to build on the previous study of the development of Machakos District, 1930-1990 (Tiffen *et al.*, 1994), which examined the long-term changes that had taken place in its population, economy, environment and society. The investments made by its people and the Government during this time had enabled the district to support five times more people at a better standard of living and with more technically proficient and diversified farming, on better conserved soils, with more trees, and with more off-farm income opportunities. During this time, settlement and the accompanying necessary investments had also spread from the better-endowed highlands to the hotter and drier lowlands, barely inhabited before 1950.

Within Makueni District, this study concentrates on the dry zones, namely:

- Agro-ecological zone 4 (AEZ 4), characterised in the Kenya Farm Management Handbook (Jaetzoldt and Schmidt, 1983) as Marginal Cotton,
- AEZ 5, characterised as Livestock and Millet, and
- AEZ6, characterised as Lowland Ranching.

We largely ignore the higher potential areas of Mbooni, Kilome and Kilungu Divisions (agro-ecological zones 2 and 3), which form only a small part of the district. This is in order to be able to make comparisons with semi-arid zones in West Africa, which form a second part of the research project.

1.2 Goals of this profile

The focus of this particular profile is on crops and their marketing, as livestock are discussed in Fall (2000). However, as livestock form an alternative farm enterprise, they are referred to from time to time. The goal of this profile is to assess changes in crop production and marketing management by farmers in Makueni District since 1988, and the impact of national level policies on household investments in agricultural production over the same period.

1.3 Study methodology

A review of the substantial policy changes affecting crop production and marketing in Makueni District since 1988-90 was carried out. Secondly, district level production

statistics were used to construct a profile of production and yields for the main crops in Makueni District as a whole, and the dry areas in particular. Thirdly, structured interviews with household heads and farm managers were undertaken in four villages within the study area, looking at the various investment decisions and choices they were making, as related to crop choice and marketing. Using both the district production data and farm level data, we then try to see the impact of the changes in government policy.

Four villages were selected that represented the varying climatic and market conditions in the drier parts of the district. They include:

- Kyamusoi village, which is a relatively wet area, in AEZ 4. It is within three hours' walking distance from Wote Town, the headquarters of Makueni District and the main market centre within the district;
- Kaiani village, which is on the borders of AEZ 4 and 5 but is relatively distant from Wote Town, and is connected to it via a poor road. It is, however, close to Kathonzweni, an important local market centre;
- Darajani village, which is a relatively dry area of AEZ 5, and is near the main Nairobi-Mombasa highway. It has its own small market but is also within 3 hours' walking distance of Kambu Town, a busy market centre on the same highway;
- Athi Kamunyuni village, which is in AEZ 6. It is remote from Kambu Town and any major highway and/or market centre.

For the purposes of the farm household survey, 12 farmers were randomly selected from a list of all the villagers in each of the four study villages. The head of each farm survey household, or in his absence, the farm manager, generally his wife, was interviewed, using structured formal questionnaires through a single visit interview. If no responsible person was found at the farm during the visit, the household was not replaced.

It is realised that the sample was small, and all the data from it should be regarded as *illustrative of trends* rather than as precisely quantitative. We note, however, where survey data and district statistical data appear to be in confirmation of each other.

Preliminary findings were reported at a workshop to district officials, and to 16 selected farmers from the four villages, in Wote in November 1999. The discussions at the workshop were very useful in refining this final report.

1.4 Organisation of this profile

This profile is structured as follows:

- Policy review
- District level production statistics
- District level price data
- Village marketing strategies
- Household food strategies and district drought management
- Household investment choices
- Policy impact and recommendations

2 POLICY REVIEW

Since 1990, there have been major changes in government policy in Kenya which have affected the marketing of agricultural produce in Makueni District. At national level, there has been a steady deterioration in the Government's ability to fund agricultural services. Some of these major changes are reviewed briefly below.

2.1 Creation of new districts, divisions and locations

The Government of Kenya has operated a policy of bringing government closer to the people by the sub-division of administrative areas. Officials under the Office of the President are responsible for the administration of their units, the co-ordination of the work performed by the technical Ministries, liaising with the Members of Parliament and the provision of information on government policy downwards, and the reaction to it upwards. They are headed by the District Commissioner, with Divisional Officers in charge of divisions, and below these, Chiefs responsible for Locations and Assistant Chiefs for Sublocations. At these last two levels, they interact with an important group of people in Kenyan society known as the local leaders, people respected for one reason or another for their part in community life. These often have their own means of reaching up for technical support or project help, through their political, church, commercial or NGO contacts (see Fig 9.2, Tiffen *et al.*, 1994). Some Ministries, like Agriculture, have technical staff at location level, while others do not go below the divisional level.

The creation of Makueni District out of the old Makueni, Kilome, Mbooni and Kibwezi Divisions of Machakos District in February 1992 was part of the sub-division policy. Since then, many of the divisions have also been sub-divided. Similarly, many former sublocations have been upgraded to locations, and village areas to sublocations. By early 1999, the original 4 divisions had become 16, as shown in Table 1.

These changes had several repercussions for marketing and production. Wote town became a District headquarters and received an influx of additional government staff, creating new market demands in the adjacent area. Some of these staff were better qualified and more experienced than those who had previously operated at divisional level, though handicapped by the reduction in government resources available for their work. Similarly, as more divisions were created, there was, at least theoretically, scope for upgrading staff who had previously been operating at the locational level, and improving the quality and availability of technical advice. However, this was dependent on the level of other resources necessary for their work.

At the same time, the Makueni County Council was formed, and Wote Town and Mtitoni Andei became Urban Councils, with responsibilities, amongst other things, for market places and licensing of small traders. Other functions in relation to trade are carried out by the District Trades Officer.

As yet, Wote's new status has not led to any significant improvements in road communications. The inadequacy of the roads has always hampered market development in this area. However, Wote town received an electricity supply and

improved direct-dialling telephone service in 1999. New government offices, under construction since 1992, are still not operational.

Table 1: Divisions created since 1992

	1992	1993	1994	1995	1996	1997	1998
Wote	*	*	*	*	*	*	*
Kibwezi	*	*	*	*	*	*	*
Kilome	*	*	*	*	*	*	*
Mbooni	*	*	*	*	*	*	*
Matiliku	*	*	*	*	*	*	*
Mulala	*	*	*	*	*	*	*
Makindu		*	*	*	*	*	*
Mtito Andei				*	*	*	*
Tulimani				*	*	*	*
Kathonzweni				*	*	*	*
Kalawa				*	*	*	*
Nguu						*	*
Kisau			*	*	*	*	*
Kaiti		*	*	*	*	*	*
Kilungu					*	*	*
Kasikeu					*	*	*

Source: District Agricultural Officer.

A minor but important consequence for marketing was that the Machakos District Co-operative Union no longer had control over the activities and physical plant of any farmers' Co-operative Societies in the new district. This led to various conflicts, including a dispute over ownership of the Makueni Cotton Ginnery, which, at the time the district was formed, was being operated by the Makueni Farmers' Co-operative Society, as a constituent society of the Machakos District Co-operative Union.

2.2 Liberalisation of markets

Grain

As noted, Makueni District was carved out of Machakos District, and it covers a significant proportion of the arid and semi-arid parts of former Machakos District. These areas experience frequent droughts. Mbogoh (1991) observes that such frequent droughts result in localised food shortages with concomitant huge food prices fluctuations within and between regions. This was seen as the main justification for the establishment of agricultural produce price stabilisation and marketing boards, e.g. the National Cereals and Produce Board (NCPB) in Kenya. Before the final phase of the liberalisation of grain marketing in 1993, the NCPB was important for the marketing of grains and food crops in Kenya. However, as noted by Mbogoh (1991), market controls, and the imparting of monopoly power to the NCPB over inter-district grain marketing in

Kenya prior to 1993, did not deter the proliferation and growth of private trade, especially in the rural market centres.

The growth of the informal marketing channel (i.e. private trade channel) in an otherwise controlled marketing environment must be an indicator of some problems in the operations of the formal (i.e. official) marketing channel. And in the case of the NCPB and grain marketing in Kenya, it is well documented that inefficiencies in official channels led to situations where the differences between the producer (farm-gate) prices and the prices that the consumers paid when getting the same produce through official channels could be as high as 146 percent, even only a few months following the harvesting time (Mbogoh, 1991). Clearly, this kind of marketing margin encouraged the growth of parallel (or informal) channels, thus bypassing the state marketing controls. These informal marketing channels were an important food-marketing outlet for the farmers, even during the marketing controls era.

In the light of policy changes, it should be noted that attempts to open up the grain trade to private competition in Kenya go back to 1944 (Lewa and Hubbard, 1995). However, it is also observed that such attempts have always been beaten back by political opposition at the highest levels of government. Hence it is not surprising that even pressure from the World Bank to institute maize marketing reforms (under the Structural Adjustment Programme in the early 1980s) did not yield much success. It was only when the Government of Kenya (GOK) started to feel the pinch of the heavy budgetary costs of running and maintaining the strategic grain reserves that the Ministry of Finance (the Ministry responsible for food supplies and marketing) and the NCPB started planning grain marketing reforms. The resulting Cereals Sector Reform Programme (CSRP) was finally adopted for implementation under the sponsorship of the European Union from 1988. Even then, Lewa and Hubbard (1995) suggest that the CRSP did not openly receive the political goodwill of the President and the ruling KANU party until late 1995.

Along with the maize marketing decontrol component of the CSRP, the restructuring of the NCPB was a key element of the programme. The CSRP was intended to make the NCPB competitive within a liberalised marketing system. It is not surprising that the NCPB had been opposed to these reforms since 1988, even though it was still given the main managerial role in their implementation, under a steering committee with members drawn from the Treasury (i.e. the Ministry of Finance), the Office of the President and the Ministry responsible for food supplies and marketing (Lewa and Hubbard, 1995). The NCPB only began to change its stance after the President of Kenya publicly announced his commitment to the reforms in 1995. Even then, Lewa and Hubbard (1995) state that the way the NCPB was to discharge its role as a buyer and seller of last resort, as per the requirements of the CSRP, remained a controversial issue. A major lesson from the implementation of the CSRP is that any structural adjustment programme (SAP) requires difficult trade-offs among interest groups, with the political aspects being very critical. For this reason, Lewa and Hubbard (1995) argue that reforms could be made faster and smoother by the creation of a culture of reform through education and training at all levels, including the training of politicians, getting full support of the key decision maker(s), and providing enough information to key interest groups (including the public).

The maize marketing reforms constitute a milestone in the marketing of grain because they spelt the end of over 40 years of maize movement controls in Kenya. Even though farmers, traders and consumers had been allowed to move up to two bags of maize (90 kg each) out of the district of origin without a movement permit from the District Commissioner since the 1940s, this amount was just too small to permit any meaningful free and competitive trade. Hence the initial maize market decontrols were significant in that they raised the number of bags of maize that could be moved without a permit, initially from two to 10 bags in September, 1983. Unfortunately, the amount was lowered back to two bags in 1984 during the severe drought that year. Following donor pressure, the amount was raised to 44 bags in February 1991, and to 88 bags in June 1992.

Despite all these actions, the political sensitivity of grain marketing in Kenya is illustrated by the banning of maize movement in October 1992, just before the multiparty political elections of December 1992, and this ban was not lifted until the end of 1993. Lewa and Hubbard (1995) report that the latest maize movement ban had been imposed allegedly to assist those supporting the ruling political party, by rewarding them with movement permits to engage in grain trade. Since the end of 1993, there has not been any marketing policy reversal, and grain marketing is fairly liberalised. However, it is worth noting that maize millers continued to be required to inform the NCPB whenever they wanted to bypass it and buy maize directly from the farmers and private traders until 1993, when maize import controls were finally abolished (Lewa and Hubbard, 1995).

In the case of Makueni District, one could argue that the NCPB was able to play an important role as *the* marketing agency for maize only due to trade protection. Since the liberalisation of the grain trade in 1993, the NCPB has become less competitive than the local private traders in Makueni District, and its competitive edge has been apparent only when there have been food and especially grain shortages, due primarily to its advantage in having huge grain storage facilities within and outside the district. In fact the NCPB has an ultra-modern grain storage facility in Wote, which was financed by the Italian Government under the European Union sponsored CSRP and became operational in 1995. Since the NCPB is not able to procure much grain from the farmers following grain trade liberalisation, it has resorted to leasing its storage facilities to private traders, which thus sounds a death knell for the NCPB as a competitive marketing agency.

The general impact of grain marketing liberalisation on producers and consumers in Makueni District has been ambiguous: prices vary considerably, depending on the rainfall situation during the main crop production seasons. When sufficient amounts of rainfall are received, maize producer prices can be as low as Ksh 500 per 90 kg bag, while the prices rise up to Ksh 2,000 per 90 kg bag during a bad year. Nevertheless, liberalisation is said to have led to slightly better producer prices and greater availability of maize in the market throughout the year (workshop discussions with farmers and government officials, Wote, November 1999). This can be attributed to abolition of maize import controls and freer movement of maize within Kenya.

