

13 Rainfed Agriculture, Drought and Hunger in Tanzania

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INTRODUCTION

The 2011 drought in East Africa was one of the worst in decades, affecting up to 13 million people in Djibouti, Ethiopia, Kenya, Somalia and parts of Tanzania. Many of the affected people were pastoralists, but this natural catastrophe also highlighted the role of the life-giving rains for farmers dependent upon rainfed agriculture for their subsistence, livelihood and welfare. Rainfed agriculture is by far the most dominant rural activity and livelihood in sub-Saharan Africa. Understanding the challenges of rainfed agriculture is therefore of utmost importance in a context of increased climate variability, population growth and higher food insecurities. Thus, this chapter will focus on the role of rainfed agriculture during the drought in East Africa in 2011 in a small Sukuma community along the southern shores of Lake Victoria in Tanzania. Although the direct physical and natural consequence of drought is the absence of water or the life-giving rains, the human and social implications are also consequences of a wider range of cultural factors which either strengthen or reduce the consequences of failing rains. Hence, I will focus first on the global and local discourses on water and food production as a background for understanding rainfed agriculture and drought; then on the agrarian question and overall challenges of rainfed agriculture in Tanzania, including the current land laws and national politics of nuclear villages; and finally an ethnographic in depth discussion of the 2011 drought among the Sukuma farmers in Usagara village from a water systems perspective.

GLOBAL AND LOCAL DISCOURSES ON WATER AND FOOD PRODUCTION

The Sukuma are the largest ethnic group in Tanzania, and are estimated to number more than 5 million people. Among the Sukuma:

disastrous droughts, epidemics and epizootics are not only hearsay and phantoms in the minds of the people but well-known facts of life. Life is precarious. Threatened by destruction through famine, sickness and death, life is always at risk. To stay alive is an achievement, something to work for incessantly through the whole array of technological, organizational and ideological means offered by culture and society: through cultivation and livestock-rearing, through cooperation with kin and neighbours and through the veneration of the ancestors (Brandström 1990: 168).

The Sukuma were traditionally agro-pastoralists and cattle were their main possession and form of storable wealth for procuring all of life's necessities. Although cattle still have importance in Sukuma society and cosmology, the role of farming has increased at the expense of cattle (Brandström 1985, Wijzen & Tanner 2002). In Mwanza region, smallholder agriculture employs about 85 per cent of the population. Usagara village is located about 25 km south of Mwanza, a 35 minute drive by public transport (Figures 13.1–13.2). In 2010, the population of the ward was 8,839. The number of cows was 2,057 and there were 42 oxen used for ploughing.¹ The annual precipitation in Mwanza is about 1100 mm/yr, but as seen from two precipitation data set, there are at times large annual variations, and the most important factor for farmers is the amount of rain arriving at which time and in which rainy season. Traditionally, water was regulated by intricate water laws among the Sukuma (Cory 1953, Drangert 2003). In today's world, rural farmers dependent upon rainfed agriculture are part of the global world, which puts emphasis on what to grow: food crops or cash crops?

Globally, about 12 per cent of the total land area is used for agricultural production and about 42 per cent of the world's population live on this land (Fraiture & Wichelens 2007). Only 19 per cent of cultivated land on the globe is irrigated, but this land produces 40 per cent of the world's food (Hanjra & Quereshi 2010: 365). Although agriculture accounts for about 70 per cent of the world's withdrawals of water, in many low-income countries the figure is about 90 per cent (WWAP 2012: 46). An estimated 60 per cent of Africa's population live in rural areas. In sub-Saharan Africa, more than 90 per cent of the farmland is rainfed (WWAP 2012: 177, 334). In sub-Saharan Africa, agriculture accounts for 35 per cent of GDP and employs about 70 per cent of the population. Agriculture is thus key for economic development and poverty reduction, and every 1 per cent increase in agricultural production reduces the numbers of the absolute poor by 0.6–1.2 per cent (Wani et al. 2009: 1–2). Due to population growth, however, the amount of cultivated land per person has globally declined from 0.4 ha in 1961 to 0.2 ha in 2005 (WWAP 2012: 46), directly related to hunger and food security.

Water and water availability is intrinsically linked to food security. Food security is defined as the point at which 'all people, at all times,

