

Demand for and use of banana germplasm in Africa, Asia and the Pacific

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Highlights

- More than 5,000 *Musa* accessions were distributed by the ITC to 50 countries in Africa, Asia, and the Pacific between 2000 to 2017.
- 13 of the 31 respondents used the germplasm for research. They produced a total of 20 scientific publications citing the use of ITC accessions.
- 10 respondents confirmed the adoption of ITC varieties in their local communities.
- 14 respondents had further distributed germplasm from ITC to farmers, universities, and research institutes.
- Respondents emphasized the role of local partner institutes in the dissemination of knowledge across stakeholders in the *Musa* community.

Conserving banana diversity for food security

There are currently 75 known species of banana and more than 1,000 cultivars in the world. However, the genetic diversity of banana is threatened by various factors such as pests and disease, and environmental change. Narrowing of the crop's genetic base poses a risk for agricultural production and food supply of present and future generations. The recent incursion of a new disease, TR4, is a crisis for commercial banana production and presents a clear case for why conserving *Musa* genetic resources is important. The ITC plays an important role in the global conservation and mobilization of *Musa* germplasm.

Data and methods

In 2010, Garmin, Roux and Van den houwe provided an overview of the impacts created through the conservation and distribution of germplasm and presented an evaluation of the ITC services based on a survey of its users covering the period between 2000 and 2007.

Our study covered banana germplasm users from Africa, Asia and the Pacific. Latin America and the Caribbean was previously researched by Montalvo-Katz and colleagues in 2018. We analyzed the ITC *Musa* germplasm distribution data from 2000 to 2017, followed by a user survey. The *Musa* Usage Survey was sent to germplasm requesters and aimed to identify how *Musa* genetic resources were used once they were received, the reasons for maintaining or not maintaining the accessions, and if they have been further distributed to other users. 31 users from 24 countries responded to the survey, out of 81 institutes contacted.

Table 1. Requestors of ITC germplasm by region, 2000-2017

Region	Number of known Institutes	Number of unknown institutes	Number of individuals	Number of countries
Africa	54	12	69	22
Asia	53	5	62	21
Pacific Islands	8	2	8	7
Total	115	19	139	50

Source: ITC germplasm distribution dataset

Why we need Bioversity's International Musa Germplasm Transit Centre

The Bioversity's International *Musa* Germplasm Transit Centre (ITC) is based at the Katholieke Universiteit Leuven, Belgium, and is the world's largest banana genebank with more than 1,500 accessions. The ITC distributes germplasm as rooted plantlets, *in vitro* proliferating tissue, and lyophilized leaf tissue.

The ITC ensures the safe and long-term conservation of a broad range of *Musa* genetic diversity and distributes virus-free and well-documented plant materials. As a major source of clean and healthy *Musa* germplasm, the ITC plays a very important role in the mobilization, improvement and adaptation of banana germplasm.

Bioversity International also invests in different initiatives to improve the conservation and use of *Musa* genetic resources. The Global *Musa* Genetic Resources Network, www.musanet.org, for example, coordinates and strengthens the conservation and related research efforts of a worldwide network of *Musa* genetic resources and breeding experts from the public and private sector.

