NIAB Fruit

Newsletter
Autumn 2024

Welcome to Niab Fruit

Niab Fruit was set up as an outreach programme to keep the fruit industry informed about the vast array of research projects and associated activities being carried out by Niab and its collaborators.

In the past year, we have connected with the industry through our *NIAB Fruit Annual Review 2024*, technical days, events at East Malling, and events organised by other organisations where Niab staff have attended. We have also provided updates on some of our projects in the trade press and on our dedicated *Niab Fruit* web page on niab.com. We are always keen to share the results and outcomes of Niab research with the whole industry where appropriate, and enjoy the opportunity of identifying new challenges that we might tackle with fruit growers collaboratively.

This year's *Niab Fruit Autumn Newsletter* provides an overview of many of the activities that we have been involved in over the spring and summer months to maintain our outreach, whilst also highlighting some of our latest ventures and providing an up-date on some of the new research projects that Niab has embarked upon in 2024.

If you are still to register to receive information from Niab Fruit, contact scott.raffle@niab.com.

The 2024 Niab Soft Fruit Technical Day is a virtual event to provide the industry with the latest results of a wide range of research projects led by Niab and other researchers and industry partners.

The event will include information on research to optimise strawberry and raspberry propagation to maximise yield potential, precision management of strawberry and raspberry, coir recycling, improved management of soft fruit pests and diseases, and the latest developments to improve SWD management.

For full programme details and to book your place at the event, visit niab.com and click on the Event Hub/ Book Your Place

Niab's Matevz Papp-Rupar on the stand at Fruit Focus 2024

Apple Best Practice Guide finds new home at Niab

The industry's Apple Best Practice Guide can now be viewed on Niab's website niab.com or by scanning the QR code.

The guide contains a vast volume of best practice information on commercial apple production covering topics like **Crop Production** including flowering, fruit set, thinning and fruit growth, **Pest and Disease** identification and control including integrated pest management, and **Post-harvest** information covering storage disorders and rots.

First published by Defra in paper form in the late 1990s, the Guide was written and compiled by several leading experts in the apple industry from research and advisory organisations including the then Horticultural Research International at East Malling, the Fruit Advisory Services Team, ADAS and Worldwide Fruit/Qualytech.

To ensure that the Guide could be updated with the latest best practice information, it was converted to a digital format and hosted by the Horticultural Development Council and later the Agriculture and Horticulture Development Board (AHDB). However, with the discontinuation of the horticultural and fruit levy, the Guide needed a new home to ensure it remained active. An agreement was reached between AHDB and Niab to transfer it to its new home on niab.com and it is now live and free to view.

Niab Knowledge Exchange Manager Scott Raffle and his science colleagues are now able to up-date it as the results of apple research projects are delivered. The pest and disease information together with integrated pest management content changes most rapidly so this section is refreshed annually.

Niab outreach to Kent-based schools

Niab has reached out to the next generation of scientists in Kent this year by attending two events to inspire young people to learn more about plant science and food production.

The first took place at the 2024 Living Land event at the Kent Event Centre on 2nd May. Organised by the Kent County Agricultural Society for Year 3 and 4 schoolchildren to learn about the origins of their food and rural traditions within their county, Niab provided an exhibit to promote a Growing Kent & Medway funded project designed to develop new and improved biological control of aphids in protected raspberry crops.

The children were able to view raspberry and strawberry plants with aphids on the leaves, look down microscopes to see some of the predators and parasitoids that soft fruit growers use to control insect pests, and view enlarged models of adult and larval stages of the lacewings that are being used to control aphids in the research project. They also had the chance to view a video of biological control in action on glasshouse crops.

Niab is grateful to the project partners Asplins PO, Biobest and Rumwood Green Farm for helping at the event and for providing predators, video footage and plants for the exhibition stand, along with WB Chambers for providing summer fruiting raspberry plants for the children to view.

Further details about this project on aphid control in raspberry can be found on niab.com or scan the QR code.

The second outreach event took place at Niab's neighbouring Malling School in East Malling when Niab staff set up an exhibition stand at the school's careers day, explaining the genetic research they carry out to help to breed new and improved fruit varieties (see image). The pupils had the chance to view the process carried out to extract DNA from strawberry fruits and learn why it is important to produce new fruit varieties for commercial fruit growers.

