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Farmers in socio-economic diversification in Nyeri Division?

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Never in the history of the coffee market chain have stakeholders remoulded the industry they did after the collapse of the international coffee agreement in 1988. The end of the quota system which regulated the coffee supply and hence moderated the prices, saw the prices tumbling down from 1.15 US \$ per lb to just below 50 US cents in couple of years. The end of the quota system however was not the only militating factor. There were other factor contributing. With the end of quota unlatched the hitherto controlled chain, allowing countries to off-road their stocks into the market. In short time, Brazil, the world leading producer, improved production and developed more land in the areas less prone to frost, meaning more coffee into the market. At the same time, new producers emerged as key players: Vietnam for example increased hers coffee output four times within ten years. With unregulated market and so much often poor quality coffee, the industry remained depressed for a long time. What strategies did stakeholder take along the chain? This is a question that has not been carefully considered.

This chapter outlines the efforts by stakeholders in diversification in the coffee chain. We shall concentrate mainly at the production level. In this rung, producers largely shifted to other crops that could earn them some money after the collapse of the coffee industry. This is referred to as horizontal diversification, as compared to vertical diversification, where value is added in a product. While growing other crops than coffee in Kenya is an established practice, farmers widespread commercial production of alternative crops was inexistent before the crisis. Even subsistence farming was slowly but surely being threatened by coffee farming in the mid 1970s and early 1980s owing

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to strong coffee prices. The coffee farmers had to increasingly import food from other regions, notably from the Rift Valley. Real opportunities existed in horizontal diversification after the coffee crisis. Dorsey (1999, p. 19) points out that in central Kenya, the smaller the land, the more diversification there seemed to be. Citing Netting's (1993) study in Nigeria, Dorsey notes that diversification is the main strategy for combining higher production per unit area, with risk reduction and sustainability among the Kofya smallholdings (Netting, 1993).

Diversified production provides smallholders with opportunity to select a particular crop for commercial production for example French beans, cabbage or tomatoes (Dorsey, 1999). However, farmers seeking to market other products also faced the same trade barriers in the consumer markets in the North. Like value added coffee, processed or semi processed horticultural products would a 9 % tariff in the European Common (EC) market.

Theories of agricultural diversification and induced innovation have yet to be fully developed. Most studies on diversification have focused on population increase, land and availability of labour as dependent variables. These theories are mainly concerned with the food production for subsistence although some deal with the general question of agrarian change. The population pressure theory remains the most well known paradigm in explaining agricultural diversification (see Boserup, 1981; Chayanov, 1966). Some studies have rightly stated that agricultural development process is extremely complex, a process that is influenced not only by population density and resource availability but also by behavioural factors and economic opportunities (Tiffen, Mortimore, & Gichuki, 1994). Farmers will diversify in response to the prevailing market demands, in an effort to maximise profit. This view participates in the market demand theory (Wolgin, 1975; Alam, 1975; Anderson, 1989). In the recent past, diversification has been more inspired by emerging need like the urgency to protect the environment, with the ambit of sustainable development. This effort may be constrained by producers' aversion to risks. We are interested here with the 'economic opportunities' that invite farmers to diversify. The situation after the coffee crisis forced farmers to seek out new economic opportunities unrelated to coffee farming.

I – Farmers in diversification: a social-economic overview

All farms in Nyeri are diversified. On average, a farm has about five productions. The strategy is to spread risks as much as possible. We sought to enquire about the major hindrances towards horizontal diversification and the responses were as follows. Even before asking farmers exactly what they grew

as alternative to coffee most of them began by enumerating their problems in this direction. Land, capital, water, access to the market were highlighted as the important difficulties in the efforts to forge new strategies and alternatives to coffee. Success or failure of the post coffee economy will depend on how the farmers will solve these problems.

However, as it is pointed out above, the situation is multifarious even at the village level. That is perhaps why in the table above, the percentage of responses on water in Mathira was higher than for example in Mukurweini, despite the presence of a small scale irrigation scheme or springs in two of the main area studied. In any case, the demand for water has always been high in Nyeri and far exceeding the available supply. As a resource, water may have become even much more strained after the fall of the coffee economy as farmers tried intensification through irrigation. Other than water, another variable influencing diversification was access to market. Proximity to a selling point was definitely an influencer to diversification.

Eight percent of those who practised market gardening (kales, cabbages, tomatoes) sold to neighbours (who buy directly at the farm). Twenty five percent took their produces at the nearest market places while 6% transported to markets far from their farms. 'Far from the farm' was indicated upon the means of transport; if the farmer used mechanised transport, then the target market was indicated as far. Fifteen percent distributed the diversified products to different markets. In Mathira, the importance of the Karatina market was marked by the fact that 13% said they sold their products there. The rest, 28%, were those who did not have anything to sell. Each region seemed to have its own 'vortex' market point, linked to numerous smaller *thokos*, markets places. Again, women were dominant in these places.