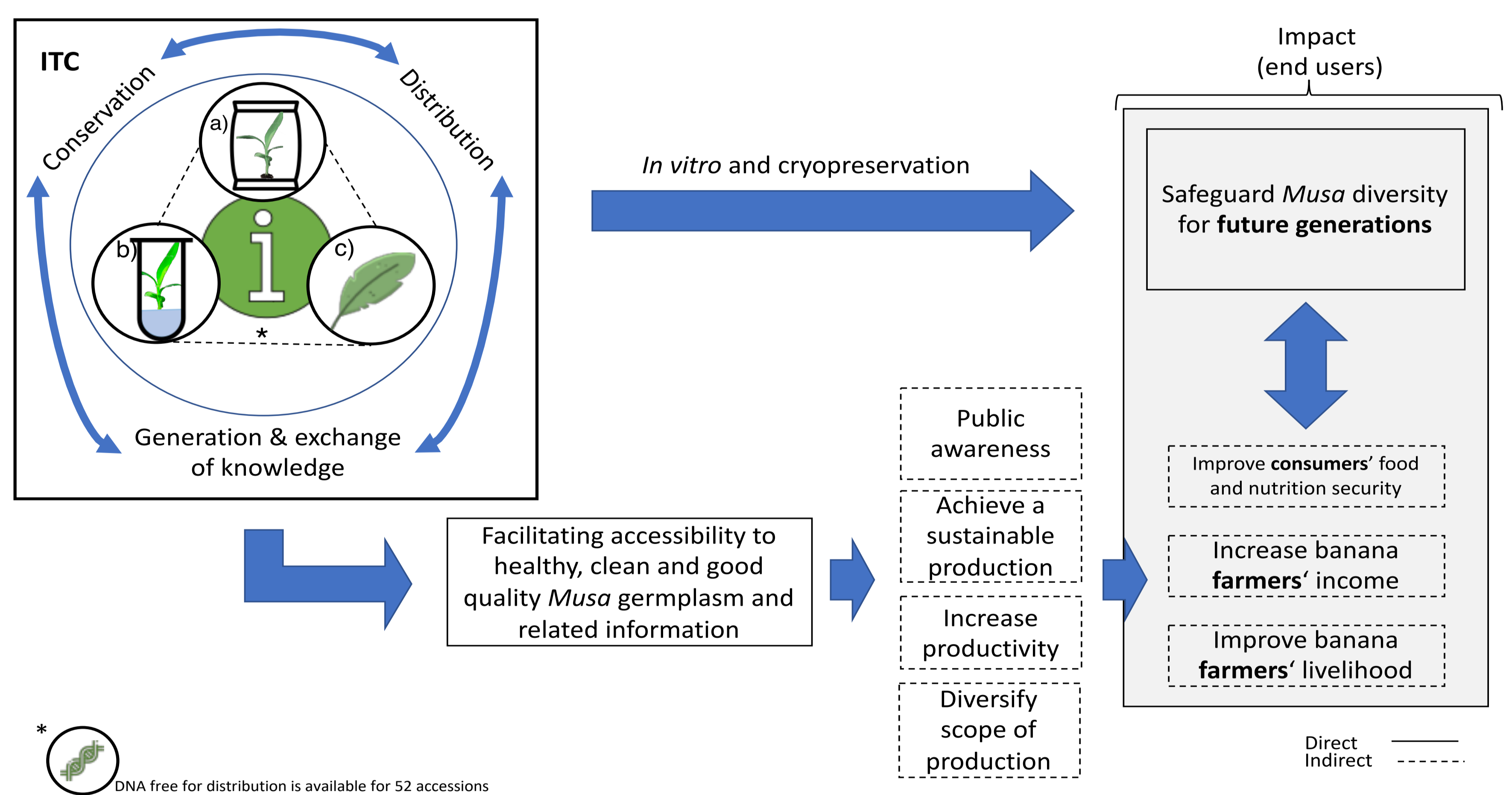


Figure 1. Impact pathways generated by the ITC

The chart depicts the pathway of impacts generated, directly or indirectly, by the ITC from the genebank to end-users.

