

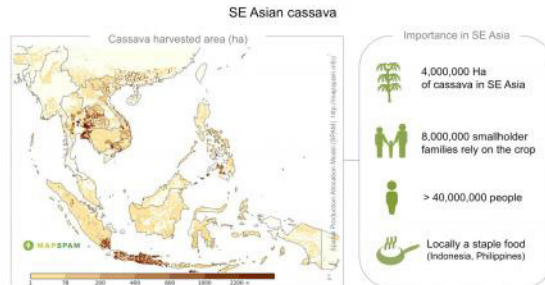
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Achilles' Heel

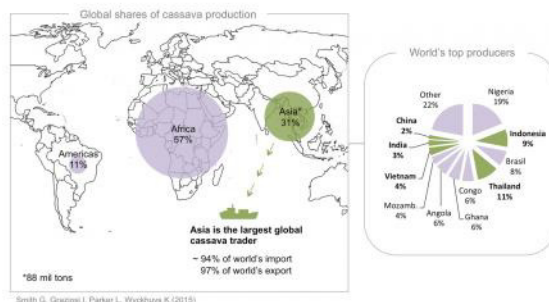
What's in your noodle soup? You may never have heard of it before. Cassava - or tapioca - is a root crop like sweet potato originally from South America, where it is steamed or boiled and eaten as a source of carbohydrate. It appears that Spanish traders introduced the species from Mexico to Southeast Asia in the 19th Century, where it survived drought and high temperatures. It's still eaten as a root crop in some areas, especially in mountainous areas where few other crops will grow. But today it's also used in a wide range of other foods and markets, and cassava starch is used to make everything from noodles to sweeteners.

A revolution is underway

Asia is now the world's largest trader of cassava and cassava products. Cassava or tapioca has been transformed to supply a diverse and lucrative market - from food products to industrial products, pharmaceutical products, even bio-fuels. This burgeoning market represents a huge opportunity for poor smallholder farmers to earn a better income from a crop which requires little investment and can grow on very poor soil. For decades cassava was a safe option for poor farmers. But now it's under threat.



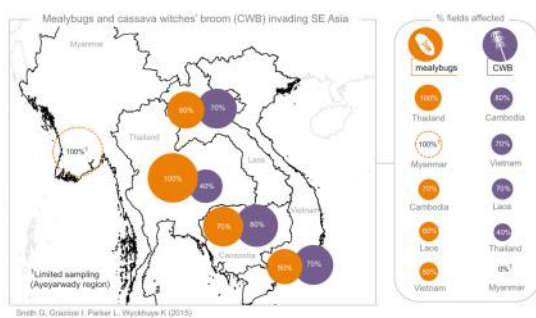
Global cassava production (FAOSTAT)



The perfect storm

Global demand in the carbohydrate market for cassava is on the rise, driving the billion-dollar cassava industry. In Southeast Asia, it is smallholder farmers who are in a unique position to take advantage of this market. Farmers cultivate cassava on their small plots of land because they do not have to spend a lot of time looking after it, and it brings in a good income. It's also a relatively climate-hardy crop: it can grow well despite low rainfall, poor soil fertility and temperature increases. But the crop is being grown in a rapidly and dramatically changing environment, characterized by climate change, fast changing land use patterns and very low input use.

Pests and diseases invading SE Asia cassava fields



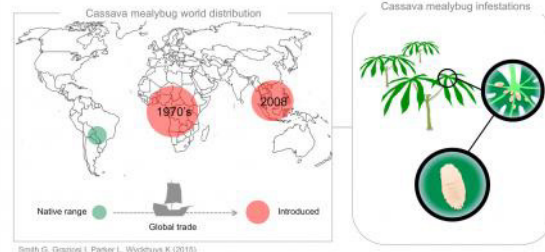
But it has an Achilles' heel...

Population pressure in Southeast Asia is driving low soil fertility. Poorer soils lead to less healthy crops, which are not as capable of fighting pest and disease attacks. These maps below show where cassava is grown. The areas of higher cassava yields correspond with areas where fertilizers are applied. This shows that when farmers put back into the soil what they take out - like phosphorous or nitrogen - soil fertility is built, the ecosystem becomes stronger, and cassava yields are better. In areas where fertilizer is not applied, crop productivity goes down and pests and diseases thrive, threatening smallholder farmers and the cassava industry. Mealybug and Cassava Witches' Broom Disease are among a swath of new pests and diseases sweeping through the region, negatively impacting cassava yields and farmer's incomes.

Pest invaders

Spurred on by more intense agricultural production on smaller pieces of land, low soil fertility and climatic changes, new cassava pests like mealybugs are making good headway. Hitchhiking from their homes in South America or Africa on the back of cassava planting material, pests and diseases have followed the journey of the cassava crop east.

Cassava mealybug: global invasion



Infestation levels at alarming levels

Because these pests and diseases are new to Southeast Asia, local ecosystems cannot fight back yet. Farms - and the smallholders that depend on cassava planted in them - are not equipped to deal with the threat. Cassava Witches' Broom diseases is a severe threat to key cassava growing areas of Cambodia and the situation is so serious that many farmers are struggling to find disease-free cassava to plant. One of the causal agents of Cassava Mosaic Disease, Sri Lankan cassava mosaic virus (SLCMV), was firstly found in Cambodia last year, hence the threats of the diseases against Southeast Asian cassavas has been extended. Mealybugs have infested virtually all cassava fields in Myanmar and Thailand. This map shows an impact forecast for cassava mealybug based on hectares of cassava grown in each country. The impacts of pests and disease can be disastrous for farmers who rely on selling cassava for their income, and who can't grow any other crop in their low-fertile soil. And they are a threat to a growing billion-dollar industry.

Cassava mealybug: impact forecast

