

Smallholder access to the export market

The case of vegetables in Kenya

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Abstract: Vegetable export production is a major source of income and contributes to the alleviation of poverty in Kenya. However, emerging production standards pose a challenge to continued smallholder involvement. This paper assesses the number of smallholders in export vegetable production in Kenya, their link to the export market and their EurepGAP certification status. In the latter half of 2005, about 11,100 smallholders produced export vegetables in nine districts of Kenya involving about 350 certified smallholders. French beans were the major crop; more smallholders were linked to the export market by middlemen and flexible arrangements than by an export company. In addition to other factors, the export sector can serve as a role model for the domestic sector with respect to production standards.

Keywords: vegetable production; export sector; smallholders; EurepGAP; Kenya

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The horticulture sector and current challenges

In Kenya, many smallholders produce horticultural crops, ie fruits, vegetables and flowers, for both the domestic and export markets. (A recent review of the opportunities and constraints for the vegetable subsector is provided by Lenné *et al*, 2005.) Horticultural crops are high-value crops with relatively high returns per hectare. They constitute one of the major sources of foreign exchange in Kenya (Figure 1).

Export production contributes directly and indirectly to increases in rural and urban incomes and the alleviation of poverty (McCulloch and Ota, 2002); however, production standards such as the European Retailer Produce Working Group for Good Agricultural Practices (EurepGAP) pose a challenge to the Kenyan export sector. Generally, it is not clear whether

smallholders will be able to comply with emerging standards and will continue to participate in export production (Barrett *et al*, 1999; Dolan and Humphrey, 2000; Farina and Reardon, 2000; Jaffee, 2003; Jensen, 2004; Okello, 2005).

Volumes of vegetables produced for the domestic market – tomatoes, cabbages and kales being the most important crops – far exceed those for the export market, and therefore far more smallholders participate in local than export market production. Most of the produce for the local market is marketed through the informal sector, ie open markets and kiosks, and currently only 5% is sold through supermarkets (Tschirley *et al*, 2004). So far, their production is not governed by production standards and enforcement, eg on maximum residue levels and tests related to food safety issues, is rarely carried out. Within the next few years, retail shares of

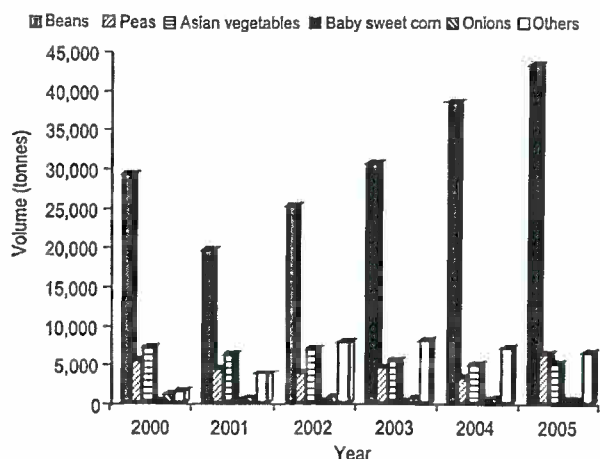


Figure 1. Kenyan vegetable export production by crop and year. Source: Ministry of Agriculture.

supermarkets are expected to increase to 10–20% (Tschirley *et al*, 2004) and concerns are growing over food safety issues with vegetables produced for the local market (Kedera, 2006). Extending the analysis done by Lenné *et al* (2005), the export sector thus can also constitute a role model with respect to food safety policies and structures for their monitoring and enforcement.