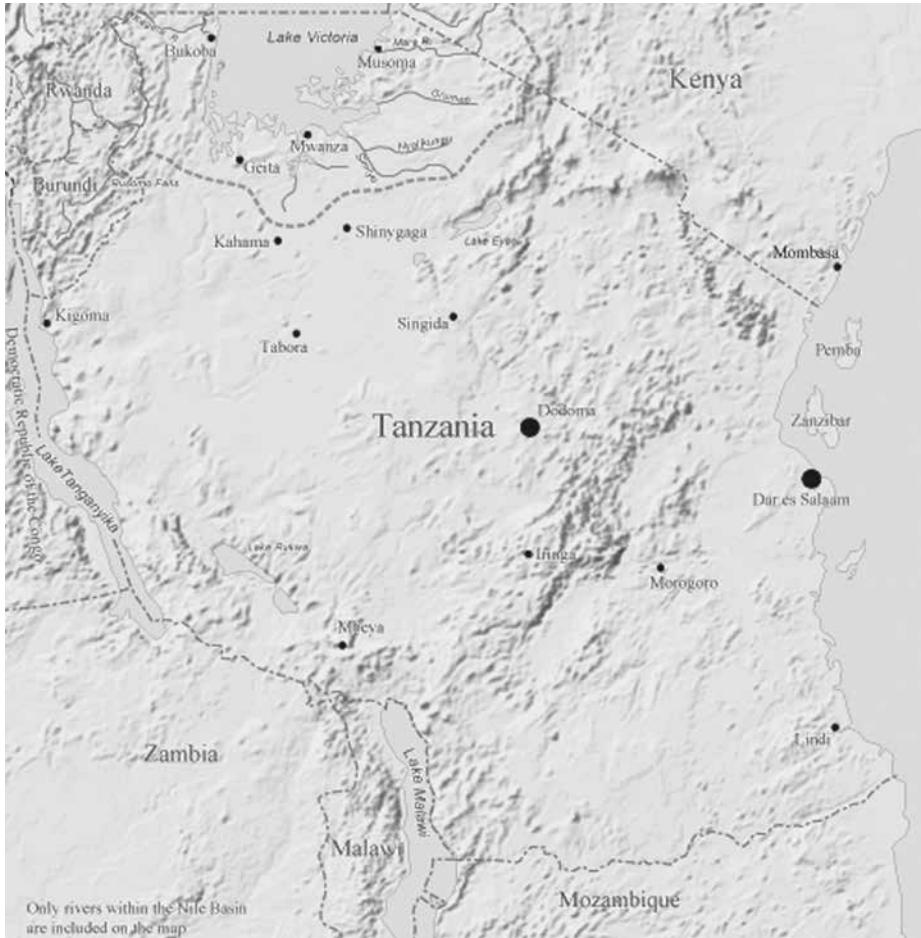


Figure 13.1. Tanzania. Map from the Nile Basin Research Programme, University of Bergen, Norway.

have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life' (FAO 1996), and as 'a necessary if not sufficient basis for poverty alleviation' (Cook et al. 2011: 2). According to the World Food Council:

food security implies two things. First, ... that food is available, accessible, affordable – when and where needed – in sufficient quantity and quality. Second, it implies an assurance that this state of affairs can reasonably be expected to continue ... that it can be sustained. To put it simply, food security exists when adequate food is available to all people on a regular basis (World Food Council 1988: 2).



Figure 13.2. Map of Usagara and Mwanza in Tanzania (map modified by Terje Oestigaard from Google Maps).

In today's world there is a general consensus that even with the current land and water resources there will be enough food for even a world population of 9 billion. However, the current number of people living in hunger is increasing and today counts for more than 800 million people. In the more policy-oriented debates it is currently emphasized that one needs a holistic and global approach to the emerging water and food crises, including the whole value chain from the farm to the fork. Although these overall and global approaches are important, in practice they have little relevance for rural dwellers dependent upon the unpredictable rains. Many of the processes taking place during droughts and even more so during extreme droughts are already a reality for rainfed farmers in normal years, although to a lesser extent. In sub-Saharan Africa it was estimated in 2008 that 48 per cent of the population survived on less than US\$1.25 a day. And as a paradox, in this region hunger is most widespread in rural areas among farmers and households producing food (Hårsmar 2010). In sub-Saharan Africa, being a smallholder farmer relying on rainfed agriculture means that you live through various degrees of poverty. In years of good rains, one may get a small surplus, but being



Figure 13.3. Failed harvest in Usagara, early 2011 (© Terje Oestigaard).

dependent upon rainfed agriculture implies one thing for sure: droughts will come one year or another (Figure 13.3).

One may differ on or identify different types of droughts from an analytical perspective, although all of them are characterized by insufficient water or water at the wrong time for agricultural purposes. First, there is unpredictable drought, which occurs when total precipitation is comparable to normal years, but the harvest is exposed to growth stress as a result of unpredictable, erratic and uneven rainfall. Secondly, there is full-season drought, which occurs when overall precipitation patterns are much lower than in normal years and plants do not receive enough water. Thirdly, there is terminal drought, which occurs when initially there is enough water for cultivation, but later the soil is exposed to a water deficit. Fourthly, there is intermittent drought, which occurs when there is a short dry spell during the growing season and the harvest is exposed to drought only at one stage during growth (UNECA ACPC 2011: 19).

Variability in rainfall generates dry spells almost every season and hence shorter periods of water stress during the growing season. Dry spells are manageable and investments in water infrastructure can overcome these fluctuations, which may last from two to four weeks. Meteorological

droughts, on the other hand, occurring on average once a decade in moist semi-arid regions and up to twice per decade in dry semi-arid regions, result in complete crop failure. When such droughts occur, they cannot be counteracted by agricultural water management, and other social coping strategies are necessary, such as food relief and grain banks (Wani et al. 2009: 8), if they exist. When the rain and the harvest fail, farmers have to buy their food for survival on the global market, where prices increase and fluctuate during periods of drought. This directs the question to food crops or cash crops.

For individual farmers, whether poor or relatively better off, it makes sense to generate as much income as possible by cultivating crops that can be sold on domestic or international markets and then to buy cereals at the same markets. From a poor farmer's perspective, however, there are no cheap cereals. In today's world, everyone needs money and volatile and increasing food prices make the need to generate more income ever more urgent. When the poor are barely able to make ends meet – and in most cases they cannot – there is only a marginal net difference between selling cash crops and buying life's necessities. This net difference is, however small, vital to farmers in sub-Saharan Africa living on an absolute subsistence minimum. Thus, even in arid regions farmers dependent on fluctuating rainfall patterns may choose to grow water-intensive crops well aware of the fact that if the rains fail, they are left with nothing. If they had chosen crops requiring less water, they could have some harvest even in years of bad rain and consequently some food. Subsistence farming means living on the absolute minimum – in other words, in extreme poverty and often starving. The possible net difference if rains and harvests are successful is a calculated reward and risk that comes at a high price. However, very few farmers take the risk of planting only cash crops; food crops are a security net (Oestigaard 2014). If what and when to grow is a risk mitigation strategy, *where* to farm is a political question institutionalized by law or land tenure regimes, and varying land systems may offer different possibilities as risk reducing or coping mechanisms in times of failing rains.

THE AGRARIAN QUESTION AND OVERALL CHALLENGE OF RAINFED AGRICULTURE

The classic agrarian question in Africa has been how capitalism can enable agricultural development that contributes to industrialization and decreased poverty. Thus, agrarian reforms have been seen from broadly three perspectives – the social, economic and political. The social perspective has a welfare focus and emphasizes possibilities to reallocate land to the poor. The economic perspective stresses the emergence of small commercial farmers who create employment with multiplier effects.

Finally, the political perspective argues for transforming the whole agrarian structure as a development strategy (Maghimbi et al. 2011: 19).

