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25

**URBAN IRRIGATION AND COOPERATIVE
ORGANISATIONS IN ADDIS ABABA, ETHIOPIA**

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Network papers in this set:

Newsletter June 1993

- 23 *The Governance and Management of Irrigation Systems: An Institutional Perspective* by Shui Yan Tang and Elinor Ostrom
- 24 *Increasing Women's Benefits for Irrigation Development: Smallholder Irrigation in the Kano Plains, Kenya* by Joitske Hulsebosch and Barbara van Koppen
- 25 *Urban Irrigation and Cooperative Organisations in Addis Ababa, Ethiopia* by Axumite G. Egziabher
- 26 *Farmer Organisations for Lift Irrigation: Irrigation Companies and Tubewell Cooperatives of Gujarat* by Tushaar Shah and Saumindra Bhattacharya
- 27 *Poverty in Irrigated Settlements: A discussion paper and replies from Network members*

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**URBAN IRRIGATION AND COOPERATIVE ORGANISATIONS
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by

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Contents	page
Introduction	1
Socio-economic Situation of the City	2
Urban Agriculture in Addis Ababa	5
The Mekanissa, Saris and Furi Producers' Cooperative	7
Conclusion	23
References	26

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URBAN IRRIGATION AND COOPERATIVE ORGANISATIONS
IN ADDIS ABABA, ETHIOPIA

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Axumite G. Egziabher

Introduction

Recent years have seen the continuing increase of population in urban areas, persisting problems of food supply, availability and distribution, and in some cases worsening hunger for many millions of people in Third World cities. Often, urban supplies are the first to suffer whenever food production declines for whatever reason, as farmers keep their products for their own needs. The urban poor depend on the market system for their food, while the rural population depends on both its own production and trade or markets: therefore, the urban poor are more vulnerable to market disorders and food interruptions.

This paper summarises current understanding of the character and role of urban agriculture in Addis Ababa, and the organisation of producers for whom urban agriculture is the sole means of survival. The study first summarises the socio-economic situation of Addis Ababa, the capital city of Ethiopia. It then looks at the contribution of urban agriculture to the provision of food to the population, employment and income to the producers in the city. Finally, it reports the experiences of the cooperative in organisation, irrigated production, sales and income. The formation of the cooperative is seen as one of the urban farmers' survival strategies. Positive action, hard work and commitment by members, and technical assistance from government agencies have helped the cooperatives' development. However, the concerned authorities cannot give them the legal status that would give access to credit facilities and other services because of the urban location of the cooperative. This continues to hamper security and output.

Socio-economic Situation of the City

The Environment of the City

Addis Ababa is a relatively new city compared to older religious administrative and commercial centres like Axum, Yeha, Roha and Gondar. Addis Ababa was founded in 1881, after the seat of Emperor Menelik II had to move through several sites in pursuit of supplies of food, firewood, wood for construction material and water. The Addis Ababa Master Plan Project Office (AAMPPO) quoted R.J. Honat (1968), who stated that in Ethiopia, "the City moves to the food, rather than the food is transported to the City" (AAMPPO, 1985).

Addis Ababa is located in the centre of highland Ethiopia and covers some 22,200 hectares (CSO, 1986). It is a plateau region of volcanic origin where the altitude ranges from 2200 to 2900 metres (average 2438 metres) above sea level. Because of the altitude, the area has a temperate wet and dry climate with two important climatic regions: the "Degga" area, which is a cool zone and "Woina Degga", which is mild and relatively constant in temperature.

Addis Ababa is encircled by hills, volcanic cones and forest. Relief divides the area into two drainage systems, with water in the north flowing into the Blue Nile, and in the south into the Awash system. A number of rivers and creeks cross the urban area, although only two are perennial (and these have a strongly seasonal regime). There are two rainy seasons annually, with the main rains (mid-June to mid-September) giving some 750mm of the annual average of 1250mm. The lesser rainy season (February to April) accounts for the balance.

Soils are of two principle types: the heavy-textured black cotton soils (vertisols) and the light-textured, red volcanic soils (mitosols). Both types have a high clay content, but the higher content of the vertisols causes swelling, shrinkage and cracking, and such difficulties add to construction and agricultural development costs. Soil erosion is severe, especially on steep hilly slopes which have lost their vegetation cover.

Vegetation is not just an aesthetic consideration in Addis Ababa. Forests at the fringes of the city and other suitable surrounding areas are important sources of fuel and energy for the population, prevent soil erosion, supply construction material and are also important for recreational purposes. These forests, together with urban agricultural activities, make Addis Ababa the "green city" it is often called.

Population

The 1984 National Population and Housing Census indicated that Addis Ababa had a population of 1,412,575, accounting for 30 percent of the urban population in the country. Comparisons with 1961 estimates show an increase of almost 215 percent: the population of Addis Ababa had trebled in about 23 years. The sex-ratio of the population in the city had also changed, with an increase in the proportion of female population from 105 males per 100 females in 1961 to a proportion of 90 males per 100 females in 1984.

The average household size of the population in the city had also increased from 3.5 in 1961 to 5.2 in 1984. A survey of the dynamics of the Addis Ababa population with special reference to the migration indicated that 54 percent of migrants who were not heads of household reported that they had become established as family members of existing established households in the city (AAMPPO, 1985). This implies that the increase in the household size was the result of both natural increases and migration into the extended family system. Thus the population of Addis Ababa not only changed in size over the years; the household structure in the city had also changed from a nuclear to an extended form.

The CSO estimates indicated that the population growth rates in Addis Ababa decreased from 7 percent in 1961 to 5 percent in 1984. In 1985, the AAMPPO demographic studies suggested that the recent growth rate could be considered as 3.5 percent and might be an alternative for the maximum population growth level. The general decrease in the growth rate was due mainly to the temporary effects of the 1975 nationalisation of rural land.