Cotton

Since Kenya attained political independence in 1963, the production and marketing of cotton had been regulated and controlled by the Cotton Lint and Seed Marketing Board (CLSMB). The CLSMB appeared to operate relatively satisfactorily up until the early 1980s. Its poor performance in the late 1980s led to the virtual collapse of the CLSMB in particular and the Kenyan cotton industry in general by the beginning of the 1990s.

In the late 1980s, the failure of the CLSMB to pay farmers in Makueni District within a reasonable time-frame for their cotton led to most farmers abandoning cotton, as they could not afford the heavy input costs and long delays before getting a return.

The cotton industry was liberalised in 1993. Farmers became free to sell to any trader or co-operative. Now all of the cotton production is marketed through private companies and/or co-operatives. For example, some farmers in the study villages sell their cotton to agents of the Kitui Ginneries or Voi Industries. For the farmers who are still producing cotton, the prices are more attractive now than they used to be during the pre-1994 period under the monopolistic marketing regime of the CLSMB. Before 1994, the prices of cotton were as follows:

Ksh 5 per kg of AR-grade cotton;
Ksh 3 per kg of BR-grade cotton.

where AR and BR are the prime and general grades of cotton respectively. Since the industry was liberalised, prices have improved, and the latest (1997) prices paid to farmers by the Kitui and Voi Ginnery Agents were, on an average basis, as follows:

Ksh 22 per kg of AR-grade cotton;
Ksh 8 per kg of BR-grade cotton.

The major problem now faced by the farmers who grow cotton in Makueni District is one of low seed quality. Due to lack of the supply of high quality (New High Yielding Variety) seed, the farmers are forced to use and plant seed from their old low-yielding cotton crop.

Milk

The dairy subsector in Kenya is dominated by smallholder production: the smallholders account for about 80 percent of the total production. The impressive development of dairying since 1963 is attributed to concerted government efforts through the provision of extension services and subsidised inputs to small scale farmers (especially veterinary and artificial insemination (AI) services) (Kenya, MoALDM, 1996). Prior to liberalisation of the dairy subsector in May 1992 milk processing and marketing developed simultaneously with production, through the efforts of the Kenya Co-operative Creameries (KCC) with its network of factories and cooling facilities. The KCC's development had benefited from direct government loans and government guaranteed external loans. Even though it was founded and registered as a private company and farmers' co-operative in 1925, the Government started using the KCC as a statutory body in the implementation of its dairy development policies and programmes after Kenya became a sovereign state in December 1963. The KCC continued to enjoy

that status until the dairy industry was liberalised in May 1992. Up to that date only the KCC was allowed to process and distribute milk and milk products in designated urban areas. The farmers' dairy co-operatives, which played a key role in the marketing of their members' raw milk, were only licensed to deliver their milk to the KCC factories and milk cooling facilities.

Under liberalisation, producer and consumer prices were decontrolled and competition in all aspects of the industry (especially in processing and marketing) allowed. In liberalising the dairy industry, the Government highlighted the message that in the future the industry has to develop in a self-sustaining manner with an emphasis on beneficiary and private sector participation. The role of the Government would then be the provision of public goods (Kenya, MoALDM, 1996). Since May 1992, the Kenya Dairy Board (KDB), which regulates the dairy industry, has licensed over 40 new co-operative and individual (private) concerns to engage in the processing and marketing of milk and milk products throughout Kenya, thus providing competition for the KCC. Due to its poor financial performance since 1989 and enhanced competition since May 1992, the KCC is no longer able to attract much milk from the producers, and the organisation is on the verge of collapsing altogether.

Trade in raw milk has increased dramatically since the liberalisation of the dairy industry in 1992, with over 1000 individual traders and over 200 dairy co-operatives being known to be involved in milk marketing in Kenya (Kenya, MoALDM, 1996). It is against this background of dairy policy change that the New Makueni Farmers Co-operative Society was found to be performing fairly successfully in its dairy operations in May 1999. These involve reception of milk from its members in the neighbourhood of Wote Town, followed by the pasteurisation and sale of that milk to the consumers within Wote Town. However, it should be noted that the general impression of farmers is that milk marketing liberalisation did not have much impact in Wote town in particular, and Makueni District generally, because milk produced in the district had always been sold locally (the district is a 'milk-deficit area'). Nevertheless we would like to observe that milk now moves faster in the marketing chain, and many shopping centres now buy milk from the farmers. Hence the question of whether milk is now more readily available in Wote is due to policy changes or increased demand from the government officers in Wote town is difficult to answer. Due to high seasonal variations in milk production in Makueni District, the producer/consumer prices of milk fluctuate widely during the year.

Inputs

The major farm inputs that may be of concern to Makueni farmers include certified seed (mainly maize and beans), pesticides and fertilisers. Prior to the decontrol of the seed industry in 1996, the Government regulated the production and distribution of certified seed maize and beans by granting the Kenya Seed Company (KSC) monopoly status over marketing. With liberalisation, many other players have appeared in the seed industry and price determination is now the responsibility of the seed market/industry. The Government now emphasises the need to intensify extension work on the use of improved seeds in order to boost agricultural development (Kenya, MoALDM, 1996). However, with many more players joining the seed industry, there have been reported cases of fake 'certified seed' being sold, and this calls for better supervision of the industry.

The pesticides market in Kenya is fairly large, with a turnover of over Ksh 2 billion annually. This market comprises 45 percent fungicides; 32 percent insecticides; and 20 percent herbicides. The pesticides industry has always enjoyed liberalised marketing, but its main problem is an importation policy which promotes business in already formulated compounds. Imports of technical grade pesticides for local formulation attract much higher duties than the imports of already formulated compounds, such as fungicides and insecticides (Kenya, MoALDM, 1996). Nationally, the largest users of pesticides are horticulture (38 percent), cereals (27 percent), coffee (20 percent), maize (five percent) and other crops (ten percent). In Makueni District, the main use of pesticides in farming occurs in cereals production in the form of grains storage dusts, and in coffee and horticultural production. As in the case of pesticides, the use of fertilisers in Makueni District is not widespread.

During workshop discussions, it was observed that the inadequate use of both organic (manure) and inorganic fertilisers was due to two factors: the farmers keep only a few animals and they cannot afford to buy substantial amounts of fertilisers. Hence it was thought that the small quantities of fertilisers being used in most of the drier areas of Makueni District are unlikely to have much impact on crop productivity there. The high risk of drought in the district also discouraged the use of inorganic fertilisers.

Prior to 1990, fertiliser marketing was heavily regulated. The process of liberalising fertiliser marketing started in January 1990 with the removal of price controls and was more or less completed with the liberalisation of the foreign exchange requirement in 1993. As a result of these changes, fertiliser was being imported by about 15-20 companies by 1996 and distributed through commercial firms, parastatal organisations, including marketing boards, co-operatives and stockists. Fertiliser is imported in bulk and packaged in Mombasa port, where there have been reported incidents of fertiliser mixing and adulteration, resulting in questionable quality for indicated fertiliser types. This requires governmental attention to protect farmers from unfair trading by importers. Fertilisers are sold in quantities of 50, 25 and 10 kg packets. However, in a number of cases, stockists are known to sell by the kilogram, thus opening fertiliser to deterioration. This suggests that a market exists for smaller packages of fertiliser to cater for the needs of smallholder producers. With the liberalisation of fertiliser marketing, fertilisers have become more readily available in Makueni District, albeit at higher but more stable prices since 1993. Most fertilisers are used in the upper zones (i.e. zones III and IV) of Makueni District (mainly in Kilome, Mbooni and Kilungu areas, particularly in coffee and horticultural production). This was also the case in the 1980s (Mbogoh, 1991). There has been an upward trend in the use of fertilisers in these areas since 1990. Not much fertiliser is used in Zone V of the district, primarily due to the increased risk element arising from a high probability of rainfall failure in this agro-ecological zone

Livestock and livestock products.

Government policy on trade in livestock, hides and skins has not changed since 1990. Dealers continue to be licensed under the Department of Veterinary Services. This licensing practice helps to monitor and control the spread of livestock diseases. In the past, contagious bovine pleuropneumonia (CBPP) has threatened the livestock trade in Makueni area, but CBPP has not been a problem in the area since the 1990-91 period.

There has not been any quarantining of livestock on the account of CBPP since then, and the livestock trade has flourished, with most sales going to local butchers. However, some sales are made to traders who take their animals to Emali and thence to Mombasa. In the realm of veterinary services, the Artificial Insemination (AI), Tick Control and other Clinical Services have been privatised since 1993, and this has certainly affected livestock production and market management aspects in Makueni District (see Fall, 2000).

Special Government programmes

Many Kenya Government Departments are dependent on special programmes for the operational funds to make their work effective. Normal Departmental budgets are largely absorbed by staff costs. From 1978 to 1987, Machakos District received additional funds through the Machakos Integrated Development Programme (MIDP), funded by the European Commission. This included the training of farmers on use of new technologies, the provision of loans to co-operative societies for agricultural development in dry areas (for purchase of farm inputs, etc) and general support to the co-operative movement (especially the Makueni Co-operative Society, for cotton development). Much of this work was rendered ineffective by the failures of the parastatal responsible for cotton marketing (see below). Unfortunately, there was little emphasis on rural road development, but there were some useful investments in rural water supplies and an expansion of soil and water conservation activities (Tiffen *et al.*, 1994: 258; Gichuki, 1991). After the exhaustion of MIDP funds, operational budgets fell substantially.

In recent times, Makueni District has been a beneficiary of the Makueni Agricultural Project (MAP), sponsored by the Government of Denmark and executed by the Danish International Development Agency (DANIDA). MAP is an offshoot of the Makueni Small Scale Irrigation Programme (MSIP), and was started under the sponsorship of DANIDA on a pilot basis in November 1993. The MSIP was renamed MAP in July 1996, and it operated on a transitional basis until July 1997 when it was confirmed as a fully endorsed DANIDA-sponsored programme for 15 years effective from July 1996. The significance of such a project at a time when government budgetary allocations to operations and maintenance are declining and restricted cannot be over-emphasised. Through MAP, the Makueni District Agricultural staff obtain reasonable technical support and funding, enabling them to acquire stationery and other supplies and also to undertake some field work. MAP has enabled staff to organise some workshops and also undergo some training both locally and overseas.

Extension provision

Government provision of extension services and advice to farmers has substantially diminished over the period due to budgetary constraints, and the Training and Visit (T&V) extension system, originally introduced with World Bank funding, has effectively lapsed. The National Extension Project (NEP Phases I, II and III) was based on the T&V Extension System. For government officers in Makueni District, this is an expensive and ineffective extension approach. With dwindling government resources, the planned two-weekly visits to farmers have been changed to four-weekly and now eight-weekly visits, and this has seriously eroded the efficacy of the system. In any case,

the system is not popular with most farmers because they do not like the idea of assembling for training at the farms of a few 'select' farmers.

However, with declining funding, there has been a policy change, and it is now proposed to introduce a "demand driven" extension approach under which the farmers would be provided extension advice upon their request. This approach entails the movement of extension subject matter specialists (SMSs) from district headquarters to divisional and, if necessary, to locational headquarters, so that they are more accessible to the farmers. Makueni District will be one of the pilot districts in the implementation of the "demand driven extension system", but it is not certain when the proposal will start to be implemented. Workshop discussions in Wote in November 1999 indicated that farmers would welcome this change.

Monetary policy, fiscal policy and inflation

Agricultural sector reform policies need to recognise their interdependence with the non-agricultural sector policies, especially macroeconomic policies. The key macroeconomic policies that influence prices and hence create inflationary pressures are the monetary and fiscal policies.

Kenya has recently adopted a fiscal policy that emphasises:

- the tightening of the fiscal deficit to reduce government domestic borrowing while at the same time servicing external debts;
 - releasing of domestic savings to private sector investments;
 - restriction of government expenditure to about 25 percent of the GDP; and
 - debt management procedures that are consistent with and serviceable within government fiscal policies.
- (Kenya, MoALDM, 1996)

Monetary policy now emphasises the maintenance of:

- stable and competitive free market determined exchange rates;
 - liberalised interest rates; and
 - a liquidity expansion that is tied to GDP growth rates.
- (Kenya, MoALDM, 1996)

To achieve the objectives of the Government's fiscal and monetary policies, the Central Bank is implementing a prudent regulatory framework for the supervision of financial institutions. The Capital Markets Authority is supervising the capital markets in order to enhance mobilisation and allocation of financial resources, and the Government has been divesting from financial institutions and other parastatals to facilitate increased private sector involvement. (Kenya, MoALDM, 1996)

Inefficient fiscal policies are known to affect the efficacy of the other macroeconomic policies, particularly in the monetary and external sectors of the economy. There has been some conflict between fiscal and monetary policies in Kenya in the recent past. This is because recent budgetary operations, together with fiscal tightening in Kenya, have led to the retirement of substantial public debt, particularly external debt, thus abating fiscal pressure which should have released increased credit to the private sector.