In 1895, the German colonisers declared that all land in Tanzania, occupied or not, would become Crown lands. In 1928, the British governor authorized land grants for periods up to 99 years. After independence, all land continued to belong to the state. The Land and Village Land Acts of 1999 state that all land on mainland Tanzania 'shall continue to be public land and remain vested in the President as trustee for and on behalf of all citizens of Tanzania,' meaning that the state is the ultimate owner of the land, and makes grants for the occupation and use of it (Cl. 4(1), op. cit. Maghimbi et al. 2011: 28).

President Nyerere introduced the concept of *Ujamaa* in the Arusha Declaration in 1967. This policy was populist and was based on what today is commonly seen as a utopian belief that a modern state could emerge from communal villages. The aim of *Ujamaa* was to increase agricultural productivity and at the same time reduce economic inequality. At the heart of the socialist vision of *Ujamaa* was a particular view of the world and its commodities. In this view, there was a limited amount of good and goods in the world, and one person's gain would be another's loss. Since Tanzania aimed to be 'self-reliant' in order to avoid dependence as a newly independent state, this implied a zero-sum national economy. Within Tanzania, wealth accumulation in any form would be at the expense of someone else, who would lose something (Sanders 2008: 115), thus running counter to the socialist vision.

Nyerere placed the nation at the centre of the framework for modernization and as a result repressed cultural, ethnic, social and religious diversity. By abolishing chiefdoms in 1963, the rural population's relationship to the state was changed. The chiefs had largely lost popular support in the colonial era, but with this radical break, in combination with villagization, the state-peasant relationship was fundamentally transformed (Havnevik 2010).

From 1967 to 1973, the number of people in Tanzania living in *Ujamaa* villages increased from about half a million to about 2 million, approximately 15 per cent of the rural population. In 1973 the government abandoned the policy of voluntarism and the president ordered that the whole population should be moved into villages. This took place through organized 'operations', basically a military metaphor for mobilization. 'Operation Villagization' forcibly removed about 7 million people into villages, or about 50 per cent of the rural population. Through this process, some 8,230 new villages were created (Mesaki 1993). However, as Bryceson remarks, villagization 'was not about socialist collectivity as much as nuclearizing scattered household settlements into villages where health dispensaries, schools and agricultural marketing services and productive infrastructure could be more efficiently provided' (Bryceson 2010: 75). Nevertheless, villagization also led to environmental degradation. This may

have happened in any case, but the process of villagization accelerated it (Kikula 1997).

In practice, there was little link between the Arusha Declaration and the new *Ujamaa* policy of 1967 and the actual implementation of the policy, apart from the nucleated village unit. The farmers were still dependent upon fluctuating market prices for their crops rather than government stimuli, but more important; they still dependent upon the fluctuating rains. Although farmers were promised numerous benefits, the new policy was viewed with considerable scepticism (Havnevik 1993). As Kjekshus wrote in 1977:

The implementational features have fundamentally undercut some of the preconditions of the program and harmed the outcome. Already the socialist features of the village plan have been compromised, and it is doubtful whether the move has been a school in grass-roots democracy that has strengthened the peasantry's sense of self-reliance and dignity. More fundamentally, it is doubtful whether the change of settlement pattern is consistent with the fundamental requirements for economic development in the Tanzanian ecology (Kjekshus 1977: 281).

The Sukuma used to live in widely dispersed households on the semi-arid cultivation steppe, and there were no villages in Usukuma until the forced villagization of 1974. This political decision to force the Sukuma into villages and to work on communal farms had severe repercussions. As a consequence, life for the Sukuma became harder in the postcolonial era and the environment and land was desiccated (Wijisen & Tanner 2000: 21–2).

The villagization process disregarded existing customary rights and land tenure systems, thereby completely undermining the security of customary landholders. It also created other problems that contributed to agricultural decline. Nuclear settlements and villages created an artificial land shortage in areas where land was in abundance. With farmers living together, all land in the vicinity was farmed, but beyond a certain point it became uneconomical for a farmer to walk and establish new farms. As a consequence, in many villages farmers faced land shortages while unoccupied farmland was available only some ten miles away (Maghimbi et al. 2011: 27–33).

Since 1989–90 people have been allowed to move back to their original lands, but most people have stayed in the villages. Nevertheless, although the intentions behind the vision were good, the programme failed to transform Tanzania into a modern self-sustaining state (Sanders 2008: 113). In Tanzania today, about 70 per cent of farming land is cultivated by hand hoe, 20 per cent by ox plough and only 10 per cent by tractor. Small-scale farms still predominate and are on average as small as 0.9 ha, with only a few farms of 3 ha or more (Maghimbi et al. 2011: 43–4). Thus, villages do

not necessarily solve the problems, in fact they may create more problems when not access to land but water was and still is the most essential for rainfed agriculture. And irrigation did not follow the villagization process.

Water is an increasingly scarce resource, and not only at household level. Importantly and fundamentally, erratic rainfall patterns represent huge uncertainty and risk for rainfed agriculture. Water is the basis of all agricultural practices. The absence and presence of different types of water sources structure all societies, whether those sources are rain, rivers or lakes or a combination of water bodies at a certain place. Too much water at the wrong time of year, such as unpredictable and devastating floods, is as bad as too little water when it is really needed, the result being drought. Everything depends on the arrival of the right rains in the right amount at the right time (Figure 13.4), and their failure and the ensuing dire consequences underscore the fragility and vulnerability of all aspects of life (Oestigaard 2009). This total dependency on an unpredictable resource represents a huge uncertainty. Farmers aim to reduce and control this uncertainty in the best possible ways, but their means are in practice limited. Farmers rely on tradition, in this case the culturally accumulated knowledge derived from generations of experience involving the soil, crops and crop performance under varying and erratic rainfall patterns. Now, this centuries old knowledge is adapted to the modern world in which life and well-being largely hinge on growing the most valuable crops



Figure 13.4. The arrival of the rains in Usagara (© Terje Oestigaard).

