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European Innovation Partnership project

Ivy/ Potato Blight Project

Interim report

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About the project

The project aims to develop a new, environmentally sensitive product for control of late blight in potatoes, based on an extract of common Ivy (*Hedera helix*). Naturiol, a company dedicated to the development and supply of naturally sourced performance chemicals isolated a chemical called 'alpha hederin' – from a chemical family known as Saponins – which previous work has indicated can protect foliage against late blight and other diseases of potatoes and improve marketable yield.

In addition, Emerald Crop Science Ltd have developed a novel biostimulant product called OptiYield Diamond (OptD), based on phosponate, that helps plants to grow more vigorously, potentially increasing their resistance to pests and diseases in general and increase yield.

The project also explores whether Hederin, alone and in combination with OptD, can make a contribution to managing late light on potatoes.

Trial sites, plots and treatments

Trials were carried out at Tyn yr Helyg, an organic farm near Aberystwyth and at Henfaes farm, near Bangor. Because of differences in production systems (organic and conventional), different treatments were applied on each of the two sites:

Treatment	Tyn yr Helyg	Henfaes
1	Hederin (1g/l)	Hederin
2	Cuprokylt*	OptD
3	Diluted Hederin (0.1g/l)	Hederin and OptD
4	Tap water (control)	Fungicide programme
5		No treatment (control)

Each treatment had 4 replicates, making a total of 16 plots at Tyn Yr Helyg and 20 at Henfaes, each with a total of 20 plants each of the variety Maris Piper which has moderate blight resistance.

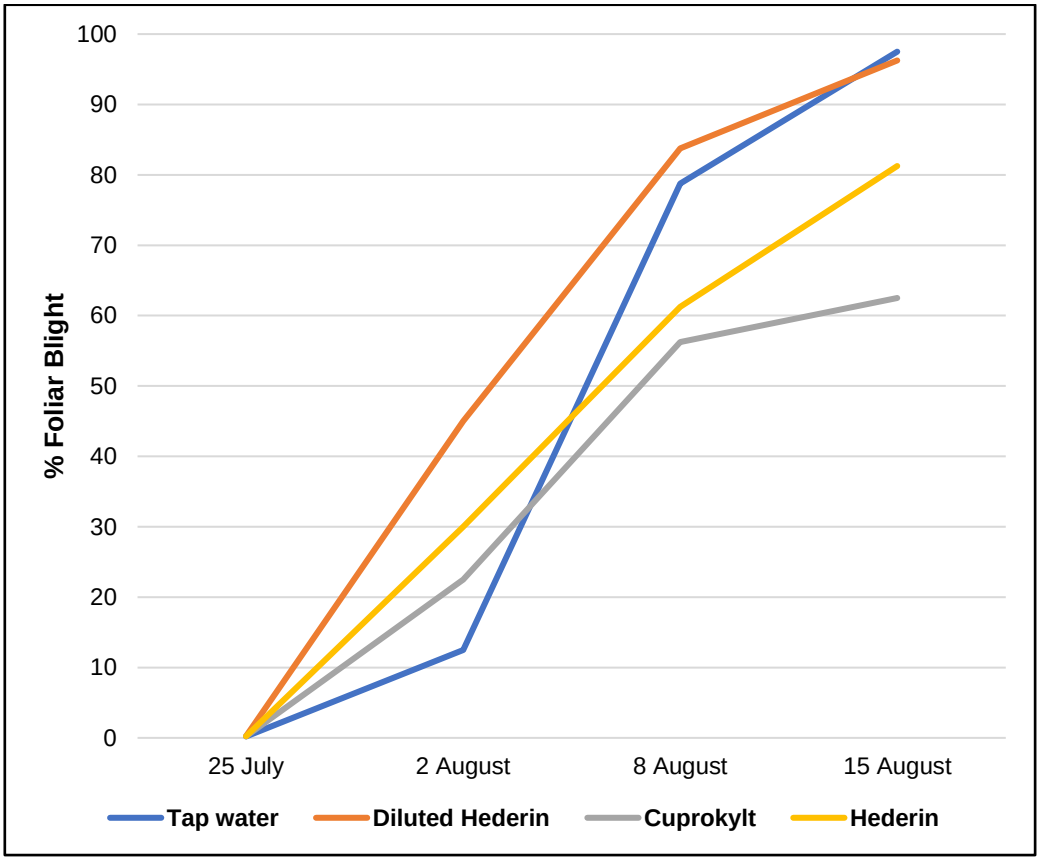
Trial plots at Henfaes

Treatments were applied with a knapsack sprayer to runoff (5L per plot) at weekly intervals on the following dates between mid – July and late August

The amount of foliar blight was assessed about a week after each application as estimated by the percentage of the foliage visibly affected by blight in each plot. After harvest, tubers were weighed, graded for size and the number of rots/ blighted tubers counted

Results at Tyn yr Helyg

The **blight infection** advanced rapidly. Some blight control was noticeable by week 3 particularly for the copper (56% blighted) and full-strength hederin (61% blighted) plots compared to the control treatment (79% blighted). By week 4 of the epidemic, blight control was most noticeable for the copper treatment (63% blighted) but control for full strength hederin (81% blighted) remained greater than for tap water control treatment (98% blighted) and for diluted hederin (also 98% blighted).



