

# Challenges for safer smallholder horticulture in Senegal

*PAN Africa works to raise awareness of hazardous pesticide practice and train farmers in alternatives. The horticulture export sector now emphasises food safety and quality yet there are few incentives in local markets to reward safe and sustainable production. **Julienne Kuiseu** discusses the issues.*

A decade ago, 80% of Senegal's horticulture produce originated from small and medium producers. Since then their role has been declining, as large-scale commercial producers have entered the market, in particular for export. Some of these companies run integrated operations, growing, packing and shipping their own produce, while others work with outgrowers or buy from independent smallholders. In 2003, outgrowers and smallholders in export chains were estimated at a few hundred only<sup>1</sup>. Whilst horticulture exports have more than doubled since 1995, production is concentrating in fewer and fewer hands: today just five producers account for 80% exports, of which one company accounts for 30%<sup>2</sup>. The export sector may be thriving yet the livelihoods of independent smallholders are increasingly in jeopardy, particularly since the introduction of stricter European Union (EU) regulations on pesticide residue levels and importer quality requirements. One consequence is that exporters are no longer prepared to subcontract growers or buy smallholder produce unless they can ensure quality and food safety compliance via training and close supervision. Yet smallholders still provide a considerable proportion of Senegalese export horticulture, with export

companies providing inputs and monitoring crops. A whole system is underway, recruiting field managers, to make sure field protocols are followed.

Senegal enjoys a good market in the European off-season during November to April, notably for green bean, its major vegetable export crop, and cherry tomato. Other crops exported include mango, melon, okra and chilli pepper. Cherry tomato exports are growing most rapidly, from under 1,000 tonnes in 2000 to over 5,000 tonnes in 2004 and Senegal is now the second largest non-European supplier of tomato during the winter months. Most of its produce goes to France and Belgium.

In the national context, though, export products remain a minor part of total horticulture production. In 2002-03 just over 5% of national fruit and vegetable production of around 236,000 tonnes was exported. The crops produced in the highest volume are onion, sweet potato, tomato, cabbage and melon. Tomato is grown for fresh consumption and for processing for tomato paste, an important component of the national diet. Onion and potato growers have been hard hit in recent years with the dumping below production costs of very cheap Dutch produce. One smallholder support project endeavours to improve the

attractiveness of Senegalese onions through better storage facilities and marketing via a quality label.

Quality standards and control are also critical issues for the export sector, particularly with the arrival of stricter Maximum Residue Levels in the EU and increasingly demanding private standards, most notably those of the EurepGAP assurance scheme adopted by many of Europe's major supermarket chains [see p10 and PN 57 p6].

## Smallholder practice

PAN Africa conducted a survey of 120 smallholders cultivating tomato, green bean or onion in ten villages in the southern part of Les Niayes zone, Senegal's major horticulture production region, during autumn 2005. Survey respondents were 76% men and 24% women and most farmers interviewed (62%) did not belong to any grower association, while only 20% of respondents worked with export companies. Farm size did not exceed five hectares (ha) for any respondents and most cultivated up to 0.5ha of each crop. Only 27% farmers were educated in French and none above secondary level. Growers sold more than half their produce to local markets via intermediaries who buy from the field or wholesale traders. The remainder is sold to other traders or exporters (mainly green bean).

## Pesticide use and hazards

In the survey, more than 80% growers prioritised chemical control methods, with only 16% using alternatives. Pesticide sourcing was as follows: village shop (63%); authorised distributors (34%); weekly market (3%). Informal sales via village shops and markets pose definite health hazards for the dealers, growers and consumers as there is little awareness of how to handle and apply pesticides properly. Growers reported using 13 different insecticide active ingredients and formulations, three containing methamidophos, an acutely toxic WHO Class 1b compound. Methamidophos, deltamethrin and methomyl were used most frequently.

In terms of using protective equipment, 90% reported they did not use any type of gloves, nose mask, eyeshields, boots or even long trousers. After spraying pesticides, 78% said they wash hands, 20% took a shower and 2% drank milk. Hazardous practice was revealed in what growers did with empty pesticide containers - 83% farmers said they threw them away, 8% resold them while 5% reused them. However, the vast majority (92%) were aware of toxic effects, but only 7% reported experience of poisoning episodes although they could not recall dates or products involved. When adversely affected, 54% self-treated, 29% sought medical assistance and 14% did nothing.

## Food residue issues

Almost all growers surveyed knew that pesti-



Smallholder cabbage and tomato plots, Thiehem village, Senegal.

Photo: Carina Weber, PAN Germany

cide residues can remain in produce. Their respect for pre-harvest intervals (PHI) varied. Of 12 growers using methamidophos, three reported waiting 15-20 days before harvesting produce, five waited two weeks, one waited 10 days and one just seven days. The others could not say how long they left between application and harvest. Although most of the growers were not supplying for export, 60% said they knew about Maximum Residue Levels (MRLs) and European requirements. Informal feedback from other sources suggested that because the MRL issue has been such a 'hot topic' at national level for the export sector, even smallholders in local markets are aware of it, indicating a certain level of information exchange between local and export market supply chains. Asked about the impact of European requirements on their own enterprise, some growers surveyed mentioned reduced production costs through reducing pesticide use while others had abandoned growing crops for export.