However, this has not been the case and the substitution of domestic for external borrowing has led to excessively high interest rates, thus generating a classic case of conflict in fiscal/monetary policy mix. Overall, this development has been damaging to the economy (Wagacha, 1998). As a result, the dilemma that now faces the policy makers and the Central Bank in Kenya is how strategic debt management can be applied to remove the service burden of past budget deficits. This would be expected to reduce interest rates and thus arrest inflation. The high levels of inflation experienced in Kenya in the 1990s are thus attributable to inappropriate monetary and fiscal policy mix, as is reviewed and discussed hereafter. Prior to 1991, the Government used to control interest rates, but these were fully liberalised in July 1991. Liberalisation did not achieve the expected results (i.e. positive real interest rates with narrow spreads between lending and savings deposit rates). This result may be attributed to inflationary pressure following the increased money supply, poor fiscal credibility, and poor economic performance, among other factors (Wagacha and Ngugi, 1998).

Wagacha and Ngugi (1998) note that the period before 1980 was characterised by government efforts to control money supply by targeting the growth of the domestic credit, and that interest rates played a passive role as a monetary policy tool until 1983. During that era, interest rates were only adjusted to reflect inflationary pressure. From 1983, however, interest rates became the main instruments of monetary policy so that greater flexibility in interest rates was preferred as a means of achieving monetary control and allowing appropriate allocation of financial resources in a more efficient and equitable way than could be achieved using the regulations. For this reason, the Government used to review and fix interest rates from time to time until the interest rates were liberalised in July 1991.

According to Wagacha and Ngugi (1998), the period 1990-1996 marked a substantial implementation of financial sector reforms in Kenya, with several developments being made towards the use of indirect monetary policy tools, i.e. the use of open market operations, bank reserve requirements, and the Central Bank lending or discount operations. During that period, the aim of the Central Bank was to control inflationary pressure emanating from excess liquidity, but this was not immediately achieved due to the conflicts in policy actions. Generally, the 1990-1996 period witnessed high money supply growth, at an average of 19.2 percent, compared to 13.3 percent and 8.1 percent in 1985-89 and 1980-1984 periods respectively. Hence, there was high inflationary pressure between 1990 and 1996, which filtered into the agricultural sector in the form of increased production costs, and higher producer and consumer prices for agricultural products.

Inflation was not seen as a policy problem in the 1960s, which was a period of monetary stability, non-alarming budget deficit, and a stable balance of payments. However, inflation became a policy problem in the 1970s, with the growing balance of payments problem, which was attributed to oil crisis, monetary and fiscal expansionary policy actions and the adopted administrative controls that served to fuel the inflationary pressure. The problem of inflation persisted into the 1980s and 1990s, with the first half of the 1990s being characterised by high inflationary pressure with a peak of 46 percent in 1993. This, according to Wagacha and Ngugi (1998), is attributable to the following factors:

- High budget deficit: this was financed through borrowing from the Central Bank. The increased sale of treasury bills saw an increase in short-term interest rates. Increased lending rates translated to increased costs of production. This, coupled with a declining GDP growth rate, acted to fuel the inflation rate.
- Excess liquidity: unsecured excess credit extended to commercial banks by the Central Bank contributed to a high liquidity level, together with increased government expenditure during the multi-party elections in 1992.
- Worsening of external sector performance: although there was an increase in exports, prices were low, while imports demand also took an upward trend, resulting in a decline in foreign exchange reserves to levels as low as two weeks of import cover by August 1993.
- Decontrol of prices: this was implemented as the economy experienced shortages of essential foods due to erratic weather, leading to an increase in the food price index. At the same time, tax measures increased the excise tax and saw expansion of the bracket for VAT-based commodities.

Table 2 gives a summary of the average inflation rate in relation to economic growth (percent GDP growth) in Kenya for the 1972 – 1995 period.

From the data below (Table 2) it is evident that poor economic performance is associated with high levels of inflation. Wagacha and Ngugi (1998) note that, according to monetary theory, to stabilise the economy it is necessary to have high levels of inflation to maintain a stable money supply, so that the money demand function is stable. In an open economy, the foreign exchange rate regime is also important in determining the rate of inflation. This is because changes in the foreign exchange rate will be transmitted to imported prices, domestic costs and, therefore, domestic prices. The period 1990-1998 witnessed highly fluctuating exchange rates for the Kenya shilling with an overall downward trend, and these have no doubt contributed to the inflationary pressure on Kenya's economy.

Table 2: Average Inflation and Economic Growth Indicators, Kenya, 1972-1995

Period	% Inflation*	% GDP growth
1972 – 1979	10.8	5.2
1980 – 1984	11.9	3.4
1985 – 1989	9.7	5.0
1990 – 1995	17.1	2.5

Source: Wagacha and Ngugi, 1998: 36.

*Calculated as the change in the weighted average Consumer Price Index (CPI).

The Kenyan Government liberalised foreign exchange in October 1993. Before then, the Government used to devalue or revalue the Kenya Shilling (Ksh) depending on the status of the balance of payments (especially the current account). The liberalisation of the exchange rate was followed by the depreciation of the exchange rate in the first half of 1994, resulting in an improved balance of payments from the inflow of capital. However, the exchange rate appreciated in the second half of 1994, following the

decontrol of petroleum prices and the increasing inflationary pressure. Despite the 1994 performance, the real exchange rate showed appreciation in 1996. Overall, the real exchange rate trend in Kenya since the beginning of the 1990s shows a high degree of volatility, primarily due to the unstable macroeconomic condition in the country (Wagacha and Ngugi, 1998).

Table 3 gives the trend in the nominal and real exchange rates in Kenya between 1972 and 1996.

Table 3: Nominal and real exchange rates, Kenya, 1972-1996

Period	*Nominal exchange rate	** Real exchange rate (1990 = 100)
1972-1979	30.3	75.1
1980-1984	43.0	77.2
1985-1989	67.4	89.4
1991-1996	74.1	97.3

Source: Wagacha and Ngugi, 1998.

*Calculated as weighted average of official exchange rates of the major trading countries.

** Nominal exchange rate deflated by the ratio of the weighted average foreign price level to the average domestic consumer price index (CPI).

The nominal exchange rate in Kenya since 1972 generally reflects inflationary pressure that has translated into higher producer and consumer prices of agricultural and other commodities in Kenya, especially in the 1990s.

The national macroeconomic situation definitely affects rural farmers, and we have no doubt in stating that the inflationary factor that has been associated with the operations of fiscal and monetary policies in Kenya since the 1970s is responsible to some extent for the observed fluctuations and increases in agricultural producer prices in Makueni District.

Summary

The main impact of the policy and institutional changes in Kenya over the past ten years has been an overall reduction of government involvement with, and investment in agricultural production and marketing in Makueni District in particular, but also in Kenya generally.

It is difficult to isolate and quantify the impact of policy changes on farmers' investments from those of diminishing government resources and the effects of rainfall variation. However, this will be attempted in the following sections, after we have first looked at trends in crop production.

3 DISTRICT AND DRY DIVISION PRODUCTION

3.1 Data collection methods used

Official District-level data on production in Makueni District during the 1990s are set out below. Statistics on crop production and price trends are normally collected and compiled by the Ministry of Agriculture officials using the following methodology:

1. Using an administrative location as the sampling unit, a minimum of 20 farmers from each of the locations in the district are randomly selected and interviewed to give information on their planted area of land, on a crop by crop basis, and realised yields during the previous crop season;
2. The data generated from the locational sample are averaged out to give the locational production and yield data for the preceding season;
3. The aggregation of the locational average production and yield data, with some averaging out for yields, gives division and district production and yields data, based on which locations constitute what divisions in the district;
4. Yields data are validated by sampling from district-wide farm demonstrations plots, which enables the Ministry of Agriculture officials to compare production and yields from demonstration plots and what the farmers actually get from their farms;
5. On the basis of the comparisons made as indicated above, the Ministry of Agriculture officials are able to make approximations to derive estimates of crop production and yields profile for the district during the preceding year;
6. To get the district produce prices, the Ministry of Agriculture officials station some people at the major market centres in Makueni District on strategic market days in order to survey, observe and record market prices for all major traded commodities. The major market centres covered include Emali, Wote, Kibwezi, Mtito-Andei, Mbooni and Kilome;
7. On the basis of the commodity prices recorded in the different markets, the Ministry of Agriculture is able to average out or give price variations and ranges for different commodities as summarised in Table 6 on a quarterly basis.

A key problem with this data is that each year's statistics cover two full cropping seasons rather than one. It is, therefore, very difficult to see the full range of variability between one season and another. However, given that they are the only available data, we have used these district level data to construct production and yield profiles for the district during the 1990s.

3.2 Makueni District

Tables 4 and 5 (below) give a longitudinal profile of the production and area planted of the major crops in Makueni District for the years 1992 to 1998.

Table 4 shows that the farmers react to droughts by reducing the area planted, if the failure of the rains is evident early. The extreme fluctuations in output caused by the erratic nature of the rains between 1992 and 1998 are very evident. In this period, the maize output varied from a high of 81,000 tons in 1994 to a low of 20,000 tons in 1995 and 1998. However, the issue of the rainfall-production relationship would appear to merit more detailed analysis.

Table 4: Annual Cropped Areas and Production (Two Rains), Main Crops, Makueni District, 1992-8 (all figures in thousands)

Year		1992	1993	1994	1995	1996	1997	1998
<i>Crop</i>								
Maize	Ha	89.4	72.9	147.4	102.7	85.5	117	71.3
	Tons	53.7	80.2	81	21.1	60	70	19.6
Sorghum	Ha	8.1	6.7	5.6	9.3	8.4	9.9	4.3
	Tons	4.4	2.7	2.5	1.9	3.8	5.4	0.7
Millets	Ha	3.3	1.8	1.9	2.6	5.6	3.6	2.7
	Tons	1.8	0.8	0.9	0.3	1.3	1.7	0.5
Beans	Ha	47.7	49	71.1	48.6	52.8	51	33.2
	Tons	21.5	27.1	43	7.2	10.7	12.1	5.6
Pigeon peas	Ha	20.1	17.2	55.7	53.7	29	37.5	22.6
	Tons	12.1	10.3	36.2	11.7	11.7	16.2	16.2
Cowpeas	Ha	42.3	35.1	47.4	22.8	16.5	15.1	3.4
	Tons	19	17.5	23.7	2.3	4.6	7.8	0.8
Green grams	Ha	0.2	0.2	1.3	0.8	3.7	1.5	2.1

Source: District Agricultural Officer, Makueni.

Table 5: Main crops, as percentage of area planted

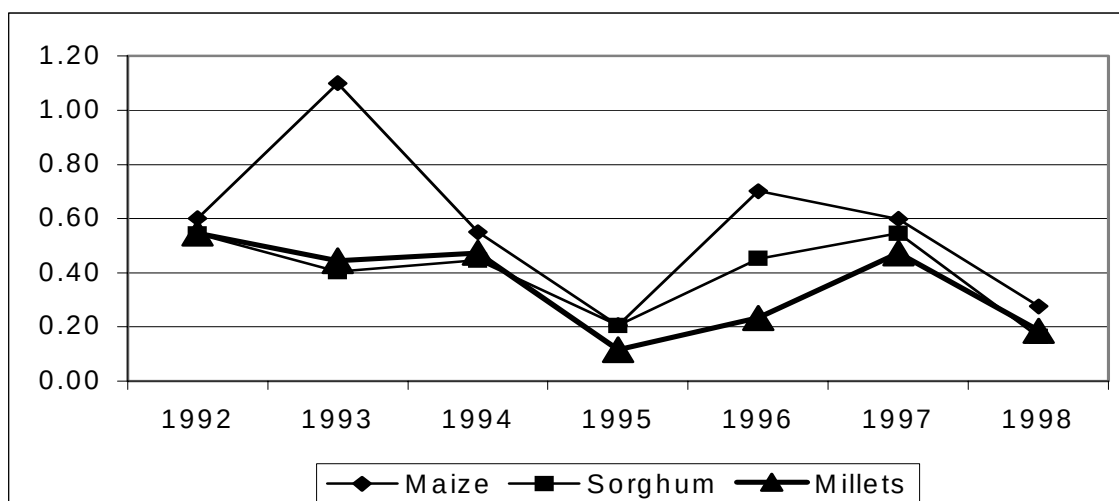
	1992	1993	1994	1995	1996	1997	1998
Maize	41.7	39.1	44.5	41.6	41.2	48.6	50.1
Sorghum	3.8	3.6	1.7	3.8	4.1	4.1	3.0
Millets	1.5	1.0	0.6	1.1	2.7	1.5	1.9
Beans	22.3	26.3	21.5	19.7	25.5	21.2	23.3
Pigeon peas	9.4	9.2	16.8	21.8	14.0	15.6	15.9
Cowpeas	19.7	18.8	14.3	9.2	8.0	6.3	2.4
Green grams	0.1	0.1	0.4	0.3	1.8	0.6	1.4
Cotton	1.5	1.9	0.3	2.6	2.8	2.1	1.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated data for Makueni District, based on Table 4 data.