Significance of the export sector in terms of smallholder participation

Figures on the number of smallholder export producers in Kenya and also on their share of the market differ depending on the source; often the source of primary data is not cited. This leads to a high level of uncertainty around horticultural statistics, a problem that is widely recognized (see, eg HDC, 2004). Jaffee (2003) – based on exporter interviews – estimates that in 2001/02 about 47% of exported fruits and vegetables (27% and 85% of the volume of export vegetables and fruits respectively) was produced by smallholders. Minot and Ngigi (2003) discussed the range of smallholder involvement in export production based on various studies conducted in the 1990s and early 2000: the lowest estimate was between 13,000 and 16,000 smallholders (Jaffee, 1995); Ebony Consulting International estimated 20,000–50,000 smallholders in French bean production alone, and, based on the survey of Kamau (2000), Minot and Ngigi arrived at a total of 108,000 smallholders in export production.¹ A more recent study estimated that about 200,000 smallholders were growing horticultural crops for the domestic and export markets. Of these, 60% were produced for the domestic market; the remaining 80,000 smallholders produced crops for the export market (Karuga and Masbayi, 2004 – based on data from the Ministry of Agriculture). It was further estimated that, of the 80,000 export farmers, 50,000 produced vegetables whereas 30,000 produced fruits (Karuga, 2004). However, these categories may not be so clear-cut, with farmers producing fruits and vegetables for both the export and domestic markets.

Differences in definitions

Several factors may contribute to the debate on the number of smallholders in the horticultural sector. First, considering the heterogeneous Kenyan conditions, there may be differences between the studies regarding definitions of a smallholder farmer, a horticultural farmer and a small-scale export farmer. These definitions may overlap so that one farmer fits into more than one category. Second, the horticulture sector is very dynamic, which implies that the number of farmers involved fluctuates greatly and that the process has speeded up due to the changing requirements of the export market (maximum residue limits and private standards, eg EurepGAP). Horticultural production also fluctuates between seasons due to changing climatic conditions and varying demand. Third, agricultural and horticultural statistics are scarce and availability varies between individuals and institutions. The latter is probably the most serious constraint for any attempt to assess smallholder participation in the industry.

Some questions and the aim of the study

This survey fulfilled a dual purpose. First, it aimed to shed some light on the numbers of farmers involved in export production in 2005/06 and their linkage to the market. Second, it attempted to establish a sampling frame for an in-depth survey of the economic impact of EurepGAP standards on smallholder production in Kenya, which the International Centre of Insect Physiology and Ecology (ICIPE) initiated in 2005. The article further attempts to provide some answers to questions that were raised in informal discussions with various stakeholders in the horticulture sector when preparing for the study:

- Are middlemen more active than exporters in districts close to Nairobi and are exporters more active than middlemen in districts far away from Nairobi?
- Do farmers linked to middlemen produce different crops from farmers linked to exporters?
- Does the share of EurepGAP-certified producers vary depending on the crop produced?

Approach and definitions applied in assessing smallholder integration in the export market

With support from the district horticultural officers and the frontline extension workers of the Ministry of Agriculture, lists of all smallholders in export vegetable production were compiled at the sub-location level, which is the lowest administrative unit in Kenya, in nine districts of Central and Eastern provinces. Information on one district (Machakos) is incomplete, comprising figures from seven sub-locations of two divisions (Matungulu and Yatta) only.

Characteristics of a smallholder farmer

Harris *et al* (2001) defined small-scale producers as farmers with less than 10 acres of land, with medium-scale and large-scale producers being defined as farmers with between 10 and 20 and more than 20 acres respectively (cited in voor den Dog, 2003). The definition

of a smallholder, ie a small-scale farmer, was discussed in the research preparation workshop held under the 'Economic impact of EurepGAP standards on smallholder production' survey in November 2005 in Kerugoya, Kirinyaga district. The participants, ie district crop officers and frontline extension workers from the above-named nine survey districts, concluded that this definition did not reflect the reality on the ground. They instead defined small-scale horticultural producers as farmers with less than 5 acres of land under horticulture, and farmers with 5 to 10 acres of land and over 10 acres under horticultural production as medium- and large-scale producers respectively. These are the definitions applied throughout the paper.

