



CONTINENTAL

# Five years until series production of dandelion tyres

**Continental and Professor Dirk Prüfer from Münster have together received the Transfer Prize from the University of Münster for the research project Taraxagum. Natural rubber is to be extracted from the roots of the Russian dandelion for various rubber applications. According to Continental, it will take at least 5 years in order to get from development period to series production.**

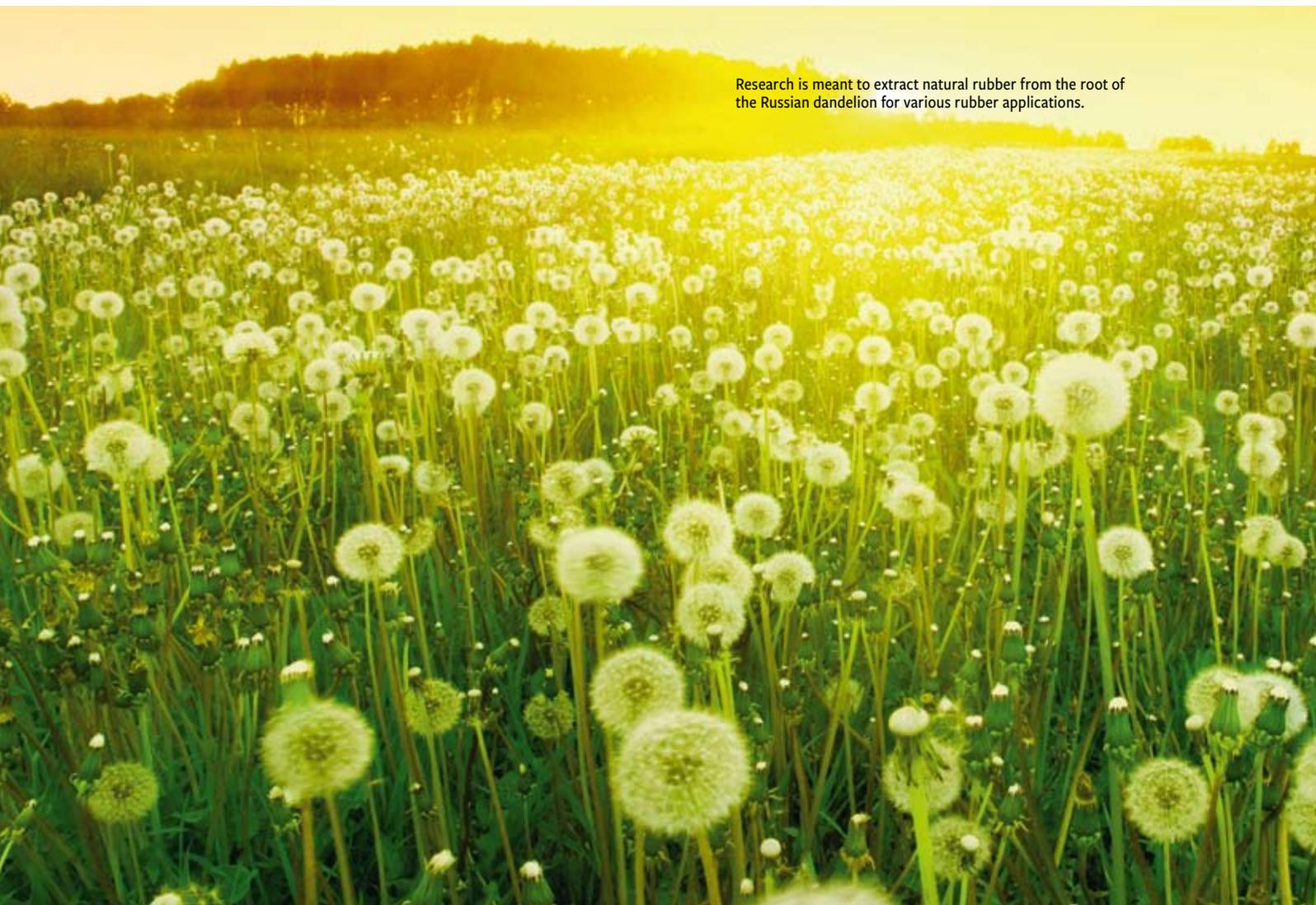
The prize was awarded for excellent transfer of know-how from biotechnological research to commercial application. According to information from the scientists, the period was shortened, which is normally necessary to breed dandelion plants for productive, and thus, industrially usable application, thanks to biotechnology developed in Münster. The Transfer Prize of the University of Münster is endowed with 10,000 euros. The prize money will be donated to the botanical garden of the University of Münster, where the cultivation of the first plants for research on dandelion rubber had started. Already this

year, the technology company will open its own Taraxagum research lab in in Anklam, Mecklenburg-Western Pomerania.

According to people responsible for Continental, the regionally produced rubber will shorten transport distances, and thus, save carbon dioxide emissions. Continental expects series production of dandelion tyres in five years at the earliest. The milky juice of the Russian dandelion contains macromolecular rubber, which means long chains of rubber molecules being an essential raw material for many rubber products. In the past, tests trying to use this raw material were less successful. Nonethe-

less, the tyre manufacturer Continental has already produced prototypes of truck and passenger car tyres made from dandelion rubber. At the moment, Continental is investing 35 million euros in a research laboratory for dandelion rubber in Mecklenburg-Western Pomerania, which is supported by the federal state's Ministry of Economy.

According to company information, it is now possible to make use of the dandelion rubber because of Prof. Dirk Prüfer's research team. The biotechnologist is professor for biotechnology of plants at the University of Münster and head of the department Plant Biopolymers at the Münster branch of



Research is meant to extract natural rubber from the root of the Russian dandelion for various rubber applications.