Niab launches Vine and Wine membership clubs

Niab has launched a Vine and a Wine Club to help to support and inform both UK vineyard managers and their staff, along with winemakers.

The new membership initiative bridges the gap between viticulture/wine science and practical application, ensuring members will be the first to benefit from emerging, innovative research. The Clubs allow Niab to actively collaborate with UK grape growers to develop funding opportunities for new research. Vineyard managers and winemakers who become members will help to shape the work that Niab does to address UK vineyard and wine research priorities. With early projects beginning to take shape, the Clubs provide an opportunity for members to gain access to the results and information, allowing them to put the research into practice.

The first meeting of the Vine Club took the form of a research day in early September, including talks from Niab soil scientists Nathan Morris and Flora O'Brien, Niab entomologists Francis Wamonje and Michelle Fountain, and Head of Vine and Wine research at Niab, Belinda Kemp. There were also presentations made by Lucy Manukyan of Deep Planet and Amanda Mader, viticulturist from Australia.

Wine membership options include *Fizz Club UK* focusing on the specific needs of UK sparkling winemakers and based on the highly successful outreach programme that was set up for Canadian winemakers at the Cool Climate Oenology and Viticulture Institute (CCOVI). The *White and Red* option meets the needs of UK still winemakers and will include winemaking with *Vitis vinifera* and PIWI varieties. Niab plans to work through the Vine and Wine Clubs with UK winemakers to ensure our wine industry benefits directly from our scientifically robust research that offers tangible results winemakers can use in decision making.

For full details about the benefits of membership, eligibility and costs go to niab.com or scan the QR code.

The Niab stand at a careers day at the Malling School in Kent

East Kent Fruit Society visits East Malling

On the evening of 14th May, Niab invited the East Kent Fruit Society to East Malling to learn more about the range of fruit research projects being delivered to support the industry. The evening took the form of a farm tour where members of the society were able to view current trials and experiments taking place in the field and glasshouses.

The event opened with a tour of The WET Centre, where Trevor Wignall and Mark Else summarised how the Centre had helped to support the industry in improving precision irrigation and nutrition, whilst also learning a huge amount about the latest technology on offer to growers, and how and why the position of crop rows within tunnels influences crop yields and fruit quality. The visitors also got to hear how Niab research is developing a nitrogen use model in raspberry and how we can use it to match nitrogen supply to plant demand.

They also viewed an Innovate UK project that is developing a way to measure the levels of pollination across a strawberry crop and is assessing a new tool that redirects pollinating insects from areas with excessive pollination to areas with insufficient pollination. There was a chance to find out about Niab

research into landscape complexity and how it influences pest control services, Growing Kent & Medway funded work to reduce the time to breed new apple varieties, and how Niab pathologists are working with Overland to improve the quality of recycled coir substrate.

The members also learnt more about how Growing Kent & Medway is supporting the horticultural, food and drinks industries in the Kent & Medway region, before finishing their visit at the new Wine Innovation Centre and research vineyard followed by hospitality and networking in the Mumford Building.

Growing Kent & Medway Showcase Day

Over 100 visitors attended this year's Growing Kent & Medway Showcase Day, on 20th June at Niab's East Malling site. The event offered the opportunity for visitors to view the modern facilities at Niab, built with funding provided by Growing Kent & Medway, The East Malling Trust and Kent County Council, whilst learning more about some of the projects that are funded by the programme.

Following a welcome by Niab CEO Mario Caccamo, visitors toured the facilities and were briefed on projects on extending the storage life of cherries (University of Greenwich), speed breeding of apples (Niab), recycling of coir substrate (Niab) and the vision for new research into vine and wine production

(Niab). They also had the opportunity to meet Evogro and view their state-of-the-art growing cabinets and learn how their business has benefited from Growing Kent & Medway funding.

There was a chance to network with a number of other exhibitors made up of food and drink businesses who have engaged and benefited from Growing Kent & Medway funded activities such as Growing Green, The Food Accelerator Programme, Mentoring and a range of funded research projects that are helping businesses to develop more sustainable products through Business Innovation Vouchers and the Business Sustainability Challenge.

The event was rounded off with a Nigerian barbecue in the evening which was enjoyed by many outside the Mumford Building at East Malling, overlooking the research vineyard whilst the sun set over the North Downs ridge. Full details about all the Growing Kent & Medway activities and research projects are found at www.growingkentandmedway.com.