The export market chain and options for certification

Smallholders were assigned to five categories depending on their link to the export market: groups 1 to 3 were linked to exporters but differed in their EurepGAP certification status. Group 1 comprised EurepGAP-certified farmers; group 2 referred to farmers who had applied for and were on the way to certification; group 3 referred to non-certified farmers;² group 4 were farmers who marketed their produce via middlemen; and group 5 were 'floating' farmers who marketed their crops via differing channels.³

EurepGAP offers four options for certification, although in Kenya only option 1 and 2 certificates had been issued at the time of this study. Under option 1, an individual farmer applies for certification. The farmer must carry out an internal self-inspection based on the EurepGAP checklist and undergo an external inspection by an accredited certification body. Under option 2, a group of farmers applies for a EurepGAP group certificate. The group must establish an internal management and control system, perform individual self-inspections and group internal inspections based on the EurepGAP checklist before undergoing an external verification by an accredited certification body (EurepGAP, 2004).

In this survey, only farmers who intended to plant vegetables for export during the short rains in September/October 2005 were included. In addition to the information on export market linkage, the survey included details of the crops grown by each farmer.

Current level of participation of smallholders in the vegetable export market

Link to the export market

In total, this survey lists 11,132 smallholders in nine districts of Central and Eastern provinces in Kenya who grew vegetable crops for export in 2005. Figure 2 shows the high variation across districts with respect to farmer-export market linkage and status of certification.

Overall, Nyeri had the highest number of export producers, followed by Kirinyaga, Maragua and Meru Central. Nyeri and Kirinyaga have an advantage over Meru Central with respect to market access due to their proximity to Nairobi. However, Meru Central is a major producer in terms of export crop volume due to its favourable agro-climatic conditions (ie more fertile land and higher rainfall) and slightly larger plots allocated by

smallholders to export production. Also, many large-scale farms are located in Meru Central.

The number of smallholders linked to middlemen exceeded that of those linked to an exporter only in Thika and Meru Central. This could be due to the field sizes in Meru and the number of exporter-owned farms in the district. By procuring export produce from smallholders, exporters strive to spread production risk (eg from hailstorms) over various regions in Kenya so as to ensure even supplies throughout the year.

Certification status

Exporters have more resources available to invest in smallholder certification and monitoring of smallholder production than middlemen, who ultimately also deliver the produce to exporters. The number of certified smallholders per district and of those who are in the process of certification can be expected to be a function of the number of exporters active in this district, the volume of horticultural export produce these exporters send to Europe and the scale of exporters' own production, eg via their own large-scale farms. Other factors determining the level of export vegetable production could be the functioning of local markets, alternative cash crops, the presence and role of non-governmental organizations as well as donor support, etc.

Most of the EurepGAP-certified smallholders referred to in this report were certified under option 2, with a few under option 1. Smallholders who are certified under option 1 are organized in schemes – this usually refers to farmers in one region – and are often considered to be farm-workers on their own farm, ie they contribute land and labour but have ceded all decision making in export production to the exporter. Certification of smallholders under option 1 has different implications at farm level from certification under option 2. For example, investments in pesticide storage and grading sheds do not necessarily take place at farm or farmers' group level, but more likely at scheme level. Schemes may vary in size, but cover a higher number of smallholders than farmer groups certified under option 2, and the exporter normally manages the schemes.

Various informal discussions with staff members in export companies revealed that both options vary in their implications, especially with respect to a feeling of ownership of the standards by the farmers; option 2 farmers seem to be more knowledgeable and dedicated to embracing the standards than option 1 smallholders. From an exporter's perspective, both options have their advantages and disadvantages. Option 2 seems to result in more reliable partners, but requires intensive training as well as backstopping; whereas option 1 results in a one-stop shop: a larger group of farmers producing higher volume per group. Under option 1, more of the crop management is organized and carried out by exporter staff. According to informal interviews and meetings with staff members of several of the biggest exporters between 2005 and 2006, the strategy chosen varies from exporter to exporter, depending on the target market and on their experiences and preferences. Also, the operative standards to be adhered to by the exporters vary between buyers and the market (segment) they supply to (Jaffee and Masakure, 2005). Thus the

