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Picture Cover Page: Julius-Kühn Institut, Darmstadt (Ge 1)

POINT OF VIEW

Involving Nature intelligently. To feed nine billion people farming must be intensified. At the same time farmers are to use less and less chemical crop protection and hold back on the fertiliser. This is agreed not only by environmental and consumer protection groups but also by legislators and retailers. Intelligent processes are the only way out of this dilemma. In this respect technology is ahead of chemistry. GPS-controlled sprayers already work reliably; spraying sequences and combinations of biological and synthetic agents have still to prove themselves. The best thing, however, is for us to sharpen our own understanding of the intelligence of Nature by observing our soils and fields more intensively and to look for the deeper causes of all our challenges.

Rainer Maché

Walking the path of knowledge

Necessity is the mother of invention. An Indian economics professor seeks out innovations where few would expect to find them: among small farmers in remote regions.

Text: Klaus Sieg | Photos: Jörg Böhling

Through his enthusiasm for local ingredients and the way they are prepared, Anil Gupta quickly comes into contact with the village women, too.



Tanadi squats in the shade of the large tamarind tree. With lowered eyes he looks at the dusty surface of the village square. Tanadi had not wanted to sit on the plastic stool – on a level with Anil Gupta. And so the professor from the big city had promptly pushed the plastic chairs aside and seated himself next to the small farmer on the gnarled roots of the tree. Now he points to a dry branch in a plastic bag. “What do you use this plant for?”

Anil Gupta eyes the farmer curiously through his glasses. “For nothing special, there’s not much you can use it for,” Tanadi shrugs.

“Really?” the professor insists.

Tanadi scratches his grey, stubby beard. “Well, we stick the branches in the field to keep the rice weevils away,” he says. “The water in the paddy field washes the medicine out and spreads it over the plants.”

Anil Gupta slaps his thigh. “That’s nothing special? But that’s fantastic!”

TOURS OF EXPLORATION IN THE HINTERLAND

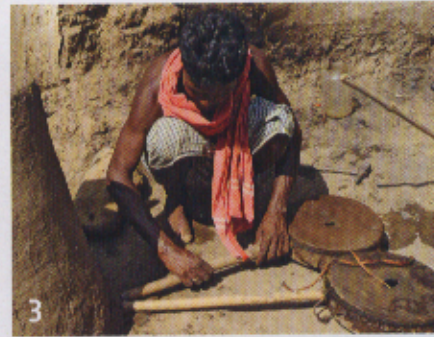
Anil Gupta teaches and researches at the Indian Institute of Management in Ahmadabad, one of the most renowned universities in the country. He is light-skinned, slim and tall, with a carefully trimmed beard. Farmer Tanadi is short and stocky. His

leathery skin bears witness to hard physical work under the scorching sun of eastern India.

Tanadi has never been outside his village, Sargipal. The economics professor lectures in Berkeley, Cambridge or Boston. But while his colleagues sit in their comfortable offices, he visits villages that seem light years away from the modern India of the big cities. There he seeks out inventions, tricks and ideas from people who have to get by on the strict minimum. “Necessity makes them very inventive.” Anil Gupta’s eyes light up. “People in the villages often don’t realise what they’re capable of.”

The professor’s enthusiasm is infectious. Tanadi straightens up. Recipes for vegetal fertilisers and weedkillers come bubbling out through his red teeth, stained from chewing betel nuts. He knows herbs from the woods that help against toothache, broken bones, malaria or stiff knees. This is just what the professor has undertaken the long journey here for. He pulls a crumpled piece of paper out of his shirt pocket and makes some notes.

Anil Gupta and a band of about thirty activists have already been to Assam, Gujarat, Kashmir, Orissa, Rajasthan or West Bengal. Every six months the group, made up of students, post-graduates, retired botanists, farmers or managers, goes on one of these Shodh Yatras, as the tours of exploration are called. They have already visited well over a thousand villages in remote areas of India.



1 Badly developed infrastructure: the women in the villages have to cover great distances to bring water home from the hand pump. | 2 Even when people are often wary in the beginning, the professor from the big city soon wins their hearts. | 3 The village smith demonstrates a method of smelting iron that has been used for centuries in this resource-rich region. | 4 Learning from one another on equal terms. Anil Gupta enquires about the properties of local plants.

