

On the trail of taro: The tale of taro leaf blight

Sefra Alexandra, Michel E. Ghanem, Nelissa Jamora and Melinda Smale
Email: theseedhuntress@gmail.com

Highlights

- Taro, *Colocasia esculenta*, is one of the main staple food crops of Pacific Island countries.
- CePaCT in Fiji has over 1,000 accessions of taro and more than 21,000 germplasm samples were distributed globally between 2004 to 2017.
- Samoa experienced a nearly 100% crop loss of taro due to a devastating taro leaf blight (TLB) outbreak in 1993.
- Plant genetic materials from CePaCT were used in a 10-year breeding cycle that resulted in viable TLB resistant lines. These were successfully used to replant taro fields in Samoa.

Fields of tragedy

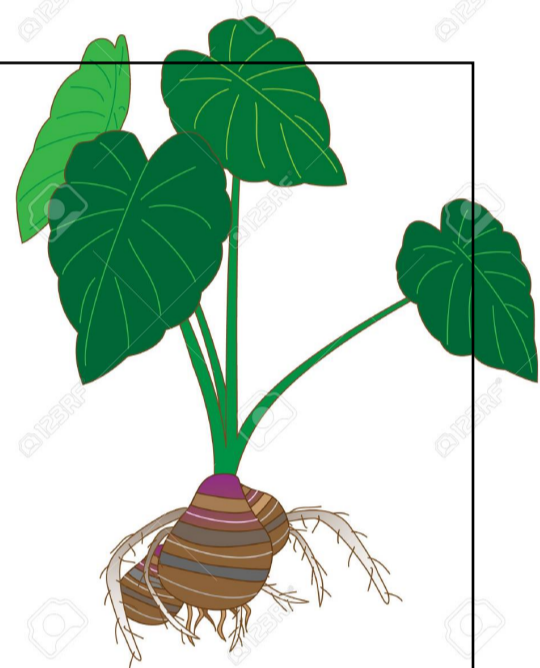
"The Tale of Taro Leaf Blight" recounts the South Pacific's version of the Irish Potato Famine and how a cocktail of climatic conditions proliferated a devastating epidemic of taro leaf blight (TLB) (*Phytophthora colocasiae*) on the island Independent State of Samoa in 1993.

Within a short period, there was an almost 100% crop loss, causing a cultural, food security and economic catastrophe. The disaster cast a poignant light on the dangers of monoculture and relying on narrow diversity. This event provided the global impetus to establish several international organizations to conduct expeditions in order to gather specimens from various centers of origin that expressed natural resistance to the blight.

You got to fight the blight!

We conducted ethnobotanical fieldwork, gathering an impact story that showcases the vital importance of the conservation and use of the global genetic diversity of taro. On this journey, we outlined the how, why, and by whom the global diversity of taro was gathered to fight the blight.

Why we need the taro genebank at CePaCT



The tale of the taro leaf blight (TLB) is also the origin story of the formalization of the Centre for Pacific Crops and Trees (CePaCT).

When the taro collecting expeditions in search for TLB resistance returned from all over the world, scientists, farmers and breeders needed a safe place to store, multiply and conserve their germplasm. In 1996, the Pacific Heads of Agriculture and Livestock Programmes agreed 'to put in place, both in their countries and through regional cooperation, policies to conserve, protect and best utilize their plant genetic resources'. Thus, CePaCT, the genebank of the Secretariat of the Pacific Community (SPC) of the Land Resources Division (LRD), was formed with the assistance of the global community to safeguard these taro accessions.

CePaCT has over 2,000 accessions of crops important in the Pacific region – sweet potato, banana, cassava, yam, Irish potato, taro, breadfruit, vanilla, *Alocasia* and *Xanthosoma* plants. The taro collection, with more than 1,000 accessions, is the largest collection of taro diversity globally.