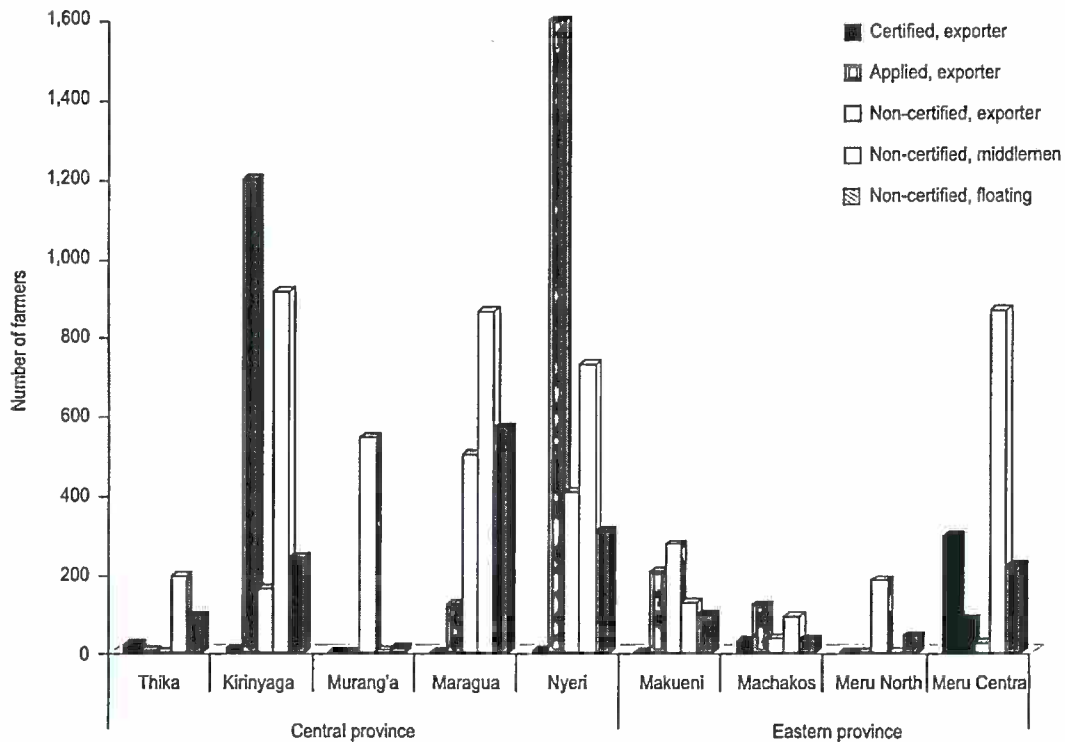


Figure 2. Level of smallholder EurepGAP certification and linkage to the export market across districts in Eastern and Central provinces, Kenya.
 Note: Smallholders who market their produce via several different channels are included in the group with the weakest link to an exporter.

implementation of the standard at farm level is heterogeneous even for the European market. Implications with respect to transaction costs (costs of information, monitoring and enforcement) in procuring reliably certified produce have not yet been assessed; one can expect that they are lower for option 1 certified smallholders than for option 2 farmers.

Most EurepGAP-certified smallholders in Murang'a were certified under option 1 and produced beans for the canning industry. For the purpose of our study and for the above-mentioned reasons, they were considered to be significantly different⁴ from smallholders certified under option 2. Due to these differences, we excluded them from the group of EurepGAP-certified farmers and included them under the group of non-certified exporter-linked farmers.