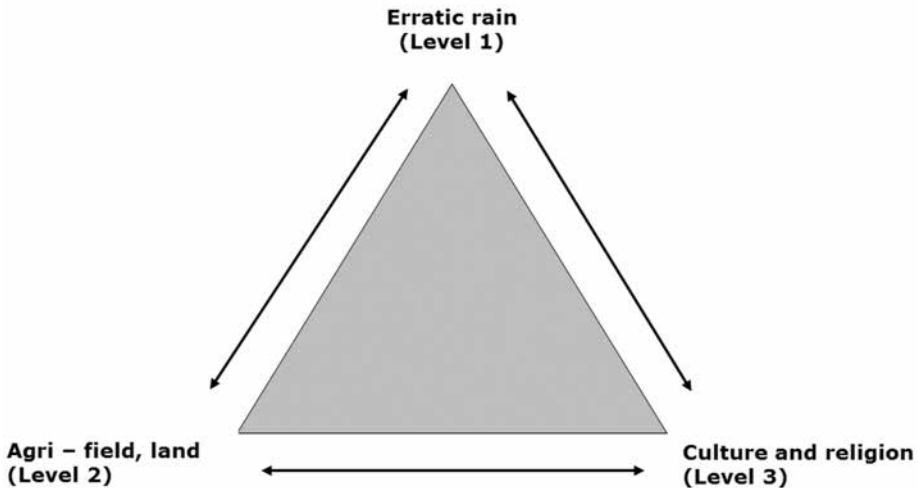
that produce an income and secure a livelihood beyond subsistence (Oestigaard 2012).

RAINFED AGRICULTURE AS A WATER SYSTEM

Understanding the water-world and how different types of water create possibilities and limitations for livelihoods and agriculture is fundamental to understanding current agricultural practice and future development, and can be seen from a water systems perspective (see Tvedt and Oestigaard this volume, and for instance Tvedt 2010a, 2010b): (1) The physical water-scape at a given time, including rain and rivers etc., (2) human modifications and adaptations to the actual waterworlds; and (3) cultural concepts and ideas of water and water systems, including laws.

With rainfed agriculture as a particular water system, one may adapt and develop this approach (Figure 13.5). There is, of course, no direct and deterministic relationship between people’s ideas about their world and how they cultivate. For instance one may grow millet using a hoe irrespective of whether one believes in Christianity, Islam or the ancestors.

Rain-fed agriculture in a water system perspective



Agriculture - from Latin *agricultūra*, *ager* is field, land + *cultūra* - culture

Figure 13.5. Rainfed agriculture in a water-systems perspective (© Terje Oestigaard).

Rain (layer 1) is, however, a constant and limiting factor that structures agricultural practice. Thus, by analytically using agriculture – from Latin *agricultūra*, from *ager* field, land + *cultūra* culture – one may distinguish the physical work and actual cultivation as belonging to layer 2 and the cultural elements as part of level 3. These levels overlap and are mutually dependent.

ERRATIC RAIN (LEVEL 1)

In Mwanza, as in many other places in Africa, there are two main rainy seasons: one in February–April and the other in October–November. The first is the ‘long’ rainy season and the latter the ‘short’ season. However, ‘rain is scarce in this semi-arid region. When it does fall, it is often erratic and unevenly distributed. Too much or too little at the wrong time can and often does spell disaster for these agricultural people’ (Sanders 2000: 473). Moreover, even when the rains come, they may fall unevenly: one village may receive sufficient rain whereas the clouds may pass over another village without rain falling. Even within a village, the actual precipitation may vary depending upon particular clouds and rain at a given time in the rainy season.

Although life-giving rain is of utmost importance, the two rainy seasons are not of equal weight, and it is during the long rainy season that most of the food surplus is secured. The long rainy season is thus fundamental to food security in a given year. When the short rainy season comes, additional food is produced. All of this will be eaten by the time the farmers expect the next long rainy season. If this fails, the results may be catastrophic like in 2011 when the drought in East Africa affected up to 13 million people, and also hit parts of Tanzania, the Mwanza region included. In Tanzania, it was estimated that 500,000 were affected by this drought (World Vision 2011).

In Usagara, the long rainy season from February to April was disastrous. The rain almost completely failed and there were only small intermittent showers. The short rainy season in October–November 2010 had also been bad, but not as bad as the ensuing long season. During the autumn of 2010, there had been enough rain to produce some food and small amounts of cotton. Consequently, there was barely enough food to tide people over to the next long rainy season. In 2011, the maize planted in late January died, and farmers hoped for the rain so they could start cultivating rice in particular. The rain, however, did not come and the fields were left virtually barren. Without rain, there was nothing the farmers could do. As one farmer put it, one cannot move the land and farmers have to live where their land is.

Still, the farmers work and have to be prepared if the rain comes. The preferred agrarian cycle is to prepare the land and plant in January and

wait for the rain to come and harvest in March–April and then plant again and harvest in June. In a year of good rain, generous rain should fall at least three days a week from March to April. However, in 2011 the rains failed more or less completely, with only some small showers from mid-March onward. When the rain fails, not only have farmers put in a lot of effort in vain, but the outcome is a failed harvest.

Dependence upon fluctuating rains is a gamble. The vulnerability of rainfed agriculture was once described by an Indian finance minister in his national budget as a ‘gamble on the rains.’ He went on to stress that ‘variations in rainfall, or disruptions in water supply, can make the difference between adequate nutrition and hunger, health and sickness – and ultimately – life and death’ (Human Development Report 2006: 174). Moreover, ‘rainfed farming is not just risky; it involves long delays between investment and fluctuating returns. Sooner or later, steadily accruing loan interest outstrips a borrower’s fluctuating capacity to pay’ (Shipton 2010: 226). In 2011, the farmers faced the ‘hungry season’ with barren fields and hardly any food. When the rains came in Usagara village in late August in the short rainy season, they were met with great relief. Everybody had survived the difficult ‘hungry season’, but as one old woman remarked, this drought had been one of the three worst in her whole life. Famine is serious food deficit, and in the globalized world where one needs money, farmers face a difficult choice: should one grow food or cash crops?