We asked how diversification is done: 59% of respondents in Mukurweini said they inter-cropped with coffee; 39% said they practised it in a separate part of the farm. Only 1% in Mukurweini said they practised both in the coffee farm and in a different part of the farm. This could indicate the falling value of coffee in the area. However since main diversified crop was macadamia, it probably had no effect on coffee quality since from agronomic point of view the nut crop does not affect coffee. In Tetu, 10% said they inter-cropped with coffee while 87% said they grew other produces elsewhere while 3% said they did it in both. Societies were increasingly applying rules that prohibited inter-cropping and this could explain why 87% in Tetu said they did not inter-crop with coffee. Of course farmers may not have been very open about inter-cropping. Unlike in the past when legal sanctions (often with imprisonment) strictly prohibited inter-cropping, many farmers seemed to be deviant. In Othaya, 92% said they inter-cropped diversified crops with coffee. This

probably is an indicator of the consistent poor prices in the region or most probably a result of it. Only 4% said they did not inter-crop, while the rest did not diversify at all. Inter-cropping was 43% in whole of Mathira. This can only be said mostly of farmers from the Ihwagi (Mathira) sample. For growers belonging to the Baricho Society, specialisation on coffee excluded inter-cropping although there were still signs of around Gaturiri area. This is can be attributed to favourable prices in the 1990s for farmers in this society. Almost like in Tetu, a large number (82%) in Baricho said they did not inter-crop while the rest said they both inter-cropped and separated other crops from coffee.

We related this to the strategy of migration. Did farmers diversify in their own land Nyeri, or in the White Highlands? Did they hire land? In other words what is current process of diversification in regard to land? As it has been indicated above, the average acreage in Nyeri was 1.5 ha at the time of the study. Only a third of this was utilised for subsistence food production. Land was often cited as a handicap towards diversification. Despite the rising pressure on land, land hire was not as common as had been thought although women responses were markedly different from men’s *vis-a-vis* this question. However, most respondents indicated that they grew ‘diversified crops’ in their own traditional land in Nyeri. The following table describes the responses on where the producer diversified in regard to land.

The table needs further comment. The fact that most people interviewed grew diversified crops in their own farms could mean that the actual subsistence requirements did not inhibit horizontal diversification in Nyeri. The level of diversification was still too low and its needs (at the time of writing) were readily met in the available land. The reason given by the majority of respondent of those who hired land in Nyeri (as opposed to elsewhere like in the White Highlands) was mostly to augment subsistence food production rather than for increasing family income. We can describe the people who hire land in the region studied in two main categories. First, the majority was the traditionally landless and who still lived in squatter villages created in colonial times. These hired land for all production, including coffee growing for those who still had hope on the crop.

The second group seemed to be those who had land (on average 1.5 acre²) but still did not have enough land satisfy the food needs of the family. In this group are likely to be young families: parents with three to four dependants. Land was hired from those who had relatively more land than there subsistence needs. There were also people who had migrated to the former White

2. 1 acre = 0,20 ha

Highlands or people whose children have already moved out the homestead into employment or enterprise in towns. Land was hired at around 2 000 Kenya shillings (Ksh) par year (about 20 € (Euros) at the time of writing). Where land is very scarce like around Igwagi in Mathira, farmers augmented food production by cultivating forest land in the nearby Mt. Kenya forest.

As Dorsey (1999) says about diversification the size of the farm did not seem to affect diversification. This can be confirmed from the field. People who diversified after the coffee crisis seemed to be those who had less land. This is the case in Mathira's Igwagi region where along the small scale irrigation scheme peasants had on average quarter acre. It could be of course that perennial water supply had intensified land demand along the river as well as retaining young people in the area, discouraging migration into towns. This could only mean further subdivision of land into small plots. This can be generalized as the situation in the whole district. On the other hand, it could be that people with more land other hand little incentive to intensify, their basic foods needs already met, if only that people diversified for subsistence need. There are other factors. More land in this region could also imply that the family was rich and most likely the children had been well educated, had left the village and there was no one to exploit the land, children having been socialized to think away from land.

The problems facing the farmers were real. Outright, these impediments were 'inherited' from the coffee society and represented what we may call the 'curse' of the small scale producers. Some farmers seemed to have come up solutions like building reservoir for harvesting rain water. However, we have just looked at the horizontal dimension i.e. diversification within the farm.

II – Horizontal diversification: towards pluri- and fruti-culture

There was evidence of practical attempts at diversification. As a strategy, diversifying horizontally varied from region to region. It is important to state from the onset that the great percentage of farmers practised what we may call *pluri-culture*, i.e. getting some income from as diverse on farm sources as possible. In this way, this way the farmers spread the risks at the farm level. The commonest diversified crop in the study area were vegetables, macadamia nuts, and tomatoes records the produces registered as diversified as well at their geographical spread. The question stressed on the produces meant for selling to boost the family income in Nyeri.