AAMPPO's survey indicated that almost half the population (48.3%) of Addis Ababa in 1984 had been born outside the city. In fact, the trend showed an increase in the proportion of the Addis Ababa-born population (or non-migrants), from 44.4 percent in to 51.7 percent in 1984. The decrease was explained as the decline in net migration effects followed by a constantly higher rate of natural increase (AAMPPO, 1985).

The Urban Economy

The AAMPPO (1985) study showed that the Central Planning Region contained 58% of employment establishments, 62% of employment, 61% of output and 79% of the fixed assets of the modern manufacturing activities (including medium-and large-scale industries) of the country. It further indicated that 85% of those establishments and 83% employment were located in Addis Ababa and its environs. Out of a population of 917,000

aged 10 years and above, 39.1% were employed, 3.1% unemployed and 57.6% economically inactive, giving an unemployment rate of about 7.5%, slightly higher than that of the CSO 1978 survey results (7%). Some 50% of the employed population in Addis Ababa were working in distribution and services, 27% were occupied in production (modern and traditional) and the remaining 23% were working for the government. The survey showed that the population employed in traditional production included people occupied in formal and informal activities, i.e. small-scale industrial and handicrafts activities, and those engaged in urban agricultural and related activities such as vegetable production, forestry, fishing, abattoirs and dairy farms.

In 1984, about 52.7% of the population in Addis Ababa had an income of less than Birr¹ 100 per month, 19.3% had an income of Birr 100-199 per month, 10.2% earned 200-299, 10.5% Birr 300-499 per month, 6.2% Birr 500-999 per month and only 1.1% had an income of Birr 1,000 or more per month (AAMPPO, 1985).

The AAMPPO working paper on population trends, urban households income and domestic expenditures quoted the Wages and Work Organisation Board which defined the minimum wage as "the remuneration that should be paid to an unskilled worker performing the least complex task at the time of his hire by his first employer." AAMPPO estimated the minimum wage required for urban subsistence (the food and non-food requirements of a reference family). Their estimate of the necessary minimum wage, using 1982/83, figures was Birr 123.85 per month; of which 56.6% was required for food and 43.4% for non-food items. Comparison with the earlier figures suggested that more than half of the population of Addis Ababa had an income below the poverty line.

Management Structure of the City

Every urban dweller is organised in his/her *Kebele* or Neighbourhood Unit, which is the smallest planning unit and constitutes about 500-1000 households. The population in Addis Ababa was organised into 284 *Kebeles*. *Kefetegnans*, or Higher Associations were also established depending on the size of the urban areas. Addis Ababa now has 25 *Kefetegnans*. Central Associations were formed comprising delegates from the *Kefetegnans* and

Kebeles. Thus Addis Ababa was divided into 284 *Kebeles*, 25 *Kefetegnans* and one Central Association (the Municipality).

The Central Association is responsible for providing the necessary services for the vegetable producers' cooperatives in the city. Like other urban activities, the cooperatives pay land taxes (because they hold temporary title deeds - see below) to the Central Association. In fact some of the members of the cooperatives are also elected members of their *Kebeles*.

Urban Dwellers' Associations were subsequently formed to decentralise decision-making and increase local participation in development schemes. But their contribution was limited as they were faced with inadequate organisational, financial and technological resources.

Urban Agriculture in Addis Ababa

The traditional Ethiopian diet did not contain many vegetables, except for Ethiopian cabbages (kale), garlic, onions, pumpkins and peppers. It is said that Europeans imported seeds, grew exotic vegetables and sold them in Addis Ababa during the early years. Memories of such Greek, Italian, French, German and Russian products are still mentioned among the elderly vegetable producers in Addis Ababa. As food habits changed and the population of both Ethiopian and foreign residents in the city increased, the consumption of vegetables has increased. The vegetable production area expanded and the variety of vegetables grown has also increased, sometimes mentioned as reaching up to 15 - 60 types. For example, even in the case of five vegetable producer cooperatives studied, the occupied production area expanded from 194.2 hectares in 1984 (AAMPPO, 1984) to 273.6 hectares in 1990 (Ministry of Agriculture Working Paper, 1990).

The city of Addis Ababa is chiefly supplied with fresh vegetables from:

- five producers' cooperatives within the city;
- private small producers outside the city; and
- state farms, i.e. Etfruit.

In addition, a survey of consumption of fresh vegetables in Addis Ababa in 1352 households revealed that about 17% reported they produced their own vegetables, and the average cultivated area of most of the households did not exceed 25 square metres (Hormann and Shawel, 1985).

¹ Ethiopian Birr 2.07 = US Dollar 1 up to September, 1992; Since October 1993, Ethiopian Birr 5 = US Dollar 1

The following five vegetable producers' cooperatives cultivate along the main rivers in the city, following irrigating cultivation along the rivers of Gefersa, Tinishu Akaki, Tiliku Akaki, Kebena and Bulbula and other small streams in the city:

- 1 the Mekanissa, Furi and Saris Cooperative;
- 2 the Kefetegna 24 and 25 Cooperative;
- 3 the Shankilla River Cooperative;
- 4 the Keranio Medhane Alem (or Kefetegna 24) Cooperative; and
- 5 the Kebena Bulbula Cooperative.

Thus the five cooperatives, with a total of 485 members, cultivate a total area of about 273.6 hectares, which covers about 1.23% of the area of Addis Ababa. Taking an average household size to be 5.2, this means that the livelihood of about 0.18% of the population of Addis Ababa depends solely or wholly on vegetable production.