Coping with the uncertainties of erratic rainfall in a time of climate change, when rainfall patterns fluctuate even more markedly, is an immense challenge. Farmers living on the absolute subsistence minimum are dependent on rain and on making the right decisions. How is it possible to be strategic when everything depends on the uncertain rains? Millet is a low water-intensive crop and in times of hardship may secure livelihoods. Rice and cotton, on the other hand, demand much water for cultivation, but if rain comes in abundance, they are the choices that bring the most money and prosperity. Farmers cannot afford to make wrong decisions, yet they do, because everything depends on the rain, which is impossible to predict.

The main solution is diversifying risks. Specialization may increase vulnerability, whereas diversification may reduce uncertainties. Some plots of land are used for maize, cassava, beans and vegetables and others for rice and cotton. Herein, however, there is also a paradox. If all land is used to grow millet, which is less water-intensive but generates little cash, there might be enough food if there was little rain. However, if the rains are good, farmers will lose opportunities because of their wrong choice of crop. Thus, when the rain fails, much arable land will be left uncultivated, because farmers will not want to put prepared rice fields under millet in case the rain does come. Hence, food deficits are also culturally made. Ultimately, this situation highlights the impossible choices farmers have to make

when their lives and subsistence are totally dependent on unpredictable annual rains.

When the rains fail completely, all these strategies are in vain. The result is hunger and famine, which have huge impacts on society. People have to get money to buy food. Today, the global market on which they sell their agricultural products during times of good rain is also where they have to buy their necessities at fluctuating and increasing prices when there is drought. Money matters and changes lives.

After the long rainy season failed during the spring of 2011 in Usagara, during the following summer the farmers and their families experienced hunger and had a very hard and strenuous time. Those with the least food got some supplies of maize from the government, but otherwise social mechanisms in the village helped increase food security. Within families and among neighbours, people with a small surplus shared food with others. Those better off for various reasons also employed the poorest to do work in return for small wages, which enabled them to procure food. Moreover, Usagara village enjoyed a comparative advantage in being located close to Mwanza and other smaller cities. People from Usagara could thus migrate as day labourers to towns or search for agricultural work in other parts of the country. Thus, although the drought brought hardship and suffering to the Sukuma of Usagara, all of them survived.

This drought was hard, but the Sukuma have throughout history been used to droughts and have adapted to this way of living. Despite the difficulties, globalization and the market economy have brought some advantages in times of crises. The problem with drought, it was explained by one, was not really that harvests failed. The problem is the lack of money that enables farmers to buy food from elsewhere. By being day labourers, it was possible, even in the most recent crisis, to generate some income and thus buy food and survive. This was quite different from the crisis in the early 1980s when it was more difficult to buy food even if people had money.

The absence of rain influences all parts of society and life. During the drought the wells run dry. Villagers had to dig new wells at greater depths and further away. This implied that the women had to walk longer and spend more time collecting and carrying water. Girls are the first to be taken out of schools to carry water when there is a drought and more time is needed to secure water for the household's daily consumption. There was less drinking water for both humans and animals, and several farmers had to sell their cattle (Figure 13.6).

Although the short rainy season during autumn 2011 was good, rain can be a double-edged sword. If it rains continuously and intensively for a week, the crops will be swamped and die, since they also need sun. Rice can survive intense rains for longer periods, but maize and other staples are more sensitive. Good rains are those that ideally last

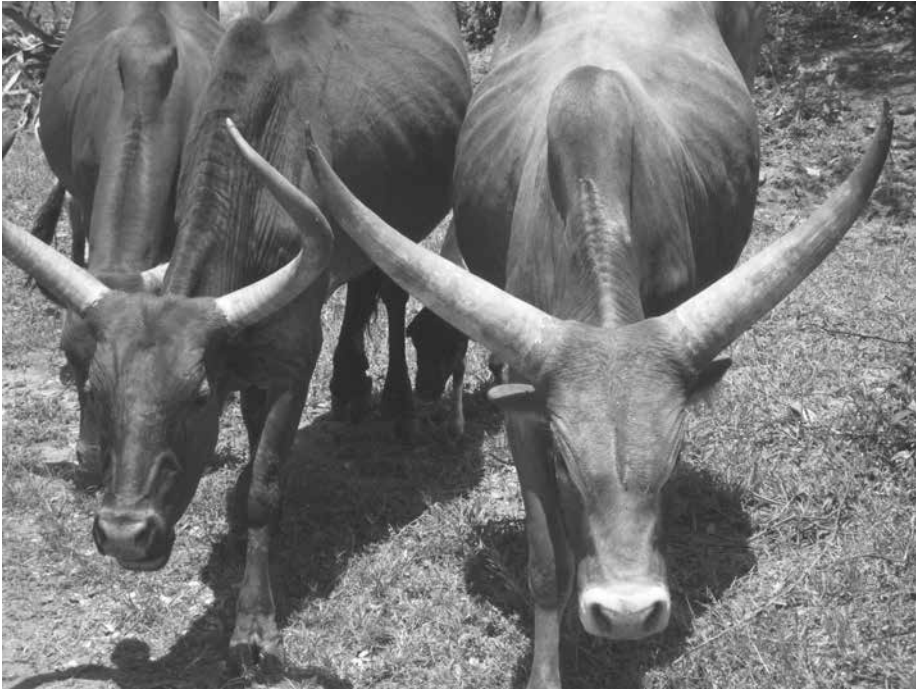


Figure 13.6. Cattle as commodity among the Sukuma (© Terje Oestigaard).

two–three days, followed by some three–four days of sunshine, and so on. Thus, as with rain so with sun: too much or too little at the wrong time is equally bad.

The short rainy season during the autumn of 2011 started early. The first rains came at the end of August and continued. Although the heavy rains necessary for rice cultivation did not come, the light rains provided enough water for maize, millet, finger millet, beans and other crops. Thus, after the catastrophic season in spring 2011 and the poor harvest of autumn 2010, the rains in autumn 2011 provided farmers with food for survival and even a small surplus for sale.

