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## Oil from a Wasteland - The Jatropha Project in India – Part 4

The Selection and breed of the plants request constantly new experimental designs to find out about the best location and best nurture to yield a large crop



The agrarian researchers want to cultivate bushy growing plants

### The search for elite plants

The CSMCRI has been making preparations for the jatropha project for six years now. Indian agronomists have been gathering jatropha seeds and cuttings from all parts of the country since 1998. The result is a collection of plants that are adjusted to a broad spectrum of climatic and local conditions. The researchers discovered that the plants produce a large variety of yields, ranging from zero for some plants in some seasons to individual plants that reliably produce between one and two kilograms of oilseed annually. These members of the “jatropha elite” are being used as the starting material for the present project.

At their station in Bhavnagar, the CSMCRI researchers are using shoots clipped from these selected high-yield plants as cuttings for propagation. The cuttings are rooted and cultivated in a greenhouse until they are about 25 centimeters high. They can then be transplanted into open fields. A small proportion of the young plants have been cultivated from seed. The difference between this method and propagation from cuttings is that in the latter case the new plants have exactly the same genetic makeup as the parent plants - and, the researchers hope, the same high yield.



In the nursery, the young plants are propagated from cuttings or raised from seed before being transferred to the test plots in Gujarat and Orissa.

The researchers have now produced approximately 20,000 cuttings, which were transplanted between March 2003 and September 2004 on two trial areas of wasteland characterized by very different climatic conditions. The jatropha plantations around Chorvadla cover an area of 10 hectares, and the plantations in the eastern state of Orissa cover 24 hectares. The trial fields in Orissa have a more humid climate, but some of the parcels selected for the project lie in an area of sand dunes near the town of Gopalpur and are extremely poor in nutrients.

Years ago, the local people gave up their attempts to cultivate these barren fields near Mohuda (Orissa). But today, the scanty thorn bushes that used to grow here have been replaced by a waving green sea of jatropha bushes. In spite of the extremely barren soil, the plants have clearly flourished by comparison to their counterparts in the dry climate of Gujarat. Pushpito Ghosh, the CSMCRI official who is responsible for the project, hopes that the first harvest of nuts can begin soon.

The German and Indian experts have worked out a sophisticated set of trials for the two planting locations. They have divided up the entire planting area into individual parcels in order to examine the impact of a number of factors on the growth and yield of the plants. Among the issues being addressed are:

- Does cultivation from seed or propagation from cuttings lead to higher-yield plants?
- Is a minimal amount of fertilizer helpful and, if so, is mineral or organic fertilizer more effective?
- How strong is the impact of climate on plant growth? What type of soil is best?
- Does pruning the plants result in more bushy growth and a higher yield?
- The agronomists hope to answer questions such as these by the time the project is concluded in 2007.

*With the help of a testing plan, the agricultural researchers are investigating the impact of various factors on plant growth and yield in the test beds.*

If the project is successful, that won't really be the end. On the contrary, the project calls for local farmers to be informed over the coming years about the uses of jatropha as an energy-producing plant. The information campaign will already begin in 2005, because the practitioners want to find out from the scientists everything they need to know in order to efficiently propagate the young plants and cultivate the jatropha fields.

The researchers are not aiming at the implementation of a hightech agrarian concept that calls for maximum input and delivers bumper crops. Instead, they're looking for a practicable type of cultivation that is compatible with the routines and possibilities of local farmers, so that the jatropha plantations can be profitable for their cultivators with a minimum input of labor, money and materials.

They're also hoping that the project, as a tried and tested model, will have a positive impact at the local level in the medium term as well. "By cultivating these energy-producing plants, processing them and finally producing biodiesel, we are creating new sources of income for the local population. Cooperatives could take over the cultivation and processing of the oilseed, thus creating value that did not exist before," explains Rudolf Maly.

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