Table 1: Estimated vegetables supplied for Addis Ababa market, 1983

Major crops (Vegetables)	ETFRUIT ¹	Peasants ² in Shoa	Coops ³ in AA	Total	MFS coop ⁴
Potatoes	1	68,505	230	68,736	80
Carrots	-	991	658	1,649	280
Swiss Chard	-	175	684	859	540
Cabbages	2	2,447	1,140	3,589	220
Beetroots	-	1,064	370	1,434	200
Tomatoes	15	2,936	85	3,036	85
Onions	12	8,232	20	8,264	20

Source:

- 1 Compiled from ETFRUIT annual sales statistics for 1974/1975 E.C. (1983)
- 2, 3 and 4 are compiled from the data of D.M. Hormann and Hailu Shawel 1985 report on pages 255-262
- 3 The cooperatives indicated as major suppliers are:
 - a. The Mekanissa, Furi and Saris Cooperative (MFS Coop)
 - b. The Kefetegna 24 and 25 Cooperative
 - c. The Shankilla River Cooperative
 and production from communal and private plots
- 4 Detailed figure for MSF (also included in 3)

D.M. Hormann and Hailu Shawel (1985) estimated that in 1983 only three of the five cooperatives supplied about 80% of the swiss chard, about 40% of the carrots, about 32% of the cabbages and about 26% of the beetroots provided to the Addis Ababa market (see Table 1). The Mekanissa, Furi and Saris Producers' Cooperative produced about 63% of the swiss chard, 17% of the carrots, about 14% of the beetroots and 6% of the cabbages supplied to the city vegetable market in 1983. Although it was not possible to obtain information on production in subsequent years from the various sources, these data can serve as indicative that the cooperatives contribute a significant proportion the vegetable needs of the city population.

The Mekanissa, Saris and Furi Producers' Cooperative

It has been suggested that when urban land was nationalised and the landlord-tenant relationship abolished, the urban farmer survival strategies were threatened, as there was no better opportunity for them in any other activities in the city. But the urban farmers did not just wait for poverty; rather they decided to become state-land occupiers and went on producing vegetables to satisfy their human needs, just as squatter settlements do. Furthermore, they decided to form a producers' cooperative to strengthen themselves against any threat and to improve their productivity.

The political situation was favourable for such organisation and the government gave the initiative and priority to agricultural cooperatives in the rural areas (Tesfaye Assefa, 1989). However, the formation of the Mekanissa, Furi and Saris (MFS) Vegetable Producers' Cooperative was on the members request and for their own interest - for their survival. The cooperative depended principally on the members' strength and effort to survive.

Here, it has been hypothesised that the cooperative offers organisational possibilities in urban agriculture where the urban farmer households and members are less exploited and less dependent on people (employers and traders). It is a social arrangement which will be more equal and more secure than a traditional landlord-tenant relationship. Such an organisational possibility in urban cultivation not only benefits its members, but also helps to improve the nutritional level of the urban poor.

Based on the experience of the Management Committee members, a selected sample of households, and an examination of records from the MFS Producers' Cooperative Office, the author will try to explain:

- who is in the cooperative?
- the organisational structure of the cooperative; and
- the process of production, distribution and the main constraints on the cooperative.

Formation of the Cooperative

The MFS Producers' Cooperative was formed in 1976 to protect the interests of the urban farmers. On their own initiative, the members approached the Ministry of Agriculture, which was responsible for organising agricultural cooperatives in the rural areas. On their request, the Ministry cooperated in providing technical assistance and allowed the formation of the vegetable producers' cooperative. The cooperative had 268 members at its formation. The information from the survey indicated that about 75% of all the members of the cooperative were tenants and 25% waged farm labourers in the surrounding area at the time the cooperative was set up. The criteria for joining the cooperative included:

- being not less than 18 years of age;
- willingness to occupy oneself in vegetable production only;
- residence within the vegetable production area;
- willingness to transfer one's land (i.e. the land occupied) to the cooperative;
- willingness to participate in the activities of the cooperative;
- being hard-working;
- willingness to be governed by the rules and regulations of the cooperative (as indicated in its by-laws).

Failure to fulfil these criteria resulted in a number of people being dismissed from the cooperative during the early years.

At the time of this study (1991), there were 242 heads of households who were members of the cooperative. Of these, 17% were women heads of households who replaced their husbands over the years for various reasons including death, illness or separation; 83% were male heads of households. They had all lived in *Kefetegnäs* 19, 20 and 23 since they had started cultivation and they all came from an extended-family background. The

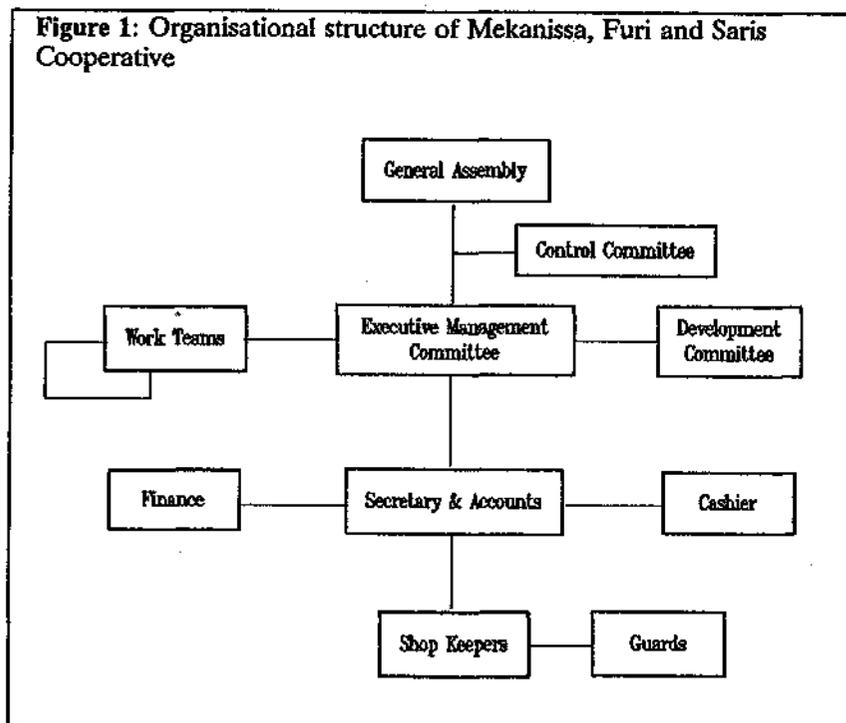
cooperative reported that of all its members, 78% were able to read and write, about 14% were illiterate and 8% were attending schools.

