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Kenya's mango farmers ditch chemicals to boost exports

Mango growers in Kenya are turning to biopesticides to help tackle a crippling fruit fly problem and reach new export markets

Nina Pullman

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Every year, small-scale Kenyan farmers produce thousands of tonnes of mangoes only to watch a large percentage of them rot on orchard floors.

Despite its prevalence, the mango industry barely contributes to rural incomes because an overwhelming fruit fly problem means yields are erratic and up to 60% is wasted, making formal contracts next to impossible.

Added to this, the risk of spreading fruit fly to importer countries and traditionally high pesticide usage mean Kenya has been a no-go zone for western mango importers who have other, more reliable, options.

But some of the 60,000 plus producers [pdf] across the country are starting to reduce their reliance on chemicals and develop alternative controls for fruit fly, in the hope of reaching the quality standards required for western export markets.

Real IPM is a small Kenyan biopesticide company that has developed a pioneering fruit fly control based on a common insect-killing fungus that occurs naturally in the soil - known as Metarhizium (Met) 69.

With funding from USAid and Rockefeller, co-founder Louise Labuschagne started to develop the business using Met 69 as a way of controlling the fruit fly sustainably. Used as a powder in traps, the fungus infects male and female fruit flies. The flies don't die immediately, but can exit the trap with enough time to infect others by grooming or mating.

The system can control an entire orchard, providing at least 20 devices are used per hectare, and the fungus is also sprayed onto soil to kill pupae or in tree canopies to catch larger adults.

"Previously we were spending a lot of money on chemicals and labour. Now it's just one person to put a trap in place, and that could be me or my wife. It used to take six men per day to spray the chemicals," says Henry Ngari, a retired teacher and mango grower who now uses the Real IPM system on his farm.

"What I'm proud of is since 2006 I have not applied any insecticide to control the fruit fly. Mango yields are good - we now sell between 90 and 95% of the crop. That's a big

improvement for farmers. We were losing around half of the crop because it was infected by fruit fly."

The problem of waste is not specific to Kenya - Rockefeller's YieldWise project estimates that 50% of all fruit and veg produced in Africa is lost before it reaches the market. This has a hugely detrimental impact on businesses and livelihoods in sub-Saharan Africa, where 70% of the population relies on agriculture for income.

"Almost all mangoes in Kenya are grown by smallholders who have low numbers of trees," says Labuschagne. "Lots of farmers aren't even harvesting because they can't sell their fruit or manage their orchards, they leave fruit on the ground and it makes it worse. So if you could solve the problem of mangoes, you could increase income for small-scale farmers."

But exporters need more than just regular yields. In the past, smaller growers primarily sold their mangoes to local markets where residue restrictions for pesticides are much lower than international standards, says Collins Wanyama, who heads up the commercialisation of the Real IPM fruit fly programme. Biopesticides are not chemicals, therefore they do not create any residues.

Sunday Ekesi, head of plant health at Kenya's International Centre of Insect Physiology and Ecology (ICIPE), says: "If you spray too much you have a residue problem, if you don't spray, you risk rejection due to fruit fly contamination, so it's a double whammy for the grower. That's where biopesticides have a real niche. The impact on income and reduction in rejection levels is tremendous. Growers can see the impact immediately within a season. There can be a 30-40% reduction in rejections."

Ekesi says biopesticides, such as the Met 69 system, are on the rise in Kenya, with companies such as Dudutech, Kenya Biologics and Farmtrack Consulting offering other environmentally-friendly solutions to various pests and diseases. "I would describe Real IPM as pioneers in biopesticides for horticulture, but their package needs to be used alongside other management techniques, such as orchard hygiene and simple methods such as insect monitoring," he continues. "At the moment Real IPM is the only company I'm aware of using the Met 69 product, but other companies have started to approach ICIPE to try something similar."

There are drawbacks with the approach. Accessing and training remote, small-scale farmers is difficult, and the trap, soil and canopy treatment, alongside basic orchard management, must all be in place for real improvement to happen.

Successful growers like Ngari are vital in helping to encourage others. "You can't teach everyone, you have to get to a few who are respected, and who can talk to others," says Wanyama. "This is a very scientific process, and laborious to educate. But growers are impressed with the improvement on yield."

The cost of the system itself is comparable to other methods, according to Wanyama, who says Met 69 may cost more initially but it only has to be bought once, compared to multiple applications of pesticides.

Once quality and yields are on track, Kenya's growers will begin to look outwards. "I'm preparing my farm and now I'm looking for people to buy my mangoes," says Ngari. "We've been selling to the Middle East for a long time, but the prices have gone down because of supply - we have a huge supply. Europe would be better as the prices are higher."

Jonathan Bamber, whose dried mango manufacturer Kenyan-based Burton and Bamber buys from around 100 small farmers, says the improvement on his growers' yields from the Real

IPM system is “absolutely noticeable”. “Kenya could well be in the top five producers in the world on fresh and dried mango. It could be a huge revenue stream for small-scale farmers, but only if we can develop the market and demand, as well as the quality on the supply side.”

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