East Kent Fruit Society members visit Adrian Scripps Ltd's Moat Farm

John Guest reports

In March, East Kent Fruit Society (EKFS) members gathered at Adrian Scripps Ltd's Moat Farm at Five Oak Green in Kent, where a new Gala orchard designed to accommodate a three-row sprayer beneath protective hail netting is the latest innovation in the company's orchard management strategy.

Society members also toured the pre-grading unit and packhouse where Gala was being graded and packed and heard about the expansion of dynamic controlled atmosphere (DCA) storage at Moat Farm.

DCA 'kennels' in a Gala bin.

Two central fruit walls flanked by 5m-high hail protection support poles.

An excellent turnout meant that the visitors were divided into two groups, taking turns to visit the new Gala orchard with Production Director Mark Holden and the grading operation with Managing Director James Simpson.

The cropping at Moat Farm includes 21ha of Gala, 5.7ha of Bramley, 4.6ha of Spartan and 2ha of other varieties and trial plots. There is 10.4ha of orchard land waiting to be planted and 45.8ha is down to grass, arable crops or is in stewardship.

The fruit storage facility comprises 22 DCA stores installed by UKCA Ltd and 36 conventional CA stores, totalling 12,000 tonnes of capacity in total. There are also substantial chilled holding areas for pre-sized bins and packed fruit.

New Gala orchard

The newest 'state of the art' Gala orchard demonstrates the latest orchard system development at Moat Farm, with the Jugala and Royal Beaut clones planted at 0.75m x 3.25m with 4,100 trees/ha. The orchard had just been planted, in winter 2016/17.

The structure is of a Dutch design that has been used for five or

5m-high flat-top hail netting support system.

six years and is capable of supporting hail net protection whilst allowing a three-row sprayer to operate beneath the netting. The orchard comprises fruit walls with a target height of 3.1m, with the hail support structure 5m high with support posts situated every 3m allowing two fruit walls between the posts supporting the hail protection net.

The nets will not go on until the trees start cropping in the third season, which fits with the 10-year life expectancy of the net and the anticipated cropping life of the trees. The probability is that the trees will be replaced after 12 years and replaced with a new variety or clone. The orchard structure should last for at least two cropping cycles (about 25 years).

When in place, the net will cover the roof area and down the sides, creating an enclosed environment which, in the Netherlands, has been shown to eliminate the need for insecticide sprays against codling and tortrix moths, when used with

Precision tree support system.

Mark Holden discusses the replacement of Kanzi by Gala Schniga.

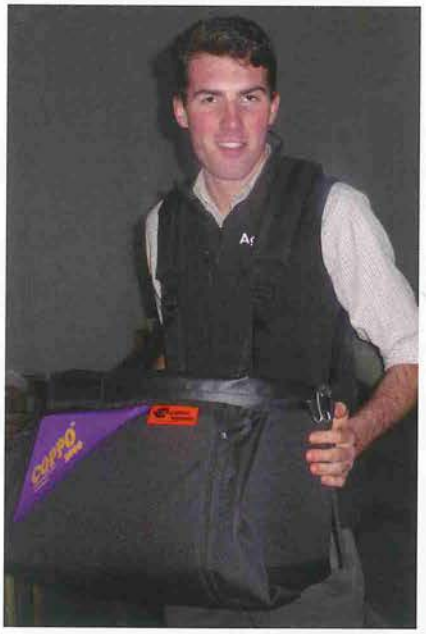
A three-row orchard sprayer in action in a Bramley orchard.

pheromone disruptors.

The cost of the structure and netting was £19,000/ha for materials, including irrigation but not labour costs. The cost of the trees was around £15,000/ha. Mark Holden said the cost was not quite as much as he anticipated, with the structure and hail protection adding about £10,000/ha to the cost of their normal unprotected orchard systems. Mark explained that they had experienced hail twice in the last five years, and it only needs one hailstorm in 10 years to pay for the system. The farm narrowly avoided hail damage last year when it hailed nearby, just missing the farm.

Established Gala

The group of visitors moved on to an adjacent Gala orchard planted in 2008, that had originally been planted with four rows of Gala Schniga alternating with four rows of Kanzi. Due to canker infection, it was decided to remove the 12 rows of Kanzi trees and replace them with more Gala Schniga that is now in its second leaf.



The picking buckets that the company imports from New Zealand. They are expensive at £80 each, especially in comparison to the standard buckets costing £40 each, but James said that the pickers are 20% more productive with the lighter better-cushioned New Zealand buckets and they pay for themselves in the first week of picking.

Bramley

Planted at 3.75m x 1.25m in 2006, the Bramley orchard has been root-pruned and the trees mechanically pruned. The mechanical tree pruning is carried out in June and July and involves trimming the trees back from the alleyway. Any major pruning, requiring the removal of larger lateral branches, is carried out in winter along with 'lifting the skirts' of the trees by removing branches that hang downwards. Regalis is used as part of the tree management strategy.

Gala apples entering the pre-sizer's camera module.

All the Bramley is pre-sized into store, removing fruit that has no prospect of suitability for supermarket sales. Adrian Scripps Ltd operates a one-pick operation in all their orchards, with fruit thinned prior to picking, ensuring that most of the fruit harvested is of supermarket quality going into store. The policy for Bramley is to thin back to doubles early in the summer.

Packhouse

Touring the packhouse with James Simpson, EKFS members saw the four-lane MAF Pomone pre-sizer, installed in 2013, in operation. The pre-sizer measures size, shape, top colour, background colour, blemishes, fruit length, internal quality and Brix. The machine runs at 10 tonnes/hour when working with fruit of an average size profile, dropping to 8 tonnes/hour with smaller apples and increasing to 12 tonnes/hour with larger fruit. Most of the fruit is pre-sized prior to packing, flowing from the pre-sizer into the packing operation.

Full bins are collected from the pre-sizer and are moved by a robot, following a selection process that allocates each bin a unique identity, allowing the computer to make intelligent decisions regarding the movement of each bin, using fully-integrated stock

James Simpson explains the scope of the MAF grader's camera technology.

Packing line input robots.

The Atlanta Ulma flow wrapping machine.

management software. This ensures that bins of the same grade are collected into groups stacked three-high before being transferred to the holding area, while retaining low-volume sizes and/or grades until there are sufficient bins to move away from the pre-sizer.

From the holding area bins are transferred either to a cold-store or moved to the packing line entry area. Three robots feed the bins into each packing line, while one more deals with the empty bins. The only manual intervention is a forklift truck driver taking the stacks of three bins to the cold-store or to the packing line input robots. Three auto-fed packing lines, comprising two Ulma flow-wrapping machines and one multiline, transfer the fruit to their designated packing points. Brillopak case-filling and stacking equipment completes the packing line. The current packing capacity is about 1,800-2,000 cases per hour.

At the end of the packing line is a robotic tray stacker. This can work continuously for 24 hours/day if necessary, lifting crates off the feed conveyor and stacking each one neatly on a pallet. The cost of this machine was around £90,000.

The investment in technology runs into £millions. Over £5.5m has been invested in storage and packing facilities in the last three years, and is an ongoing investment as new technology becomes available. James Simpson said, "We have more equipment on site ready for installation during any down-time this summer". ◆