Fruit Focus

Niab and Growing Kent & Medway exhibited once again at Fruit Focus 2024, held on 10th July at East Malling.

A combined stand allowed visitors to learn more about a range of fruit research projects that are being funded by Growing Kent & Medway and other funders to seek solutions to apple canker, apple scab, forest bug, brown marmorated stink bug and spotted wing drosophila (SWD). Information was also promoted on the work Niab is doing to harness naturally occurring organisms to improve pest and disease control in fruit crops, along with a project to improve soil health in commercial vineyards.

Niab organised research tours for visitors to learn more about the results delivered from The WET Centre, Plum Demonstration Centre and Research Vineyard, along with a tour of research polytunnels to learn about a project aimed to improve precision pollination in strawberry.

Visitors who joined the Growing Kent & Medway research tour, were led through the stand, learning more about a series of funded projects on the

improvement of raspberry propagation, coir recycling for soft fruit, varietal susceptibility to SWD, Tensei Ltd's recycling of horticultural waste into fruit packaging materials, and the development of online games involving production and marketing of strawberries.

See you all again at Fruit Focus on 9th July 2025.

Putting plant science into practice - visitors to Niab at East Malling in 2024

Niab receives regular visitors to the East Malling site from the UK and overseas throughout the year.

Defra's wine team visited East Malling in June to meet Niab's resident vine and wine researcher Dr Belinda Kemp, viewing facilities old and new including the Rhizolab (built in the 1960s, refurbished in 2013), the Wine Innovation Centre and the Research Vineyard.

New vines have recently been established alongside the Rhizolab. Believed to be the only facility of its kind in world wine production, Dr Kemp and her team are now able to initiate future research on vine root growth and development. The team learned of the latest results from a research project investigating the effect of ground cover crops and soil management practices on soil health, grape yields and juice quality. They also had the chance to find out about Niab's plans and vision on how to increase its support of vine and wine production in the UK.

Harper Adams University's Sustainable School of Food and Farming held a training event at the East Malling site in June. The School's purpose is to educate, inspire and empower current and future farmers to work towards reducing emissions, enhancing nature and developing more climate friendly businesses.

Over thirty young and new farmers attended the East Malling event, discovering how Growing Kent & Medway funded projects are helping and supporting horticultural, food and drinks businesses in the region to increase their circularity and become more sustainable.

The visitors also had the chance to find out about Niab's research to harness naturally occurring beneficial organisms for pest and disease control services, research to develop precision dosing orchard sprayers, how The WET Centre has helped the soft fruit industry to adopt precision growing technology, and how we are developing methods to match nitrogen supply to demand in raspberry crops.

New Projects 2024/25

Niab has begun work on a series of fruit research projects this year which all seek to make fruit production more sustainable. Whether developing more sustainable methods for improving crop health and crop protection, producing plants in a more sustainable way with reduced inputs, or improving the efficiency and speed of fruit plant breeding, all seek to increase efficiency of production in ways that are sympathetic to the environmental problems growers face today. The projects are summarised below and are grouped according to the scientific discipline that they fall into.

CROP SCIENCE AND PRODUCTION SYSTEMS

Title: Arboricrop: Next generation agriculture using real-time information from tree crops
Funder: Innovate UK
Industry partners: Benchmark Control Ltd (lead), Adrian Scripps Ltd and HL Hutchinson Ltd
Term: February 2024 to July 2026
Niab project leader: Graham Dow

Conventional fruit production relies upon growers employing costly interventions of water, nutrients and crop protection products to optimise plant health, yields and fruit quality. This project will design, test and produce a Next Generation Electrophysiological Sensor (NGES) that can detect plant stress before visual symptoms appear, allowing growers and agronomists to apply interventions earlier, thereby minimising yield losses and maximising efficiency. Such technology has demonstrated promise in protected crops, but this project will focus on woody crops such as apple and vines.

Title: Soft fruit: Nutrient sensors and related technology to improve productivity and reduce waste
Funder: Innovate UK
Industry partners: EDT DirectION (Lead), Netafim UK Ltd and New Farm Produce Ltd
Term: March 2024 to February 2025
Niab project leader: Mark Else

Niab has worked with Netafim UK and others to develop a nitrogen demand model for use in protected raspberry with precision dosing rigs. The model was refined and in 2023, it led to a 76% reduction in use of nitrogen compared to a commercial control with no significant yield loss, but leaf and cane growth were reduced leading to lower harvest and cane management costs. This project is investigating how hand-held and in-line NPK sensors can be used to study nutrient delivery in real time, which in turn will enable fertiliser formulations to be adjusted more readily to better match demand with supply.