Meru Central had the highest number of certified farmers in September 2005, which could be attributed to the presence of numerous export firms in the region. The share of farmers who had applied for certification in September 2005 was highest in Nyeri, followed by Kirinyaga, while Murang'a and Meru North had none. In total, the number of non-certified farmers linked to an exporter was lower than the combined numbers of farmers who had applied for certification and those who were already certified. 'Applied for EurepGAP certification' is defined as farmers who are in the process

of certification; they have undergone the training and have invested in some infrastructure necessary for certification. These farmers may not all achieve the standard, so the figures for 'applied for' may not all translate into certified farmers at some later date and thus may overestimate the status of EurepGAP in Kenya. Often, smallholders drop out of the process just before undergoing the final audit for the certificate (Nyahah, 2006). Murang'a had the highest number of non-certified farmers linked to exporters, followed by Maragua; this was due to the large number of farmers who were registered under option 1 in the district.

By November 2006, 33 option 1 producers and 267 option 2 producers in eight groups had been certified in Kenya (Halim, 2006). This survey shows that by September 2005, about 3,700 smallholders had either been certified or had applied for certification in the nine study districts. Thus, not much progress with respect to certification occurred in late 2005 and early 2006. Informal discussions with staff members in export companies revealed the opinion that smallholders could achieve private standards such as EurepGAP, but only with external technical and/or financial support. So far, the information available does not allow us to conclude whether or not the concerns raised by Barrett *et al* (1999), Dolan and Humphrey (2000), Farina and Reardon (2000), Jaffee (2003), Jensen (2004) and Okello (2005) are valid.

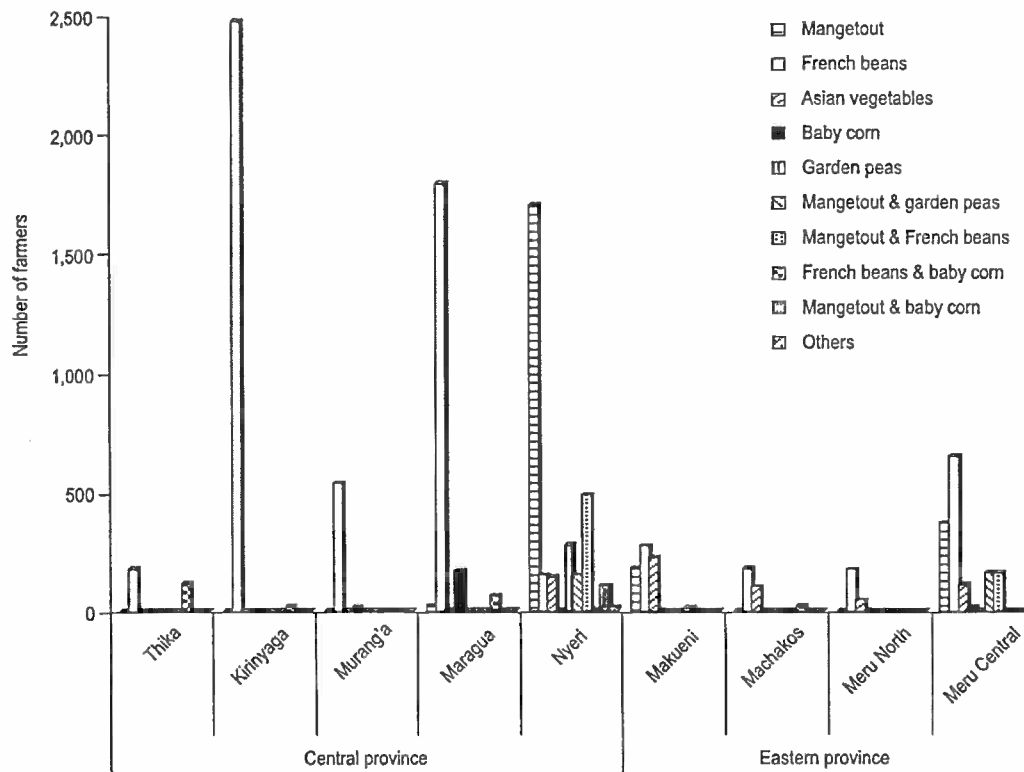


Figure 3. Export vegetable crop production by district in Central and Eastern provinces, Kenya.

