

# African cotton gains a space-based ally



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Promoting social and environmental sustainability in African cotton cultivation through innovative ideas and progressive agricultural methods has been a core objective for Cotton made in Africa (CmiA) since it was established by the Aid by Trade Foundation (AbTF) in 2005. This approach has also played a decisive role in its success. In 2022, 40 percent of cotton produced in Africa was verified by CmiA, and the uptake of CmiA cotton by retailers and brands increased by 50 percent compared to the previous year.

CmiA's success is based on the impressive achievements of some 900,000 small-scale farmers who cultivate cotton on more than 1.8

million hectares throughout ten countries in Africa south of the Sahara. The way they work is being shaped and permanently changed by the challenges of both the market and climate change.

Above all, CmiA aims to empower people to help themselves. However, even these



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efforts require direction and a goal. “It has always been a priority for CmiA to find sensible and feasible innovations that enable small-scale farmers to improve their sustainability, profitability, and quality of life,” states Tina Stridde, the Managing Director of the Aid by Trade Foundation, continuing, “In this way, CmiA provides farmers with the tools to master future challenges as well.”



From the very beginning, CmiA has supported cotton farmers with a number of projects for developing their agricultural and entrepreneurial skills on a sustainable trajectory. Hundreds of thousands of women and men have already participated in CmiA training conducted through CmiA partners to address a variety of topics relevant to the CmiA standard, including soil conservation, integrated production and pest management (IPPM), and foundational business knowledge, as well as indirectly connected issues such as gender equality and child protection.

Through innovative projects like CAR-iSMa (short for “Climate Adaptation and Resilience – a pan-African learning & knowledge exchange project on improved

Soil Management”), CmiA is working with cotton companies to investigate new ways of improving soil fertility and building up agricultural resilience to the effects of climate change and to promote regular communication on this subject area between people from different companies and different countries.

The Innovations Club was founded this year by AbTF and the African Cotton Foundation to foster communication between regional and international experts. It aims to support the exchange of regional and international experts to establish practical measures for the regeneration of African cotton ecosystems.

CmiA worked with its partners to develop seminal training material on issues including biodiversity and rainwater management, for example in the form of accessible picture blocks. These materials will soon become available on the CmiA Learning Platform, which will always be accessible to agricultural consultants working for CmiA partners in Africa.

Cotton made in Africa’s latest project is also paving the way to the future. Together with Geocledian, a leading



*Pictured above: Tanzanian farmers harvesting cotton in their fields © Malicky Stanley Boaz*



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company in the field of geoinformation and remote sensing, and with the Tanzanian company Alliance Gineries Ltd, CmiA is currently exploring the applicability of satellite-supported remote sensing to cotton cultivation.

Remote sensing technology has the potential to transform global agriculture. Using satellite technology and computer-supported evaluation processes, data on the condition of agricultural land, including crops, will become available and always be accessible worldwide.

Sensors mounted on satellites for Earth observation capture various wavelengths of electromagnetic radiation reflected by the Earth's surface and its vegetation. This provides information on crop cultivation and plant growth and allows conclusions to be drawn about soil composition and fertility.

CmiA launched a remote sensing project in May 2023, collecting data from two of the ten Sentinel satellites operated by the European Union for the purpose of observing the Earth and the environment. Using machine learning, computers identify patterns in the raw data delivered by the satellites. In the case of the CmiA-initiated project, this process yields information about the condition of and changes in land surfaces.

The next step of this project involves collecting GPS data for a selection of cotton fields. "With a relatively small set of reliable reference data, we can make inferences about the bigger picture. Broadly speaking, I only need to collect data for 1,000 fields in order to evaluate the condition of 40,000," explains Stefan Scherer, the CEO of Geocledian.

Satellite-supported remote sensing offers great opportunities for the cotton industry in sub-Saharan Africa with its many small-scale farms.

These opportunities are available



*The data from the two identical Sentinel-2 satellites is part of the basis of the Remote Sensing Project of CmiA and Geocledian ©ESA/ATG medialab*

to everyone involved in production. For instance, cotton companies can collect more precise production data through remote sensing. Exact information about the area under cultivation enables them to estimate harvest yields, which is helpful for market projections and trading decisions.

Agricultural consultants employed by cotton companies also benefit from the results of remote sensing, as do farmers, since the consultants can see which farmers need assistance with improving their sustainable cotton cultivation practices. A user-friendly data report reveals where cotton is currently developing well and where not; in addition to helping identify pest infestations. This allows the ideal harvest time to be calculated.

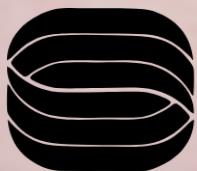
Remote sensing is also a boon for transparency. When combined with GPS data pertaining to the fields of the farmers who cultivate cotton in collaboration with Alliance Gineries, it shows users where the fields are and allows them to monitor compliance with sustainability criteria such as minimum distances from protected areas. Users can also monitor the performance of other processes like crop rotation, intercropping, and green manure.

Above all, remote sensing has great potential to further strengthen the structural advantage of African cotton, which is becoming increasingly significant on the international stage due to current trends



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in legislation. In the view of Stefan Scherer, cotton cultivation in sub-Saharan Africa is more sustainable than in industrialised and emerging economies like Brazil; this is due to its more traditional economy, whose beneficial aspects remote sensing can amplify. "Reporting requirements along the lines of the Supply Chain Act in Germany or the European Union's Taxonomy Regulation will eventually make it mandatory to be able to trace sustainability metrics down to the field level," says Stefan Scherer.

CmiA's remote sensing project is in the right place at the right time, showing how trade and production can benefit from innovative approaches, including on the globalised cotton market. Sooner rather

*"Cotton made in Africa's work in the coming years will be shaped by sensible and feasible innovations that advance the sustainable development needed for the cotton sector in Africa South of the Sahara to make major progress. The remote sensing project has the potential to become a milestone along this path."*

**Tina Stridde, CEO Aid by Trade Foundation.**



than later, remote sensing will be used not only by industrial cotton cultivation in the Global North and in emerging economies but also by small-scale farmers in Africa, who can employ the technology to increase the fertility of their fields and improve their harvests in order to earn a decent living in a stable environment.

Through its remote sensing project,

Cotton made in Africa is once again proving that it is more than a sustainability label or a certificate of origin for cotton. By counting on the future viability of Africa's traditional small-scale farming culture, CmiA's efforts reflect its firm belief that this culture has the potential to become a driver of innovation for sustainability in the textile value chain in the coming years.

*"We are thrilled to be partnering with CmiA on the remote sensing project. It is exciting to be promoting the digitalisation of cotton cultivation in Africa and supporting CmiA and its partners in Africa with our expertise. CmiA takes a systematic approach to sustainability, and remote sensing makes it possible to provide proof of its success as far back as the cotton fields."*

**Stefan Scherer, founder and CEO of Geocledian. @Geocledian**