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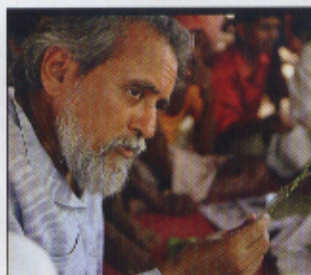
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HARVESTING LOCAL KNOWLEDGE

This time they have travelled to Chhattisgarh. In the villages live many aboriginal people whose status in Indian society is below even that of the lower castes. In the straggling villages of Chhattisgarh there is just one single water pump for sixty or seventy households. The women have to balance the precious liquid on their heads for the long walk home.

Sargipal consists of a handful of clay huts. Bamboo fences keep the emaciated cows out of the small rice fields and vegetable gardens. As well as rice, Tanadi grows paprikas, potatoes, okra or tomatoes. Most of it is consumed by the family. The farmer sells the rest at the market. Tanadi has seven children and four grandchildren. If the harvest is bad, he has to offer himself as a day labourer for the equivalent of one euro. Like the other farmers in his village, he breeds his seed himself and uses traditional growing methods. There are also a lot of things that they simply try out. The knowledge thus acquired rarely spreads beyond the village. The expertise of these people, who are almost without exception illiterate, has not been recorded anywhere before.

"We are living in the Information Age – yet their valuable knowledge is in danger of being lost," says Anil Gupta. "More and more farmers, for example, rely on purchased rice seed instead of working on the further development of their own varieties, which are much better adapted to the local soils and micro-climate." This is why the professor created the Honey Bee Network. "Like a honey bee, we want to harvest local knowledge and spread it." The central component is a freely-accessible database with more than 100,000 records so far. The breadth of these simple people's inventiveness is stunning: out of a mobile phone they cobble a remote control for their water pump, from an old bicycle a manure spreader or a plough. They protect mango trees against termite attack with a mixture of dung and red clay. With



» We are living in the Information Age – yet their valuable knowledge is in danger of being lost.« Anil Gupta

an ointment made from urine and local herbs they heal mastitis in cows.

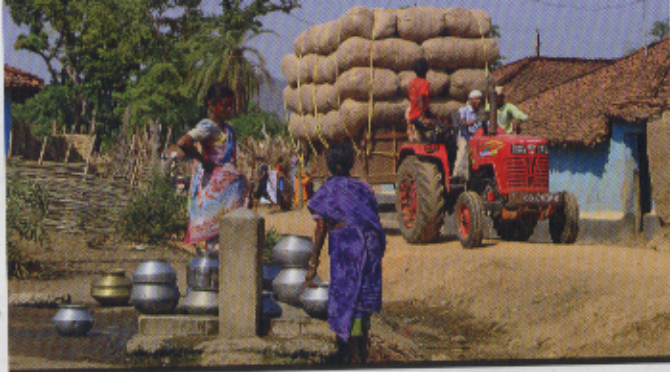
WALKING TO WHERE THE IDEAS ARE

But how do you come upon the ideas, tricks, customs and inventions of small farmers who live far from surfaced roads in villages without electricity or mobile phone reception? You walk to them. Anil Gupta has already covered about 6,000 kilometres. With long steps the 57-year-old scientist strides over the cracked earth to the next village. The way leads along dusty riverbeds, past fields where piles of collected ebony leaves lie drying. The farmers sell them to beedi makers, who roll tobacco into the leaves and tie them with a length of thread. The smoke from these poor man's cigarettes smells like a brush fire.

The sun is already well above the rounded tops of the wooded hills. Very soon the thermometer will climb to over 45 degrees in the shade. The air is still. It is May, the hottest time in the year. No rain can be expected for several weeks. The Shodh Yatras are purposely scheduled for times when it is particularly hot and dry or else bitterly cold. "In this way we show the inhabitants of the region our solidarity," Anil Gupta explains. While the others in

1 On foot to distant villages. Anil Gupta and his followers have already covered more than 6,000 kilometres on their tours of exploration. | 2 The smallest twig arouses Anil Gupta's curiosity. The professor is interested in everything the people from the villages make use of. | 3 Inventing with the simplest means. The people from the villages are masters of improvisation. | 4 Each plant, with its ascribed effect, is meticulously recorded and later correlated with the information collected from other tours of exploration.





