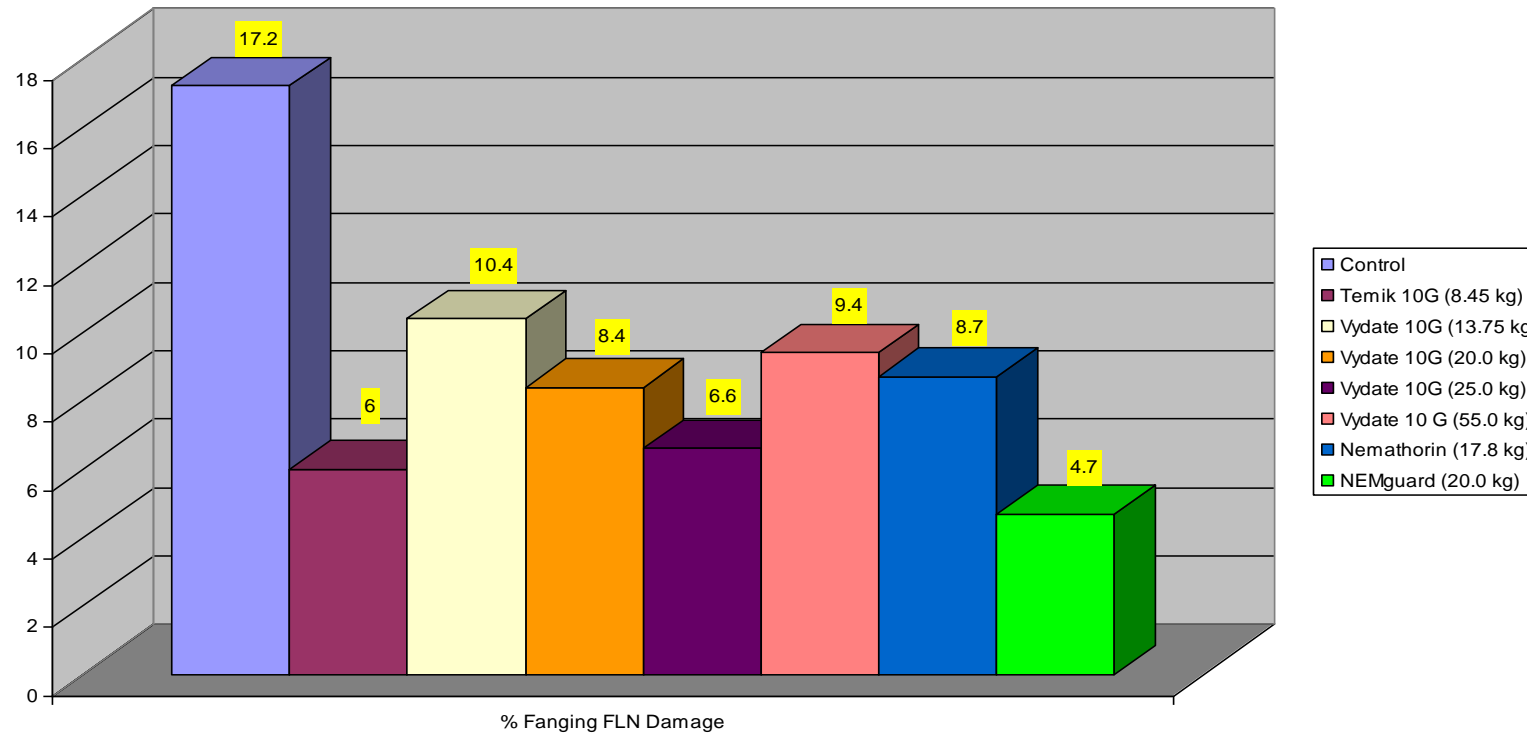




# What got us started on the route to bio-nematicides.

NEMguard Efficacy v Temik, Vydate & Nemathorin in Carrots  
Agrisearch 2004



# Who Are Ecospray?

- Ecospray are an independent UK based biopesticide company
- We have researched, developed and registered an extract of garlic for use as a pesticide
- Approved in a range of crops both protected and outdoors in Europe and across the world. For example East and West Africa
- Our focus has been on soil applied use patterns, especially as nematicides. Showing comparable efficacy to synthetic actives in many situations



# What Have We Done?

For centuries garlic and garlic extracts are known to have pesticidal properties. The reasons are now becoming clear

Research has shown the active substances within the garlic extract are 'polysulfides'

We have a clear understanding of what these substances do when they enter an organism

We have produced and registered a stabilised form of garlic extract as a pesticide with consistent performance and are now focusing on how these actives impact on soil health in addition to providing adequate efficacy.



EU Regulatory Approval:  
EFSA Journal 16<sup>th</sup> April 2020 (outcome of second annexe 1 review)

The summary to the conclusions document released by EFSA includes the following statement:

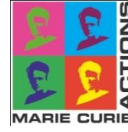
-  
“The uses of garlic extract according to the representative uses as a repellent, insecticide and nematocide on a wide range of crops in agriculture, horticulture and amenity, as proposed at European Union (EU) level results in a sufficient efficacy against the target organisms.”



# How?

- What makes Ecospray very unusual is that many of the efficacy comparisons that EFSA reference are from open field situations where efficacy has often been contrasted to (until recently) very widely available and frequently used potent synthetic chemistry such as organo-phosphate and carbamate based formulations.
- Ecospray Ltd had no choice since ~2001 to navigate through EU regulatory frameworks that were in place to authorise crop protection by mostly synthetic active chemistry. A huge challenge for a very small business.
- The evolving EU approach was small businesses to form 'task forces' for registration of 'non-mainstream' products. Garlic was no exception, but Ecospray Ltd was 'last man standing' using this approach. We developed a strong and ongoing collaborative approach to the science.





# Making biological work better.

## The Ecospray perspective.

- Most of EU agriculture is facing a cross-roads, being forced to accept less synthetic chemistry and much more biological based and sourced technologies to sustain (and possibly improve) agricultural productivity in all sectors.
- Much of the advisory networks at state and commercial level are still mainly based on the last 30-40 years of chemical technology. Fragmented support to adopt the new ideas.
- With the exception of protected crops, few experts with broad knowledge base on how biological approaches emerge and can be transferred and explained to farm level in a manner that gives reliable outcomes and builds confidence. Slow expansion of biological sector in open field crops.





# Making biological work better. The Ecospray perspective.

- Little appreciation by the market that biological approaches are much more demanding to develop than chemical actives with perhaps 8 weeks activity (most of this type of chemistry has gone from the EU). The cross-roads.
- Much greater reliance on statistical methods to 'reveal' the effect with biological approaches, more expensive trials?
- For example:-
- EU recommends a minimum of 4 replications for efficacy trials. Prone to excessive variance = reduced chance of significant effects = more difficulties with regulators = more repeated trials = more cost.
- Not an especially attractive option for a 'start up/spin-out' SME.
- Ecospray have included up-to 8 replicates in some nematicide efficacy trials.



# Summary

- Ecospray has shown that botanical based products can deliver comparable efficacy to products based on synthetic actives. EFSA agrees, conclusion 2020.
- Acceleration of adoption of ‘open field’ biological approaches will require enhanced technical and educational support at national levels.
- Few of the existing distributors have sufficient ‘in-depth’ knowledge to establish the new use patterns and decision support inputs that biological approaches often need and farmers require to feel secure.
- But, there is now a new political will to get ‘biological’ working. France may be taking the lead!

