

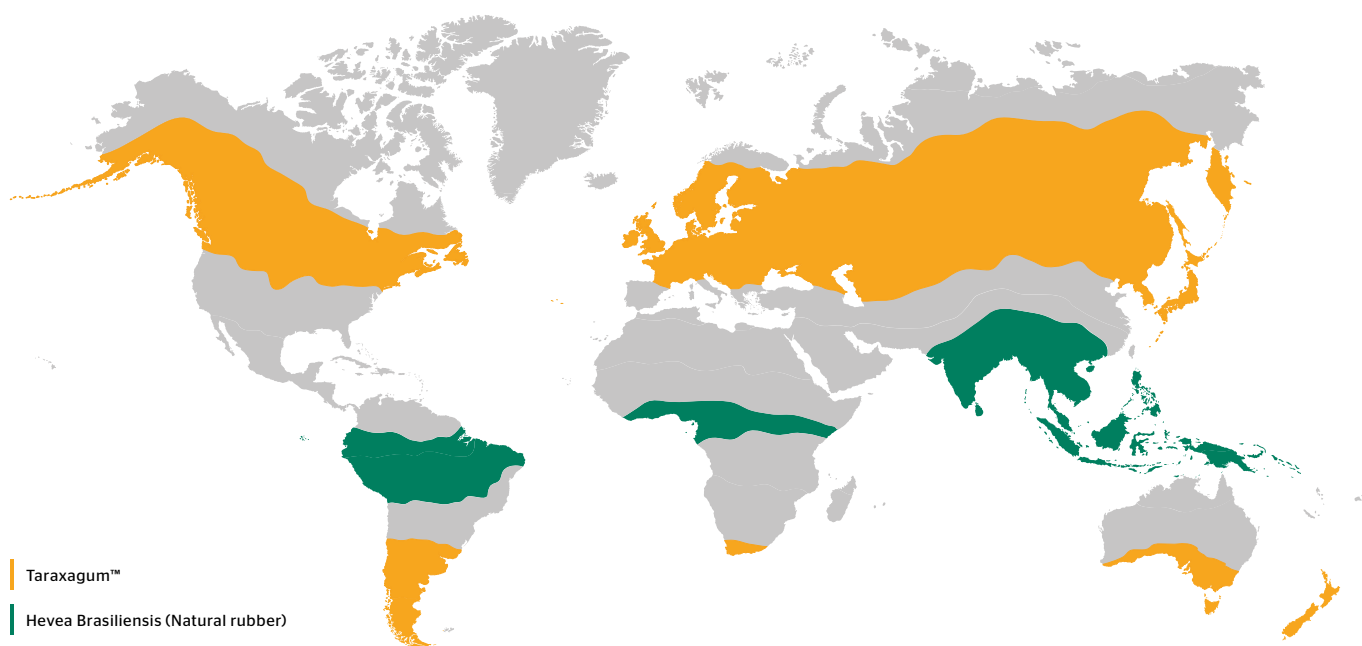
Taraxagum

Natural rubber from dandelion



Taraxagum

Natural rubber from dandelion



The benefits of dandelion

Russian dandelion (*Taraxacum kok-saghyz*) is a relatively low-maintenance plant that contains a high volume of natural rubber and grows in temperate regions across the world. This is a major advantage over the rubber tree (*Hevea brasiliensis*), which grows only in tropical climates - today mainly in Southeast Asia. Dandelion, however, can thrive equally well in not only Asia but also North America and Europe. And it's easy to cultivate, too: One field of dandelions is ready to harvest

after just one or two years. All these factors mean that cultivation areas could be situated close to tire plants, which, among other key advantages, would help to reduce transportation distances. Through its Taraxagum project, Continental is seeking to do its part to prevent ongoing tropical deforestation and reduce the carbon emissions resulting from the long distances involved in transporting conventional natural rubber.



Continental's research endeavors

In collaboration with its partners, Continental rediscovered the huge potential of the dandelion back in 2011 and became the first tire manufacturer to invest significant resources across the value chain. The multi-award winning Taraxagum project launched by Continental, the Fraunhofer Institute for Molecular Biology and Applied Ecology (IME) and University of Münster aims to pave the way for natural rubber that is obtained from the dandelion plant and can be used for all kinds of tires and other industrial rubber applications.