It will be seen that maize is by far the most important crop, although millets and sorghums are the recommended drought crops. A rather similar area is under pulse crops (i.e., beans, pigeon peas, cowpeas and grams). It appears that cowpeas are becoming a less popular crop, and that the area under maize is increasing, but due to the annual fluctuations in cropped areas, it is difficult to be sure of trends. Data from our interviews confirm that farmers no longer want to invest in cowpeas (see 7.2 below). The apparent popularity of maize production in what is officially called a 'sorghum-millet zone' is often attributed to two major factors:

- The high labour demand for sorghum and millet production, particularly due to the need for bird-scaring during the grain formation period and maturity before harvesting;
- Changing diet preferences in favour of maize-based meals.

Figure 1: Grain yields in Makueni District, 1992-98



Source: Derived from district data, provided by District Agricultural Officer.

Figure 1 shows the grain yields data derived from the above tables. As would be expected, the yields show great variation by year, even though each year is an average of two seasons. This makes it difficult to establish trends. We noted the same difficulty in our previous study of the production profile for Machakos District.

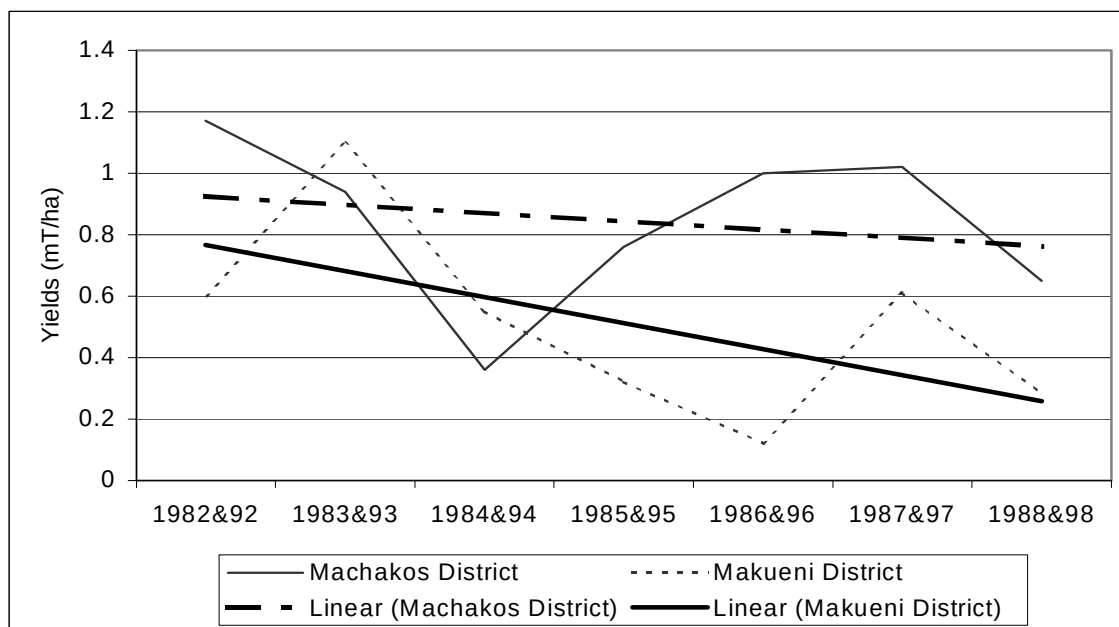
We have 14 years of relatively reliable data for Machakos District from 1974 to 1988. In the first half of this period, 1974-80, maize yields averaged 0.8 tons/ha; in the second half, 1981-8, they averaged 1.02 tons/ha. Each period had one very severe drought with an impact on yields. On the face of it, average yields increased, despite the increased use of the marginal potential AEZ 5 land, but the issue requires further analysis in relationship to the rains experienced in each period (Mbogoh, 1991: 10).

It is important to try to establish whether yields are on an upward or downward trend, since this would show whether farmers are successfully replacing nutrients and maintaining the productivity of the soil in the long term. The period for which statistics are available for Makueni District is as yet too short to do this with any certainty, though Figure 2 suggests a downward trend. It is likely that the district would have, on average, lower maize yields than the old Machakos District, because it contains a higher proportion of AEZ 5 land. Average maize yield for the period was only 0.51 tons/ha. The situation needs watching.

A comparison of the maize, sorghum and millet yields (Figure 1) shows that the farmers get higher yields from their maize varieties, even in drought years, and that they are well justified in preferring maize to the available millets and sorghums. This is in spite of official advice. Initially, the MIDP promoted sorghum by distributing free seed, but

production declined when this ceased (Mbogoh, 1991:20). At the workshop, farmers in the Darajani group expressed interest in a new short season sorghum variety, but as yet, few have been able to try it.

Figure 2: Maize yields in Machakos, 1982-88 and Makueni, 1992-98



Source: 1982-88: Mbogoh, 1991. 1992-1998: District Agricultural Officer, Makueni.

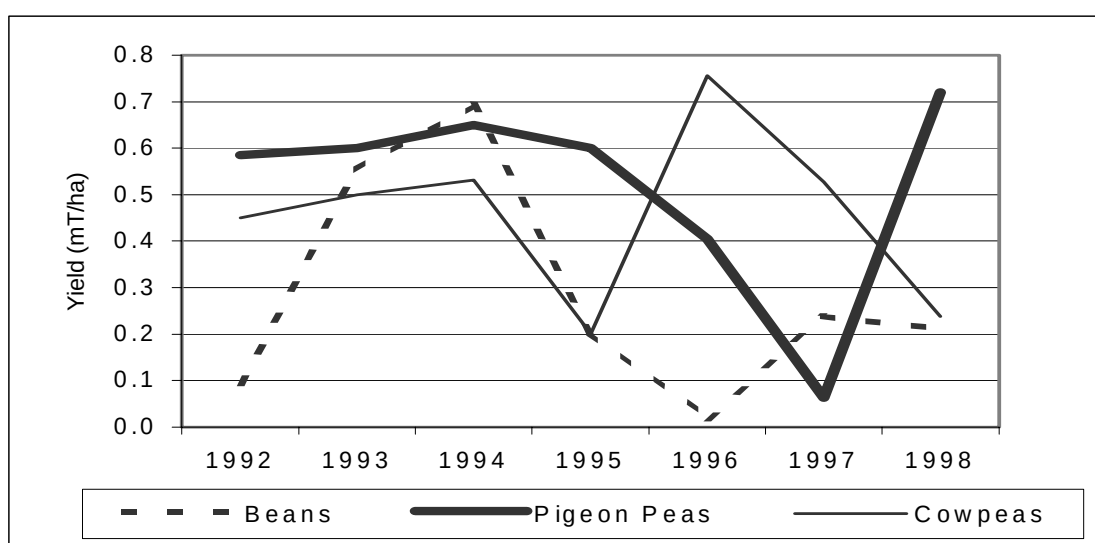
It must be supposed that the local maize varieties are well adapted to the conditions. The District Agricultural Officer reported that both local and improved maize varieties (e.g. Katumani Composite B (KCB) and Makueni DLC maize varieties) are planted. Enquiries at the Makueni Farmers Co-operative store in May 1999 showed that Makueni DLC was not then in stock. The manageress of the store said that the farmers thought a commercial alternative, Pioneer, did better, and that for the wetter areas they also bought the C4141 Cargill hybrid. We found in our previous study in Machakos District that the farmers actively experimented and crossed old local varieties with new issues to get seed well adapted to their conditions.

Farmers' experimentation is not confined to evaluating alternative varieties, but extends to adaptive selection and crossing. One woman farmer in our previous Machakos survey explained how she plants KCB and her local seeds in blocks – with Katumani on the windward side – so that cross-pollination occurs. She then selects the best cobs from the middle to use as improved seed stock, retaining the seed from the outer lines to repeat the cross the following year. The crossed seeds, she claims, both matured earlier than the local seeds and gave higher yields than KCB. Some farmers have been formally involved in the maize-breeding programme, through hosting on-farm trials and providing varieties for testing. Selected seeds from a farmer's Mwalavu variety, for example, proved to have better cob placement (higher and less susceptible to pest damage) and similar yield potential to KCB, although maturing five days later. (Tiffen *et al.*, 1994: 230, as derived from Mortimore & Wellard, 1991.)

Of the 40 farmers interviewed in our previous study in five locations of Machakos District, only a third used Katumani varieties (sometimes more than one) exclusively, whilst another third planted Katumani along with local or hybrid varieties, and a third used no Katumani seed at all. It is unlikely that cost was deterring them. The liberalisation of the grain and seed trade in 1996 seems to have brought new varieties into the local shops, adding to the range of choices open to farmers.

Pulse yields seem to be very variable and to have a different pattern to grains (Figure 3). This is to be expected for pigeon peas, which, unlike the other crops mentioned, are a two season crop.

Figure 3: Pulse yields, Makueni District, 1992-1998



Source: Data from District Agricultural Officer.

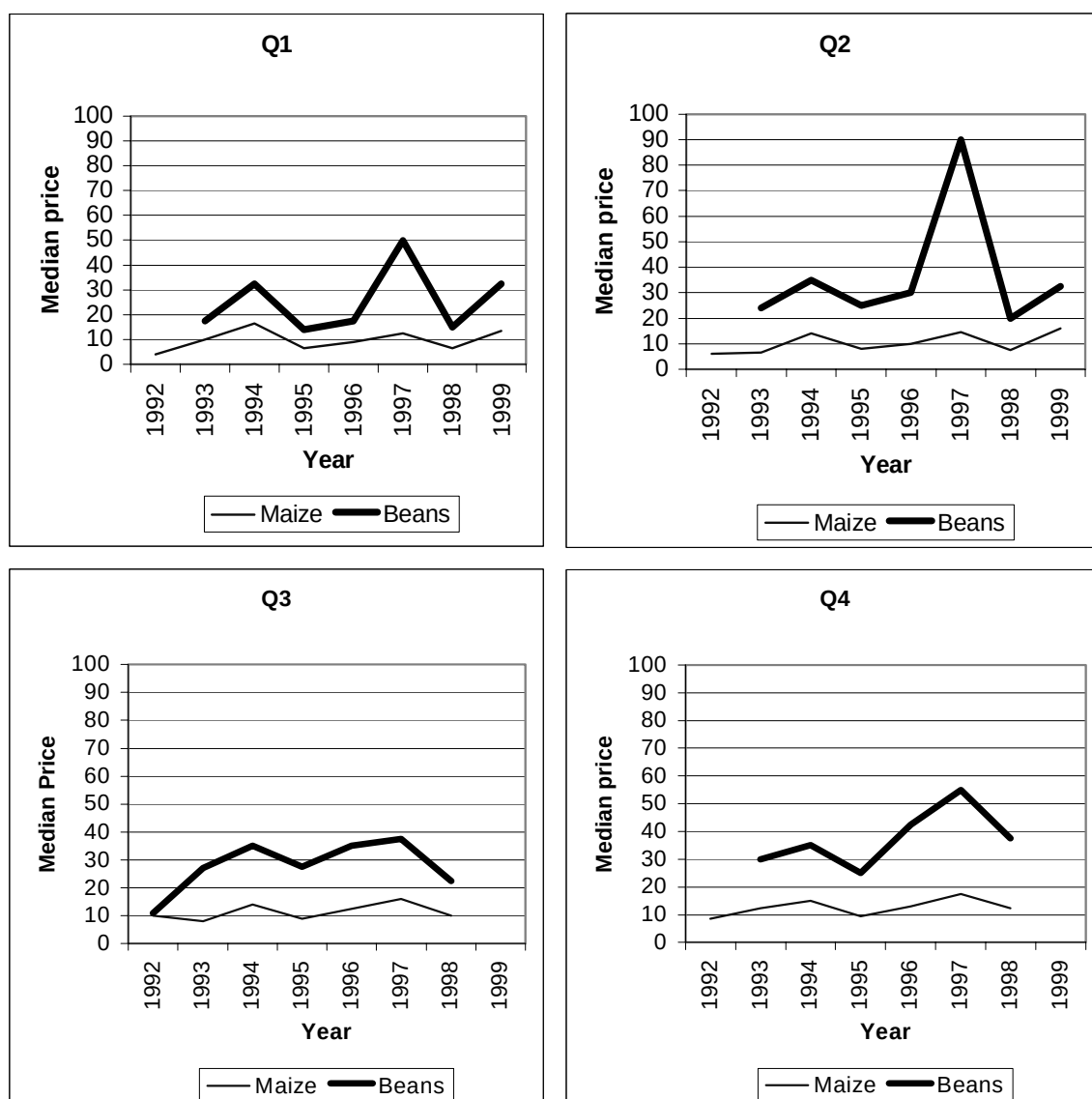
With the help of the District Agricultural Officer, we obtained estimates of production on a divisional basis, but had to conclude that, partly because of the creation of new divisions, and partly because it is not easy to access the original data held at divisional level, the data were not very reliable. However, it appears that over 90 percent of the production of grains and pulses comes from the drier areas of the district, agro-ecological zones 4, 5 and 6. In the small areas of higher potential land, farmers put much of their small farms under high value crops, such as coffee, fruits and vegetables (Murton, 1997).