Their concerns may be relevant to some of the smallholders, who may drop out of export production because they cannot meet the standards, and turn to alternatives, one of which is vegetable production for the domestic market. Expected rises in the supermarket share of urban retail of fresh fruits and vegetables from 5% to 10–20% (Tschirley *et al.*, 2004; an increase to 15% was estimated by Traill, 2006) and increasing demand for produce of the same standard as export produce may result in an increasing trend in procurement for larger producers (Neven and Reardon, 2004). But even smallholders producing for the local market, especially those delivering to supermarkets, may have to face challenges of compliance with standards in the long run.

Farmers linked to middlemen were distributed across eight of the nine districts covered by this survey; only Meru North did not have farmers linked to middlemen.⁵ In Meru Central and Maragua, middlemen were more active than exporters, as shown by the higher number of farmers who sold to middlemen than to exporters. The share of smallholders linked to middlemen was highest for Thika, followed by Meru Central, Maragua and Kirinyaga districts. The presence of middlemen in Kirinyaga could be attributed to its proximity to Nairobi, while in Meru Central it could be attributed to the high volumes of export vegetables produced and the variety of crops grown.

The export crop portfolio

Figure 3 shows the high variation in the types of export vegetables produced and the number of farmers involved in the production of each crop. It thus reflects differences in agro-climatic conditions. Makueni and Machakos are mid-altitude semi-arid districts, whereas the others are districts in the central highlands with higher rainfall and agricultural potential.

Overall, Nyeri produced the highest diversity of export vegetables, followed by Meru Central. By far the most important export crop for smallholder production, as measured by the number of smallholders involved, was French beans, followed by mangetout.

French bean farmers were distributed across all districts. Kirinyaga was the leading district for French bean production (38.6% of the French bean farmers were located here), followed by Maragua district. Often, farmers produced French beans in combination with other crops such as garden peas, courgettes, butternuts and sugar snap peas. Nyeri district was the highest producer of mangetout, with a share of 74.6% of all mangetout farmers, followed by Meru Central. Thika, Murang'a, Machakos and Meru North districts do not produce mangetout. Asian vegetables were mainly produced in Makueni, with 36% of the Asian vegetable farmers there, followed by Nyeri with 22.5%.⁶ Maragua

had the highest number of farmers producing baby corn as a single export crop. Garden peas were grown only by farmers in Nyeri district.

The combination of mangetout and garden peas was frequently found among farmers in Meru Central and Nyeri. Mangetout in combination with French beans were mainly grown by farmers in Nyeri (73.9% of farmers), followed by Meru Central and Makueni. Mangetout in combination with baby corn were produced in Nyeri only. A combination of French beans and baby corn was highest in Thika (51.3% of farmers), followed by Murang'a (28.1% of farmers). Thus baby corn production took place in most districts, but rarely as the only export crop; according to the exporters, it is grown for crop rotation.

Link to the export market, certification and crop portfolio
EurepGAP certification as well as the link to the market varied with the crop produced. Table 1 shows the share of producers by crop and certification status across districts.

Six mangetout producers were certified. Of those, 83% were from Meru Central and 17% were from Nyeri district. Comparing certification status and market linkage within a district shows that in Nyeri none of the mangetout farmers were EurepGAP-certified, 41% were in the process of application, 21% were non-certified but also linked to an exporter, 26% were non-certified and linked to middlemen, whereas 12% of the mangetout producers were 'floating' farmers. More mangetout farmers in Maragua and Meru Central were non-certified and linked to middlemen than in the other districts.

Overall, more French bean than mangetout farmers were certified (320 *versus* 6), while Asian vegetables were not produced by certified farmers. With respect to Asian vegetables, the highest number of producers was linked to an exporter and had applied for certification. Baby corn production showed the second highest number of certified farmers, although there were just 15 farmers altogether from Meru Central. However, looking at the share of producers that were certified reveals that for baby corn, 7% of all smallholder export farmers were certified, followed by 5% of French bean farmers. 'Other crops' refers to crops that were grown by fewer than 100 farmers, ie courgettes, runner beans and butternuts, which were produced in only three districts. There were no certified farmers in this crop category.