In late 2018, a research center - Taraxagum Lab Anklam - was opened in Germany, 180 kilometers north of Berlin. In collaboration with a number of project partners, Continental is investigating in particular the industrial application of dandelion rubber along the entire value chain, from breeding, seed production and cultivation through to

harvesting, root processing and rubber extraction.

The challenges, however, are many and varied. Scientists have already succeeded in decoding the genome of the dandelion and learning about its metabolism. This is vital for supporting conventional breeding methods applied to further increase the amount of rubber in the dandelion latex. A number of projects are also underway exploring some of the more pragmatic issues that need to be resolved. For example, Continental is working with partners to develop field machinery for harvesting the dandelion roots without damaging them. The aim is to harvest one metric ton of rubber per hectare of cultivated dandelions, which roughly corresponds to the yield from one hectare of traditional rubber trees. This would enable Continental to cover some of its future rubber requirements from a new, sustainable source.



Dandelion tires

Tires made from natural rubber obtained from dandelion roots exhibit properties comparable to those made from natural rubber obtained from rubber trees, as has been proven in extensive product and tire testing. Depending on the intended purpose (summer, winter or all-season tires), natural rubber accounts for between 10% and 30% of the total weight of a Continental tire - and even as much as 40% of the total weight of a truck tire.

In 2014, an experimental tire of the WinterContact TS 850 P model with a tread made from dandelion rubber underwent comprehensive testing and passed with flying colors. At the 2016 International Motor Show Germany, Continental unveiled its first truck tire made from dandelion rubber.

A Taraxagum bicycle tire from Continental is already on the market. Urban Taraxagum was

unveiled at Eurobike 2018 and is the world's first series-produced tire featuring a tread made from pure dandelion rubber. Continental wants to industrialize the technology by the end of the decade for cars and commercial vehicles too. This would not only represent yet another vital step toward even more sustainable tire production, but also make the company that little less dependent on the traditional rubber market.



Natural rubber

A material with a long history

Natural rubber is a valuable commodity. It can be found in many rubber products – and especially in tires. Rubber is traditionally extracted from the latex – a milky fluid similar to sap – of the tropical rubber tree. As far back as 1,600 years ago, the indigenous Inca people made use of the “tears of the tree,” making balls from natural rubber by drying the latex and allowing it to agglutinate. It was not until the 19th century that the chemical process of vulcanization – whereby rubber and other substances are heated under pressure – turned the sticky natural rubber into a valuable commodity suitable for industrial use. From then on, the demand for rubber skyrocketed and the search for alternative sources quickly began. In around 1930, researchers found a previously undiscovered variety of dandelion – *Taraxacum kok-saghyz*, commonly known as the Russian dandelion – growing in the mountains of Kazakhstan. They found that it contained a high volume of natural rubber, especially in its root.

Supported by:



Federal Ministry
of Education
and Research

on the basis of a decision
by the German Bundestag

Supported by:



Federal Ministry
of Food
and Agriculture

on the basis of a decision
by the German Bundestag



Mecklenburg-Vorpommern

Continental Reifen Deutschland GmbH

Group Sector Tires
Büttnerstrasse 25
30165 Hanover
Telefon: +49 511 938 - 01
www.continental-tires.com

Key partners in Continental's Taraxagum research network:

- › University of Münster
- › Fraunhofer Institute for Molecular Biology and Applied Ecology (IME), Münster
- › Julius Kühn-Institut Federal Research Centre, Quedlinburg
- › Eskusa GmbH
- › Bavarian State Research Center for Agriculture (LfL)
- › Holmer Maschinenbau GmbH

The Taraxagum research network would like to thank the following for the project funding:

- › Federal Ministry for Education and Research
- › Federal Ministry of Food and Agriculture
- › Ministry of Economic Affairs for the state of Mecklenburg-Vorpommern
- › European Union

for the funding from the Operational Program of the European Regional Development Fund
in the funding period 2014-2020.