Figure 1. – *Nyeri district in Kenya.*

Diversification is a localized strategy. From the field, it emerged that the two major factors influencing diversification towards horticulture and general market gardening were water and initial capital. Obviously, farmers within the same village may follow different diversification projectiles. Those near rivers or springs and dams may produce horticultural products (legumes, mainly tomatoes, cabbage and kales). Those on the hilltops or places far from water sources may rely on milk production or macadamia. Indeed we can infer that the spread of nut farming in Upper Tetu and parts of Mukurweini is partly due to fewer of water resources which would have given the producers other alternatives. This is so in the areas around Giakanja, Wamagana and in Lower Tetu. In the 'other', the most notable response for income generating produce was fruits. Passion fruit production was rising in Upper Othaya and Mukurweini. It can be surmised the most important crop in terms of economic hope was the macadamia. However, most farms had over three diversified crops two of which were commercial or could be sold. In descending order of importance, the following table describes the value given to different activities in horizontal diversification in terms of what the farmer thought 'was most important' financially. Coffee is included for comparison.

Milk
Coffee
Macadamia
Horticulture
Other

Some regions seemed to have more diversified farms than others. We can infer various reasons why Mathira and Othaya areas for example seemed to lead in of market gardening. The most important is the presence in this area of large regional grain and vegetable markets, Karatina and Kiria-aini respectively. Seventy percent of farmers in the Mathira sample said these markets places were important openings for their produces. However the major concern was that most of the profit was taken by middlemen. In addition, some areas in the Upper Mathara like Igwagi had an efficient small scale irrigation scheme running from river Ragati. Land is scarce here. The average acreage is 0.7 compared to 2 acres in other areas. Being of high altitude, coffee competes with tea for space, but tea and horticultural production seemed to take an upper hand economically. Coffee was introduced in this area around 1968, ten years after other divisions in the district and the farmers always ranked it third after tea and horticulture. From this, it is not surprising that Ihwagi coffee farmers were some of the poorest paid in the district. To reduce costs, farmers in this sample had resolved that the factory should not advance them inputs for coffee. Naturally, this had affected quality and production, further diminishing their income. Perhaps this was implicitly a manoeuvre by farmers: undermine coffee production and allow more time and space to concentrate on horticultural production. The factory coffee delivery in 2005 was about 300 000 kg, which means the factory was barely profitable. According to the ministry of cooperative and marketing, a factory needed about 500 000 kg to break even.

Yet here we have some of the richest small scale post-coffee farmers. Producers interviewed said that on average, horticultural or what they described as ‘three months produces’ (mainly kales and cabbages) could earn up to ten times more than coffee. On average, a quarter hectare of cabbage could earn 60 000-90 000 Ksh (about 700-1 000 €) net after four months in an area where coffee pay averaged at about 7 000 Ksh (about 90 €) at the time of the study. Since this was the transition time it was observed that farmers experimented with many more ideas. In this place, we found passion fruits, parsley, pepper and cucumber.

III – Signs of radical disengagement from coffee

In the fifteen years following the coffee crisis, there were emerging signs of radical shift from coffee farming. In the following pages, we analyse the key on farm products diversification activities in the district of Nyeri.

1 – The case of dairy farming

Dairy farming was emerging as an important horizontal specialisation in the district the most diversification was. Although dairy farming was always an important economic exercise in this area before the coffee crisis, it became the most important on farm earner after the fall of the coffee prices. Dairy farming in Mukurweini was emerging as a more serious exploitation than in other the regions. The milk industry is comparatively much more developed in this sub-region. The organisation of dairy farming in other areas was weak or non-existent.

We found Wakurima dairy in Mukurweini as the ideal post coffee effort in reorganisation of collective production. This enterprise was modern and professionally run. Average milk production in this area had risen by over five times, from 4 000 to about 20 000 litres between 2002 and 2005, thanks to the installation of a cooling facility. With over ten thousand members, and a gross income of 12 million Ksh (13 000 €), it was at the time of the study the most self sustaining community based income generating project. Eighty percent of this money went to farmers, which amounted to between 2000-3000 Ksh per month. This may appear modest. However, comparatively, it was three to four times per head in coffee income in 2005-2006. An important benefit in this dairy was that peasants had access to ready credit facilities. These loans were used mainly for development and to pay school fees. Most coffee societies stopped giving credit (other than in form of fertiliser) after the crash. The Mukurweini dairy represented the ideal of the post coffee society: agribusinesses run professionally by farmers.

After the coffee crisis, dairy farming became an important choice for diversification in the four regions. This was a natural consequence, I should add. As has been explained in part one, livestock farming was always part and parcel of this community. At the time of this study, 90% of farmers in the region had on average one cow which provided milk for selling and for domestic needs. When coffee was the main source of income, milk was largely meant for domestic consumption. After the fall of coffee prices, many families started relying on milk for extra income. Though this income (about 2 000 Ksh par month) may seem meagre, it nevertheless formed an important contribution to family income much more than coffee.