Table 6: Average crops commodity prices by quarter, 1992-1999 in Ksh/kg

Year and quarter	Maize	Sorg.	Millets	Beans	Cow-peas	Pigeon peas	Green grams
<i>1992:</i>							
Q1	3-5	N/A	N/A	N/A	N/A	N/A	N/A
Q2	5-7	5-7	N/A	N/A	N/A	N/A	N/A
Q3	7-13	4-8	7-15	7-15	8-10	7-12	8-20
Q4	7-10	N/A	N/A	N/A	N/A	N/A	N/A
<i>1993:</i>							
Q1	8-12	4-10	5-15	15-20	12-20	15-20	12-15
Q2	5-8	8-12	12-16	23-025	10-15	12-16	12-15
Q3	7-9	6-13	12-18	24-30	20-30	20-30	24-30
Q4	10-15	6-15	12-20	25-35	20-35	24-30	18-35
<i>1994:</i>							
Q1	15-18	10-18	14-30	25-40	20-40	25-50	18-40
Q2	12-16	10-18	20-25	25-45	25-35	25-45	20-50
Q3	10-18	10-25	15-30	25-45	10-20	20-35	30-55
Q4	12-18	15-18	16-25	25-45	10-20	25-40	30-60
<i>1995:</i>							
Q1	5-8	5-8	10-15	10-18	15-20	15-25	20-30
Q2	6-10	6-8	15-20	20-30	15-20	20-30	20-30
Q3	8-10	6-8	15-20	20-35	15-20	25-35	25-35
Q4	7-12	8-15	10-20	15-35	20-30	25-35	25-40
<i>1996:</i>							
Q1	8-10	7-12	15-25	10-25	20-30	15-20	20-30
Q2	8-12	10-15	15-25	25-35	25-35	25-35	30-40
Q3	11-14	10-18	25-40	35-45	25-35	25-35	35-50
Q4	10-16	20-35	30-50	35-50	30-45	40-50	40-70
<i>1997:</i>							
Q1	10-15	30-40	35-40	40-60	30-50	40-60	40-70
Q2	12-17	10-12	25-40	80-100	60-80	80-120	80-120
Q3	12-20	10-15	25-40	30-45	40-60	30-45	40-50
Q4	15-20	10-17	15-30	50-60	35-50	40-55	50-60
<i>1998:</i>							
Q1	5-8	10-15	12-18	40-50	35-50	35-45	40-55
Q2	5-10	5-15	10-30	25-35	30-45	25-30	30-45
Q3	8-12	7-15	15-25	25-35	11-15	25-30	25-30
Q4	10-15	7-15	35-40	30-40	18-20	25-30	30-40
<i>1999:</i>							
Q1	10-7	7-15	25-40	30-40	18-30	15-35	30-40
Q2	12-20	7-15	25-40	30-40	25-40	30-50	30-45

Source: District Agricultural Officer.

Figure 4: Prices per quarter (Q) 1992-99



Source: Data from District Agricultural Officer.

4 DISTRICT LEVEL PRICE DATA

The prices of the major types of crop produce vary according to the month of the year and between years, depending on the prevailing rainfall situation. Table 6 gives a summary of the price trends for the major commodities between 1992 and 1999 on a quarterly basis and in Kenya shillings per kilogram. Price levels reflect the food supply situation, particularly in the face of more or less steady or increasing demand, and the above data show 1996/97 to have been a relatively difficult period in terms of food shortage in Makueni District, following the 1996 drought in the district.

Taking the median point of the prices range, the prices for some main commodities were graphed, as shown in Figure 4.

Some of the price rise shown for maize is due to the general inflation in the country, referred to in Section 2. Table 7 compares the average prices for 1992-3 and 1994-98, and shows a jump in average levels.

Table 7: Average price for maize in Makueni District, 1992-3 and 1994-8

(Ksh/kg)	1992-93	1994-98
Q1	7.00	10.2
Q2	6.25	10.8
Q3	9.00	12.3
Q4	10.5	13.5

Source: Calculated from data provided by District Agricultural Officer.

The most notable feature of the Table 6 data is the variability. The dramatic 1997 price rises reflect scarcity. The variability of prices and their rise are sometimes blamed on the freeing of the maize trade and the discontinuance of the stabilising function of the NCPB. However, there is no indication that this is increasing. There has always been some variation. For example, Eastern Province first quarter and third quarter prices for maize in 1985 were 3.30 and 2.27 Ksh/kg respectively (Mbogoh, 1991, Table A.22). It was noted then that Machakos District prices for maize were often above the national average, since it was a deficit District. In 1988, the average Machakos producer price was 3.88 Ksh/kg, compared with the national average producer price of Ksh 2.24 per kg (Mbogoh, 1991:16 and Tables A.18 and A.19). There is no evidence, therefore, that the decontrol of the maize trade has greatly changed the situation. What may act as a stabilising influence on local maize prices is the Government's policy on food relief, discussed later, which may prevent prices from rising even further in drought years. However, it is thought that the problem of high variability in both crop yields and produce prices in the drier areas generally reflects food insecurity. Hence there is a need to promote production of drought-tolerant crops in such areas.

Intra-annual prices for beans are very volatile, which may be because they are less often distributed in food relief programmes. Farmers at the workshop said that relief food amounts were generally small, and it does not seem that relief food is being internalised as a survival strategy in Makueni District.

5 VILLAGE MARKETING STRATEGIES

5.1 Choice of enterprise

The original intention in the village interviews included identifying the most important types of agricultural enterprises and marketed produce in the study areas at the time of settlement, (or when the households started farming), during the 1988-1990 period, and in the year previous to the interview (1997/98 situation). However, we found that the start of farming was spread over several decades in all villages, since our random sample included some who were amongst the first settlers establishing farms in those

areas, some who had arrived in a later wave of settlement, who might have found vacant land, or who had had to purchase an established farm, and some who had inherited farms from the original settlers. The pattern of establishment amongst those interviewed is shown in Table 8. The small size of the samples does not justify a statistical analysis of the main crops marketed by decade. Neither is it useful to contrast activities at the time of starting a new farm, and the sales policy on a mature farm by 1998-90, since in some cases the new farm was inherited or purchased already cleared and developed, and in other cases it had to be developed from the bush.

Table 8: Decades in which the households interviewed began farming

Village	1950s	1960s	1970s	1980s	1990s
Kyamusoi	3	0	2	1	5
Kaiani	0	6	0	5	1
Darajani	0	7	1	2	1
Athi	0	0	3	4	3
Total	3	13	6	12	10

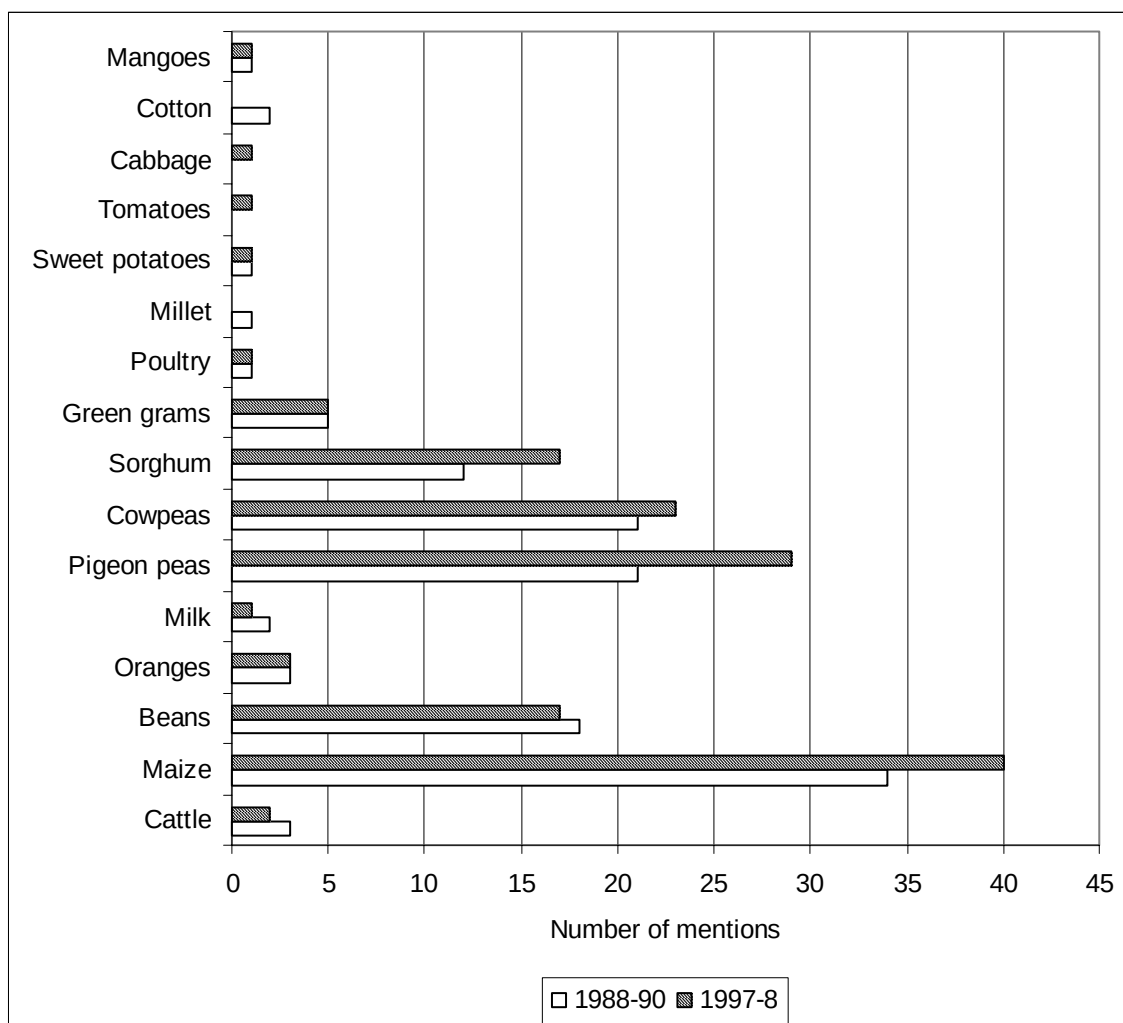
Source: Field interviews, 1998.

Nevertheless, it is clear from the results of this study that since the first settlements, maize and pulses have always been the most important crops marketed. Livestock production always seems to have been regarded as a secondary activity, although in Kyamusoi it may have been more important in the 1950s than today. This was an area where clearance of bush was undertaken by the Government; in the other villages, the settlers could not keep cattle till they had reduced the bush and the threat of tsetse. Although sorghum and millet were officially the recommended crops in all areas, most farmers have from the start preferred maize, with only the farmers in the driest village, Athi Kamunyuni, regarding sorghum as important. Amongst the pulses, beans have always been popular in the two medium potential villages, along with cowpeas and pigeon peas, while the farmers in Darajani and Athi Kamunyuni sell green grams, pigeon peas and cowpeas, but not beans.

In order to help assess the changes in marketing that have occurred over the past ten years, farmers were asked about the most important marketed products that they produced in 1988-90 and then in 1997-98. Households were allowed to provide more than one response to this question. The results are set out in Figures 5 and 6 below. The charts show the number of times a product was mentioned as important.

Figure 5 shows that farmers marketed a similar mix of crops in 1997-98 as they did in 1988-90. The data do not indicate any significant changes in crops, in spite of the major policy and institutional changes which have affected crop marketing in the zone. In so far as there was change, it was to make maize and pulses more important in the farmers' marketing strategies. Cotton was already unimportant in the survey villages by 1988, and this agrees with the production data for Machakos District which are analysed in Mbogoh, 1991.

