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Planting hope, harvesting fuel

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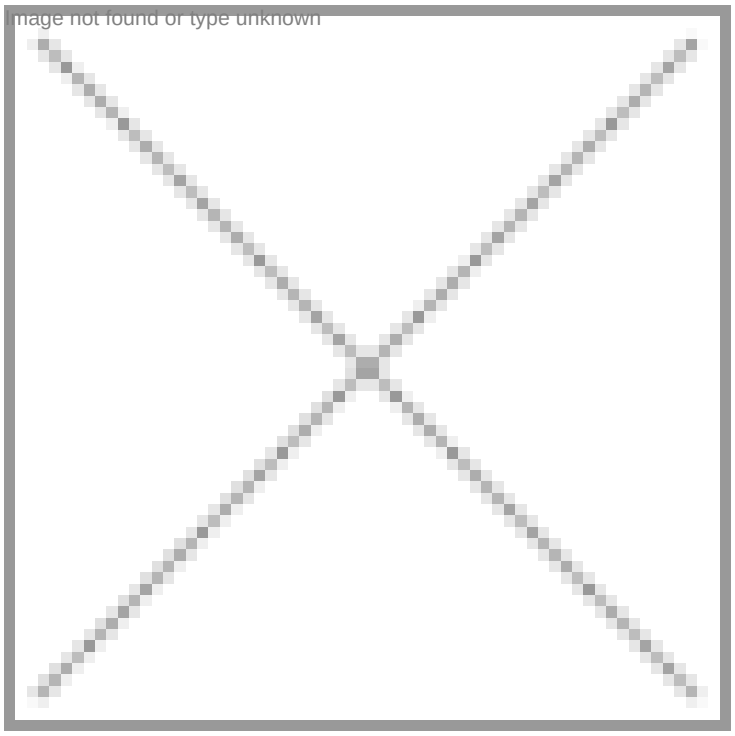

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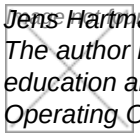
A humble desert plant named Jatropha has been receiving much attention lately, raising high hopes for the future.



Jens Hartmann
The author is Country Head India and Head, Bayer CropScience South Asia. Born in Wuppertal, Hartmann pursued his early education and advanced academics in Germany. In October 2004, Hartmann took up responsibilities in India as the Chief Operating Officer, Bayer CropScience Ltd.

Offering a wide range of applications, the hardy shrub's potential sounds more than promising. Jatropha can revive barren grounds, create jobs from virtually nothing, help small farmers in emerging countries to escape poverty, and it can even provide renewable energies.

This particular oil well holds a lot of future promise. Jatropha nuts can provide high-quality biodiesel per hectare. Refined Jatropha oil can be used for diesel motors with just minor modifications to the engine. What is more, the fuel is clean and environmentally friendly, offers an outstanding CO2 balance and can thus contribute to protecting the climate.

How it all started

The pioneer country of the Jatropha campaign is India. This is where, in 2003, an enterprising project woke the hardy shrub

from centuries of inconspicuous slumber. Agricultural researcher Professor Dr Klaus Becker of Hohenheim University in Stuttgart, Germany, initiated the project together with Daimler Chrysler. Jatropha was cultivated in trial plantations in the Indian state of Gujarat, refined locally and used in test vehicles in early 2004. In April-May 2004, a modified Mercedes Benz C 220 CDI went on a 5,900km-tour through India, receiving worldwide publicity.

The Indian government has also come to realize the economic advantages of the succulent shrub bearing the scientific name of Jatropha curcas. So far, India imports 70 percent of its oil, an increasingly costly item in the country's budget. Reducing the country's dependence on fossil energy sources is therefore high up on the political agenda. By 2011, the government plans to substitute 20 percent of the country's diesel consumption, and Jatropha is officially rated as the most important alternative fuel source.

Stopping erosion

Inexhaustible oil source, environmentally-friendly energy supplier, and a job generator, the plant offers all that and even more. According to Professor Klaus Becker it is even able to heal degraded surfaces: "We are planting Jatropha on wasteland to stop erosion. We hope that in 10-15 years time we might be able to recuperate these areas."

Even the crop's by-products might be useful. Once the oil has been extracted from the Jatropha nut, the remaining press cake can be used as animal feed. The quality of the Jatropha flour is significantly better than soy, Professor Becker explains. "The only problem we haven't solved yet is how to extract the poison. But I'm sure we will work something out." The poison itself could also be marketed.

So far, Jatropha is still a wild plant that needs to be domesticated for cultivation. But researchers, industrialists and politicians worldwide are increasingly interested in the energy plant with its promising potential.

The Indian government has selected Jatropha as a potential source for biofuels. There are both public and private initiatives on Jatropha in India which have resulted into approximately 0.3 million hectares of plantations. Cultivation thus falls way short of the government's projected target of 2.2 million hectares of Jatropha already by 2006.

The plant can be grown on some of the estimated 60 million hectares of waste and marginal land including degraded forest land, but experience shows that a minimum rainfall of around 500-700 mm is needed to fully exploit the yield potential.

Bayer activities with Jatropha in India

There are currently a couple of multinational companies engaged in Jatropha cultivation for biofuel production. Bayer CropScience is also looking intensely to become a partner of choice when it comes to professional crop protection for Jatropha.

The development of Jatropha from a wild plant to a plantation crop requires professional input including the management of pests, diseases and weeds. And Bayer CropScience is ready to support this development with all its expertise in order to find tailor-made solutions for Jatropha production.

Food production takes priority

Cultivation on poor or degraded soils is in the focus also for the Chairman of the Board of Bayer CropScience, Friedrich Berschauer : "Biofuels certainly make a contribution to covering the increasing global demand for energy while simultaneously lowering greenhouse gas emissions. However, "We would be well advised to also promote research into approaches that do not lead to competition in food growing," adds Berschauer. He believes that the second generation of biofuels, based on biomass and biomass residue, will play an increasingly important role here in future. Berschauer summarized Bayer CropScience's guiding principle as follows: "Food production takes priority".

New jobs

The Indian population will benefit from further advantages of the crop. Farming and processing Jatropha will create jobs where they are needed most: in the rural areas. The modest shrub requires little care and even less water. As it is inedible to animals, it does not need fences for protection. Its nuts cannot be harvested automatically, resulting in the creation of long-term jobs and income for the rural population. Professor Klaus Becker reckons that it takes 1.5 workers per hectare to grow and harvest Jatropha nuts. While China and India have already started planting extensive areas, Africa is planning huge Jatropha farms as well.

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