An indicator of the rapidly growing dairy industry in the district was the increased number of dairy product operators compared to the time before the crash of the coffee industry. The following private enterprises collected milk in the study area in 2005; Shama, Mwitha and Brookside dairies. The government had also refurbished the public owned Kenya Cooperative Creameries, raising hope for a more reliable market for milk. However, the quintessential effort towards the exploitation of the local dairy industry was the Wakulima project, the community programme in Mukurwe-ini described above.

Nyeri is climatically conducive for dairy farming. But as has already been pointed out above, land shrunk rapidly in thirty years, consequently reducing pastures and fodder production. More and more families shifted to 'zero grazing' which greatly favoured women because they did not have to drive the cows into the pastures, a practice traditionally done by men. Women could maintain a cow through zero grazing as part of their domestic routine, which further reinforced women increased domination of farm earnings. Although statistics are scanty, there was evident of raised milk production through zero grazing.

However, the emerging role of the dairy farming also heightened conjugal tensions. Asked who owns family cow, husband or wife (in terms of feeding and controlling the money from milk), 90% of women respondents said it was the wife. However, this was always the general social representation since the 1970s when men left dairy farming to women in favour of off-farm sources of income. Any attempt by men to control dairy farming and income would be subtly resisted. Where men managed to get the control of the milk trade, they soon would find themselves unable to sustain its production. Women had long mastered the details of dairy farming including marketing of the milk and what it takes to get the maximum from an animal.

Indeed lines at the milk collection points and the offices at the Wakulima dairy showed strong by participation women. Over 40% of the members of this enterprise were women. In Nyeri small scale farmers owned an average of one grade cow producing about four litres a day. Most of it was sold at between 15 to 20 Ksh per litre. This translated to about Ksh 100 par day, 36 000 a year compared to about 7 000 a year from coffee at the time of compiling these data. This may indicate why a grade cow had increasingly become an essential asset in the household, as well as a potential source of gendered conflict after the coffee economy. A mature dairy cow cost about Ksh 20 000, making it the easiest asset to dispose off in case of emergency. Further as we shall see under women and their strategies, there emerged a significant symbiosis between coffee and dairy farming. Men held firmly on coffee, but the cost of inputs was prohibitive leading them to rely more on compost manure. '*kahua nyina ni ngombe*- the mother of coffee is the cow' was the expression used by

a farmer to express this 'symbiosis' which could further explain why men did not generally want to take over the dairy from women.

However, it is noted that the dairy farming is ranked second after coffee as source money even in Mukurweini. This should not be surprising since the study was conducted during the transition from the coffee economy. Farmers were therefore still strongly attached to the catch crop. In some of the responses, it was evident that the monetary value attached to coffee was largely a carryover from the past and not necessarily on the actual financial benefits, a sign of the deeply looted identity woven around coffee since its introduction in mid 20th century.

2 – The case of *miraa* (khat)

Perhaps the most surprising new crop was khat (*miraa*). Commonly grown and used in East and the Horn of Africa, it is used mostly by people of Somali and Arabic origin. The existence of *miraa* as a commercial crop is another important novelty in Nyeri. This crop is classified as a mild stimulant, which if consumed in large quantities may have hallucinogenic effect. Nyeri was not noted for its production and hence our interest in highlighting it.

In the 1990s, it was slowly infused into popular youth culture in Kenya, mainly through the *matatu* (private public transport vehicles) sub-culture. For these reasons, it carries a negative moral label. In Kenya, its production is associated with Meru district which neighbours Nyeri and where in some parts its signification is what coffee was in Nyeri before the crisis. On the Nyambene hills, a cultural identity has evolved around the crop over the centuries. However like other commodities, its economic benefits and social representation is urban and elitist. *Miraa*, like coffee, is a cash crop whose local consumption is limited but which has critical social and economic significance to thousands of people in a chain that spans mainly between Meru, Somalia and the Middle East. Trade in khat is estimated to be worth 4 to 5 billion Ksh and this make it a crucial crop to both the government and farmers in Eastern province. Though not entirely new in Nyeri district, its commercialisation in the region was unknown until this study led to its *mediatisation*.

In the study, we came across four commercial *miraa* growers in Nyeri. The most important producer was Peter Mambo in the Kihuyo (Tetu) sample. In the 1990s Mr. Mambo worked in Nyambene District where *miraa* is what coffee was in Nyeri in the 1970s. He would bring home some *miraa* shoots which he would inter-crop with coffee. By the time of the study, he had 300 khat trees, 'for each coffee bush, I planted one khat tree,' he said.

Photo 1 – The case of miraa, indicator of radical disengagement.

