

Bananas are the world's fourth food crop but in many countries in Asia and Latin America, it is also an important export crop. Africa is also importing it increasingly. Among European stakeholders, there's interest in African bananas. Before export from this continent can take off, a number of questions need addressing. Wageningen UR is developing practical knowledge for a multidisciplinary approach.

PERSPECTIVES FOR THE AFRICAN EXPORT BANANA



photo: Lineair

Approximately 85 percent of the bananas that are produced worldwide, are consumed locally. The remaining fifteen percent are intended for export and only a small part of that originates from Africa. Nevertheless, more and more stakeholders in the banana sector are setting their sights on this continent. The distance is important advantage for trading. Western Africa is only at the few days' sailing from Western Europe. The production costs are lower than in Latin American and

Asia and the import duties are lower. African governments would welcome foreign enterprises that want to invest in establishing plantations.

Local markets

"Export demands large production systems such as plantations. You have to produce and sell in

bulk to be able to ship the product. It is not that easy to just set up a plantation", relativates Jetse Stoorvogel, lecturer at the Land Dynamics group at Wageningen University. He has been doing research into precision agriculture in the banana sector for fifteen years. "In some areas in Africa, such as Mozambique, you can envision plantations because they already know large production systems over there. But it fits badly in other regions. The agricultural structure is too small-scale or the population too dense, such as in Kenya."

Development organization ICCO also finds that the scale of the plantations raises questions. A large part of the banana production comes from small African farmers who sell the bananas on local and regional markets, emphasizes Marije Rhebergen, coordinator of ICCO's tropical fruit program. When large companies focus on Africa, there is large chance that the farmers will lose their own food supply. ICCO would like to have the value of the banana distributed more fairly across the entire chain: "Workers' wages that support subsistence are the minimum."

Many varieties can be found in colorful stacks on local and regional markets

'IN AFRICA, BANANA CULTURING IS NOT PER DEFINITION MORE SUSTAINABLE THAN ELSEWHERE'

Production islands

Sietze Vellema, senior researcher at the Technology and Agricultural Development group, also sees an area of tension. The export plantations must not become production islands, he warns, that are completely separated from the national market and local knowledge development: "The Western standards that apply to the export banana, entail such high requirements that the bana-

nas grown for the national market cannot possibly meet them. Fairtrade standards, by the way, can have the same effect. When export plantations are decoupled from the national market that way, local parties will be able to profit much less from technological developments and applied knowledge. This may hamper improvements on the long term." Co-operation between parties is therefore already required at the production level to arrive at sustainable banana culturing. Also important is that the developed knowledge and technology end up with all stakeholders. That exactly is Vellema's turf. "The developments in knowledge must reach all banana growers, from multinational to the small, local banana farmer." The possibilities thereto and the way in which knowledge is disseminated differs per area and per chain, according to Vellema.

Lower use of pesticides

Worldwide, banana culturing has a high disease pressure. European stakeholders on the market side are aware of that. In consultation with these parties, Wageningen UR contributes to the development of knowledge that can be applied immediately. Biological pest control, precision agriculture in which fewer pesticides are used, and the development of early warning systems are examples. Part of the European interest in African bananas is based on the fact that fewer pesticides are used in Africa in banana culturing. Stoorvogel: "Use of pesticides has effects on the health of the consumer via residues on the product, and of the plantation workers as they can come in to direct contact with the poison. The consequences of that first route so far have always remained relatively limited, but the health of the plantation workers did suffer greatly from the use of pesticides." The special research program of Wageningen UR in which Stoorvogel is now involved focuses on diminishing pesticide use in banana culturing, but for a large part does not happen in Africa. Because it is less needed there? "Yes, but that is because notably on plantations, pesticide use can be excessively high and there are many more plantations in Central and South America. What also plays a role, of course, is that you have large plantations over there that want to invest in research and where you can more quickly achieve results. If you were to help establish large-scale production systems for the export in Africa – provided this were possible – you would therefore likely see an increase in pesticide use as well." That risk is also seen by Hans-Willem van der Waal, manager Producer Relations van Fair Trade importeur AgroFair: "In Africa, banana culturing is not per definition more sustainable than elsewhere." Both the role of the consumer and of the small farmer will have to become more important to



photo: Lineair

guarantee that sustainability, feels van der Waal. “The consumer must be aware of the fact that the present banana is not a sustainable product”, according to van der Waal. “There is a lot of abuse in the production, socially and ecologically. Within the banana industry, there is no party that can tackle this on its own. Co-operation is the only way to make banana culturing more sustainable.”

Narrow genetic base

The disease pressure has to do with the fact that worldwide, only one banana variety, the Cavendish, is grown for export. Other varieties can be found in colorful stacks on local and regional markets, but never reach the western consumer as they are too sensitive to transport across large distances. The Cavendish banana can be transported but has a narrow genetic basis and is very susceptible to diseases, tells Gert Kema, senior researcher at Plant Research International (PRI). The disease Black Sigatoka, caused by the fungus *Mycosphaerella*, is an important threat to the crops which is fought with frequent spraying. The fungal condition Panama disease, which caused the predecessor of the Cavendish to be wiped out at the start of the 20th century, is also appearing again. New strains of the soil fungus that cropped up in

Asia are a worldwide threat to the banana sector, according to Kema. In earlier research of Wageningen UR and its Brazilian co-operation partner Embrapa, the DNA of the fungus *Mycosphaerella* was pinned down. Knowledge of the DNA of fungus as well as banana provides building blocks for making banana culturing more sustainable, says Kema. In the short term, it makes it possible to spray more specifically and enables biological pest control, among other things.

New genotype

“But I only see one real solution and that is the use of resistant properties of wild bananas for the Cavendish”, Kema continues. Unfortunately, this resistant banana variation can hardly be accomplished by classic culturing. The banana is a sterile plant; crossing therefore isn't an

option. “The creation of a new genotype of banana with the necessary resistance properties and comparable consumption quality can only be reached in about seventy years via the natural route. Only genetic modification would allow us to decline resistant properties of other banana species in a foreseeable time span.”

However, it looks like consumers will not accept this easily. There are, however, arguments in favor of this. According to Gert Kema, it is not a case of an advanced, arts-and-crafts type genetic intervention when it comes to the use of the properties of wild bananas. “We see an important possibility in cisgenesis, in which the natural biodiversity of bananas is used.” Producer relations manager Van der Waal of Fairtrade, which does not accept genetically modified products, also finds that introducing the genetics of the

wild banana into the Cavendish does not differ much from classic breeding. “With regard to that, I am positive about it. If we weren't talking of genetic modification but of accelerated culturing, the resistance in society would be less great. But that needs to be explained to the consumer in a clear manner.”

Social embeddedness

Kema expects to have a resistant banana within ten years. The new possibilities must be utilized in co-operation with small farmers and plantations, he emphasizes. “We also want to make growing for local consumption more sustainable to increase food security. Some farmers have eighty-year-old banana plants that have provided their family with food for three generations. It isn't easy to convince them that our adapted banana plants are better.” A grower has to be able to deal with the development of technologies, in which social embeddedness is crucial. Wageningen UR therefore works demand-driven. Kema: “Genetic modification is a solution for the long-term.”

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