Figure 5: Main products marketed, 1988-90 and 1997-98, by number of times mentioned as important (full sample)



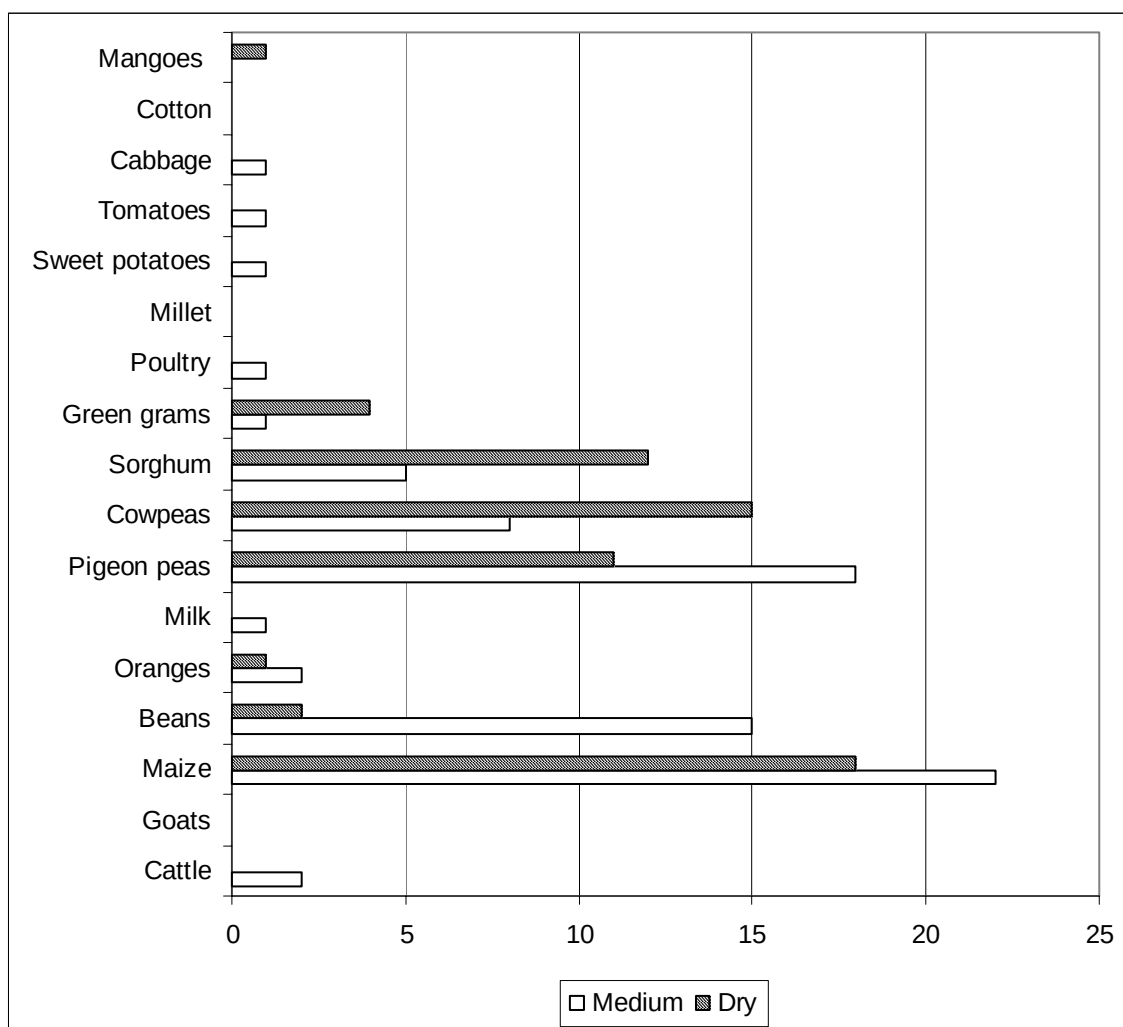
Source: Field interviews, 1998.

Figure 6 compares the main products marketed in the medium potential villages and the two in the dryer areas in 1997-98. Sorghum and cowpeas, and to a lesser extent, green grams, were important marketed products in the dryer villages, and pigeon peas and beans in the medium villages. It is interesting that although sorghum is not nearly as important as maize in terms of the area allocated to it (Table 5), it does feature in these villages as an important crop for sales. Maize sales were important everywhere.

Figure 6 shows that the medium potential villages have more opportunities to diversify into the higher value crops, such as fruit and vegetables. It is also worth commenting on the apparent small importance given to livestock in the reference year. We can hypothesise that this was the case for two reasons. Firstly, the rains and, therefore, the crops were good in the previous year. There was probably little need for emergency livestock sales; indeed, many farmers would have been trying to build up livestock holdings. Secondly, farmers probably give greater importance to products which bring in a lot of money at one time, when compared with products which they sell in small quantities regularly. This may account for the surprising absence of milk, even in the

medium potential village where there were many crossbred cows (see Fall, 2000). This illustrates the importance of taking climatic factors into account when analysing sales data. The Welfare Monitoring Survey II Basic Report 1994 (Kenya, CBS, 1996) shows livestock income as substantially more important than crop income over the month preceding its survey in July 1994, but this was after two poor rains. (Table 9)¹.

Figure 6: Main products marketed in medium potential and more arid villages, 1997-98, by number of times mentioned as important



Source: Field interviews, 1998.

¹ The Welfare Monitoring Survey was based on the respondent's recall of expenditure and income over the past month, i.e. approximately June 1994. June data is not necessarily typical for the year as a whole, neither as regards income nor expenditure. 1994 was not necessarily a typical year, and in June the respondents would have been recalling results after two poor rainfall seasons.

Table 9: Sources of agricultural income, Makueni District, July 1994

	Ksh	Percentage
<i>Livestock:</i>		
Sales	1,190.4	54.7
Products sold	127.2	5.8
Products consumed	79.0	3.6
<i>Other:</i>	182.0	8.3
Land Sales		
Interest	35.4	1.6
Crop sales	0.6	-
Crop Sales	118.4	5.4
Own Crop Consumption	445.0	20.4
Total Agricultural Income	2,178.0	

Source: Kenya, CBS, 1996, Table 6.3.

Table 10: Reasons for stopping or reducing sales

	Reason					
<i>Products</i>	Climate	Govt	Market	Other	Disease	Total
Oranges	1					1
Maize	3		1	1		5
Beans				1		1
Pigeon peas	1					1
Sorghum	2					2
Poultry				1		1
Cowpeas	5			1		6
Pawpaw			1			1
Milk				1		1
Green gram	1			1	1	3
Cabbages				1		1
Cotton		1	4			5
Firewood				1		1
Castor oil				1		1
Popcorn				1		1
Total	13	1	6	10	1	31
Percentage	41.9	3.2	19.4	32.3	3.2	100.0

Source: Field interviews, 1998.

Those farmers who had begun to sell a new product or increased sales of an existing product were asked to say why. The main reasons (as derived from Table 10 data) were as follows:

- Favourable climatic factors in 30.4 percent of the cases
- Favourable change in government policy or service in 2.9 percent of the cases
- Favourable change in market demand and prices that are not related to change in government policy in 30.4 percent of the cases
- Favourable factors other than the ones listed above in 36.2 percent of the cases

Table 10 shows reasons for reducing or stopping selling products. The same pattern is shown, with farmers generally citing climatic reasons as the major reason, market conditions as the second factor, and other priorities for family labour as the third factor. Even in the case of cotton where a change in government policy was largely responsible for marketing problems, farmers perceived a market change rather than a change in government policy or services, which is perhaps fortunate for politicians!

5.2 Choice of market outlets

Households were asked about where they sold their produce before and after 1988-90. Replies are shown in Table 11.

Co-operatives were one of the outlets that we had expected to be mentioned, but no farmer mentioned them, even for the 1988-90 period. This was despite the drive to establish them and to provide them with stores, lorries, etc., under the MIDP in the early 1980s. By 1998, sales to private traders had also replaced sales to the NCPB. Table 12 shows that farmers in Kyamusoi, near Wote, clearly had the greatest choice of outlets, being able to choose between selling to traders, or direct to consumers such as schools and hotels, or operating their own market stalls. However, overall, private traders are clearly the most important outlet.

Table 11: Percentages using different market outlets, 1988-90 and 1998

Village	Farm gate		Nearest market		Nearest big market		Machakos town or Nairobi	
	1988-90	1998	1988-90	1998	1988-90	1998	1988-90	1998
Kyamusoi	28.6	11.5	71.4	86.5	-	-	-	-
Kaiani	-	-	76.9	70.6	23.1	23.4	-	5.9
Darajani	7.1	-	50.0	72.7	28.6	27.3	14.3	-
Athi	N/A.	12.5	N/A.	37.5	N/A.	50.0		

Source: Field interviews, 1998.

The survey data show that farm-gate sales are not very important for any products, especially since 1990. Most produce is sold in local markets - people prefer their local markets, within 1-2 hour's walking time, even if smaller. Most walk or cycle to market, though some use the local buses (*matatu*). However, in Athi Kamunyuni, fewer people patronise the very small village market and more undertake the journey to Kambu town. Their costs in going there varied from Ksh 70 to Ksh 300, according to whether they had to spend the night. The smaller sum is equivalent to a day's wage on non-skilled work (see Nelson, 2000). Costs and time appear to weigh heavily; only 26.2 percent of

the cases said they chose their market because it was better or had good buyers; the rest mentioned factors to do with cheapness and ease of access. About 36 percent dealt there with friends or family members; the majority had no special contacts. The outlets are shown in Table 12.

Table 12: Percentage of respondents using different outlets, 1988-90 and 1998

Village	Private traders		Own market stall		NCPB		Consumers	
	1988-90	1998	1988-90	1998	1988-90	1998	1988-90	1998
Kyamusoi	57	77	14	11	14	-	14	11
Kaiani	100	88	-	-	-	-	-	12
Darajani	100	100	-	-	-	-	-	-
Athi	50	100	-	-	50	-	-	-

Source: Field interviews.

It is likely that there is sufficient competition between traders in the larger markets to keep trading margins down. In 1998, Wote had 192 licensed traders and Kathonzweni had 119. Farmers in Kibwezi had access to fewer traders; there were only 14 in Darajani, but Kambu is relatively near with 105. Athi Kamunyuni was too small to have any licensed traders (information from Clerk to District Trades Officer).

5.3 Conclusion

The major policy changes in marketing since 1990 appear to have had little effect on the choice of enterprise. This is partly because farmers see climate as a key constraint. While they do also react to changes in the market situation, they do not always realise the link with government policy. However, it does also appear that the major investments which the Government has made over time in building up co-operatives for dry area crops, such as grains and pulses, for which there is an active local market, have not been worthwhile. The local system of markets and traders appears to deal with these crops quite satisfactorily. This may or may not be the case with export crops that are not locally sold; in the previous study we found that the coffee co-operatives appeared to operate satisfactorily, but that private traders had been instrumental in developing fruit and vegetable exports (Tiffen *et al.*, 1994).

6 HOUSEHOLD FOOD STRATEGIES AND GOVERNMENTAL RELIEF POLICIES

6.1 Food self-sufficiency and food security in survey areas

Erratic production and variable yields are primarily due to erratic rainfall, and farmers in Makueni District experience frequent crop failures. The so-called 'short rains' and 'long rains' in Makueni District usually fall during the months of October-December and March-May, respectively, and are highly variable. Due to this, Makueni District is

prone to frequent and often severe food shortages which invariably necessitate food aid. For example, the failure of the 1995 short rains, followed by the failure of the 1996 long rains led to a severe food shortage and unusually high food prices in the district.

It follows that farmers are not able to produce as much food for their households as they plan. However, it is also the case that not all households aim at self-sufficiency since they may be short of the necessary labour or land, or they may feel that they can meet their objectives better by devoting some of their resources to a non-farm business or to a marketable crop and buying part of their food needs. In order to find out their strategy on food self-sufficiency, households were asked what part of the family food needs they aimed to produce in a year of reasonable rainfall. Their answers are given in Table 13.

Table 13: In years of reasonable rainfall, the time households aim to supply family food from farm (percentage of respondents in each village)

Villages	Less than 6 months	6-7 months	8-11 months	Year
Kyamusoï	16.7	26.0	8.3	50.00
Kaiani	8.3	16.7	8.3	66.7
Darajani	16.6	0	33.4	50.0
Athi Kamunyuni	-	9.1	-	90.9

Source: Field interviews, 1998.

This table shows that in years of reasonable rains, about half to two-thirds of farmers aim to grow enough food for their family needs in the three villages with good market access. Half to one third plan on buying some of their food needs. However, in the village with poor market access, i.e. Athi Kamunyuni, most farmers hope to supply all their family food needs.

We assume that most farmers plan their budgets for their other expenditures, including what they can afford to invest, on the basis of their expected food expenditures, and that, if the rains are bad, food expenses are increased, and other types of expenditure have to be reduced. High food expenses are shown in the Welfare Monitoring Survey Basic Report II after two below average rainfall seasons², as shown in Table 14. This was clearly a time when farmers in semi-arid areas like Makueni, had to buy much food, obtaining a comparatively small proportion from their own crops.

We asked farmers how many years in the last five they had had to buy more food than they had planned. Table 15 shows the expected difference between the medium potential villages and the more arid villages, with the highest number only having to buy extra in one year in Kyamusoï, and the highest number having to buy extra in four or five years in Darajani and Athi Kamunyuni. Athi Kamunyuni farmers aim at self-sufficiency owing to their large farms and isolation from the market, but appear to achieve it only rarely.

² See footnote 1.

Table 14: Mean monthly household expenditure by broad categories, June 1994 (Ksh)

	Machakos	Makueni	Rural average	National average.
Education	185.5	226	215	254.8
Medical care expenses	172.3	161.1	249.5	347.1
Food expenses*	2,331.90	3,541.80	3,554.10	3,958.30
Own crop consumed	707.1	445	1,190.30	974.3
Other non-food expenses	1,193.60	669	1,095.80	1,730.40
Durables expenses	40.5	22.8	60.1	128.2
Total household expenditure	4,632.00	5,065.60	6,364.90	7,393.10

Source: Kenya, CBS 1996, Table 6.8.

*Food expenses include expenses on livestock and livestock products consumed

Table 15: Number of years in the last five in which more food than expected was bought

	Villages					
Years	Kyamuso	Kaiani	Darajani	Athi Kamunyuni	Grand total	(%)
0		1			1	1.8
1	4	2	1		7	13.0
2	2	3	2		7	13.0
3	4	2	4		10	18.5
4	3	5	4	4	16	29.6
5		3	2	8	13	24.0
Total	13	16	13	12	54	100.0

Source: Field interviews, 1998.