The household size varied from a one-person household to a 16 person-household, with a total population of 1727. The average household size can thus be taken to be 7.1. Of the total population 52% were males and 48% were females. The age structure showed that 24% were less than 10 years old and 35% were between 10-19 years of age, while 38% were in the age group 20-64 and only 3% were 65 years and above. Thus the population of the cooperative could be characterised as a youthful population, which is indicative of potential manpower supply, high consumption needs and other social requirements.

Organisational Structure

The cooperative members were organised in groups whose structure comprised the General Assembly, special committees and functional bodies (see Figure 1). Important decisions, policy matters and annual production,

Figure 1: Organisational structure of Mekanissa, Furi and Saris Cooperative



distribution plans and programmes were decided by the General Assembly (of all members). The last or final decision for any resolution was given by the General Assembly. Each member had the right to elect and be elected. Any resolution gaining two-thirds of the cooperative members' support was accepted for implementation. The General Assembly elected all the committee members who ran the cooperative.

The Executive Management Committee consisted of a Chairman, a Vice-Chairman, a Secretary, a Treasurer and one committee member. The Executive Management Committee prepared the work plan and budget of the cooperative and it ran the day-to-day business activities. Its main activities included preparation of production plans, follow-up for the implementation of the plans, estimation of production costs, estimation and collection of revenues, preparation of the necessary materials for production, preparation of quarterly reports for financial, material, production and marketing of the cooperative's products. The Executive Management Committee also coordinated the work of the other committees. The Chairman was responsible for any administrative and legal matters on the day-to-day work of the cooperative. The Vice-Chairman represented the Chairman whenever necessary. The Secretary was responsible for the day-to-day administrative matters of the cooperative office work and for recording minutes of meetings. The Treasurer was responsible for all the financial matters of the cooperative. The Executive Management Committee had a clerk who was a temporary waged worker of the cooperative and she was paid Birr 3 per day.

The Control Committee consisted of three elected members. This control committee examined the reports and records of investment, and financial matters and the whole management of the cooperative, and reported its views to the General Assembly.

There were seven Development Committee members and they took important decisions with regard to production and sales plans and programmes. Based on their own experience of market assessment and the physical conditions (climate, soil, etc.) of the area, the Development Committee made proposals for the decisions on the crop rotation system, selection of the type of vegetables produced each season, the inputs, sales and work programme of the cooperative. The proposals were then discussed with the Executive Committee and finally presented to the General Assembly for approval. The Development Committee together with the Executive Management Committee followed up the decisions and if necessary made alterations to the plans during implementation.

The production team leaders assigned work to their team members. They were in charge of supervision and evaluation and awarded points to the members of their own team. There were seven work teams. A team usually consisted of 30-40 members, depending on the location of the land and the spatial distribution of the households. Thirteen guards (six for night and seven for day shifts) provided security for the common property of the cooperative. Twenty two shopkeepers were in charge of the sale of produce in the cooperative shops in the nine *Kefetegnas* in Addis Ababa.

The members of the cooperative worked on the farms, in the shops, as guards, cleaners and on any other necessary activities within their cooperative. They were all evaluated and given points by their team leaders. For example, in the selected sample of 30 heads of households, one was an elected member of the development Committee, one was an elected team leader, two were working as cleaners in the cooperative office, two were guards and the remaining 24 were working in the farms at the time of the survey.

Thus it was reported that members were assigned wherever they were thought to be more productive and fit for the work required. As long as the members worked wherever they were assigned, their contribution was evaluated by their team leaders and given points which were then translated into how much they should receive when they collected their shares. Those who worked overtime were given higher scores or took compensation in time off. The cooperative members were also allowed to delegate their grown up children, above 16 years old, to replace them if they could not work in the farm due to unforeseen circumstances.

Legalisation Problems

Although the cooperative had been functioning since 1976, strengthening itself in different ways and achieving important goals in the interest of its members, there were significant problems of legalisation. The cooperative had not been legalised up to the time of the survey. The main reason given for this was that the land was under the ownership of the municipality of Addis Ababa, i.e. the City Council, and the City Council claimed that it was not entitled to legalise or approve agricultural activities in the city. Legalisation for agricultural cooperatives was the responsibility of the Ministry of Agriculture. But the domain of the Ministry of Agriculture was in the rural areas. Thus although the Ministry of Agriculture had actually been giving technical assistance while the cooperative was being set up, providing inputs and other necessary matters, it had no legal right to interfere in activities within the city limit.

The cooperative, regardless of its contribution in terms of satisfying the basic needs of food for the urban population and income for the producers, and despite its potential to reduce the nutritional and economical vulnerability of the low-income producers and the urban poor, therefore remained an illegal entity running an illegal activity in the city. As mentioned earlier, the problem was a classic case of falling between two stools - that of the City Council on the one hand and the Ministry of Agriculture on the other hand, neither of which would accept that it had the power to legitimise the cooperative.

The other major constraint identified was lack of credit facilities, tied to the fact that the cooperative was not legalised. The Agricultural and Industrial Development Bank (AID Bank) had already informed members that only legalised cooperatives had the right to claim credit facilities. It was clear that such a lack of capital could impair the extension of production and increasing productivity. The cooperative needed favourable credit not only for investments but especially to procure production means, since it did not have enough financial reserves at its disposal and therefore often depended on trade for financing its production.

The lack of legal recognition also prevented the cooperative from implementing other planned development projects. For example, the cooperative had a plan to diversify a small part of its vegetable area into dairy production, so that it would be able to sell the milk and use the manure as fertiliser. But the project had to be postponed because of lack of credit facilities. The cooperative had managed to obtain a temporary title deed since 1984. This title deed does not give the right to invest in permanent structures. Thus the fact that the cooperative did not have the right to use the land according to its wishes also imposed restrictions on any development schemes that it could think of, such as getting loans from private individuals or an "Idir" (local fund-raising association).