(Source: P. Mbataru)

The most significant dimension of this crop is obviously the economic value it brought to the farmer compared to coffee. The farmer was able to educate his children through secondary school. 'I am one of the few parents without school balance' he affirmed. 'I have taken one of my daughters to a college and I am paying using miraa money,' he said.

On average, he could earn about 12 000 Ksh (120 €) per month from the crop, a far cry from the 2 000 (20 €) he hoped to get from coffee in the same period. To supplement his income, the farmer sold cigarettes coffee and sweets to the clients. These he said, are very popular with *miraa* chewers.

Mr Mambo had already learnt biological pest control by burning Mexican marigold. The smoke kept off the insects that destroyed young *miraa* shoots, the most valuable ones. In addition, the farmer had learnt that the smoke also kept away mosquitoes, an added advantage. This is important because he lived near a dam and a bushy land. He had also learnt to use banana leaves to

keep *miraa* harvested shoots fresh. Curious in the farm was *mahindu*, almost extinct banana specie. According to Mambo, the leaves of *mahindu* added a 'sweet flavour' to *miraa* twigs. Other learning this 'notable' had acquired was the grading of the twigs into the following grades: *giza*, *kangeta*, and as well as different types of khat trees: *asili* and *lawe*. The *asili* type was said to be the best in taste. Importantly, he said that the *miraa* shrub also acted as shade tree in the coffee farm, implying a mutual benefit that is more economical than with other shade trees. According to the local agricultural officer, the shrub had no apparent effect on coffee so long as its foliage was controlled to avoid over shading the coffee bushes. This was indeed important because *arabica* coffee bushes are very sensitive and only specific shading trees were recommended. The economic dimension of shade trees in coffee farms was limited to firewood or fencing. The introduction of commercialised shade trees would be of an enormous advantage to the farmer. For our problematic, learning is again confirmed. One would say that the new society has to reinvent itself which necessarily involves new know-how.

Mambo's clients were mostly workers in the nearby Sasini coffee plantations. The farms employed a large number of *miraa* chewing people, mainly the Boran, Samburu and Meru people. Some students of the nearby Kimathi Institute of Technology as well as business people from Nyeri town regularly came to buy twigs from him. The farmer said he had a number of Asian clients.

What was the reaction of his wife? Mr Mambo said that she was initially hostile to the idea. Attached to coffee much more than the husband, Mrs Mambo had opposed the inter-cropping of *miraa* with coffee. This is interesting because many women interviewed in the field had little attachment to coffee other than just a part of the many domestic labour tasks. The typical response from women regarding coffee was: *ni mti wa arume* (it is men's crop). We can say that although this is an isolated case of 'feminine' attachment to the crop, some women had 'acquired' coffee from men long before the crisis. This could likely be the case in families where men had concentrated in off-farm economic activities much before the crisis, leaving women to manage all on-farm activities. Mr. Mambo worked for long as farm hand in Nyambene, 200 km away from home. Indeed his wife confirmed this by saying that she had brought up the children 'alone with little coffee money' before we grew *miraa* in our firm".

However Mambo insisted on inter-cropping the cuttings with coffee, which she reluctantly accepted. She later became even more supportive to the new cash crop when it turned out to be more beneficial financially than coffee. The couple claimed that the coffee trees themselves had benefited more from the

miraa crop in form shade and even much more by the mulching and application manure that was required to keep khat productive and 'flesh'. The most important thing to note here is the inter-cropping *miraa* into the coffee farm. Other than the fact that the new crop is alien to the region, at least in the commercial sense, the very fact of inter-cropping it with the coffee is radical: other than a few selected trees for shading, it was almost regarded as sacrilegious to inter-crop perennial crops in the coffee farm.

Significant also is how this crop introduced in the area in 1998, had spread in the area. As an idea, it spread rapidly in the area, once the people learnt its benefits. Mambo's farm acted as the nuclear farm. The *notable* said there were about 10 people in the area who had plant the crop, all of it from his farm. The first to do so were his brothers and uncles which may suggests that the first stop in the spread of new ideas in peasant societies may be relatives and friends. Perhaps wanting to downplay the spread of the crop in his area, the area chief said he had only two. However, Mambo said he had sold to the chief himself five *miraa* shoots to plant. His immediate neighbours had already planted the crop.

Nevertheless, this *notable* had not placed all his eggs in one basket. There were marked efforts in his farm to spread risks over several produces; other than coffee and *miraa*, the farmer also grew horticultural crops like cabbage and kales. In a small portion of the farm, he had a small 'green house' where he grew seedlings for indigenous and exotic trees. His efforts at intensification and pluri-cultivation were aided by the presence of a spring and a dam in the farm. He also earned extra money as a carpenter. In all this is an excellent case of how farmers could specialise in diversification, and innovate at the same time. This is a common strategy in Nyeri after the fall of coffee.