Farmers producing mangetout and garden peas were mainly in the category 'applied for certification' and linked to exporters in Nyeri district. A lower number with this crop combination in Meru Central were non-certified and linked to middlemen. Mangetout in combination with French bean production was a fairly frequent combination, but was confined to three districts only. For this group, the highest share of farmers was linked to an exporter and was in the process of certification. Only a few farmers produced mangetout and baby corn; they were found only in Nyeri and were not EurepGAP-certified.

Concluding remarks

This article presents the situation regarding smallholder involvement in export production in two provinces of

Kenya in 2005/06. Overall, the figures show a heterogeneous situation that seems to depend on agro-climatic conditions and field sizes, which are linked to individual and district history along with inheritance rights, road infrastructure, competition among exporters and middlemen as well as the target export market and its operative standards.

The figure of about 11,100 smallholders in export production is rather low in comparison with other figures cited in the literature. The figures presented here most probably constitute the lower end, taking into account incomplete information in some districts. Also, the figures shown refer to farmers who were active in export production in the second half of 2005 and not those who could potentially grow export crops. The number of smallholder export producers varies between districts, with Nyeri and Kirinyaga being the leading ones in terms of the total number of farmers involved. Nyeri district had the most diverse crop portfolio amongst the surveyed districts. French beans were the most important smallholder export crop, with about 6,400 farmers involved, plus those who produced them in combination with another crop such as mangetout. Results further show that, despite the presence of various exporters and farmer training on EurepGAP standards, more farmers were linked to middlemen or were 'floating' (ie linked neither to an exporter nor to middlemen) than were linked to an exporter. However, among the smallholders who were linked to an exporter, the majority were in the process of certification (there were few who had no plans to apply for certification).

There seemed to be no direct influence of the proximity to Nairobi on middlemen *versus* exporter activity, and most were active in all districts; also, farmers marketed all crops to exporters as well as to middlemen.

Some of the figures presented in this report need further validation. In the long run, it would be valuable to monitor how the number of smallholders and the share of land allocated by smallholders to export vegetable production changes over time. Such data could contribute to monitoring the impact of private food safety standards on producers involved in the market chain at the Kenyan producer level. Such a need has been identified (see, eg Henson and Reardon, 2005), but so far in Kenya, no monitoring mechanism is in place and, during the time of this survey, the adoption of standards by smallholders had not yet become widespread. In a wider context, such an assessment could also indicate the impact of standards on poverty. In view of the problem of scarce and scattered export and horticultural statistics, it would be beneficial to compile figures and reports centrally.

Further potentially valuable research could target the domestic market and determine to what extent good agricultural practices and similar standards are also applied to domestic crops. In addition to the development of improved, adapted vegetable varieties, sustainable seed delivery systems, organized technical assistance and more efficient marketing systems, in which the export sector provides a role model for the local market (Lenné *et al*, 2005), the export sector's role in leading the adoption of standards needs to be assessed.

Table 1. Certification and link to the market by crop across districts of Central and Eastern provinces of Kenya (all values in %).