When the rain started, the farmers opted for different strategies. With the arrival of the first rains in late August, some farmers suspected they would not last. They therefore postponed maize planting, since they did not want to lose the planted seeds or waste time and money. Waiting to plant is a way to minimize risks, and by the end of October there were still farmers who had not started planting (the main period of rain during the short rainy season is October and November). Other farmers, however, calculated differently and took a chance in the belief that the early rains of late August would continue. Some started cultivating maize at the beginning of September, and because the rain kept coming they had the chance to have

two harvests in this rainy season. Thus, given equal dependency on the seasonal rains, there are different ways to reduce risk and manage the uncertainties of rainfed agriculture. But in the end, these risk-managing strategies are a gamble when everything depends upon unpredictable and erratic rains.

AGRI-FIELD, LAND (LEVEL 2)

By the end of March 2011, when the rain had not arrived and the prospects for the forthcoming season looked miserable and people prepared for difficult times, farmers started to plant millet in various fields. The latest one can plant millet with a hope of a successful harvest is in April. However, they did not cultivate millet in the fields they had prepared for rice cultivation, since they believed the rain would eventually come. Still, even if millet is drought resistant, it nevertheless requires varying amounts of rain for a month. Unfortunately the rain failed in April as well, leaving farmers with almost no harvest or food until the onset of the next season's rains.

In the past, combinations of cash and food crops were grown: cotton together with chickpeas, millet, cassava and sweet potatoes, while in more swampy areas, which have now dried up, rice was cultivated. Millet was the dominant staple until the 1980s, but since then people have introduced crops they prefer to eat, and today millet is perceived as disgusting because of its murky brownish colour. From the 1980s and 1990s onwards, rice cultivation became more dominant.

Rice is preferred as a staple for several reasons. First, it is the dietary preference today. Secondly, if a surplus is produced or cash is needed, it can generate a good income, with prices per kilo ranging between Tsh. 1,600 and 1,800. Thirdly, rice can be stored for years after harvest and thus represents both food security as well as potential cash income. Maize, for instance, can only be stored some five or six months after harvest and must therefore be consumed within a relatively short time. Finally, even when there is insufficient rain for planting, as in spring 2011, the rice seeds may survive up to three years. Thus, the resistance of rice to spoilage is also a security mechanism.

Cotton is highly drought resistant, whereas maize and sorghum are more vulnerable to water shortage and drought. As such, cotton is preferable during dry periods. However, cultivation of cotton is water intensive and requires a successful rainy season, whereas millet needs little water. Where land is a limiting factor, farmers must calculate the proportion of land to be used for subsistence agriculture in relation to cash-crops. When they do not have enough land for cultivation, food-crops for personal consumption are more often given priority over crops that may generate limited cash in an uncertain market. Among the villagers it was generally agreed that the best

way to improve agriculture is to introduce small-scale irrigation or rain-harvesting techniques, which would enable more secure food-crops, with some additional cash-crops.

Moreover, changing crops is not unproblematic. When smallholders change crops from year to year, the soil may lose some of its nutritional qualities. A major problem with maize is that the crop is attacked by striga – also known as ‘witches’ weed’ – a highly destructive parasitic plant. Millet is also highly vulnerable to striga, and the government has instructed farmers who grow millet in their fields one year, to grow cotton or cassava the next in order to eradicate the parasitic plant. However, if the next season is also dry, farmers face an added problem, since they cannot grow millet again. Striga particularly affects maize, sorghum and millet, but not rice, which is located in wetter areas. Nevertheless, instead of using pesticides, if a field is infected by striga, farmers may cultivate cotton or cassava the next year, since striga does not survive alongside these crops. In short, crop rotation patterns also influence the crops chosen in a given year.

The Sukuma were the ethnic group cultivating most cotton and cash-crops in Tanzania. Mwanza region has been at the heart of cash-crop farming in Tanzania. In Usagara before 2011, the majority of farmers had shifted from cash-crops, and in particular cotton, to food-crops. Half a decade ago, about 50 per cent of the farmers were growing cotton, whereas in 2010 only 13 per cent had cotton as the major crop. The main reason for this decline in Usagara was the vulnerability caused by the free market system. If the cotton price is high, farmers switch from food to cotton production. When the prices of fertilizer and pesticides increase, the returns from selling cotton decrease: the growing costs may be higher than the net returns and farmers would not have enough income to pay for these inputs. The price for cotton was so low that food crops become the new cash crops, in particular rice. Moreover, individual farmers cultivating cotton on small farmlands cannot compete economically with large industrial plantations. Thus, increased expenses and decreased cotton prices caused farmers to return to food crops to survive.

However, during the short rainy season in the autumn of 2011, farmers started reverting to cash crops and cotton production, and many more were expected to produce cotton again during the main rainy season of 2012. The government offers preferential loans with good conditions to farmers who want to invest in cotton production, and farmers pay back their loans after the harvest and sale of the cotton. Overall, then, there has been a change from subsistence agriculture to cash crops and back again, and then possibly a return to more cash crops.

About 75 per cent of cotton is exported, mainly to China (approx. 50 per cent), but also to India, Bangladesh and Taiwan. Prices for cotton used to be Tsh. 500–600/kg, but rose rapidly to Tsh. 1,200 in 2011. There were two main reasons for this doubling of prices: the appreciation of the

US dollar and low global production. The farmers in Usagara were well aware of these changes, although not necessarily of the reasons for them. Some farmers suggested the Tanzanian government had increased prices in order to help them. The misunderstanding of why prices increase may lead to wrong choices about which crops to cultivate. In Usagara, cotton was largely abandoned because of the falling prices. With the rapid increase in those prices, many farmers were rethinking their options and considered growing cotton again. However, because the prices of cotton are governed by the international market and not the Tanzanian government, farmers may again fall prey to fluctuating prices if global production increases.