3 – The case of vanilla

In terms of novelty, vanilla was the most important introduction. However, less than 5 % of respondents said they had heard about the plant. At the time of writing, there were about ten farmers who had introduced the product in Nyeri. However, the benefits of the new crop were far from being realised. Often, many innovative ideas are introduced in times of need and desperation may magnify the perceived benefits of the new idea. Vanilla makes a good example of this. At the time its introduction in Nyeri in 2004, vanilla farmers in Uganda had already abandoned the crop mainly due to the drastic fall in prices. In the 1990s, Ugandan producers were reported to earn about 70 € par kilogram of good vanilla. Much later, this 'good news' was picked up by Kenyan farmers who desperate for new sources of income after the fall of the coffee prices.

It was obvious that farmer in Nyeri had little information about the crop. This is natural in desperate conditions in a transition. However, due to climatic reasons, successful introduction of this crop was doubted right from the beginning. According to agricultural officers in Nyeri, vanilla is a difficult crop to grow even in the best of conditions. The most important problem with this innovation was that the climate in Nyeri was too cold for the crop. It required high rainfall and humid conditions like those in the tropical rain forests of the Congo and Uganda. Agronomist observed that its introduction would probably be more successful in some parts of the Kenyan coast, where conditions were more appropriate. There were other aspects of the crop that the farmers did not seem to have learnt before its introduction. According to an agricultural officer quoted in the media, vanilla was a difficult crop to cultivate. The new plant is incapable of cross or self-pollination and the producers have to do it manually. Secondly, farmers did not seem to be aware of the strict technicalities of curing and treating its grains. In addition, the maturity cycle of this crop could take longer than new coffee plants to mature before the first harvest (Mwangi, 2007, p. 4).

There were also the issues related to the uncertainties of the markets. Nevertheless, farmers who had introduced the crop knew that it required a lot moisture and shade and therefore had made measurable efforts to provide these conditions. Most of vanilla was under banana shade. But, out of the seven farmers seen, five said half of their initial crop had already dried up. We note that the farmers in Othaya had formed a group to facilitate the introduction, production and marketing of the new crop, indicating early effort at collective solutions to local problems.

The introduction of vanilla is also another good case study of how innovation diffuses. As a new idea its source was traceable to Uganda. Respondents talked of various vectors or notables. In Othaya, planters explained that a group of local government politicians who, on tour to Uganda 'discovered' vanilla. They brought the vines and sold them to farmers in Nyeri at 200 Ksh (2 €) a piece. The idea spread quickly, due to the strong demand, more vines had to be ordered by an organisation that was formed *ad hoc* in Othaya to purposely to valorise the new crop in the region. This group claimed that it had even made contact with potential buyers abroad through the internet. In Mukurweini area, a Kenyan student in Uganda, a son of a local leader (chief) bought back some vanilla vines to his father and sold some to neighbours. Some of these vines could be traced 20 km away.

Like the introduction of apples described below, we note two initial characteristics of the innovation: the high commercialisation of it diffusion. This seems to be the case with new crops introduced in the area as we shall

see with the avocado. It was also noted with the introduction of a variety of sweet potato vines that sold at 20 Ksh a piece. It is interesting that notables are mostly civic leaders. It is unlikely that members of parliaments would have come back with vanilla vines. Councillors were closer to people. Innovations are mostly diffused by community leaders. In this, we discern their role of the leader in extending the productive horizons of the people they represent. Often this is not for charity. People are expected to view the leaders positively: caring and mindful and worth of voting for in the next elections.

We can conclude that in the horizontal diversification the farmer seemed to define the new society by innovating. Most of the new ideas diffused from neighbour to neighbour. Albeit weak, the introduction of vanilla is symbolic of the desperation of the farmers to look for other sources of money. Innovation should be an important property of the new society.

4 – The case of fruits

Although fruit production is common in Nyeri, commercial production was rare until the coffee crisis. In the transition period, farmers were forced to experiment and innovate on various products. We analyse some of the new and promising alternative fruit crops that may form part of the post coffee economy.

a – Apples

The case of Ndirangu apples is worth mentioning because it represents the innovative character of the post coffee society. Attempts to grow apples in the Kenyan highlands had been unsuccessful and most of the fruits sold in the country were imported from South Africa. Media reports that a farmer in Nyeri had grafted two species of apples to produce a fruit adapted to the local conditions yet producing high quality fruits attracted both researchers and buyers eager to find an alternative source that could defray importation costs.

We note here one characteristic on innovation in crisis: the commercialisation of ideas at the early stages of introduction. At the time of writing, the farmer sold seedlings at 1 000 Ksh (10 €) each, a prize few local people could afford. With the media publicity, he was able to get richer clients from around the country. However, other farmers who we may call ‘secondary innovators’ were able to replicate the grafting techniques and sell the seedlings as low as 150 Ksh (1.50 €), making faster to diffuse the innovation. Later, farmers interested with the fruit could get seedlings from the Nyeri King’ongo prison where grafted seedlings at 100 Ksh (1 €) each. Statistics at the prison showed increased sales of grafted apples in the last five years. The adoption of the idea by an institutional actor meant that the idea would diffuse even more as prices fell.