The Executive Committee members also suggested that at times they had some minor problems with previous landowners. It was stated that the former landowners had tried to disrupt the production and the formation of the cooperative. Although they did not regard this as a major problem, the members explained that they still faced court cases one way or the other because of the lack of a permanent title deed to the land.

It was also stated that the cooperative was suffering from unaffordable heavy urban land taxes. The cooperative had been paying urban land tax to Addis Ababa City Council at a rate of Birr 0.02 per square metre, i.e. about

Birr 40,000 a year for the whole farm. But having a temporary title deed meant that they could not make a permanent investment, and the urban land tax that the cooperative paid was felt to be a very heavy burden. It was indicated that land tax was the major component of the production cost of the cooperative. It was also stated that not only was the tax high but the tax collectors never collected on time. The rural tax for similar production areas was Birr 2 per hectare, which is one percent of the urban agricultural land tax.

Other problems included occasional plant disease, frost and theft. But the committee members explained that those were not major problems as the cooperative members were tackling the diseases by using different crop rotation systems. Cooperative members were also obliged to guard the plantation whenever necessary. However, one could observe that better skills in sorting, packaging, handling and storing the vegetables might have enhanced income.

The committee members stated that whatever they had achieved to date was due to their dedicated struggle and they were determined to fight even harder for their rights and legalisation, harder because they had realised:

- that their survival might be threatened by any plans and programmes approved by the City Council; and
- that one of the main factors in improving their productivity lay in getting credit, and the only way to obtain credit was if they could have their cooperative legalised.

Land Holding

Up to 1984, the cultivation area that the cooperative occupied was 80 hectares, for which they had no title deed. In 1985 this was extended to 200 hectares, by occupying more state-owned land along the river side. It was observed that the occupation did not include the open land claimed by the nearest military camp; the reason given for this was "to avoid confrontation."

The cooperative managed to receive a temporary title deed for this area. According to the interview with the Executive Management Committee, this was the result of:

- the households' or the members' unity, determination and struggle for their survival and their rights;
- their achievement in the supplies that they provided for the city population; and

- their ability to convince some of the authorities who were highly involved in the 1984/85 famine relief programmes.

The cooperative uses irrigation water from the Tinshu Akaki and Tiliku Akaki rivers, which are the main rivers in the city. Water is taken from the rivers by the use of permanent and temporary structures - dams built by the cooperative members. The permanent water diversions are built of stone and concrete while the temporary ones are made of earth. The cooperative had built about 10 permanent structures, the large ones being about 288, 70 and 28 square metres and the others less than that. The cooperative had about six temporary structures which were usually washed away during the rainy season and had to be rebuilt in the dry season. Although the cooperative uses rain during this time, the effort (financial, material and energy) that it puts in to create such temporary structures is quite considerable. Irrigation from three of the dams is done using canal tubes because of the physical configuration of the farms, while gravity is used to move the water from the remaining dams.

The dams and canals were unanimously considered to be the most important investment the cooperative has made for all its members. These were estimated to be worth Birr 1.4 million. It was also reported that they had never faced a shortage of water since the permanent structures had been constructed, unless there was serious drought.

Of the total area, about 150 hectares of land has been used by the cooperative members as communal plots, while about 50 hectares of land had been allocated to all members of the cooperative as private-plots. The reasons for dividing the land into communal and private plots was explained that:

- it was the heads of the households who were the official members of the cooperative and they were expected to work for the cooperative, i.e. on communal plots, and the production was intended mainly for sale; and
- the family members were expected to work on the area near their homes, i.e. on private plots, and be able to provide for household consumption.

The average number of private plots was three, with the assumption that one would be worked by the head of the household, who normally was taken to be the husband, one was for the wife and the other one was to be worked by the children of the household. But it was reported that some

households were allocated four plots depending on the quality of soil of the area. The width of each plot was 6 metres, while the length varied between 12 and 50 metres depending on the configuration of the area.

For example, the selected sample of 30 households were allocated a total of about 1.7 hectares as private plots. Looking the number of the private plots of the selected households, 90% had three plots each while 10% had four plots each. The total area of the plots of each of the households varied from 288 square metres up to 1080 square meters. The members of the selected sample of households stated that they could do better if they were allocated more land as private plots, i.e. they felt that there was a shortage of land.

Farm Operations

The following operations were carried out in the urban vegetable farms: Land preparation including slashing of old crop residues, ploughing, discing, land levelling; canal maintenance, nursery preparation, transplanting, irrigation, fertilising, weeding and harvesting. These were all done by hand on the communal as well as private plots. The cooperative started using a tractor for ploughing when it was donated by the Ministry of Agriculture. As the vegetable farms are located near the river and have relatively gentle to steep slopes, it was observed that ploughing was done along the contours to minimise soil erosion and to improve water penetration.

Nursery sites were selected by the Development Committee in the case of the cooperative, or by the head of households in the case of private plots. There was at least one nursery for each team. It was reported that transplanting was carried out when the seedlings reached a certain height and were believed to be strong enough according to the experience of the individuals concerned: the team leader in the cooperative and the heads in the case of the households. Weeding was done by hand as frequently as possible and cultivation was done using hoes and a forked cultivator.

The plots were mainly irrigated during the dry season. Water diverted from the river was directed to the vegetable plots using main, secondary and field canals. The field canals supply water to each of the individual plots (i.e. communal as well as private). These were all constructed by the cooperative members themselves. It was also reported that the frequency and intensity of irrigation depended upon the type of vegetable, soil and weather condition. For example, younger vegetables were irrigated more frequently than older ones. If a shortage of water occurred in the dry season, some had to irrigate in the day time while others did it in the evening.