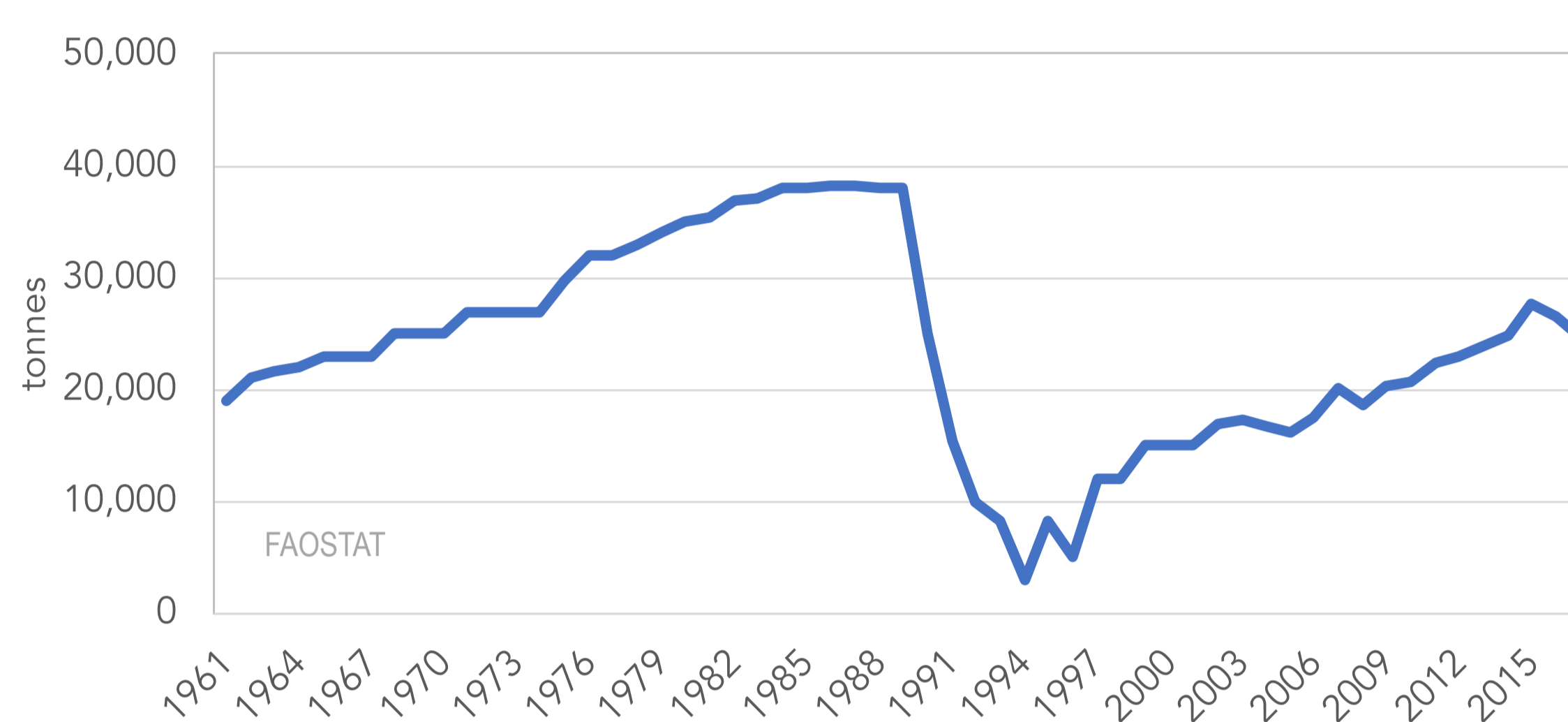
Global distribution of taro germplasm by CePaCT, 2004-2017