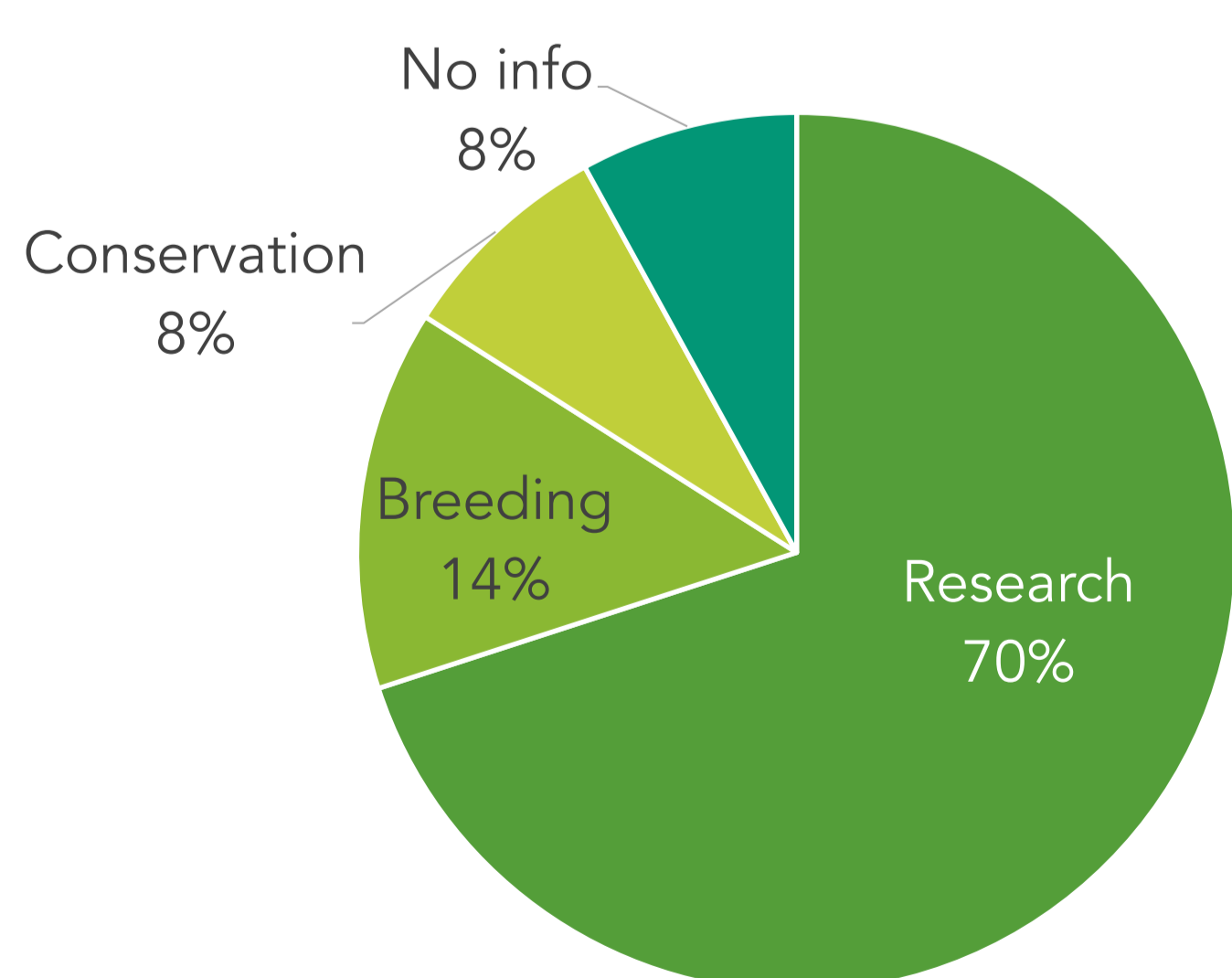


Figure 2. *Musa* germplasm requests, by purpose
Source: ITC germplasm distribution dataset, 2014-2017

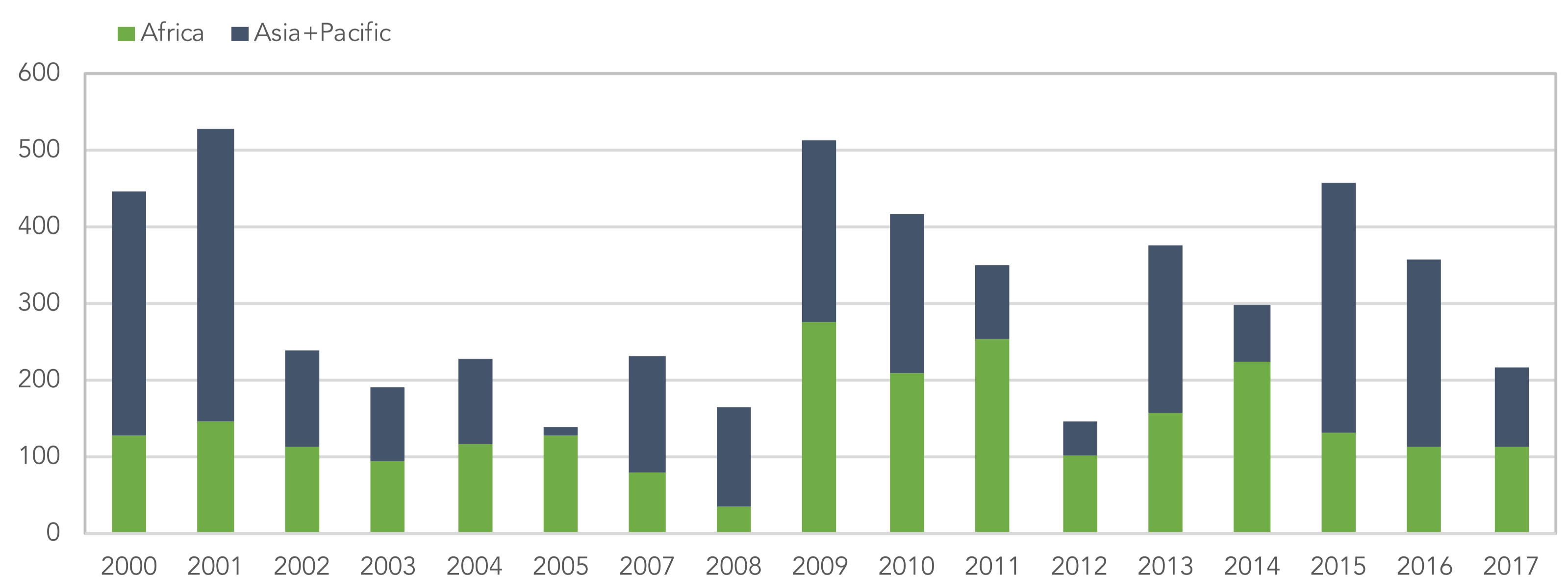


Figure 3. Number of accessions requested from ITC, by region
Source: ITC germplasm distribution dataset, 2000-2017

The 2018 survey of users confirms the important role of the International Musa Germplasm Transit Centre in the global conservation, mobilization, and improvement of banana germplasm.