With regards to inputs, the cooperative used improved seeds which were bought mainly from the government shops and it also supplied its members for the private plots. The cooperative also bought urea and applied it to some of the communal plots (especially for potato plots) in combination with manure. However, animal manure was used as a fertiliser in all private plots and in most of the communal plots. The cooperative bought the manure from the surrounding individuals who owned livestock for communal plots. In the case of private plots some households owned livestock; those who did not had to buy manure from others. The main reason for not using more commercial fertilisers was that they were too expensive. The animal manure was applied either when it was fresh in liquid form, mixing it with water, or dry manure was spread on the farm and mixed with the soil using hoes. Green manure and compost were non-existent, and the cooperative members stated that they were not familiar with these inputs.

Although it was reported that there were occasional plant diseases, no use was made of pesticides. Crop rotation was practised in the communal as well as private plots. Generally, vegetables were harvested all year round depending on the maturity and available market. All the farm work was done by the members themselves. There was no processing except for trimming the unnecessary parts and washing the root crops like carrot, potato and beetroot. The harvested vegetables were packed in baskets or boxes or tied in bundles and taken to the store and weighed and distributed to the cooperative shops in the city - using the truck in the case of the cooperative.

Cooperative Production

Leafy vegetables such as cabbage, swiss chard, cauliflower, lettuce, kale and spinach; root crops like potato, carrot and beetroot; and also pumpkin, onions, green beans, tomatoes, leeks, celery and others were grown in the communal as well as private plots in different proportions.

The type of vegetables to be cultivated and the timing for this were proposed by the Development Committee, discussed within the Executive Management Committee and approved by the General Assembly in the case of the communal plots. The most important factors taken into consideration during this decision-making included the soil type, weather (i.e. occurrence of heavy rain or frost), and information about the marketing period as more vegetables are consumed during fasting periods like Lent. Two crops were cultivated a year for almost all the vegetables, except for swiss chard which was grown all year.

Considering the most common land use and the major crops on the communal plots, it was indicated that each year the cooperative used about 33.3% of the area of the communal plots for potatoes, 33.3% for carrots, 11% for swiss chard, about 7% for cabbages, about 7% for beetroots, 3% for lettuces, 2% for onions, 1% for pumpkins and the remaining 2% for other vegetables, including green beans, celery, tomatoes, leeks, kale, spinach and eucalyptus trees. The cooperative had planted about 26,000 eucalyptus trees in the relatively steep slopes of their farm land to prevent soil erosion.

Although the Management Committee members mentioned that the cooperative has been improving in its organisational structure and the production process and distribution system over the years, production as well as yield per hectare from the communal plots was relatively low.

Table 2: Land use of communal plots, estimated average annual production and yield per ha of the major crops (vegetables) of the Mekanissa, Furi and Saris Cooperative, 1985-1990

<i>Major crops Vegetables</i>	<i>Average size of plots (ha)</i>	<i>No of crops per year</i>	<i>Estimated average annual production (MT)</i>	<i>Estimated yield per hectare (QT)</i>	<i>Estimated average price per QT(Birr)</i>
Potatoes	50	2	18.0	180	80
Carrots	50	2	15.0	150	75
Swiss Chard	17	1	3.4	200	50
Cabbages	10	2	4.0	400	65
Beetroots	10	2	4.0	200	50
Lettuces	5	2	1.0	100	30
Onions	3	1	0.8	250	40
Pumpkins	2	2	1.4	350	40
Others*	3	-	-	-	-

* other crops included green beans, celery, tomatoes, leeks, kale, spinach

The estimated average annual production (1985-1990) for the major crops was indicated as 18 tonnes of potatoes, 15 tonnes of carrots, 4 tonnes of cabbages, 4 tonnes of beetroots, 3.4 tonnes of swiss chard, 1.4 tonnes of pumpkins, 1 tonne of lettuces and 0.8 tonnes of onions. The yield per hectare of the communal plots also varied from 350 kg. for pumpkins, to 250 kg. for onions, 200 kg. for swiss chard, cabbages and beetroots, 180 kg. for potatoes, 150 kg. for carrots and 100 kg. for lettuces (see Table 2). Such low

yields per hectare call for more technical assistance and credit facilities to enhance better production.

Cooperative Marketing

The production of the cooperative, i.e. production from the communal plots, was all intended for sale and the marketing system will be explained here. Before 1985 the MFS Producers' Cooperative, together with other vegetable producers' cooperatives, was running a producer wholesale market, which was a simply constructed hall, in Mercato (Emanuel) the largest market in Addis Ababa. They sold their products to distributing wholesale traders, who in their turn sold the products to groceries, small retailers, institutions, etc..

Prices were changing in the different marketing channels. Since 1985 the cooperatives were allowed to run their own producers' retail shops or cooperative shops in the 25 *Kefetegnas* in Addis Ababa. It was also observed that the cooperatives sold some of their products at the farm gate at the same price as that of the cooperative shops. But the quantity was not significant. Thus, the cooperatives were able to sell their products to consumers directly, be it in the cooperative shops or at the farm gate.

The MFS Cooperative ran nine cooperative shops in nine *Kefetegnas* in the city. This meant that the cooperative was expected to serve the population of these *Kefetegnas* and the population of the adjacent Kefetgna 21 as well. According to the 1984 Census data, these *Kefetegnas* contained about 39.9% of the total population in Addis Ababa. Thirteen cooperative members ran the cooperative shops (as shopkeepers), and the products were sold by weight.

Permission for the cooperative shops was given on condition that the cooperative sold the vegetables at fixed retail prices. The prices were agreed and approved by a special committee which consisted of representatives of the Executive Management Committee of MFS Cooperative, representatives of other vegetable producing cooperatives in the city and representatives of the authorities which were assigned to control prices in the city. Every change in prices had to be approved by the committee before it was implemented. It was stated that there had not been any changes of prices up to the beginning of 1990, when the cooperative increased prices of four of its vegetables: onions went up by about 150%, potatoes by about 82%, cabbages, by about 78% and carrots by about 100%.