Title: Vine AI: Artificial intelligence for fungal disease management
Funder: Growing Kent & Medway Prototype and Demonstrator fund
Industry partners: Deep Planet Ltd (Lead), English Wines plc, Gusbourne Estate Ltd, Nyetimber Ltd, Rathfinny Wine Estate Ltd
Term: May 2024 to April 2025
Niab project leader: Belinda Kemp

Early detection of fungal diseases in vineyards is crucial if growers are to prevent disease spread and reduce the number of crop protection products used to manage the problem. Conventional crop monitoring by agronomists and farm staff using human eyes does not always identify problems quickly enough. In this project, Deep Planet is working with Niab and five UK vineyards to employ satellite imaging and machine learning artificial intelligence, to accurately detect and predict early infection by Botrytis, powdery and downy mildew to replace inefficient methods of monitoring.

Title: Project PIP: Crafted in Kent – raising the bar for alcohol-free wine
Funder: Growing Kent & Medway Business Innovation Voucher
Industry partner: HWB Group
Term: June 2024 to May 2025
Project leader: Belinda Kemp

With increasing consumption of alcohol-free drinks, there is a significant market need for an alcohol-free wine. Niab is working with The HWB Group who have successfully introduced over 50 beverage brands over 20 years, to create the first UK-based alcohol-free wine. Together they are exploring innovative fermentation and de-alcoholisation techniques using locally sourced produce from Kent. The vision goes beyond tradition, incorporating cutting-edge technologies and know-how to deliver a refined de-alcoholisation process that preserves the intrinsic character of the fruit.

Title: Soil health: Developing a holistic biological soil health test
Funder: Innovate UK
Industry partner: Verdant Carbon Ltd
Term: August 2024 to January 2026
Project leader: Flora O'Brien

With fruit growers keen to maximise yield potential from every soil-grown tree or plant, it is important to employ land which is in optimum health, but it can be difficult to determine the relative health of a field soil.

In this project, Niab and Verdant Carbon Ltd seek to develop a test that will reliably assess the abundance and functionality of soil microbial communities, and relay the information to the grower in a simple-to-understand metric. The work also aims to measure the health of soil nutrient (carbon and nitrogen) cycling functions, to further support environmentally positive farming.

PLANT GENETICS

Title: Berry Fresh Initiative: Evaluating impact of decontamination on strawberry sensory properties
Funder: Growing Kent & Medway Business Innovation Voucher
Industry partner: Aridom Sanex
Term: May 2024 to May 2025
Project leader: Abi Johnson

The shelf-life of harvested strawberries can be significantly reduced by fungal pathogens and food spoiling organisms, leading to loss of sales and food waste. Niab will investigate a novel decontamination process using pre-harvest treatments of dry fogging technology and hypochlorous acid to assess if it maintains fruit quality and extends shelf life. The work will also refine application rates to maximise fruit flavour and texture, and identify the optimum frequency of application. If successful, the work will lead to improved fruit quality and reduce the level of food waste.

Title: Soft fruit genetic improvement network (GIN)
Funder: Defra
Industry partners: ADAS and James Hutton Institute
Term: October 2024 to June 2029
Project leader: Xiangming Xu

There are increasing numbers of privately funded breeding programmes in the UK soft fruit industry which would all benefit from a coordinated research approach to pre-breeding genetics of key traits and new breeding tools. This project is being funded by Defra to link academia to industry and develop our understanding of the genetics influencing improved tolerance to pests and diseases, and increased water and nutrient use efficiency in strawberry and raspberry. It will also develop genetic tools and resources for minor crops such as blackberry and honeyberry to support increased production in the UK.

PEST AND PATHOGEN ECOLOGY

Title: Too hot to pollinate? Pilot data on temperature regulation in commercial bumblebee hives
Funder: The Worshipful Company of Fruiterers
Term: February 2024 to November 2024
Project leader: Sarah Arnold

Soft fruit growers using bumblebees for pollination are only permitted to use the native subspecies *Bombus terrestris audax* which could be less active and less tolerant than other species in hot conditions. Bumblebees regulate the temperature in their nests by wing-fanning to cool the brood, but this distracts them from their pollination work. This project seeks to identify the temperature at which these bees start cooling the hive and the temperature at which cooling is no longer effective. The results will highlight any shortcomings in this species and identify periods when alternative pollinators are required.

