

A targeted foliar feeding programme that ensures apple trees never run short of vital nutrients is helping a long-established Hampshire fruit business optimise fruit size and quality.

The Blackmoor Estate has been growing apples for almost 100 years and is now one of the last remaining commercial top-fruit growers in Hampshire.

The family-run business, located near Selborne in Hampshire, also features one of the UK's leading fruit nurseries supplying rootstock and fruit trees, as well as a large arable enterprise.

But it is best known for its production of traditional and new varieties of English apples, pears and, more recently, cherries grown for major supermarkets and local customers. All Blackmoor's fruit is grown to LEAF (Linking Environment and Farming) standards.

Although steeped in history the estate is pushing boundaries when it comes to apple production, making the most of the cool climate and altitude in this part of the South Downs National Park to produce top quality English apples with full flavour and a crisp texture as efficiently as possible.

The estate grows 49ha of apples on upper greensand and clay-over-loam soils. Key varieties are Cox, Bramley, Gala and Braeburn. Target yields are 50-60t/ha in established Gala and Braeburn orchards and fruit manager Darren Higgins aims for at least 92% of class 1 fruit.

Over the past three years the estate has been replacing M9 orchards with M26 orchards to help achieve those objectives, retaining a 3.5 x 1m trellis system. Older Cox orchards are being phased out in favour of more robust and in-demand varieties like Gala. The semi-dwarfing M26 rootstock is being used to help combat canker, which seems to be more of a problem on the weaker M9 rootstock.

The estate has been using Agrovista's fruit agronomy service for the past 12 years to help deliver optimum yields and quality. Nutrition is a priority, says Darren. "We need to ensure trees have access to all the nutrients they need, when they need them, to optimise fruit yield, quality, storability and shelf life."

For the past eight seasons the estate has been using FiloCal, a fruit-specific foliar feed range, throughout the growing season as a supplement to base nutrition. Customised programmes deliver different proportions of nutrients depending on orchards' needs at the time.

"We use it on all varieties, tailoring rates accordingly," says Darren. "We include it with every spray round once there is enough foliage for uptake.

"We haven't done any trials as such, but the results are clear to see. Tree health has certainly improved and fruit quality always seems to be good.

"We find the FiloCal program improves leaf growth and health, and we are getting a good skin finish. Calcium uptake is better, reducing bitter pit which can be a problem in Cox and Bramleys, particularly in older orchards."

Agrovista technical manager Alex Radu, who oversees the agronomy at Blackmoor Estate, says: "Soil nutrient levels, as well as foliar nutrient applications, play an important role in maintaining the sustainability of an orchard and in producing good first-class yields.

"However, foliar feeds fine-tune and address some essential nutrient requirements during critical growth/development stages and ensure that all nutrient levels match the trees' need so that nothing becomes limiting.

"There are a lot of foliar feeds options on the market, but not all come up to the same standards. On some farms, nutrition is not always adequate, producing poor quality fruit with limited storage life and some significant levels of bitter pit.

"It is also worth noting that if the current cold wet weather continues, supplies of nutrients from the soil could be restricted more than usual early this season, as trees struggle to take up and mobilise the amounts they require for optimum early growth and development."

Independent trials comparing FiloCal with other products and generic nutrients have shown balanced nutrient uptake in leaves and developing fruits, he adds. This resulted in impressive reductions in bitter pit and increases in fruit weight, equating to 23% increase in yield and returns over untreated.

"We know by our own commercial experience that FiloCal is producing similar results in UK orchards, delivering improved tree and root health, minimising stress and promoting healthier leaf and branch growth."

Darren appreciates the product's flexibility. "It's a liquid so it is easy to use and it is compatible with a wide range of fungicides and pesticides. Importantly, it doesn't cause scorching, so we don't need to stop spraying so early when temperatures are high."

Efficacy and ease of use are critical, says Alex. "It is really important that foliar feeds can be applied without mixing problems or leaving residues, they must be readily taken up by the foliage and used by the plants.

