

From bees and duckweed to a parasitic plant

As a contribution to feeding the growing world population, the Food for Thought campaign raises money for cutting edge research. Twelve new projects have been selected which will research a wide range of subjects including bee deaths, duckweed as a protein source, and the parasitic striga plant.

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If farmers were to see one third of their cows or pigs dying for no apparent reason, everyone would be kicking up a fuss,' says Marcel Dicke, professor of Entomology at Wageningen University, part of Wageningen UR. At the moment, many beekeepers in Europe and North America are faced with losses on this scale in their bee populations. If the bee deaths go on, they could pose a threat to global food supplies, in Dicke's opinion. 'Honey bees are livestock too, just like cows and pigs. Three quarters of our agricultural crops, including all the fruits, tomatoes, peppers, soya, cotton, sunflowers and rape seed, are pollinated by bees. That represents one third of all food production.'

Dicke suspects the bee deaths are due to a combination of causes. 'There are experts who suspect that it is all because of the Varroa mite,' says Dicke. 'That is a serious pest for beekeepers. But there is also a fungal disease, nosema, which can bring about hefty bee losses. And then there are the newest pesticides, which could also be to blame. I think it is due to a combination of factors.'

In order to gain new insight into the causes, Dicke wants to start a new research group.



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To do that he needs 3.5 million euros. Dicke hopes that the Food for Thought, Thought for Food campaign (with which Wageningen UR and the Wageningen University Fund are raising funds for research on solutions for the world food problem) will be able to raise this amount. The campaign has been going for two years and has already raised more than eight million euros for research into, for example, malaria, the reuse of phosphate, potato diseases and cultivating rice with less water. An entrepreneurs' network in Africa has been launched as well.

DUCKWEED BURGER

Since the end of October, Food for Thought has put the spotlight on 12 new projects, including the bee death research. Another newcomer is research on duckweed as a new source of protein. 'Duckweed is the smallest flowering plant on earth. Some people cannot help laughing if you tell them something so small could solve the protein problem,' says Ingrid van der Meer, senior researcher in the Bioscience department at Plant Research International, part of Wageningen UR. 'Duckweed has very high protein levels and grows incredibly fast. The plant does not use any land but grows in ditches, reser-

voirs and greenhouses. It can also be used for water purification, in industry for example.'

To feed the growing world population and the growing livestock herds, alternative sources of protein are sorely needed, Van der Meer stresses. 'Duckweed produces 10 times more protein per hectare than soya. And you can harvest non-stop.' Planned topics of research include the kinds of protein available in the plant, the best variety of duckweed and the most effective cultivation method. Also on the agenda are how to process it into livestock feed, and its potential as a human food source. 'It would be nice if you could soon buy a duckweed burger.' Van der Meer needs 2.2 million euros for her research.

HEAVILY INFESTED

Meanwhile there are crops that we have been eating for thousands of years which are now under threat. In Africa more and more harvests of maize, millet, barley and sorghum are failing because of a parasitic plant: striga. 'Those grain crops account for at least 70 per cent of food production in Africa. If a field is heavily infested with striga, the entire harvest can be lost,' says professor of Plant Physiology Harro Bouwmeester.

Striga grows on the roots of the grain plant, extracts nutrients from it and slows its growth. The parasite lives in phosphate-poor soils and is attracted to signal substances in the grain crops. These substances are actually intended to attract symbiotic mycorrhizal fungi which the plants need in order to get enough phosphate. Bouwmeester: 'We want to develop a sorghum crop that does give off the right signal substances for attracting the fungi, but not the sort of signal substances that attract striga.'

The professor also wants to do research on a way of cultivating grain crops with the addition of as little phosphate as possible, as well as on the use of mycorrhizal fungi to keep the parasite off the crops. Bouwmeester hopes Food for Thought can help raise the 1.8 million euros needed for this research. 'Developing striga-resistant grain crops is not interesting for commercial plant breeding companies. Most farmers grow grain for their own consumption and not for sale. If their harvest fails they have no food.' ■

More information about the projects and the possibilities for contributing to them can be found at: www.wageningenur.nl/foodforthought, or from Monique Montenarie at Monique.montenarie@wur.nl or call +31 317 483490



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