Title: Optimising deployment of sterile insect technique to control spotted wing drosophila in blackberries: Black-Spot
Funder: Innovate UK: Defra and UKRI Farming Innovation Programme
Industry partner: BigSis
Term: March 2024 to February 2025
Project leader: Michelle Fountain

Sterile insect technology (SIT) has been developed by BigSis and Niab in a previous IUK funded project as a novel method to control spotted wing drosophila (SWD) in strawberry, raspberry and cherry. No SIT work has yet been carried out on blackberry, a crop with a growth habit and extended ripening period that lends itself to SWD attack. This project will quantify the effect of SIT in blackberry compared to an untreated control, whilst also employing detailed field data to produce a predictive model for SWD populations, which could transform the targeting of sterile male releases.

Title: Novel attract and kill strategies for control of UK fruit crop pests: ProBandz
Funder: Innovate UK
Industry partners: Microbiotech Ltd (Lead), Russell IPM Ltd, Driscolls Genetics Ltd, Plumford Farms Ltd, New Farm Produce Ltd, Littywood Farm Ltd and Chandler & Dunn Ltd
Term: March 2024 to February 2025
Project leader: Michelle Fountain

Niab previously collaborated with Microbiotech to develop use of bait sprays to successfully control spotted wing drosophila (SWD) in soft and stone fruit crops. The bait was mixed with significantly reduced doses of a spray control product (Tracer) and applied to a very small band of the crop leaf area. One of the baits used is now available commercially (Probandz).

In this project different baits will be tested to reduce ant attendance of rosy apple aphid and enhance natural predation of this pest. They will also be tested as an attractant for earwigs, diverting them from tabletop strawberry production.

Title: Augmentoria to boost natural biological control
Funder: Growing Kent & Medway Business Innovation Voucher
Industry partners: British Berry Growers and W.B. Chambers
Term: April 2024 to March 2025
Project leader: Michelle Fountain

Parasitoids (tiny wasps that lay eggs inside their prey) can contribute to biological control of spotted wing drosophila (SWD). The parasitoid *Trichopria drosophilae* is known to prey on SWD but is non-

native to the UK and is not licensed for use here. This project will investigate the use of our generalist UK parasitoids by developing robust and practical augmentoria. Fruit inoculated with fruit flies is deposited in these tent-like structures which prevent flies from escaping but allow parasitoids to emerge into surrounding areas potentially reducing reservoirs of SWD in hedgerows and woodlands.

Title: PAPPLe II: Integrated pest and disease management in apples and pears
Funder: British Apples and Pears Ltd
Term: April 2024 to March 2026
Project leader: Michelle Fountain

In 2023, British Apples and Pears Ltd funded Niab to investigate novel control approaches for apple scab and canker control as well as woolly apple aphid and hard bodied pests, whilst reviewing options for codling moth control. In this follow up project, the work aims to further evaluate and deliver new strategies. The scientists aim to understand the role of apple endophytes in apple canker management, investigate long-term control of woolly apple aphid using earwig amendments, and optimise the control of hard-bodied pests using semiochemical tools.

Title: Isothermal detection of cryptic thrips
Funder: Innovate UK
Term: April 2024 to March 2025
Project leader: Francis Wamonje

With western flower thrips (WFT) having developed resistance to spray control products, growers have successfully employed biological control methods in recent years, but other species such as rose, rubus, onion and flower thrips are also known to cause damage. It is very hard for growers and agronomists to distinguish between species, some of which are not harmful to the crop. This project aims to develop a rapid molecular detection tool that can easily be used in the field to identify WFT. If successful, the same principle will be used to develop similar tests for other species.

Title: Brown marmorated stink bug - UK surveillance
Funder: Defra
Term: April 2024 to March 2025
Project leader: Francis Wamonje

Niab has monitored for the presence of the invasive pest brown marmorated stink bug (BMSB) since 2021, providing early warnings to inform mitigation strategies against potential establishment. As a result of increased sightings in 2023, this project will conduct further surveillance using pheromone traps located in municipal gardens in the south east of England and Bristol, motorhome and caravan storage sites, sites where previous catches have been made, and other sites highlighted by a prediction model. A programme of outreach to motorhome and campervan owners will also be carried out.

