Dying trees can be saved

The agriculture ministry is finally taking measures to reverse the manmadepine-tree epidemic they started. But their efforts have to go beyond Atticaand they must stand up to the bee-keeping lobby

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An Attica pine tree infected by Marchalina Hellenica

THOUSANDS of pine trees throughout Greece can be saved from drying to death if they are sprayed with insecticides within the next three years, according to Greece's

environmental scientists.

A devastating tree blight was caused by a massive inoculation campaign carried out during the last two decades. Beekeepers throughout the country, bankrolled by the agriculture ministry, inoculated pines with Marchalina Hellenica, an insect whose presence increases the production of honey. But the result has been disastrous.

The agriculture ministry launched a pilot project earlier this month to spray affected trees with a variety of insecticides, in order to test the best way to combat the insects.

Marchalina Hellenica (Gennadius, 1883) is an insect that lives in the eastern Mediterranean region, mainly in Greece, Turkey and part of Italy. It inhabits the cracks and the spaces under the scales of the bark of pine trees and lives by sucking their juices. It reproduces itself by parthenogenesis and excretes a white cotton-like wax, otherwise called honeydew. Honeybees feed on the honeydew along with flowers and other plants and produce pine honey, which comprises around 80 percent of Greece's honey production. The experts are in agreement that around 60 percent of the honey produced in Greece is derived from the insect.

A manmade disaster

However, two years ago the non-profit environmental organisation, Philodassiki, revealed that throughout the country, pine trees covering hundreds of thousands of acres that were not infested with Marchalina Hellenica were inoculated with the insect in an effort to increase the quantity of honey produced. No research had been done on the consequences of the inoculations, despite the fact that they were carried out under the agriculture ministry's auspices.

Constantine Souliotis of the Benakeio Phytopathological Institute is an entomologist and a member of the committee that the ministry of agricultural development has set up to deal with the issue. He explained to the *Athens News* that the inoculations have altered nature's balance. "Marchalina has natural enemies and, in particular, another insect, called Neoleocopi, that limits Marchalina's expansion, allowing the trees to recover from the damage. But with the inoculations, the biological balance was upset and Marchalina's predators by themselves no longer can check its rampant expansion".

Michael Melas, president of Philodassiki, told the *Athens News* that we are on the verge of an ecological catastrophe with grave longterm consequences. "Trees absorb rainwater and ensure reservoir replenishment. Only a few days ago we took part in the world day against desertification - that is large tracts of land becoming desert. The spread of Marchalina Hellenica and the tree deaths it causes may lead to desertification in Greece, if unchecked. The death of trees in and around urban areas can more immediately lead to floods as has happened before in Athens," he says.

Ministry experts admit the inoculations took place throughout the country between 1995 and 2000 to bolster bee-keeping. However, environmental organisations and experts dispute these claims. "I have evidence that the ministry has been funding inoculations since the late 1980s. In 2000 they published a guide to inoculating which was recently withdrawn. In the 1990s, EU funding to improve honey production was allocated specifically in order to conduct more inoculations. This funding has not expired - it runs till 2006. The ministry has officially forbidden further inoculations only in Attica and hasn't said a word about the rest of the country," says Melas.

Pine trees are not the only trees threatened. In 1995 and 1996, Nicolaos Bakandritsos of

the Athens Institute of Veterinary Research conducted an experiment and inoculated fir trees on Mount Helmos in northern Greece with the insect. Last year he published his finding in the *Bulletin of Insectology*. By his own admission, his experiments were almost 100 percent effective and over 500 trees were infested by the insect within a year of their inoculation.

Public outcry

Philodassiki first brought the matter up in a conference in 2003. But it wasn't until the Greek media picked up the story in the last few months that the agriculture ministry decided to take action. Marchalina infested trees are covered in a cotton-like growth, a symptom of infection. When urban and suburban green spaces around Attica were inoculated and the infestation became apparent**,** the matter quickly snowballed.

In March the ministry forbade further inoculations in Attica and announced that a pilot project would take place to establish the best way to deal with the infestation. Four infested areas in Attica were sprayed with nine different pesticides in an effort to establish the most effective and eco-friendly way to deal with the problem. According to Souliotis, the first results are encouraging.

He says that some of the substances were 100 percent effective: "We have handed over the results to the ministry. In my personal opinion if we spray moderately for three years we will be able to limit the insect back to its original numbers." He adds that it would even be possible to do so in a year with heavy spraying but this could possibly endanger both the public and the environment.

"The improvement is already visible to the naked eye," says Athanasios Kritikos, deputy mayor of the eastern Attica suburb of Agios Stefanos. "We now need financial help from the ministry to deal with the problem because we cannot possibly cope with the burden," he adds.

Not unanimous

However, some ministry experts and, predictably, most beekeepers disagree with the spraying. They reject the notion that there is a serious problem and suggest that only in urban areas should trees be treated, and with water only.

George Mallios, president of the Attica Bee-Keeping Co-operative says the ministry has brushed aside the beekeepers' objections. "I was at the meetings about the spraying and despite the ministry's press release, the decision is not unanimous. In some areas they have washed the trees and there is no problem. Now they want to spray with poisons," he tells the *Athens News*. "The trees do not dry out because of the insect but of natural reasons. This is just an opportunity for some to make money," he adds.

Sophia Gounari, a researcher at the ministry's Institute for Agricultural Research, is in agreement. "There is no evidence on whether or not Marchalina poses a danger to pine trees. There are just indications and reports on either side. And reports that it harms trees are, strangely, very recent and mostly published in the press and not in scientific publications," she says and points out that it is the first time the ministry has allowed experimental spraying with substances that have not been approved for use on pine trees. "In most of these cases the spraying concerns trees over 5 metres high in parks where children play... There are no harmless insecticides," she adds,

Philodassiki, however, believe these arguments are self-serving. "The bee keepers have a vested interest while the agriculture institute experts have been part of this disaster all along. In Italy they have got the measure of the disease. It is forbidden by law to spread Marchalina and every tree must be checked individually to ensure it is healthy. But the politicians here are mostly concerned with getting the votes," Melas says.

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