Blight progression at Tyn yr Helyg

Hederin

Cuprokylt)

Dilute hederin

Tap Water/ Control

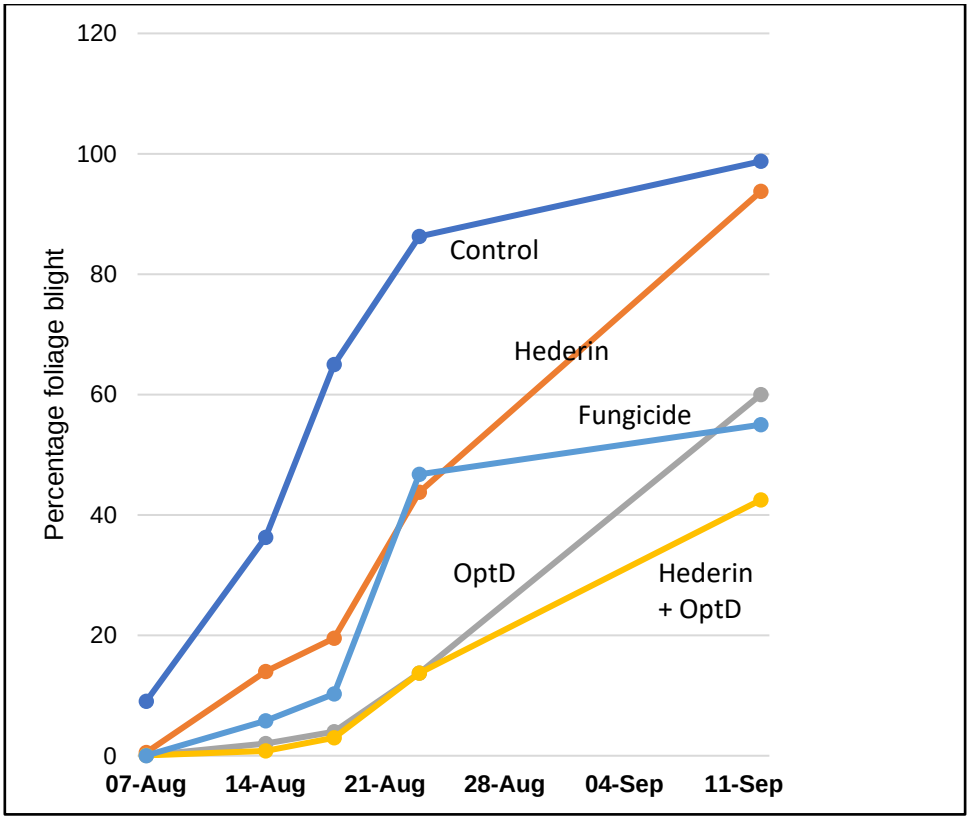
Treatments at Tyn yr Helyg

Yield data from this site was inconclusive. There were differences in plots, but these are likely to be down to differences in fertility, rather than a blight management. These will be addressed next year but more even application of manure prior to the start f the trial.

Tuber quality was generally very good. There were some differences between plots in terms of the number of rots/ blighted tubers recorded. However, we suspect that some of the 'rots' were confused with spent mother tubers, so it is difficult to draw firm conclusions from this data.

Results at Henfaes

All treatments slowed down the rate of **blight progression** compared to the control. Hederin was similar to the fungicide programme in the early part of the season and although by the end of the trial nearly 100% of the foliage was blighted, reduced blight levels in the early part of the season would be bought the crop valuable time in which to bulk up. OptD both slowed down the progression, and reduced the amount of blighted foliage at the end of the trial to about 60% of that in the control. The combination of hederin and OptD resulted in the slowest progression of all treatments, and gave the lowest level of blighted foliage at the end of the trial



Average scores of late blight in four replicate plots of each treatment

As at Tyn yr Helyg, the **yield** data was confusing, suggesting that factor other than the treatments were responsible for differences in yields between plots.

Tuber quality was also very high at this site, and the very low numbers of rots and blighted tubers on all plots made it very difficult to attach much significance to the data

Conclusions

In terms of reducing the incidence and the rate of spread of late blight, Hederin showed some promise, and especially in combination with OptD.

The benefits with respect to yield and tuber quality were much less apparent. This is partly due to differences in fertility and other factors between plots on the same site and differences in methodology between the sites. These will be addressed in the second year of the trial.