Export vegetable	Level of certification & link to the market	Central province			Eastern province			Total number
		Thika	Kirinyaga	Murang'a	Makueni	Machakos	Meru North	
Mangetout	Certified, exporter	0	0	0	0	0	0	83
	Applied, exporter	0	0	0	0	0	0	0
	Non-certified, exporter	0	0	0	24	0	0	0
French beans	Non-certified, middlemen	0	0	3	8	0	0	29
	Non-certified 'floating'	0	0	0	8	0	0	42
	Certified, exporter	5	2	0	8	8	0	84
Asian vegetables	Applied, exporter	0	81	8	2	4	8	3
	Non-certified, exporter	0	10	36	9	2	12	2
	Non-certified, middlemen	4	43	0	1	2	0	12
Baby corn	Non-certified 'floating'	7	22	0	8	1	0	7
	Applied, exporter	0	0	0	52	11	0	0
	Non-certified, exporter	0	0	0	33	0	67	0
Garden peas	Non-certified, middlemen	0	0	0	16	23	0	57
	Non-certified 'floating'	0	0	0	16	26	50	1
	Certified, exporter	0	0	0	0	0	0	100
Others	Applied, exporter	0	100	0	0	0	0	0
	Non-certified, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	3	0	3	0	0	0	30
Mangetout & garden pea	Non-certified 'floating'	0	0	100	0	0	0	10
	Applied, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	0	0	0	0	0	0	0
Mangetout & French bean	Applied, exporter	0	20	0	0	0	0	19
	Non-certified, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	0	15	0	0	0	0	15
French beans & baby corn	Non-certified 'floating'	0	0	0	0	0	0	0
	Applied, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	0	0	0	0	0	0	0
Mangetout & French bean	Non-certified 'floating'	0	0	0	0	0	0	0
	Applied, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	0	0	0	0	0	0	0
French beans & baby corn	Certified, exporter	0	0	0	0	0	0	60
	Applied, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	0	0	0	0	0	0	0
Mangetout & baby corn	Applied, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	62	10	0	4	0	0	0
	Applied, exporter	96	4	0	0	0	0	0
Mangetout & baby corn	Non-certified, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	0	0	0	0	0	0	0
	Applied, exporter	0	0	0	0	0	0	0
Mangetout & baby corn	Non-certified, exporter	0	0	0	0	0	0	0
	Non-certified, middlemen	0	0	0	0	0	0	0
	Applied, exporter	0	0	0	0	0	0	0

Note: Certified, exporter: farmers linked to an exporter and EuropGAP-certified. Applied, exporter: farmers linked to an exporter and in the process of EuropGAP certification. Non-certified, exporter: farmers linked to an exporter but neither certified nor in the process of certification. Non-certified, middlemen: farmers linked to middlemen, not certified. Non-certified, floating: farmers who market flexibly to various buyers, not certified.

Also, as identified by Henson and Reardon (2005), researchers should determine to what degree private standards can substitute for public standards in a developing country such as Kenya with a larger informal (rather than formal) domestic market.

Acknowledgments

The authors would like to thank the Ministry of Agriculture for their kind support of this survey. We would especially like to thank all frontline extension workers and district horticultural officers for their commitment and input to this survey. The authors gratefully acknowledge financial support from the German Development Cooperation (BMZ/GTZ).

Notes

- ¹ This is based on the assumption that the farmers interviewed by Kamau (2000) were typical smallholder producers. For further details on the estimation and assumptions involved, see Minot and Ngigi (2003, p 39).
- ² These may be farmers who produced for the Asian and Middle Eastern market.
- ³ Often, smallholders are organized into producer groups, which in practice means that the frontline extension workers listed members of producer groups in their sub-location or referred to existing lists of group members. The level of organization in farmers' producer groups increases from floating farmers to farmers linked to exporters. These groups, and especially the link between their produce and the marketing channel, are not static. Particularly in times of short supply and high prices, farmers may bypass the previously agreed on marketing arrangements and may choose to sell to the highest bidder. On the other hand, in times of oversupply, smallholders may not be able to sell the previously agreed quantities. Furthermore, farmers may market via more than one marketing channel.
- ⁴ This was based on discussions during the research preparation workshop in November 2005.
- ⁵ Another export crop, Miraa (Khat, *Catha edulis*), is produced in Meru North and marketed via middlemen. However, Miraa is a stimulant and therefore not covered by this study.
- ⁶ The figures on Asian vegetable production need to be validated for Kirinyaga, where Asian vegetable production linked to middlemen takes place (Nyambo, 2006).

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