The Executive Management Committee members as well as the shopkeepers stated that all the vegetables were sold on the same day they got to the

shops and they did not have any problem of waste. The main reasons for such immediate sale were said to be:

- that the prices of the vegetable from the cooperative were cheaper than the same type of vegetables sold in the surrounding shops or small markets;
- that the cooperative shops always had fresher vegetables;
- that the cooperative shops had a greater variety of vegetables; and
- that most of the shops were located within walking distance of the community that they hoped to serve, so people did not have to spend extra time or transportation costs to get fresh vegetables.

Looking at the retail prices of the major types of vegetables in Addis Ababa, it is clear that the prices in the cooperative shops were lower by about 20% for potatoes, 32% for carrots, 50% for swiss chards, 23% for cabbages, 46% for beetroots, 72% for lettuces, 39% for onions and by about 20% for pumpkins than they were in kiosks and open markets in Addis Ababa (see Table 3).

In the more distant production locations, i.e. out of Addis Ababa, the products (vegetables) were mainly collected by wholesalers and delivered to the distributing wholesale trade in Addis Ababa. The products in the areas of cultivation were often bought by freelance or employed brokers on behalf of the collecting wholesalers. The peasants' power to negotiate prices was said to be severely handicapped by their frequent dependence on the wholesaler for credit and advance payments as well as for packing materials. The producer's price also suffered from the peasants' lack of market information. This situation can be clearly seen in Table 3. Most of all it was said that it was possible that the perishable products or vegetables lost their freshness while passing through the market channels.

Thus, apart from being fresh and more nutritious, it is obvious that the urban poor or the majority of the city population would prefer to pay less or reduce their expenses by buying in the cooperative shops at cheaper prices and reduced transportation costs. It might therefore be possible to say that the cooperative provided fresh vegetables to the majority of the population - the urban poor - in the nine *Kefetegnas* it served.

Table 3: Average prices of major crops (vegetable), 1985-1990

Major Crops (Vegetable) Kg	Average ¹ ETFRUIT price	Average ² producers price in shoa	Average ³ MFS Coop retail price	Average ⁴ retail price in AA market
Potatoes	0.50	0.59	0.78	0.96
Carrot	0.30	0.46	0.75	1.11
Swiss Chard	0.30	-	0.50	1.00*
Cabbage	0.32	0.31	0.63	0.82
Beetroot	0.30	0.36	0.50	0.92
Lettuce	0.20	-	0.30	1.07
Onion	0.84	1.14	0.88	1.44
Pumpkin	0.40	0.20	0.40	0.50*
Tomato	0.88	0.55	-	1.76
Green Beans	0.20	-	0.25	-

* Information from the sales of the household (private) plots.

Source: ¹ Calculated from the price data of the Ethiopian Fruit and Vegetables Marketing Corporation (1987-1990). The prices exclude turnover tax. The products were mainly sold to government shops and supermarkets.

² Compiled from CSO, Average Producers' Prices of Agricultural Commodities (1985-1990)

³ Average retail prices of the Mekanissa, Furi and Saris Cooperative (1985-1990), collected from the records of the cooperative.

⁴ Calculated from CSO, Retail Prices of goods and services in selected Urban Centres Statistical Bulletin (1985-1990). The study deals with open markets which decide their price on demand and supply. It includes kiosks and small shops, but it does not include the government shops and supermarkets.

Investment and Annual Shares

The main sources of income of the MFS Producers' Cooperative included the sale of the produce (the major part), rent from the vehicle the cooperative owned, registration fees from members, fines and donations (as in the case of the tractor). The records of the cooperative showed that the income was mostly invested in the vegetable production and partly shared among the members over the years. The capital position of the cooperative at the end of 1990 was indicated as follows:

- office building including, a multipurpose lightly walled shade (i.e. shade used as a meeting place and also as a store and weighing place) valued at an estimated Birr 50,000;

- office furniture, about Birr 4,842;
- farm implements, except the tractor, about Birr 13,045;
- truck valued at Birr 41,000;
- trailer valued at Birr 27,000;
- water diversion structures (dams, canals and canal tubes) valued at about Birr 1,400,000;
- other fixed assets included a tractor which was donated to the cooperative by the Ministry of Agriculture and was estimated to be worth Birr 100,000.

Thus the gross capital investment that the cooperative had made (i.e. excluding the donated tractor) during the period 1976-1990 was estimated to be Birr 1,535,887 or an average of Birr 6347 per member. Including the donated tractor, the cooperative had a gross capital of Birr 1,635,887 or an average of Birr 6760 per member. The investment on water diversion structures took up about 91% of the total investment expenditure.

Apart from this investment the cooperative members shared certain income every year depending on the points recorded for them while accomplishing the various tasks in the cooperative. The number of recorded points for each cooperative member were multiplied by the same value of money to come up with the share for each member. For example, in 1985-1990 the head of the selected sample of households received an average yearly income varying from a maximum of Birr 700 per member to a minimum of Birr 175 per member. The average yearly shared income of the heads of the selected sample of households from the cooperative over the years could be estimated to be about Birr 223 per head per year.

Gender Roles in the Division of Labour

There was a clear division of labour within the households. Similar to the situation in the agricultural cooperatives in the rural areas, the heads of the households were the only members of the cooperative. Therefore the heads of households were expected to work for the cooperative i.e. on communal plots, for six hours a day for six days a week on any task set for them. In the case of female heads of households, it was reported that they were given an option in which they could work three days a week as they were also expected to work on the private plots.

The working hours were normally between 8 a.m. and 2 p.m., from Monday to Saturday; there was no work on Sundays. But the times (and the points

scored were arranged according to the type of work the members did; if they worked extra hours they were either compensated in time or the points were taken as overtime. Taking an average of six hours work per day per member, it meant that about 503.4 man-days were spent on 1 hectare of the communal land per year. All members of the cooperative participated in all the necessary tasks of the cooperative.