"It's ineffective to apply poorly formulated feeds resulting in a layer of crystals on the leaf surface that will remain unused and eventually washed off. In addition, feeds should not cause any phytotoxicity or skin russetting.

"The good thing is that growers don't have to pay a premium for this – the FiloCal product range is competitively priced."

Delivering nutrients on demand

Agrovista's FiloCal programmes are based on three products containing different combinations of nutrients, enabling bespoke plans to be created to meet individual orchard/variety needs throughout the growing season.

Key pinch points occur after full flower and over the following two weeks, when boron and zinc can run short. Boron deficiency can cause terminal bud death and leaf scorch and roll, and can reduce the transport of calcium. Severe shortage of zinc can reduce internode length, resulting in small rosettes of yellowish leaves.

Adequate magnesium is also key during fruit development to optimise chlorophyll production during fruitlet development.

Supplies of manganese and calcium can also be restricted, particularly during dry spells. Insufficient manganese causes interveinal leaf yellowing, while a shortage of calcium produces bitter pit. Affected fruits exhibit depressed skin lesions and small brown areas within the fruit a few weeks before harvest.

Other nutrients including nitrogen, potassium, phosphorous, copper and molybdenum are also included in the FiloCal programme.

Sound nutrition underpins Polish export drive

FiloCal, originally developed in the Netherlands, now has a global following among leading apple growers and producer groups.

Fruit Family consists of 87 fruit producers growing more than 1,000ha of apples near Grojec, a traditional apple-producing area 30 miles south of Warsaw.

The group was established by Grojec-based fruit specialist Activ to secure a supply of top-quality Polish apples for export within Europe and to Africa, the Middle East and south-west Asia. Farms are all certified for the countries or retailers to whom they sell, including UK retailers.

In general, members run small family farms, averaging 10-12ha, with high-density orchards of 2,500 and 3,000 trees/ha. Key varieties include Jonagold selections such as Red Prince, Gala selections and a mix of older varieties including Golden Delicious, Idared, Gloster, Szampion and Empire.

Fruit Family delivers fruit to Activ, which is responsible for storage, sorting and sales. The company's logistics centre consists of one of the most modern fruit sizing line in Europe with a capacity of 30t/hr and a state-of-the-art packing facility, along with 20,000t of controlled atmosphere cold storage.

"Fruit Family's priorities have always been to offer the highest quality products, to reduce production costs and to maximise the volume of supply," says Activ purchasing director Marcin Suchocki.

"To meet these goals the group had to introduce and develop common cultivation methods to boost productivity and quality with due respect to the environment. They realised it was vital to match input of nutrients to meet expected output and the necessary quality.

"Growers have carried out several independent trials and observations for several years, finding FiloCal nutrition program the most suitable and profitable. They see a big difference where the programme has been used."

This came to the fore last season, says Activ general director Waldemar Zolcik, when bitter pit was a problem with many suppliers who had not paid adequate attention to nutrition.

Overall, the nutrition programme significantly helped growers to drive up the quantity and quality in terms of firmness of fruit, skin roughening and damage, he adds. It also helped, as indicated in the company's sorting line statistics, to limit loss due to rot, bitter pit and other storage problems.

“FiloCal has been recognized as one of the major best practices that led to better preservation and shelf life of apples, which is essential for exporting fruit to distant destinations,” says Waldemar.

“Application of FiloCal is certainly helping growers receive a higher average price, to stand out in a competitive market with high quality products and to win new sales areas.”

FiloCal benefits

- Easy application
- Can be sprayed together with many crop protection products
- Gives spray an optimal pH value of 6.5 – ideal for most crop protection products used.
- Can be applied during sensitive periods (eg blossom) and is not temperature sensitive.
- Competitively priced

Customised usage

Three sorts of FiloCal are available:

- FiloCal Red – contains calcium and magnesium
- FiloCal Black – primarily based on nitrogen, potassium, phosphate, boron, iron, copper, manganese, molybdenum and zinc
- FiloCal Blue – based on boron, copper, manganese, molybdenum and zinc