Title: Managing the activity of pollinators in protected cropping systems (MAPP-CS)
Funder: Biotechnology and Biological Sciences Research Council
Industry partners: Agriculture Investments Ltd, Biobest Ltd, Buzzup, Clockhouse Farm and The East Malling Trust

Term: May 2024 to April 2028
Project leader: Sarah Arnold

Soft fruit production under fixed protective structures is highly dependent on introduced bumblebees (*Bombus terrestris*) for pollination. Their performance under such structures can be less reliable as they can be less active, suffer from higher mortality and sometimes fail to return to the hive, resulting in lower fruit yields and quality. This project will research the drivers of pollinator underperformance in enclosed systems, including lighting and navigational factors, and trial a range of affordable interventions to improve pollinator activity, reduce mortality and improve profitability.

Title: MiDeVa: Integrating mite dispersal with UK treatment in strawberry
Funder: Growing Kent & Medway Prototype and Demonstrator fund
Industry partner: Saga Robotics Ltd (Lead)
Term: May 2024 to February 2025
Niab project leader: Michelle Fountain

The regular distribution of predatory mites on soft fruit crops for pest control involves expensive hand labour. Saga Robotics has already developed autonomous robots that provide targeted ultra-violet (UVC) treatment to control powdery mildew in strawberry crops. This project aims to develop an innovative dual-function for these robots enabling them to simultaneously disperse predatory mites alongside UVC treatment. Niab will examine how the concurrent UVC treatment and mite dispersal influence distribution and survival of the mites and hence pest control.

Title: Integration of novel products into apple scab management
Funder: Growing Kent & Medway Business Innovation Voucher
Industry partner: British Apples and Pears Ltd
Term: May 2024 to April 2025
Project leader: Tom Passey

In 2023, Horticulture Crop Protection Ltd and British Apples and Pears Ltd funded Niab to compare the efficacy of bacterial biocontrol products, inorganic compounds and plant elicitors with two conventional fungicides for apple scab control. Three products showed considerable promise in a controlled polytunnel experiment. This project will test the products in commercial orchard conditions over one season and investigate their potential for integration into existing commercial control programmes.

Title: FLYTHRIVE: Hoverflies for aphid control in soft fruit
Funder: Innovate UK
Industry partners: Olombria (Lead), Asplins, The Summer Berry Company and The Natural Resources Institute
Term: June 2024 to May 2026
Project leader: Sarah Arnold

Control of aphids in soft fruit crops is becoming increasingly difficult with very few effective conventional chemical aphicides authorised for use. Previous studies have shown that hoverflies can contribute significantly to aphid control in protected crops as adults released into the crop can seek out aphid colonies even in dense foliage, where they lay their eggs. Emerging larvae are voracious predators of

the aphids with a single larva able to consume hundreds of aphids. This project will test and develop bespoke native hoverfly species blends to control key aphid pests of soft fruit crops under protection.

Title: Soil health: Developing agronomic practices to improve soil health and crop productivity
Funder: Horizon Europe
Industry partner: A total of 19 other partners from EU countries will collaborate with Niab
Term: June 2024 to November 2027
Project leader: Xiangming Xu

Several EU-funded projects have investigated methods of improving soil management practices and creating viable and sustainable alternatives to peat as a soilless substrate. The data and outcomes of one of these projects 'EXCALIBUR' will now be exploited by transforming agri-food by-products either into soil fertilising products or sustainable alternatives to peat substrates. Within the project, Niab is working with ReCoir Ltd to recycle and repurpose spent coir for fruit and vegetable production.

Title: Sustainable management of apple replant disease
Funder: Biotechnology and Biological Sciences Research Council
Term: October 2024 to September 2026
Project leader: Xiangming Xu

It is now generally accepted that apple replant disease (ARD) is a disease-complex primarily caused by microbial pathogens. Recent research at East Malling funded by BBSRC and the EU has shown that disease severity is reduced where newly planted trees are planted on a rootstock genetically distinct from the previous one and the trees are in the previous grass alley. Amending soils with specific biopesticides and microbes or organic composts further reduced the problem. In this project, Niab will evaluate an integrated approach to control using all these treatments in combination.

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