Total number of samples sent: 21,945

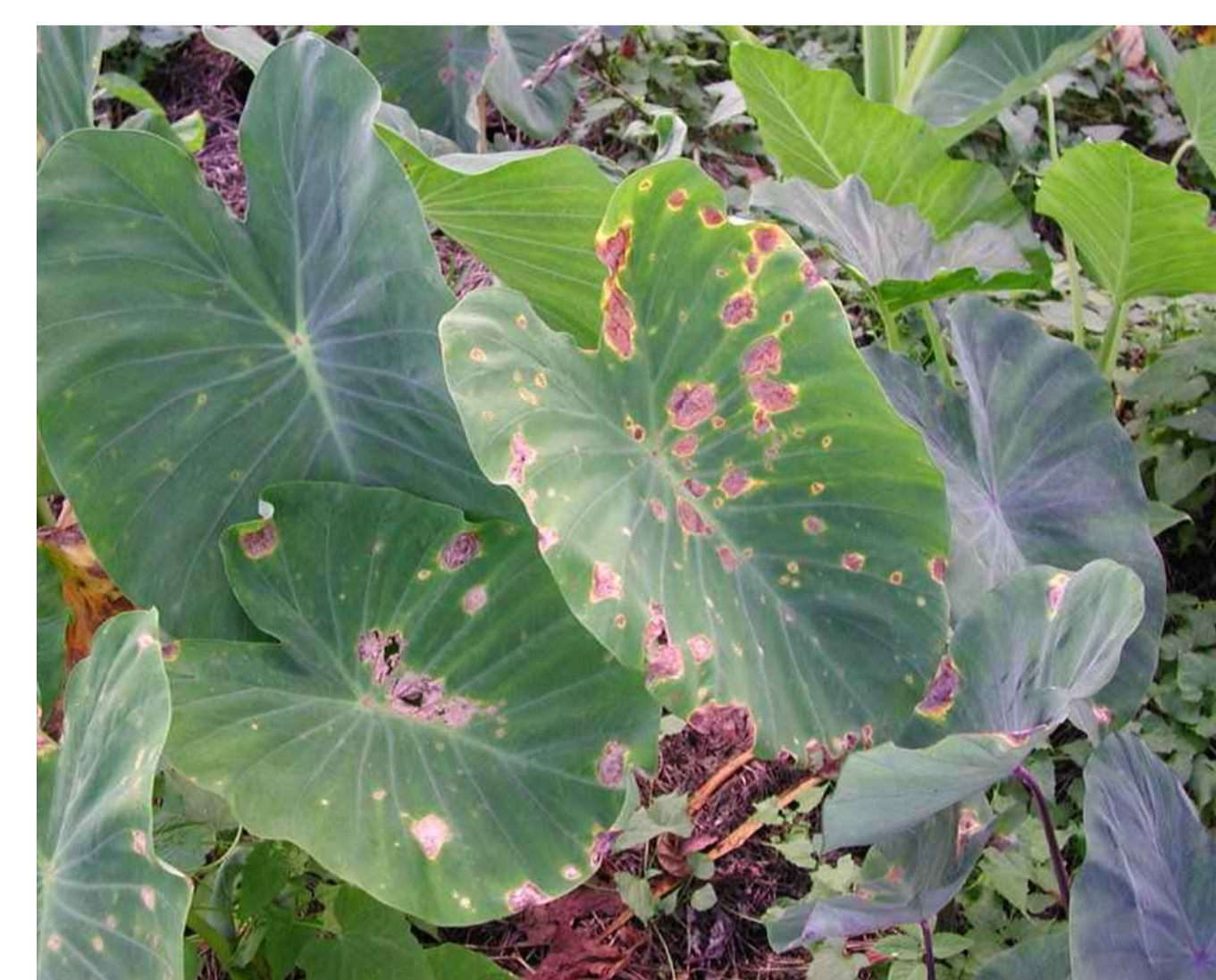
Total number of accessions sent: 3,045

Top recipient countries: Papua N. Guinea, Fiji, Samoa, Nigeria, Kenya, South Africa, Philippines, Ghana, India, Cuba, Nicaragua, Kiribati, Haiti

Taro production in Samoa, 1961-2017



Taro leaf blight on leaves



http://www.pestnet.org/fact_sheets/taro_leaf_blight_014.htm

The global partnership in taro conservation & TLB eradication

The TLB outbreak in 1993 served as a call to action to support crop diversity conservation. The global plant genetic resources community rallied together and formed networks that gathered, analysed, and bred new lines in search for disease-resistant cultivars. The tale of recovery was successful because of the availability of taro diversity for screening and breeding.