HONEY BEE NETWORK

The tours of exploration are the public face of the Honey Bee Network. The "network of oddballs" is what Anil Gupta calls the network, which has been in existence for longer than twenty years. The oddballs include scientists, inventors, farmers and NGO activists. In addition to the database, which now holds 100,000 records of contrivances, tricks and inventions, a regular newsletter is the most important organ for disseminating local knowledge. It appears not only in English but also in numerous local Indian languages.

the group rush to the water pump during a short rest, he walks a little further and strikes up a conversation with a herdsman who happens to be there.

In the next village the pilgrim band is welcomed by women in colourful saris with tattooed arms. They serve a milky refreshing drink made from the fruits of the tamarind tree, then samples of local food: various varieties of millet, fermented bamboo shoots, boiled jackfruit kernels or a chutney made from red ants. The chutney is anti-inflammatory. The professor tastes, praises and jokes. He quickly wins their hearts.

From the discoveries on the Shodh Yatras and subsequent contacts in the region the professor has developed a number of products and had them manufactured. They are sold in village shops or by Network reps. The packaging of the herbicides, vegetal fertilisers or veterinary remedies bears the name of the creator. This might be a single person or whole villages, even in different regions. Network scientists research this on the spot and in the database. Before this they test the product in the lab. The Network receives 15 per cent of the proceeds of the sales; the rest goes to the creator and various charitable trusts.

Some creators, however, will have nothing to do with patents and royalties. Anil Gupta tells of a farmer in West Bengal who does not want to have his pedal-powered rice thresher kit protected by a patent – in spite of the help offered by the professor. "He considers the invention an inspiration from God for the benefit of all people."

LITTLE THINGS WITH A BIG IMPACT

In the evening everyone drops exhausted outside a village school, an almost windowless concrete shoebox. A plastic sheet spread on the ground serves as both assembly point and sleeping place. The group walks about 30 kilometres each day. The professor does a few yoga exercises and closes his eyes briefly. Not far away sits Amrut Bhai Agrawat. The 63-year-old helped to launch the Shodh Yatras and has taken part in all of them so far. Amrut Bhai Arawat is the complete opposite of the ebullient professor. He speaks neither Hindi nor English and had only four years of schooling. As a child he worked as a day-labourer on the land.

CHHATTISGARH

Chhattisgarh is India's newest state. It was formed in 2000 from the eastern districts of the adjacent state of Madhya Pradesh. Chhattisgarh has an area of 135,000 km² and 20.8 million inhabitants. One-third of them are aboriginal Indians. Although Chhattisgarh is rich in mineral resources, more than 80 per cent of the population work on the land.

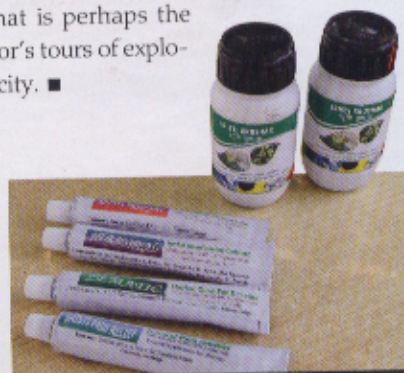


"The work was hard and I was constantly thinking about ways to make it easier." As a young man he began to tinker. With tubes and a wooden box he altered a sowing device so that the wind could blow away less of the seed. Another invention helped to loosen the soil for the groundnut harvest so that fewer nuts remained stuck in the ground. Soon Amrut Bhai Agrawat opened a workshop. Today his son runs it. Although now retired, the old man's head has not stopped working. His latest idea, a blocker for a hand-drawn well, costs only a few rupees. A small metal plate in the right place – and the women can stop and have a rest while the pail of water is pulled up. "Engineers and industrial designers pay no attention to something like that," says Amrut Bhai Agrawat. "And yet these little things have such a big impact."

BELIEVING IN ONESELF

Anil Gupta tells the villagers about his network and shows a few examples of peasant resourcefulness from other regions. A stuttering diesel engine supplies electricity to the laptop and projector. The farmers gape. It is not so much the other farmers' inventions that seem to amaze them but rather the respect and interest these earn. This will motivate them to believe in their own knowledge. And that is perhaps the main point of the professor's tours of exploration from the faraway city. ■

On the packaging of the plant products developed using information collected on the tours there are usually many creators named.



FURTHER INFORMATION

www.sristi.org/cms/en/our_network