Much of the decision-making and control of access to resources was seen to be vested in the head of the household, who would normally be a man. Household membership and headship in the cooperative gave the privilege of access to a cash income when revenues were shared after the sale of products and the entitlement to the benefit of any investment that the cooperative made. Land usage rights could pass on to others, which was why the female heads of household in the sample joined the cooperative. The share allotted by the cooperative to the heads of the selected sample of households was usually used for maintaining or building the house, and buying livestock or clothes depending on his/her own decisions.

Although the work on the private farms was mainly performed by the women and other members of the households, the types of crops, selection of nursery sites and transplanting period of plants were all decided by the heads of the households. In the case of the female heads of households all the necessary decisions were their own but sometimes these were taken with the help of the older children. The marketing of the produce from the private plots was done by the women of the households and the revenue was expended on procuring other foodstuffs for household consumption by the women themselves. For the men the shares they received from the cooperative were used for procuring assets, like improvement of their houses or utilities. Their cultural perception persisted all the way in the discussions and it seemed to be taken for granted that the men ought to invest and the women would have to be able to feed the family.

The women were responsible for all the domestic work - the tasks of cooking, cleaning, childcare, care of the sick and aged. Women who were themselves household heads would do all the work unless daughters or other female relatives were available to help. The sexual division of labour was rigid for domestic tasks, boys still virtually never aiding their mothers. All children, however, helped the women in their work on the private plots.

The female heads of households had to complete their share of work in the cooperative and cultivate their private farms together with other household members as well. They prepared food for the family, got the children to

school, tidied up the house, worked in the cooperative or on the private farms, went to the market to sell the produce or to procure the necessary ingredients for meals, and so on. The female heads of households had to prioritise their time and need. At times, they had to work less hours in the cooperative, although this resulted in less points scored and less annual values of share (income) from the cooperative. The eldest daughters seemed to share the responsibility for the housework and generally deputised for their mothers, while the boys helped mainly on the farm. In general, it was noticed that children and other residents in the women-headed households were more involved in the domestic as well as production and marketing process than in the male-headed households. Some of the adult children had even to rearrange their school programmes and joined evening classes to be able to help their mothers during the day.

Conclusion

Formation of the MFS Producers' Cooperative was one of the survival strategies of the members. The head of the households organised themselves into a producers' cooperative in order to strengthen themselves in the face of common problems. But membership for women was given only when they had to replace their husbands due to death, illness or departure from home. The cooperative's organisational structure indicated the rights and responsibilities of the members in participation and the tasks to be accomplished. The land allocation system of the cooperative reflected a clear division of labour within the member households.

The process of production and the distribution system of the cooperative demonstrated that although production and the yield per hectare were relatively low, the cooperative provided income and a share of investment for its members, created unity and solidarity among the members, and made a significant contribution to the city's supply of fresh vegetable. Production from the communal plots of the cooperative was marketed at a fixed price which was relatively cheaper than other sources (so there was a possibility of its products reaching to the urban poor).

But the cooperative faced legalisation problems. Regardless of its importance to low-income urban households, it has remained an illegal entity running an illegal activity in the city. The lack of legal recognition had strangled the cooperative in various ways including the acquisition of credit facilities, implementation of improved inputs and other development

programmes. Lack of favourable credit facilities impaired the extension of production and increasing productivity on the farms.

Unlike the unsuccessful experience or failure of most of the cooperatives in Africa (Bakuramutsa, 1982/83, Mayoux, 1988), the responses for the relative success and survival of the MFS Vegetables Cooperative are summarised as follows:

- the formation of the cooperative was inspired by the members' interest or decision to survive (i.e. a survival strategy and not an imposition);
- the cooperative depended mainly on the determination, strength and effort of its members to satisfy its needs;
- there have not been many changes in the Management Committee members and it was observed that the same Chairman has served the cooperative over the years, since the formation of the cooperative. Apart from the commitment and effort of all the Management Committee members, one of the reasons for the success of the cooperative management was said to be the character and dedication of the Chairman. It was also observed that the Chairman was still the most influential and respected person in the community;
- majority of the members had experience in vegetable production;
- the fact that majority of the cooperative members came from the same ethnic group (*Guraghes*) and religious belief (Coptic Christians) meant that they had similar cultural values and this helped in developing mutual trust, especially during the formation of the cooperative;
- although the cooperative's legalisation problem has been exacerbated by lack of responsible management authorities and the cooperative has not been able to obtain credit facilities to improve its productivity, the general political situation in the country has encouraged the formation of cooperatives.

Thus, given the willingness and determination of the households to cultivate, urban agriculture can, in such circumstances, provide both income and a new form of social arrangement, i.e. a cooperative, which is more equitable and more secure than a traditional landlord-tenant relationship.

Urban agriculture has been undertaken by these households as a final stage in their sequence of survival strategies, responding to the threat of extreme poverty and food insecurity due to shortage of income and unemployment. The study demonstrates that low-income households' decision to cultivate was led by the need to feed their families and the expectation of improved returns in the absence of better paying jobs, i.e. as a matter of survival.

The determination, the ability and the willingness to work on urban land (or to cultivate), that is the motivation and application of the household and its members, have to be viewed as equally significant to the availability of land and water resources in relation to overall production capacity. This appears in contrast to treating availability of land and water resources as causal factors, as presented in most of the literature reviewed.

In this regard the study has further revealed the particular nature of cooperative forms of urban agriculture, their significant contribution to the unity and solidarity of their members as well as their role in improving production and providing food supplies for the urban poor. Urban agriculture has improved nutritional levels, income and employment opportunities, and the standard of living of the producers, and has also contributed a significant proportion of the supply of vegetables to the city. Thus urban agriculture should be encouraged, strengthened and given its rightful place, not merely tolerated. Support for low-income urban farmers or such cooperatives means building the communities, which would then be able to help themselves and the general development of the urban areas, and, above all, accepting the reality of the urban economy.

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