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▲ A plot with adult rubber trees in Côte d'Ivoire

- ◀ Tapping a rubber tree
- ▶ Harvesting latex

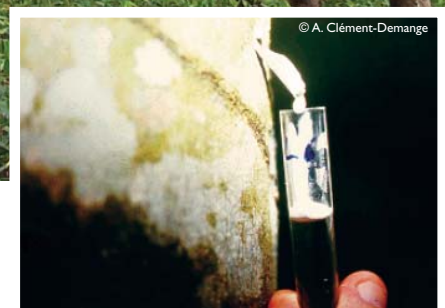
Hevea rubber trees

Rubber trees (*Hevea brasiliensis*, Euphorbiaceae family) produce natural rubber—a renewable agromaterial that is used by the industrial sector and which accounts for 40% of all elastomers (natural and synthetic rubber) used worldwide. Latex is not a sap but rather a milky emulsion containing rubber particles and consisting of the cytoplasm of latex cells present in trunk bark. In the last 20 years, *Hevea* wood has also been utilised to an increasing extent, mainly for furniture making, and has become a secondary product of cultivated natural rubber trees, currently accounting for 15% of the profits from rubber tree plots. Rubber trees have been intensely utilized since the discovery (in 1839) of vulcanization, i.e. a process that maintains the elasticity of natural rubber, which is an essential feature. 70% of this production is absorbed by the tire manufacturing industry.

Rubber trees were initially cropped after their domestication in 1876, with the first transfer of seeds from Brazil to Southeast Asia. The paradox is that rubber cropping has never actually been developed in South America, i.e. the area of origin of *Hevea brasiliensis*, due to the presence of South American leaf blight caused by the fungus *Microcyclus ulei*. Rubber cropping was first developed by agroindustrial groups in Asia during the colonial era and then gradually became a key activity on family smallholdings of less than 5 ha, subsequently accounting for 75% of the total cropping area. In 2004, Thailand supplied 35% of the 8.4 million t of natural rubber produced worldwide.

Grafted clones obtained by vegetative propagation currently represent the best adapted material available for rubber cropping. A rubber tree plot is tapped 6-8 years after the grafted trees are planted and they can then produce for 20-30 years. Tapping (harvesting latex) is periodically done every 2-5 days. Tapping techniques have gradually changed to optimise the cycle involving latex flow, coagulation and regeneration in latex tissues in the bark. Annual per-hectare dry rubber production can range from 300 to 2500 kg, depending on the production system and plantation age.

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▷▷ Visiting scientists

The Genmap project is a short-term component of a longer-term cooperative integrated research programme involving CIRAD, the Rubber Research Institute of Thailand (RRIT) and Kasetsart University in Thailand, with the support of Agropolis International and the French Ministry of Foreign and European Affairs. This programme, which covers the 1998-2010 period, was aimed at increasing the productivity and quality of products and adapting rubber growing to the ecological and socioeconomic conditions on plantations.

Kanlaya Prapan (a young Thai researcher of RRIT) visited France for 12 months in 2001-2002 to genotype progeny and construct most of the genetic map of the studied hybrid.

Napawan Lekawipat (RRIT) came to France to finalise the genetic mapping work over a 5 month period in 2005 (this visit was financially supported by a fund that complemented that of the Agropolis advanced research platform), so it was thus possible to meet the objective initially set out in the Genemap proposal.