Nevertheless, although farmers were mainly relying on subsistence farming, as much as half the crop might be sold to generate income. Thus, if farmers were able to keep all the food they grew, there would perhaps be sufficient for the whole year. Normally, however, they do not hold back food for the next year, because they have to sell some of it to earn money. This highlights the impossible situation the farmers face: all decisions are a gamble on the rain to get the highest yield possible, failure to achieve which may have devastating consequences. But even with a successful harvest, farmers have to sell large parts of their food supply to generate income and cash. It is extremely expensive to be poor.

CULTURE AND RELIGION (LEVEL 3)

The previous descriptions of agricultural practices and choices are all, of course, within the realm of culture. Cultural choices and decisions, together with religious conceptions and understandings, shape all practices, but as shown, the cultural world is also dependent, restricted and enabled by the external, real world. And for subsistence farmers living off rainfed agriculture, rain is the first and most important parameter – without rain, no food. And as seen, the consequences of droughts are partly man-made given the Ujamaa policies and the villagization processes forcing people to live in villages. This created an artificial land-shortage and increased the pressure on land.

Importantly as well, food is not just food. There is hardly any other item endowed with so much cultural and religious significance, including taboos, as food. Suffice it to point out here that the cultural values of food often outweigh other rational considerations with respect to water consumption, agricultural production and caloric output. Thus, one key advantage of millet as a food crop is that it requires less water for cultivation than other crops and as such it is a surer food source during times of failing rain and drought. Generally, although millet has been the traditional staple, people do not like to eat it anymore and will not grow it, even though it requires less water for cultivation. This change in dietary preference has

direct implications for what is grown. Thus, cultural taste and preferences have changed actual farming, and even during famines farmers rarely grow millet. And this is the case even though farmers were encouraged by the government to grow millet. Rather than planting millet on the fields prepared for rice cultivation, the fields were left uncultivated. Most farmers instead gambled that the rain would come and enable them to grow rice, which is preferred both as a cash crop for income and because it is perceived as tastier.

Regarding cotton, other social mechanisms are at work. Apart from the low selling price, there are further reasons cotton is a less attractive cash crop than others. In Usagara, cotton is sold to a local cooperative, but payments are frequently delayed. Often, farmers only get paid the first week and then the cooperative claims it needs to borrow money from banks. Subsequent payments may be delayed up to a month – a time when most farmers really need the money and cannot afford to wait. Other cash crops, such as tomatoes grown in gardens, are paid for immediately and rice in particular is seen as most lucrative as a cash crop. Milk is also sold, and keeping livestock, which are also a source of meat, is an additional source of income. However, even though cattle are a valuable resource generating extra income and providing security, particularly when the harvests fail, grazing land is limited and farmers cannot exploit the potential of livestock as much as they would wish.

During droughts and famines, government support and foreign aid are part of the strategy and planning for survival. Although the external help is limited and survival on it is hard, such help is nevertheless part of the coping strategy of the subsistence economy. There is a Sukuma saying ‘We will pass’, and the Sukuma have always suffered from severe famines, which occur every six or seven years. During famines, each person receives one big tin-can of maize from the government. This is not enough to survive on, but it gives the farmers some relief as they search for other job possibilities.

When drought and food shortage crises occur, the Sukuma usually turned to the ancestors for help. However, although the ancestors were propitiated in other Sukuma areas, this was not the case in Usagara. After they became Christians, propitiating the ancestors has been seen as akin to using witchcraft, and the church condemns both practices. Rainmaking rituals were also seen as sinful by the church and thus villagers did not conduct them.

The direct consequences of failing rain were that people suffered and starved and that poverty increased. This was interpreted in different ways. First, global climate change was seen by many as the cause of the scarcity or absence of rain, in particular among the young and those with a modern education. Indeed, through its access to information from television, radio and newspapers in varying degrees, rural Tanzania is part of the global world and the discourse about climate change is central in these rural areas

too. Secondly, farmers have long been cutting trees in the forests, and consequently the land has become eroded and lost substantial water-retention properties. Deforestation is thus seen as an important human factor affecting the actual water environment. Thirdly, changes in weather and the absence of rain were also seen as stemming from declining traditions and the broken relationship with ancestors, so that it is no longer possible to communicate with and propitiate them, or make sacrifices (Figure 13.7).

With regard to the last theme, neglect of tradition and the non-propitiation of ancestors have given rise to numerous interpretations. Some traditional healers and diviners blame the Christians, in particular the Pentecostals, whom they perceive as evil because they have created more, and new forms of, witchcraft. Others saw the drought as a punishment by God because Sukuma values were no longer followed. In general, there was an element, or at least the perception, of generational conflict, since the youth were not honouring traditional values and respecting elders. Women, too, were criticized for dressing inappropriately and not wearing their traditional dress. The lack of rain in 2011 was thus also understood as a collective punishment by God for the moral decay of and misconduct and sin in society. As one informant explained, when people do not follow Sukuma tradition and values, God penalizes them with the absence of rain. Moreover, there has been an increase in witchcraft, and this is also believed to influence rainfall patterns in various ways. People use witchcraft to become rich, and one informant linked the drought directly to the killing of an albino in 2009. Nobody was arrested for the crime. According to this farmer, this misdeed led God to punish the society collectively by withholding rain.

In other villages with many traditional healers, however, rainmaking rituals were conducted, and if and when the rain comes, the rainmakers were acknowledged and greatly respected. When rainmaking rituals succeeded and the rain came, the life-giving waters were also seen as holy and a divine gift from God to all people. Although the practice of rainmaking had disappeared in Usagara, Christians did pray to God for rain, including the Pentecostals. People had long been praying for rain in the church, but it never came. Among Muslims, too, from a religious perspective rain is seen as a gift from Allah, but erratic and fluctuating rain was seen as a consequence of climate change and deforestation, which reduce the overall amount of water.

