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'Cocoon' tree growing counters desertification in the Mediterranean [1]



As the Mediterranean is experiencing greater water stress and more frequent changes in rainfall and drought, one LIFE project is using a cocoon system for trees which can replace traditional irrigation practices and raise trees' survival rates to at least 90%.

The 'Cocoon', a tree incubator made from wax-reinforced recycled carton, has been tested around the world, and is continually being improved by its producer LandLife Company.

It is designed to produce strong trees and shrubs by helping them develop deep root systems which support the plants through periods of drought. By being protected within the Cocoon, the plant has an effective microclimate which allows it to focus on root development - even when there is no rainfall - and not become dependent on irrigation.

Sven Kallen from Volterra Ecosystems, one of the partners in the project [LIFE The Green Link](#) [2], explained how the Cocoon helps young bushes and saplings. "The Cocoon typically holds water for 2-4 months, then starts to slowly disintegrate. The idea is that the tree survives its first summer, and it will then have become established with a sufficient root system to tap into underground moisture."

Fivefold reduction in water

Currently, initial planting still has large upfront costs. Since each Cocoon holds 25 litres of water, logistical efforts need to be considered. LandLife Company is looking to mitigate this through automation, and has already tested an automated planting process with Volterra in a number of plantations in Spain.

But the Cocoon offers major savings, not least in terms of water. “In the first year alone, the trees need at least 5 times less water compared with irrigation”, said Mr Kallen. On top of this, rain water can filter through into the bucket-like structure which acts as a mini catchment area.

Replication

The Green Link is working with local partners in Italy, Greece and Spain to replicate the strong results already demonstrated.

The scope is greater than planned, noted Mr Kallen. “As part of LIFE The Green Link we originally intended to distribute 6 000 Cocoons for replication activity (1 000 for each area), but in the end we’ve already given away more than 8 000. There’s a strong interest from NGOs, farmers, commercial tree planting companies and also individuals who are concerned with the survivability of their young saplings.”

For example, 1 500 trees were planted alongside an olive grove in Brindisi, Italy, through a partnership with a local agricultural company. A coastal area, it suffers from seasonal drought and exposure to salty wind. To help assess the effect of the Cocoon, 50 saplings were planted with Cocoons and the rest are being irrigated by traditional drop irrigation.

Another area where rehabilitation is ongoing is a former industrial quarter in Turin, Italy. There, 60 cocoons have been used to plant tree and shrub species which are typical of the Po Valley region, e.g. sessile oak (*Quercus petraea*).

In another location, olive trees planted in the summer of 2017 in Catalonia, Spain, have survived difficult seasons and continue to grow even better than expected.

Interest from big business

“This project has been instrumental in opening up new markets and getting companies involved in financing large-scale reforestation projects,” said Arnout Asjes of Landlife Company. Carbon offsetting for private companies is a big incentive, and with private support, the project plans to plant 500 000 new trees in Spain alone, partly using Cocoons.

Interest comes from Dutch multinationals, including Leaseplan, an international car-leasing company. Leaseplan financed a project in 2018 to plant 15 000 trees with Cocoons, and another 100 000 trees planted separately.

With support from other EU funding through Horizon 2020, LandLife Company's factory in Poland can now produce 1 million Cocoons per year. With these production levels, expansion of this tree-growing technology beyond Europe is all but assured.

See also

[Horizon 2020 project FTI Cocoon improves Cocoon production](#) [3]

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