The most important point of innovation about Ndirangu apples was the grafting to produce a hybrid variety. The producer however did not wish not explain how he had developed his technique, something normal with originators, mainly because they waited to recoup their initial investment costs. He produced only the golden type. We also note the rapid spreading of grafting techniques among fruit growers in the region. In three years since the media report, the idea had spread throughout the district. There were in average four grafters in each of the four sub-regions during the study. New apple farmers had learnt new ways of pest control. The most common pest was the weaver bird. A farmer said that since his apples matured, the fruit were threatened by rare birds some of which he said he only used to see in his childhood in the 1940s. Farmers used the same method of pest control used by passion fruit producers described below, i.e. by inter-cropping the fruits with sorghum or finger millet. According to farmers birds were more attracted to sorghum than the fruits. A more expensive way was to cover the whole plant with nylon net so that birds would not reach the fruits. It was too early to access the detailed skills farmers would have to learn for successful production of the new crop such as special pruning techniques required for good fruit production.

Farmers were obviously motivated by the high prices of the apple in the then market. At Ksh 20 (0.20 €) a piece, the fruit was one of the most expensive in the market. Like grapes, it carried an elitist social representation; a produce for the rich and snobs. A young farmer described apples in Swahili as '*ile matunda ya wakumbwa*: the fruit for the rich'. It was hoped that prices would fall with increase of local production. It was also envisaged that apple farmers in Kenya would take advantage of importation cost from South African producers. Kenyan Farmers could undercut the South Africans and create a competitive niche market in the region or in the Middle East.

b – Avocado and passion fruits

In terms of potential, few innovations in the post-coffee economy can be compared with introduction of the avocado fruit. As an idea, this fruit was introduced in Nyeri in the 1960s and spread rapidly in the 1980s. However, commercial production did not pick up in Nyeri until the 1990s.

The avocado was significantly promoted in the 1980s by skin-care product companies under pressure from rising health concerns about traditional skin-care products and hence a campaign for natural alternatives to chemical skin gels and shampoos. In general, the 1990s saw rising health food consciousness and anti-cholesterol campaigns. The fruit was promoted as natural alternative to the so called 'saturated fats'. All this saw a sharp demand for avocado products in the developed countries and around the world among urban middle

class and the educated youth. The most important point for the farmer was the rapid rise in prices, both locally and internationally.

The fruit was much sought after by middle men. At the time of the study, the farm gate price for the fruit was 3 Ksh a piece and the supply could not meet the market demand. An indication of this was the high prices in European supermarkets. A kilogramme of the fruit (about 5 pieces) at France's Auchan supermarket chain in Toulouse cost 5 € in March 2006. At its pick production (at about six years), an avocado tree could earn a farmer, at the time of writing, about 5 000-9 000 Ksh (50 to 90 €) par year. With ten trees, a farmer could get about times the average coffee earnings in 2006. Yet despite all this, why were farmers not planting the fruit in large numbers? One reason could be that the strategies of the farmers were mainly 'survivalist' and naturally short term at that time.

There is no clear line of diffusion of the idea into the area. However for some reasons again not easy to discern during the study, like the passion fruit, commercial production of the avocado seemed to have spread from Muranga into Nyeri, which explain the high number of growers around Chinga Location in Othaya, which borders Muranga district, the same area with the highest concentration of commercial passion fruit growers.

As with apples, the introduction of avocado offered a chance for experimenting and innovation. Evident in the field were avocado improvement techniques, some of which were invented or improved by farmers themselves. There was for example grafting and pest control using the black-jack weed (*Mexican marigold*). The point here is the development, the spread and the acceptance of new avocado varieties. Again, as with some of other new products discussed above, the most important learning coming with the avocado was grafting traditional fruits with new varieties. This experimentation was becoming very common in the areas studied and can generalised in the whole district. There was sharp differentiation of the product. The *Hass* variety of the fruit was the latest introduction and was in great demand at the time of writing. It was said to be of low fat content and stayed ripe longer than the traditional variety. Other new learning noted was spacing and fertilizing the trees with farm manure. Some farmers had emerged as specialists in grafting and their farms becoming models and the nuclear from which new ideas spread. Farmer, John Murigi is a good example. He had a *Hass* avocados initiative around Nyeri and beyond at the time of the study. The novelty with Murigi's diversification is that he followed up the new producers by planting the seedlings himself and supervising the watering and fertiliser application until the plants were strong enough. At the time of the study, Murigi had at least 400 farmers in Nyeri. He said that he intended to unite them into

a marketing organisation once production increased. The farmer specialized in seedlings. In many respects both Mr. Murigi and Mambo as we shall in the next chapter with *miraa*, are ready examples of *notables*. Both also were specialised in seedlings, which helped spread the idea. Both had never had a keen interest in coffee. Murigi worked as a junior worker with the government until he was retrenched.

