

## CHRONIC IRON DEFICIENCY PROBLEM SOLVED BY INDUSTRY LEADER COLLABORATION.

Long term, previously unresponsive iron deficiency in a Kent, UK pear orchard has responded to a treatment programme devised by a collaboration between FAST Fruit consultants and Solufeed Ltd.

The Long family have been farming in Kent for three generations. David Long, of Marshgate Farm, grows 150 acres of pears on the [Hoo peninsula](#) near Cooling, an area rich in history and the site of the famous Cooling Castle - dating back to 1381.

The ancient coastal location near the Thames estuary brings benefits in terms of relatively mild and dry winter conditions, but also presents potential challenges when it comes to producing high yielding, quality fruit.

Over the last 3-4 years David Long has encountered two particular challenges issues which appeared to be getting more severe year on year, despite rigorous control measures. The most important problem by 2011 was a serious increase in pear sucker. Traditional chemical control strategies failed to control the infestation. In spring 2011, David turned to leading top fruit specialist Chris Levett of the [FAST](#) advisory team based at Brogdale.

Chris Levett takes up the story: 'David contacted me last year about his problem with pear sucker. In previous years and despite considerable expense with chemical treatment alone, he wasn't able to get on top of the pest. I arranged a site visit and observed that in some orchards he also had a severe problem with [iron deficiency](#) that had not responded to foliar sprays of iron'.

David's first priority was to get on top of the pear sucker, so in collaboration with Dr Michelle Fountain and Prof Jerry Cross of EMR, Chris devised a radical treatment programme focussing primarily on biological control using natural predators - anthocorrids, earwigs, hoverfly and lacewing larvae, supplemented by the use of sprays of predator safe insecticides, such as Envidor. Part of the change of strategy to combat pear sucker was dispensing with orchard mowing and reducing herbicide use so that predator friendly vegetation could develop in the orchards.

Despite some nervous moments early in the season when egg laying by the pest reached worrying levels, the build up of natural predators kept the pear sucker population in check and by the end of July, the FAST control programme had proved its worth. 'At harvest, the pears were a good size and quality but most importantly the new growth was clean.' says Chris.

The pest problem appeared to be under control by mid summer 2011, but the second issue of chronic iron deficiency continued to be a headache. 'Iron deficiency



affects these orchards because of the high pH of the soil on the peninsula' says Chris. 'In the worst affected orchard at Marshgate Farm the pH is 7.8 and at that level iron is locked up in the soil. When that happens, the foliage is restricted in both size and growth, and becomes more and more chlorotic as the season progresses.' After some analysis results showing disturbing and significant iron depletion in both leaf and fruit, Chris prescribed a programme of foliar iron sprays beginning just prior to harvest last August, and repeated at 2 week intervals until leaf fall. However by

the end of the season, iron levels were still too low and the foliage remained yellow until leaf drop in the autumn. Iron depletion also causes discolouration of the fruit itself, giving it an unwanted red tint which can affect the value of the crop.

Not one to be daunted by the failure of one potential remedy, Chris, supported by Mark Botting, FAST's in-house chemist, set about researching better ways of overcoming the iron deficiency at Marshgate Farm. This eventually led him to contact Bob Greensmith of fertiliser specialists [Solufeed](#) who offer a range of [chelated iron formulations](#) for a wide range of soil types and applications.

A meeting in January this year between Chris, his FAST colleagues, Bob Greensmith and Dick Holden of Solufeed resulted in a revised strategy incorporating the application of chelated iron for the 2012 season.

'We started the new programme in April this year' says Chris '3 weeks later than the ideal, but even so it wasn't long before we could tell that the new regime was having visible benefits.'

Bob Greensmith recommended [Solufeed 7.0 Fe EDDHA Regular](#), a highly concentrated form of chelated iron, ideal for the soil conditions at Marshgate Farm. This was first applied at white bud as a soil drench at a rate of 100 gms per 100 metre crop row and then at six week intervals thereafter. In total 3 applications were made. The chelated iron drench was supplemented by foliar feeds from time to time.

'Chronic iron depletion can't be cured overnight' says Chris 'But if you keep going until the iron reserves build up in the tree, it should be possible to rely on a single annual application from then on. I'm confident that this year's treatment programme with [Solufeed 7.0 Fe EDDHA Regular](#) is moving us towards that stage.'

Leaf size and colour have improved significantly and the visible improvement is confirmed by the increased iron content measured in regular leaf analysis done by Mark at the FAST laboratory. David Long and Chris Levett expect this improvement to be reflected in better yield and fruit quality as well as enhanced shelf life of the 2012 crop.



Our investigation of the iron deficiency has surprisingly raised another issue' says Chris 'Our routine leaf samples also revealed low molybdenum levels so we included an occasional foliar spray of molybdenum in our programme. There are indications of a strong correlation between molybdenum and nitrogen - low molybdenum appears to be causing nitrogen deficiency. This would have gone unnoticed if we hadn't been sending regular leaf samples to the FAST laboratory as part of our strategy to correct the iron problem.'

**Published:** Wednesday August 8, 2012