### Training and advice

PAN Africa had carried out Farmer Field School training in 2000-2003, emphasising pesticide hazards and the need for Integrated Pest Management (IPM) methods to reduce use. Evaluation showed that the 186 participants were much more aware of negative impacts of pesticide use and implemented plot observations and could distinguish pests from beneficial insects. Production costs also reduced. The Food and Agriculture Organisation of the United Nations (FAO) had also trained field agents of farmer associations and export associations in 2001-02. Nevertheless, the survey revealed that most farmers had not fully changed their practice in response to training. Of the 16% of respondents who had received training in either IPM or organic methods, less than half had adopted certain techniques in their own fields. The same was true for those attending pesticide awareness seminars - only 23% said they had changed their practice as a result, mainly by reducing volume applied and respecting PHIs.

### Poor pest management practice

A stakeholder workshop organised by PAN Africa in November 2005 considered strategies for promoting safer and more sustainable horticulture in Senegal. Despite numerous awareness-raising and training activities by different organisations over the years, stakeholders agreed that pesticide practice remained highly hazardous in local market systems. A field visit to smallholders growing cabbage and tomato in Mboro district confirmed this assessment. A young employee was observed spraying insecticide on tomato without any use of protective equipment and in bare feet and shorts. He had been asked to spray against caterpillars and yet none were observed in the plot, suggesting that pesticides were being used without any assessment of need.

Cabbage crops in the village were high-

ly infested with diamond backmoth larvae, a major pest, and farmers described a long list of different insecticides they applied, but apparently with little success. Research participants on the visit feared that the pests had probably developed resistance. A further problem was that villagers were growing cabbage at different stages of development, with little crop rotation, leading to continuous favourable conditions for pest reproduction. Farmers explained that they were unwilling to change their pesticide practice because their main concern was to avoid risking yield loss, yet the quality of their cabbage was very poor with most leaves riddled with holes.

In contrast, two large-scale export farms visited were taking considerable care with pesticide handling and implementing several methods to reduce use, by growing more tolerant varieties of tomato, melon and cucumber and the use of netting to protect seedlings from viral attack. One grower is experimenting with botanical extracts, including yam bean *Pachyrhizus erosus*, and has been able to produce watermelon without any synthetic insecticides.

### The consumer challenge

A major problem is the lack of incentives or penalties for smallholders to change practice. Many Senegalese consumers only consider external appearance and cosmetic quality (grade, colour, lack of insect damage). Consumers also lack knowledge about the harmful effects of residues in food and other intrinsic quality factors so there is no real demand for safe and healthy fruit and vegetables. Senegalese consumer groups are relatively weak and not able to alert the public to food quality and safety issues, although there are vocal consumer associations for water and electricity services. Encouraging consumers to demand safer production and to pay a fair price to reward quality will be a major challenge, but essential to promote safer production.

There have been some attempts to set up small outlets for organic vegetables in Senegal but they have not succeeded for several reasons: irregularity of supply; small range of crops available; and limited number of well-organised sources. However, certain supermarkets in Dakar now sell a few imported vegetables with organic labels. One medium-scale producer has also been growing organic vegetables for some years, selling via a stall at the weekly market in one of the large towns. His strategy is to sell at the same price as conventional produce relying on word of mouth and good reputation to ensure good sales.

A strategy to foster quality demand by Senegalese consumers could include:

- informing food chain actors about quality concepts and components
- awareness-raising for all stakeholders
- educating consumers about quality
- strengthening technical and finance capacity of farmer and consumer groups
- using media channels



Man spraying tomatoes unprotected and in bare feet, Thieblem village, Senegal.

Photo: Carina Weber, PAN Germany

- building quality content and interest in local marketplaces
  - analysing residues in produce and publishing results
  - producing posters and leaflets
- To support smallholders and promote alternative pest management and production systems, some key actions needed are to:
- lobby for alternative systems to be considered in agriculture policy
  - develop IPM and organics expertise at extension agent level
  - establish retail outlets for alternative produce
  - make better use of existing networks and dialogue forums
  - produce more technical and awareness-raising material in local languages
  - get closer collaboration between private, public and civil society organisations

Participants agreed that the media, NGOs, decision-makers, researchers, and food sector actors, all have major roles to play in changing the attitudes and behaviour of producers and consumers. Senegalese consumers have the same right to safe food as European consumers. PAN Africa will now look at how to raise demand for fresh produce with fewer pesticides.

#### References

1. Plantconsult, *EurepGAP introduction among small-scale producers of fresh fruit and vegetables in developing countries. Report for Dutch Ministry of Foreign Affairs*, 2003.
2. Kuiseu J and Sambou A, *Food and Fairness: Strategies for sustainable horticulture in Senegal? Food and Fairness project report, PAN Africa, 2005 (in French)*.

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