At the individual level, Murigi was able to educate his children through secondary school by selling grafted avocado seedling. Like Mambo with *miraa*, he was one of the very few parents without school fees balance at the local secondary school in a region where on average parents had Ksh 10 000 in unpaid fees. It is interesting to note that Murigi's farm was just a quarter of an acre.

'I intend to uproot all the coffee that I have. You see land is small. Only 3 quarter acre. I will either uproot or try to get another farm in Kieni near a river to continue with seedlings...' he said.

This could indicate that younger generation could take a radical departure from coffee, if they are assured of new sources of income. Notable here is the affirmation of Dorsey's (1999) finding in Kirinyaga that land size was not an important variable in diversification and intensification.

Under 'others', 60% of the farmers interviewed said they were considering growing passion fruits. This was indicated in the 'streaming' conversions with respondents. The high number of indication on passion fruits made it worthwhile to analyse it in relation to innovation. Other than the spread of the idea, it was interesting to enquire on the acquisition and diffusion of new knowledge since its introduction. There were four commercialised production of the fruit at the Giathugu sample in Othaya and each grower could name at least another fruit grower in the same area. For some unclear reasons at that time, the fruit seemed to have spread from the neighbouring district of Muranga. They had been inspired by successful farming across a river that formed the boundary between the two districts. In particular, the path of diffusion traced the idea of growing the fruit to the *Mbari ya Mboce* (Mboce clan) passion fruit project, a family based enterprise.

The *Mbari ya Mboce*'s case represent a good example of positive adaptation to economic changes. Several things are notable here: the use of traditional structure (clan) to establish a commercial enterprise, something rare in the region; there several innovation and learning. The farmers had learnt methods of grafting and bird control by planting millets between the fruits. There was also mutual institutional learning: the Horticultural Development Authority (HDA) had learnt that the area is also ideal for the production of

legumes. Importantly, members of the group thought that they had finally found a replacement to coffee. In 2004, each member earned about 15 000 Ksh (150 €) per month from the fruits compared to 7 000 from coffee for the whole year.

One point should be notable in these case studies: the ideas were introduced by men. This may indicate that men actively searched for a ‘masculine’ crop to replace coffee. Women on the other had concentrated in commercialisation of traditional crops. There are of course many innovations by women and which shall be discussed in the chapter on women strategies. The most important problem with these new products is the stability of the market. As pointed above with vanilla, prices of any new produce will definitely be subject to the forces of demand and supply. It is important therefore that Murigi’s plan of forming an organisation of avocado producers is plausible.

In conclusion, the notable increase of interest in these products demonstrates the search for an alternative economy in Nyeri. These efforts are in themselves confirmation that farmers were looking for other crops to replace coffee. We may call these efforts ‘desperate’ because they represented the attempts of a drowning person to save his life. On the other side, they are emblematic of a rare resilience among small scale producers. The avocado and passion are not new products in Nyeri but represent ‘recomposed’ knowledge; farmers turning formerly ‘idle’ crops into cash crops. However, this chapter has only dwelt with diversification in the farm; there is also the vertical angle of it *i.e.* diversifying the product within a particular chain.

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Résumé

Diversification agricole post-caféière dans la région de Nyeri, Kenya

La diversification est l'un des choix dans les activités commerciales. Face aux difficultés financières, on tente de diversifier. Dans les filières agro-alimentaires, la diversification se différencie selon le niveau de la filière : proche des consommateurs, les stratégies des acteurs sont plus spécifiques et rapides que celles des producteurs. Ces deniers réagissent lentement parce qu'ils manquent des ressources financières pour s'ajuster aux besoins du marché et ils diminuent les risques de production par la diversification vers d'autres produits.

MOTS-CLÉS : Kenya, Nyeri, diversification, café, crise, producteur agricole, fruits, laiterie, économie post-caféière.

Abstract

In the face of commercial challenges, diversification in any business is a natural reaction. Rapid mutation of a market chain calls for rapid responses by stakeholders. In an agro-chain, diversification depends with the level of the chain. The end nearer to the consumers tend to be more specific, stressing on value addition accompanied by attendant marketing activities differentiation, positioning, labelling, branding etc. This is vertical diversification. Established enterprises are able to respond quickly in to safeguard their market after a crisis in the chain. At the production level, producers may not have the wherewithal to adapt quickly to the market needs and will lower the risks by diversifying horizontally: introducing other 'economic' crops within the cash crop. It takes much more time to re-establish the chain.

KEYWORDS : Kenya, Nyeri District, diversification, coffee, crisis, producers, fruits, dairy, post coffee economy.