From the above results, Darajani and Athi Kamunyuni villages can be said to experience a higher degree of food insecurity than the other two villages. The average number of years with unexpectedly high food purchase was 2.2 and 2.1 for Kyamuso and Kaiani, and 3.4 and 4.1 for Darajani and Athi Kamunyuni. In such years, 54 percent said they used their own non-farm income to purchase food, 19 percent relied on other family members' non-farm jobs and 23 percent sold livestock. However, they also had to cut expenditure, and here, 59 percent said they cut consumption expenditure on clothes, food and smoking or drinking, 15 percent cut expenses related to improving or maintaining their farm and its livestock, ten percent sacrificed improvements to their house or non-farm business and 16 percent reduced educational expenditures. It was realised that this might lead to poorer health, tattered clothes, and children being chased from school, but it was felt that there was no alternative. It is clear that these bad years impact considerably on investments in farm improvements, both through sales of livestock, and by reducing investment expenditures.

Householders were asked which was the last very severe drought, meaning not just one bad season, but several bad seasons together, bringing real hardship. This offered the possibility of answers that might indicate the year of onset, or the final year, and we do

in fact see a range of answers. However, they centre on the years 1996 and 1997 (see Table 16).

We then asked about whether they had then had to sell assets which they had still not been able to replace. Except for two households, all the surveyed households reported livestock to be the main type of assets that had been sold and not yet replaced to help the farm families cope. The exceptions were the single household that had sold off some of its farm equipment (HH No. 41 in Kyamusoi) and another one (HH No. 3 in Darajani) that had sold off part of its land parcel. The sales of livestock in the recent past due to the drought and its effects in 1996 and 1997 help to explain why livestock numbers were quite low during our investigations in 1998 (Fall, 2000). Remarkably, all the interviewed households who had children in school reported that they had been able to maintain their children at school during the latest severe drought in their area. Of course the government policy is that children should not be chased from schools on account of non-payment of fees during natural disaster years (see also Nzioka, 2000 for mutual mechanisms).

Table 16: Year of last drought causing severe hardship

Last severe drought	Village				Total
	Kyamusoi	Kaiani	Darajani	Athi	
1960	1				1
1985	1				1
1993		3			3
1994	1	4	2		7
1995	1	3	2		6
1996	7	4	10	4	25
1997	3	7	10	6	26
1998		1			1
Total	14	22	24	10	70

Source: Field questionnaire, November, 1999.

6.2 The role of food aid in household planning

About 80 percent of the households interviewed in the four survey areas had received food aid during the latest severe drought period. Of these, about 6.1 percent had received such food aid from relatives (basically working children); another 3.0 percent had received such aid from churches, while the rest had received food aid from the Government.

A major benefit of food aid, as perceived by the farming households we interviewed, was the fact that such aid helped them to remain healthy and strong enough to be able to work in their farms during the following season. Food aid also incorporated provision of seed, and such seed helped the households to re-establish their farms the following season (see below).

We wanted to see if farmers count on food aid and incorporate it in their planning. About 50 percent of the respondents expected that they would get food aid if there was another severe drought in the future, while about 36.1 percent of them were not so optimistic and the rest were non-committal. About 70 percent of those expecting food aid considered it a government responsibility to provide food aid during droughts. The rest simply felt that there would be no other option but to hope for food aid during drought calamities. Amongst the families who were uncertain if there would be food aid in case of future severe droughts, about 42.9 percent stated that they would plan to store some food during good seasons (for future consumption); and a similar number said they would seek off-farm employment or do some form of business.

It seems, therefore, that there is a fairly widespread reliance on food aid in case of severe and prolonged droughts, which may encourage farmers to stay in farming in these drought-prone areas. However, they also rely on storage and off-farm employment.

6.3 Government policy on food aid

The Government of Kenya has had a long-standing policy on the provision of emergency food aid. It operates a Famine Relief and Rehabilitation Programme (FRRP) under the Office of the President (OP) which assists victims of drought and other hazards who may need food relief and other rehabilitation measures. The FRRP has a co-ordinating committee at every administrative level - from the sublocation level to the location, division, district, province and national levels. At the district level, the co-ordinating committee monitors the drought situation (and other hazards) and reports to the District Development Committee (DDC). The DDC compiles a report on sublocation basis and reports to the OP's National Co-ordination Group about the worst hit areas and their food requirements. The OP's National Co-ordination Group then makes allocations of food and other related inputs to the district. Once the district receives its allocations, the District FRRP Committee sits and allocates food and related inputs for distribution to the 'needy' areas. Each FRRP Committee consists of government officers (administration and technical people) and politicians. Minutes and records of meetings of discussion at every level (from sublocation to national level) are kept to ensure transparency and accountability.

The drought situation in the study area (Makueni District) was relatively bad throughout 1997, and the last food and related inputs distribution in the area under the FRRP was in November 1997. The situation started to improve in January 1998. Relief activities were in the form of food aid, while rehabilitation involved provision of seed, fertilisers and sometimes farm (hand) tools in desperate cases. The Kenyan Government got material support from the World Food Programme (WFP) and the Food and Agriculture Organisation (FAO) of the United Nations (UN) during the 1997 Drought Food Relief and Rehabilitation activities. The WFP donated food while the FAO donated hand tools, seed and fertilisers. Some other institutions also gave assistance, for example:

- The German Agro-Action (GAA), for the German Technical Aid Agency (GTZ), contributed food through the community based food-for-work projects, e.g. feeder (rural) roads repair project, bore-holes digging project, government offices clean-up operations, among many others;
- The World Vision (an NGO) gave or donated seed among other contributions;

- Action-Aid (another NGO) gave food and related inputs in Kibwezi area; and so did the African Medical and Research Foundation (AMREF);
- GTZ gave assistance to people in Makindu area in the establishment of group-based tree nurseries and in community training.

We were, however, unable to obtain data from the DC's office on the distribution of drought food relief. The District Agricultural Officer provided figures for seed and input distribution under the Drought Recovery Programme.

Various programmes and donor organisations have assisted farmers in the district with different types of inputs in order to enhance crop production recovery since 1992. The major types of programmes and donor organisations involved and the types of inputs provided since 1992 are as outlined in Tables 17 and 18.

Table 17: Seed Distribution to farmers in Makueni District by donor organisations, 1995-7 (in metric tons)

Type of seed	Year and name of donor					
	1995		1996		1997	
	WV	KFC/GAA	KFC/GAA	WV	KFC/GAA	MISP/DND
Maize	20.0	30.0	30.4	18.0	30.0	0
Beans	13.0	7.0	30.4	7.0	30.6	0
Cotton	0	0	0	18.0	0	11.2

Source: Data from District Agricultural Officer.

Legend:

DND = Danish International Development Agency, DANIDA.

GAA = German Agro-Action

KFC = Kenya Freedom From Hunger Council

MISP = Makueni Small Scale Irrigation Project

Table 18: Inputs distributed to farmers in Makueni District by the Government of Kenya through the Drought Recovery Programme, 1992-1997

Type of input	Amount distributed by farmers (in metric tons)					
<i>Seed</i>	1992	1993	1994	1995	1996	1997
Maize	52.3	5.0	105.0	63.5	120.0	35.0
Sorghum	2.2	100.0	12.8	5.0	5.0	5.0
Millets	5.5	0	7.0	5.0	0	2.0
Beans	4.8	226.0	21.0	15.0	80.0	30.0
Cowpeas	12.7	3.0	4.5	3.0	10.0	5.0
Green grams	0	0	6.5	0	0	3.0
Fertiliser	26.0	0	0	0	0	12.0

Source: Data from District Agricultural Officer.

It is worth noting that government policy discourages dependence on relief food so that our expectations are that relief food was not being internalised as a survival strategy in Makueni District. We were not able to obtain information on the quantities of food aid distributed via the OP's office, but assume it was more substantial than the quantities distributed as seed.

7 HOUSEHOLD FARM INVESTMENT

7.1 Farm investments made since 1989

Since investments into permanent farm improvements are being covered in related profiles, this survey concentrated on investments made to increase marketed sales. We also asked more generally about sources of investment funds, and constraints on investment. The results are given in Tables 19 and 20.

Table 19: Investment purpose and purchases

<i>Purpose</i>	Purchases				Total	Percentage
	Equipment	Inputs	Stores	(blank)		
Better farming	4	1			5	9.6
Weeding	3		1		4	7.7
Storage		2	6		8	15.4
Cultivation	5				5	9.6
Transport	7				7	13.5
Improve soil		3			3	5.8
Improve yields	6	3		1	10	19.2
Open land	5				5	9.6
(blank)	5				5	9.6
Grand total	35	9	7	1	52	100.0
Percentage	67.3	17.3	13.5	1.9	100.0	

Source: Field interviews, 1998.

Of the 45 farmers, 20 (44 percent) had made investments since 1989 to begin selling a new product or to increase sales of an existing crop. Some of these reported numerous investments. No 43 in Athi Kamunyuni was the biggest investor, with eight investments, and costs totalling Ksh 59,500 in 1997. Most farmers had, however, made between 2 and three investments, totalling an average of Ksh 9,000. There were 22 investments connected with maize, four each for beans, pigeon peas and sorghum, seven for cowpeas, eight for oranges, two for cabbages and one for green grams.

Table 19 shows that some 60 percent of investments were for improving production on existing land (better farming, weeding, cultivation, improving the soil, improving the yield). Only ten percent were for opening up new cropping areas. Another 15 percent were for improving storage facilities, and a similar number were for transportation. Many of the purchases for effecting these purposes were of equipment, in the form of

new hand tools, ox-ploughs, and wheelbarrows. Storage was mainly the construction of new grain stores. Some 17 percent purchased modern farm inputs, such as fertilisers and pesticides or agro-chemicals in general. The purchases were concentrated in the years 1997 (35 percent) and 1994 (21 percent) after good harvests.

Table 20: Financing sources by village

Source of finance	Kyamuso	Kaiani	Darajani	Athi Kamunyuni	Total	Percent
Livestock sales	1			3	4	7.7
Crop sales	2	10	1		13	25.0
Non-farm income	7	4	1	19	31	59.6
Other	1				1	1.9
(blank)	3				3	5.8
Grand total	14	14	2	22	52	100.0
Percentage		26.9	3.8	42.3	100.0	

Source: Field interviews, 1998.

Table 20 shows that the main sources of financing for these types of farm investment were income from own non-farm business or employment (60 percent of responses), crop sales (25 percent), and livestock sales (eight percent of responses). These data may suggest that non-farm income is the main source of investment finance, but examination shows that the situation varies according to village. Non-farm income financed almost all investments in the driest and most isolated village, Athi Kamunyuni, with its poor crop incomes. In Kaiani, by contrast, with better rainfall and better market access, nearly three quarters of the investments were financed by crop sales. Darajani, near the Nairobi-Mombasa highway, had the poorest investment record, probably because people there had small farms and were more interested in their non-farm businesses than in their farms. No farmers mentioned loans at this point, but a later question asked directly if they had obtained any loan for farm investments. Nine (20 percent) then acknowledged loans, of which two were from co-operatives (both in Kaiani and one dating back to 1986), one from a Bank and one from an NGO. Borrowing is rare, and the role of the official co-operatives is again shown to be unimportant. In absolute numbers, it should be noted that the majority of the households in the survey area did not have to borrow to improve their farms. The issue of credit performance in terms of repayment rates is thus not important. We are thus encouraged to conjecture that land tenure is not a major constraint to crop production since the issue of the use of land title as a collateral in credit procurement does not arise, given the limited use of credit in farming.

7.2 Constraints on investments

We asked farmers if there were investments they would like to make that would enable them to sell a new crop or to expand sales of existing crops. All farmers replied affirmatively (even in Darajani), listing an average of two projects.

Table 21: Major factors hindering desired investment; by project desired

<i>Desired Investment</i>	Barrier							Grand total	%
	Labour shortage	Capital shortage	Price unattractive	Input costs	Rain-fall	Other	blank		
Oranges		5			10	1		16	19.3
Cabbages				1	8			9	10.8
Cotton	1	1				6		8	9.6
Maize		4		1	1	1		7	8.4
Mangoes		3			2			5	6.0
Beans	1	1			2			4	4.8
Cattle		3				1		4	4.8
Poultry		2				1		3	3.6
Millet		2				1		3	3.6
Goats		2				1		3	3.6
Tomatoes					2	1		3	3.6
Sorghum		2						2	2.4
Sweet potatoes	1	1						2	2.4
Green gram						1	1	2	2.4
Implements		2						2	2.4
Building		2						2	2.4
Pigeon peas					1			1	1.2
Milk						1		1	1.2
Castor oil						1		1	1.2
Cassava	1							1	1.2
Popcorn			1					1	1.2
Soya beans						1		1	1.2
Inputs		1						1	1.2
Onions					1			1	1.2
Total	4	31	1	2	27	17	1	83	
Percentage	4.8	37.3	1.2	2.4	32.5	20.5	1.2	100.0	

Source: Field interviews, 1998.