Dr. Carla Recker (right) received the Transfer Prize of the University of Münster on behalf of Continental. (Image source: WWU - Heiner Witte)

the Fraunhofer Institute for Molecular Biology and Applied Ecology. Originally, the scientists did not have any application in mind. “It is not our mandate to build tyres. We want to understand the molecular basics of the rubber biosynthesis in the plant”, Dirk Prüfer

says. Now, however, it is exactly this biological understanding that is bringing industrial use within reach. Although the Russian dandelion contains more rubber than other dandelion species, the amount produced is not yet sufficient for industrial-scale production. In spite of all its robust and undemanding nature, the dandelion is not a crop plant providing stable yields, and thus, making it economically viable - at least not until now. Targeted breeding programs are meant to bring about a change.

One key aspect here is the development of so-called DNA markers by the researchers in Münster. These markers are naturally occurring sites in the genome. They are detectable in the laboratory and in each case occur in the genome in combination with the

respective “stage directions” that produce a certain desired property of the plant. One example is a higher rubber content. Using a DNA analysis, the scientists can determine whether or not a seedling has the desired property. As a consequence, they can tell the breeder immediately whether it is worth continuing to breed with this plant. According to the scientists, this process, which in former times took place intuitively and sometimes over millennia, can be specifically influenced and is already able to show promising results after only a few plant generations. Parallel to the ongoing breeding program, the Continental research laboratory in Anklam/Mecklenburg-Western Pomerania is to start operating later this year. **(kle)**



The WinterContact TS 850 P is already available as prototype of the dandelion rubber version.





ZARE INITIATIVE

# Problem of illegal disposal of old tyres

**Illegal disposal of old tyres is fined with high financial penalties. Special disposal companies provide professional removal. The Zare Initiative draws regularly attention to both the extent and costs of illegal disposal of tyres for the taxpayer. This Initiative is a cooperation of 13 companies, which are certified by the Bundesverband Reifenhandel und Vulkaniseur-Handwerk e.V. (German Tyre Retailer and Vulcanization Trade Association - BRV) concerning the disposal of old tyres.**

According to Zare, there is an annual amount of about 570,000 tons of old tyres. For decades, old tyres have been recycled, but the number of old tyres is much higher than the demand for recycled products. The mountain of old tyres is growing and growing, not only at the specialized disposal companies but also at illegal dumping sites. If you drop old tyres at an automotive workshop or at the local recycling centre, you have to pay three to four euros according to the Initiative. There are also “travelling dealers of old tyres” picking them up at automotive workshops

and then get rid of them, not always in a legal way according to Zare. People being responsible for Zare report on an incident in Lower Saxony: 150 old tyres were found in a forest. It was possible to find out about their origins, because the tyres still contained names and number plates, and were known to originate from an automotive workshop in Hamburg. According to the people running the workshop, a “travelling dealer of old tyres” picked them up in order to get rid of them in a “legal way”. Apparently, the disposal company threw them away in the forest instead of transporting

them to the landfill.

Nearly on a daily basis, tyres being illegally dumped are found in forests, alongside country roads, on farm roads or in watercourses. The local authorities are responsible for the removal of tyres illegally dumped, and thus the community pays for it. Illegal tyre dumping has to be pursued by the police. Financial penalties vary from federal state to federal state. When dumping between one and five tyres, there is a penalty between 75 and 330 euros in most of the federal states. Normally, you have to pay up to 2,500 euros as penalty for more than five



Illegal tyre disposal is fined with high financial penalties. (Image source: © UsedomCards.de - Fotolia.com)

tyres. It is even more expensive in Lower-Saxony: already one to five tyres cost up to 1,000 euros. Bigger quantities are even fined with up to 25,000 euros. The Initiative provides a map showing all the different locations, and gives an overview of illegal tyre dumping or burning in Germany. They continuously collect reports about the location of illegal tyre dumping or burning tyres, which come from local media all over the country. There have been a high number of cases in densely populated areas like the Ruhr area or the Rhine/Main area.

Apart from retreading, there are several possibilities of recycling old tyres. Zare gives the following overview: Because of the high calorific value (9.0 kWh/kg) tyres are very useful as heating material. As a consequence, about 50 per cent of old tyres are used in a thermal way, which means that they are shredded and burned in cement plants. Moreover, the steel proportion can also work as replacement for iron ore. The other 50 per cent of old tyres are recycled by certified recycling companies, thus, they are dismantled into their major components: 67 per cent of rubber, 18 per cent of steel, 14 per cent of textiles and 1 per cent of residual materials. It is possible to recycle all the components. Most of the rubber is transformed into rubber granulate and is used for modification of asphalt and bitumen. Furthermore, it is useful for the production of sports floors, artificial turf pitches, fall-protection mats and thermal mats. The rubber granulate can partially be devulcanized, and then be added as



Zare published this 'location map' showing 'illegal disposal of old tyres in Germany'.

recycling material to tyre compounds when producing new tyres.

The Zare Initiative aims at further raising awareness of professional tyre recycling in Germany. The partners of Zare dispose of 18 locations, and cover nearly the whole of Germany and the Netherlands. There are the following members: Allgemeine Gummiwertstoff und Reifenhandels GmbH, Bender Reifen Recycling GmbH, CVS Reifen

GmbH, Danninger OHG Spezialtransporte, Hartung Speditions-, Handels- und Transport GmbH, HRV GmbH, KARGRO B.V., KURZ Karkassenhandel GmbH, Mülsener Rohstoff- und Handelsgesellschaft mbH, REIFEN DRAWS, Reifengruppe Ruhr, REIFEN OKA as well as Reifen Recyclingbetrieb Brenz GmbH.

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