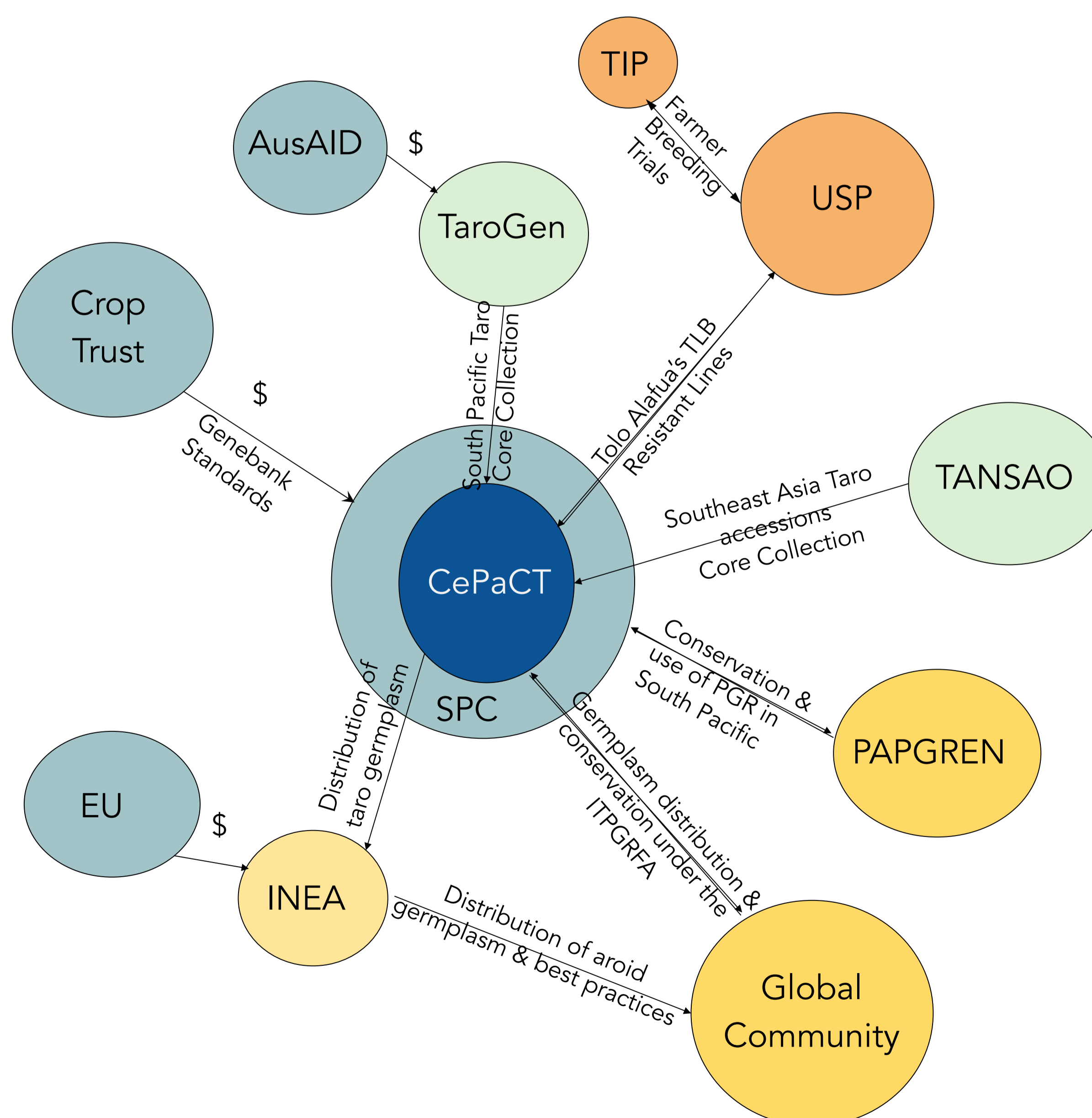


Diagram of the interdependent organizations instrumental to access & share benefits of taro plant genetic resources in breeding TLB resistant lines

- Organizations for germplasm collection
- Organizations for global germplasm distribution & use
- Organizations for funding PGR work
- Organizations for taro breeding
- Organizations for the conservation & use of taro PGR



Taro germplasm in vitro at CePaCT
Photo: Neil Palmer/Crop Trust

Work to collect taro diversity from the Pacific region and beyond resulted in the discovery of a source of resistance to taro leaf blight (TLB). The story of TLB highlights the importance of having clean, virus-tested germplasm.