Although rainmaking as a ritual has disappeared, the whole rainmaking cosmology has not. There were still people in the village believed to have power to withhold the rain. The reason they might wish to harm other people and society was unclear, but somehow they wished to be respected and seen as important. In cases where rain is believed to be withheld by anti-rain witches, people may consult traditional healers who devise medicines to be sprayed on the fields where the farmers

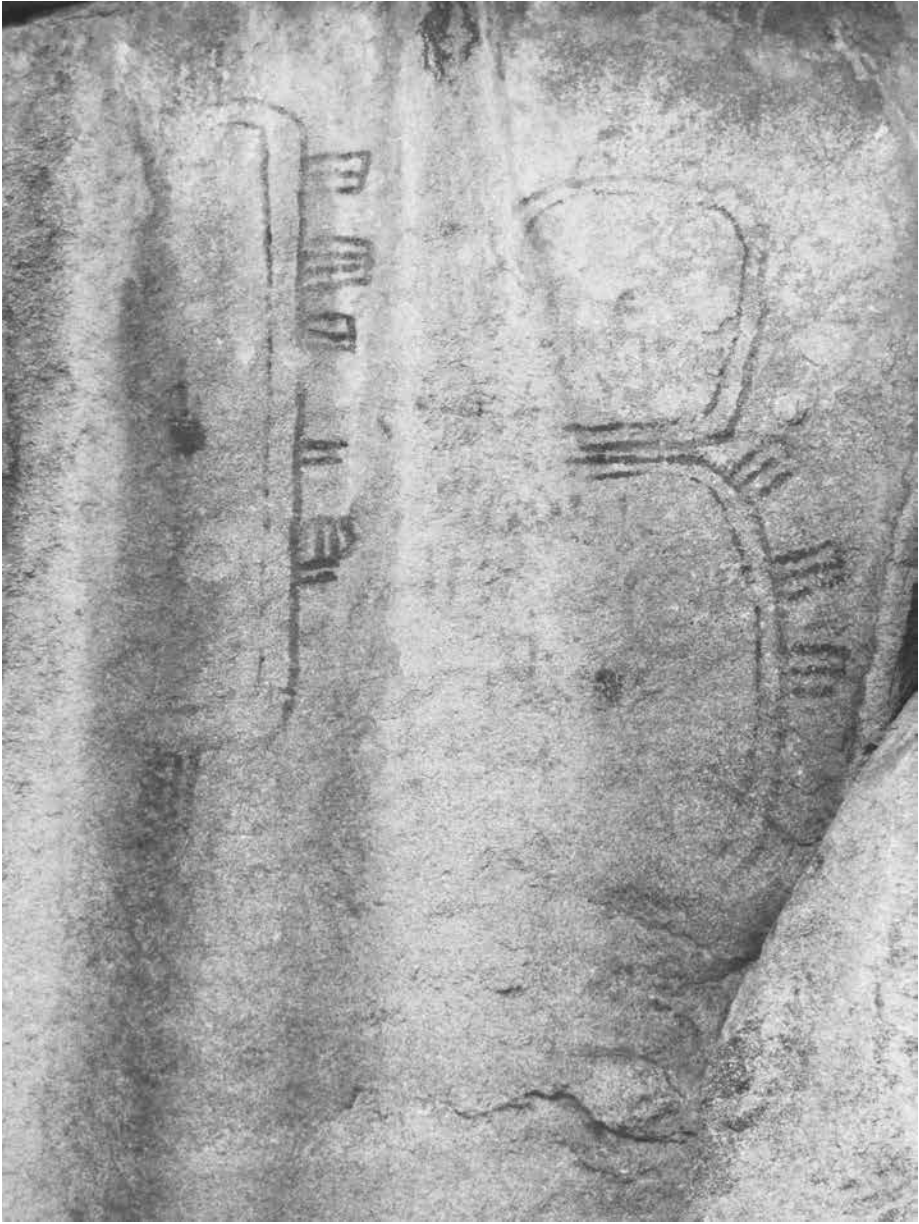


Figure 13.7. Rock-art in a rock shelter in Bukumbi village (see Figure 13.2) where rainmaking and ancestral rituals took place in the past (© Terje Oestigaard).

would like to receive rain. Thus, the absence or presence of rain was seen as an ongoing contest between those with the power to make it and those who could restrain it. If the rainmakers were the more powerful, they would punish the rain-witches, including by sending sandstorms to kill them. In 2010, in the neighbouring village of Nyahorongo, a man predicted before the short rainy season that there would be no rain that year. When the rain had still not arrived in November, the villagers grew very angry and beat the man to death. Withholding the rain was not seen as related to the world of ancestors as such, but as a result of witchcraft and malignant forces.

Thus, actual cultivation is not merely about planting, sowing and harvesting, but represents an intricate mixture of rainfall parameters and natural variables, including soil composition and qualities; customary and technological practices; as well as a wide and influential spectrum of cultural, ideological and religious concepts.

CONCLUSION

For smallholder agriculturalists in sub-Saharan Africa dependent upon the arrivals of the life-giving rains, climate variability will sooner or later result in droughts of different lengths and intensity. The risk-coping strategies will inevitably vary; from where and when to start preparing the fields to calculating the possible incomes of food or cash crops and how to balance the different crops requiring varying amounts of water for a successful harvest. But all this is of course a gamble since nobody can know when and in which amount the rains come. The right decisions have to be made, simply because the farmers cannot afford to make the wrong choices. Yet, sometimes the wrong decisions are made, and it highlights the impossible situation many farmers face and live by when their wealth and health – or suffering and possibly starvation, and in the worst case, death – is ultimately a matter of the arrival of the unpredictable rains. Political and institutional factors may reduce and increase the consequences of the farmers' choices given the possibilities they have. Diversifying risks is the optimal and the preferred choice, but when the rain fails completely all these strategies are in vain. And this is perhaps where the most depressing part of rural poverty and hunger lies; most of these farmers are strong, healthy and eager to work – and they do work hard. They prepare the fields and hope for a bountiful harvest, and when that is done they can only wait and look at the sky to see whether the clouds will come. During the drought in 2011, it was mainly the sun shining, and if there came some few clouds, most often they drifted away passing the village. When the rains failed that season, they knew very well how little food they had left while facing the extremely tough and long 'hungry season', only hoping that the rains the next rainy season would be better.

NOTES

1 Statistics from the ward office.

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