Table 21 shows that the desired investments most frequently mentioned were those to boost production of higher value crops, such as oranges, (20 percent), cabbages, (11 percent), cotton (ten percent) and mangoes (six percent). However, eight percent wanted to boost maize production. Cowpeas were not mentioned, although five percent were interested in beans. The main barriers to investment were (percentage responses): cash shortage (37 percent), rainfall (33 percent), labour (five percent) and other (21 percent). Farmers know that rainfall factors are an impediment to growing profitable crops, such as oranges and cabbages. Other factors are particularly prominent for cotton.

Table 22 shows that the perceived barriers to investment vary from village to village. Farmers in Kyamusoi (AEZ 4) mentioned capital accumulation difficulties more often than rainfall problems. In other villages, the rainfall was seen as a greater barrier.

Table 22: The importance of the different factors that hinder desired investments in all the four survey areas

Village	Kyamusoi		Kaiani		Darajani		Athi		Total
	No.	%	No.	%	No.	%	No.	%	
<i>Barrier:</i>									
Labour	1	4.3		0.0	2	9.1	1	5.0	4
Cash	13	56.5	4	22.2	8	36.4	6	30.0	31
Price		0.0		0.0	1	4.5		0.0	1
Inputs		0.0		0.0	2	9.1		0.0	2
Rainfall	3	13.0	10	55.6	6	27.3	8	40.0	27
Other	5	21.7	4	22.2	3	13.6	5	25.0	17
(blank)	1	4.3		0.0		0.0		0.0	1
Total	23	100.0	18	100.0	22	100.0	20	100.0	83

Source: Field interviews, 1998.

Farmers were asked if educational costs had diverted funds from investments. About 65 percent thought that school fees and books had diverted funds from farm investments, and 20 percent also mentioned medical expenses. While costs of school fees and books place a big burden on the rural household's ability to invest in farming, most households said they expected that investments in their children's education will pay off in the future.

We asked whether the household's ability to invest had changed for better or worse in the last ten years, and why. This question was not well understood. About 65 percent thought there had been a change, and it was most commonly associated with improved yields and enough rainfall. Only two farmers mentioned external funding.

8 POLICY IMPACTS AND RECOMMENDATIONS

While we observed that the farmers, when interviewed singly, did not always realise that a market change was due to government policy, the situation changed when they were in a workshop discussing issues together with district officers, who knew the policy background. The four working groups at the Wote workshop consisted of four farmers from a particular village, sitting with a selection of government officers. In their last session, we asked them to give the main priorities for remedial action by the central government, District officials and by the farmers themselves. Farmers and local officers, working together, were able to identify policies which they felt needed rectification. Their recommendations are given in Annex 1. In this section, we look at the conclusions that we can draw from our policy survey, the farmers' questionnaire, and the workshop conclusions.

- We have observed that it is difficult to isolate and quantify the impact of policy changes on farmers' investments from those of diminishing government resources

and the effects of rainfall variations. However, many studies of Kenyan agriculture confirm that government involvement in prices and market control for the major agricultural commodities before liberalisation resulted in dramatic movements in both absolute producer prices of crops and in the prices of cash crops relative to those of food crops. Producer prices, in most cases, were also influenced by macroeconomic policy, and import restrictions were being used to defend the exchange rate, thereby changing relative prices as between importables, exports and non-tradables (Bevan *et al.*, 1993; Nyangito, 1998). Even though macroeconomic policy is an important determinant of the relative prices faced by farmers, legal sanctions in marketing are equally important. And we have shown that producers of maize in Kenya were frequently prevented from trading efficiently by maize market controls.

- With liberalisation and marketing reforms, the scenario has changed. Experiences with implementation of the marketing reforms in Kenya suggest that there is social goodwill to accept reforms that favour profitable private initiatives, the developments in the dairy subsector being a good example. As observed by Nyangito (1998), there is a general reluctance to accept reforms which appear to hurt the welfare of the majority of people in the society, as in the case of reductions in government spending in some of the agricultural services (e.g. in agricultural advisory and veterinary clinical services) and unchecked liberalisation of international trade in food commodities. Political goodwill is also an important requirement for the success of marketing reforms which may be needed for agricultural development (Lewa and Hubbard, 1995; Nyangito, 1998).
- Equally important is the pace and the management of the reform process, a case in point being the cotton sector reform programmes in Kenya. Cotton production in Makueni was declining in the late 1980s because of the inefficiencies of the Board. However, the implementation of the cotton marketing reform programme (including the restructuring of the Cotton Lint and Seed Marketing Board) led to further weakening of the cotton industry in Kenya generally and in Makueni District, in particular. Alternative cash crops are limited, and it can be argued that Makueni District without cotton means increased rural poverty. Hence it was unfortunate that the liberalisation of the cotton industry in Kenya during the 1992/93 period coincided with the policy of dividing districts to bring government closer to the people. This disrupted the Co-operative Unions, which were based on the old districts. Subsequent ownership disputes, coupled with a failure to think through the problem of handling the Board's debts, contributed to the long failure to find a buyer for the Makueni Ginnery, which closed down after receiving its crop from the farmers in November 1994. The problems identified relate to policy co-ordination. We cannot state if an efficiently operated private ginnery would be economically viable in Makueni. However, it was apparent at the Wote Workshop and from our survey results, that some of the farmers in the district would like to market this crop (see Annex: Group 3).
- Liberalisation of grain marketing, seed provision and fertiliser does not appear to have had a great impact in Makueni. Farmers there are grain sellers in good seasons and buyers in poor seasons, and the private grain trade was already quite extensive prior to reform. Fertiliser is not much used. In so far as there has been an impact, liberalisation and marketing reforms have led to greater stability and availability of

food and other consumer goods and production inputs. The workshop identified some subsequent problems, particularly in relation to adulteration or bad labelling of inputs, which may require stronger regulatory powers. There was a general feeling at the workshop that the Government should consider making agricultural inputs cheaper by reducing the duty on them, (Annex, Groups 1, 2, and 3) and that it should take measures to vary the duties on imported maize to ensure there was no dumping of cheap maize when Kenya had a good harvest (Group 1). It was recognised that farmers, as purchasers, benefited from imports during droughts. Group 4 also thought it was important for the Government to provide market information and improve infrastructure.

- However, the policy reform has seriously altered the operations of the National Cereals and Produce Board, especially in Makueni District. The European Union financed a new grain storage facility for the NCPB in Wote Town, opened in 1994, which is mainly being leased by private traders since they are able to out-compete the NCPB in grains procurement. Our enquiries showed the NCPB does not go out to procure grains from the farmers, nor does it have any agency. It simply waits for whoever is willing to deliver and sell grains at its depot. Private traders are happy to lease space and have their grains fumigated at cost by the NCPB in the NCPB grains storage facility. The present role of NCPB staff at local level needs to be queried.
- This profile evidently shows that the main impact of the policy and institutional changes in Makueni District over the last 10 years has been an overall reduction of government involvement in agricultural production and marketing. According to the Makueni District Trade Office statistics, there has been an upsurge of private micro-enterprises, with people investing in supermarkets, bakeries, etc, especially in Wote Town and the major towns within the district along the Nairobi – Mombasa highway. The number of registered businesses in the major towns along the Nairobi-Mombasa highway within Makueni District is said to have risen from 3,900 in 1996 to over 5,000 by May, 1999. It is within this spirit of liberalisation and upsurge of private enterprises that we can explain the growth of the dairy enterprise by the New Makueni Farmers Co-operative Society in Wote Town since June 1992. Good and timely payments for milk deliveries by the farmers to the co-operative dairy is seen as the reason for the notable success of the enterprise. (Farmers' complaints against the former Milk Marketing Board were for delays and non-payment).
- The role of external influence on policy formation is known to be difficult to disentangle (Bevan, et. al, 1993). However, donors have been able to support and finance appropriate projects in subsectors where government policy appears to have been well considered. And some of the developments observed in Makueni District can be attributed to special donor-supported programmes, either in the past (e.g. through the Machakos District Integrated Development Project, MIDP), or currently (e.g. through the Makueni District Agricultural Programme, MAP).
- Farmers are aware of the cost-sharing policies of the Government, and although these are obviously burdensome, they were not in themselves a subject of complaint. However, they do feel that there are some services the Government ought to provide – irrigation and other water developments (Groups 1, 2, and 3) - the supply of information on agriculture and marketing that is specific to needs which the

communities identify (Groups 1, 2, 3, and 4) and training in group management (Group 3, with Group 4 thinking that this should come from NGOs).

- The policy of sub-division of administrative units to bring government closer to the people was not specifically mentioned in the Wote discussions. It could be, but is not at present, used as one of the channels for the information needs that were identified, for example through Chief's notice boards (this was discussed at the Nairobi Workshop, also in November 1999). Group 1, however, obviously felt that there was a need to empower the elected local authorities to use local revenues to provide locally needed services, provided that there was clarity and openness in accounting. This was partly in connection with the maintenance of feeder roads, which used to be one of the activities financed by the County Council out of its cesses on certain marketing activities. Villagers living near Wote, now a separate Town Council, were conscious of its activities in revenue collection when they visited the market, without necessarily feeling any of the direct benefits. As noted by Nzioka (2000), the County Councils are very severely cash-strapped.
- Despite the existence of an elaborate government mechanism for giving and distributing relief food aid in case of natural disasters, the Government also has ways of discouraging food relief dependence. This profile found no evidence that the provision of relief food aid during difficult times discourages personal effort in farming development. In other words, we found no evidence that the expectation of relief food during difficult times was being internalised as a survival strategy for the farm households in Makueni District.
- Our conclusion is that the past and ongoing liberalisation efforts have had mixed impacts, some positive and others negative as far as farming is concerned. The Government should re-examine the situation and intensify reforms where the impacts have been positive. In areas where the impacts have been negative, causes of poor performance should be identified and remedial measures taken to put the reforms on the right path.
- This profile actually shows that the major policy changes in marketing since 1990 appear to have had little effect on the choice of enterprise and investments to develop it. This is partly because farmers see climate as a key constraint, and because they can only afford to invest after good years. While they do also react to changes in the market situation, they do not always realise the link with government policy. However, it does also appear that the major investments made by the Government in building up co-operatives for dry area crops (such as grains and pulses for which there is an active local market) have not been worthwhile. The local system of markets and traders appears to deal with these crops quite satisfactorily. This may or may not be the case with export crops that are not locally sold. Here we have no data, as there is currently no major export crop in the district.
- Generally, it appears that changes in the economic environment following marketing and other reforms have increased the importance of off-farm income as the source of finance for farm investments. (This may also be due to the several droughts experienced this decade). However, we found that there is extensive and severe poverty among the farm households in the drier areas of Makueni District, and this factor constrains farm and other investments. In some cases, access to markets is

still a constraint. We thus conclude that external sources of finances for investment (via family mechanisms, but also via government investments for major projects, for example, in water development) will remain a key element to farming recovery after the frequent droughts in Makueni District. Government services remain dangerously dependent on aid budgets, such as those produced by MAP, for their operational costs.

ANNEX: RECOMMENDATIONS OF THE WOTE WORKSHOP, NOVEMBER, 1999

Kyamuso

District:

1. Improve collection and ensure proper utilisation of agricultural and forest products cess (a local levy by the County Council)
2. Empower local authorities to collect revenue and use it to provide the services required by communities

Farmers:

3. Communities to take up the challenge of good farming and livestock keeping methods
4. Farmers to be encouraged and given incentives to take advantage of the untapped potential in grazing land (bush clearance and reseeded with indigenous grasses), and runoff harvesting, storage and utilisation

Government:

5. Programme to construct dams for irrigation development
6. Policies that promote agricultural production or lower production costs by reducing tax on inputs and guarantee a fair price for producers by variable duties are required
7. Extension services should be area-specific and demand-driven, i.e. based on the farmer needs.

Kaiani

Government and District:

1. Government to explore ways of providing water for irrigation and domestic use
2. District Agricultural Office to provide seeds for planting in time
3. Extension staff to mobilise farmers to practise better soil management
4. Develop farmer-driven research and extension (PRA approach) - Farmers to be approached first before officers undertake any development plan or project
5. Reduce or cut duty on imported agricultural inputs and machinery

Farmers:

6. Communities to take up the challenge of good farming and livestock keeping methods
7. Farmers should demonstrate what they have been taught in order to set a good example to others.

Darajani

Farmers:

1. Form marketing groups
2. Get training on group management

Government:

3. Intensify extension and training
4. Review liberalisation of cotton industry
5. Subsidise inputs or reduce duties
6. Greater support to irrigation
7. Increase duty on imported agricultural produce.

Athi Kamunyuni

Farmers:

1. Farmers should form organisations to identify and tackle problems facing them.

Government:

2. Government should intensify extension services
3. Government should provide market information, open up market channels and improve infrastructure
4. Government should come up with farmer-driven research and farmer-friendly policies.

NGOs:

5. NGOs should provide technical, material, and financial support to community-based organisations.

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