

# Soft Fruit case study – April 2020

## FACTSHEET

### Raspberry & Cane Fruit

Many growers have already or are considering moving from in-soil raspberry production to substrate pot-grown long cane. The use of these plants supplied ex-cold stored can provide a means of scheduling when several plantings are made in the open or under polythene, fruit production using a single or several summer (floricane) fruiting raspberry varieties over a far longer harvest period than would normally be possible. Where glasshouse or polythene tunnel protection is available to protect some of the successive plantings fruiting from mid-late May to late September-early October may be possible.

Where in-soil or in-pot grown long cane is used for fruit production they are placed in a cold store in November or December when the primocane has completed its vegetative growth and shortening day length and lower temperature has triggered flower bud initiation. The plants remain in cold storage until the chilling requirement has been achieved and the schedule for planting demands. The exact date of the onset of harvest will again depend upon the variety, the amount of chilling the plants have received, the temperatures post cold store and day length. So early i.e. late February-March and July plantings will be later to come into fruit than those planted in May.

In substrate pot raised, long cane summer fruiting raspberries are best used for substrate-in-pot rather than in soil crop production as the life of plantings from this type of material is usually only 1 or at most two years. Most cultivars produce very little or weak primocane in the second cropping year. If the plants are to be cropped once, then a 7.5 L pot can be used, if for 2-3 years then 10 or 12 L pots are used. Some growers use 2 plants/10 or 12 L pot for two-year crop production.

More recently some propagators of long canes have moved to producing a single long cane plant in a 5 or 7.5 L pot, these plants are not potted on. Once the compost around the roots of the ex-cold stored plants has completely defrosted, the long cane plants are placed down in their fruiting position the canes are secured by twine or plastic clips to the crop support trellis and the irrigation drippers are placed down onto or inserted into the compost of each pot.

These plants are only suited for single-crop production, at the end of harvest, the plants are permitted to wilt and die. The pest and disease control programme for these single crop plants and their cost is substantially reduced. As first, second and sometimes third flushes of primocane growth can be removed using directed applications of carfentrazone ethyl (Shark EAMU 0622/19) each application timed when the **tallest primocane present around the floricane in the pots is no more than 20 cm in height**. No sprays are required for raspberry cane midge or cane blight control. It should be noted however that Shark has a 21-day harvest interval, the maximum individual rate of application is 800 mL product/treated ha but if applied at the correct time only 400 or at most 500 mL/ha will be required. Fruit harvesting is quicker and easier (especially for pick-your-own customers) as there is no primocane present to obscure fruit.

In the case of well-ventilated tunnel or glasshouse-protected plantings, applications of a fungicide for botrytis or raspberry rust control may be unnecessary and only sprays used for powdery mildew may be required if the variety is known to be particularly susceptible, e.g. Glen Ample.

### Establishing & Managing Plantations

It is vital to treat plants with great care when they arrive on the farm. Place them under cover in the shade but



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not in a cold store for several days (maybe for early plantings over a week) to allow the compost to defrost. Place down in the field when the weather is cool, if possible in still conditions or a gentle warm breeze. For late spring-summer plantings, misting over the rows of plants may be necessary every few hours for a few days to relieve heat stress and prevent excessive evaporation of moisture from the canes and emerging buds. During placing out or potting handle the plants with care to avoid detaching or damaging fruit buds and do not take too many plants out into the field at any one time so that none are left exposed to the wind and sun.

Make sure new canes are securely tied to prevent root damage and new plantings are thoroughly thawed out to avoid any water stress when newly planted. If grown under protection, both single and double-cropping pot-grown long cane plants are likely to require the installation of fruiting lateral supports to prevent the laterals from bowing over. Glen Ample & Tulameen in particular will require this, although some other short strong lateraled cultivars e.g. Squamish will not.

If the decision is to go for in-substrate long cane crop production it is vital to plan well ahead and to liaise closely with the plant propagator so they produce the quality of plant you require. It will be necessary to check that there is an adequate, clean and reliable water supply available for the plants as soon as they are placed down in their cropping position to the end of their harvest. The ability to liquid feed the crop is also essential, especially where plantings will be in place for two or three years. Make sure that the conductivity of compost & feed is regularly checked to avoid crop root or foliar damage.

### **Pest Monitoring & Control**

Two-spotted spider mites, aphids and raspberry beetle with summer fruiting raspberries may be the only ones that require control. Control methods should be based on routine checking of foliage, flowers and fruit. In the case of raspberry beetle the installation of funnel traps to monitor the population is recommended.

Phytoseiulus persimilis can be used for effective biological control of two-spotted spider mite. Introductions can be made at 10/m<sup>2</sup> and should be self-sustaining once established. Established plants (carried through into a second or third cropping season) should be checked for signs of vine weevil damage such as failure of the floricanes to break bud or plants that are easily pulled from the compost.



### **Raspberry Cane Midge**

At least some primocane will need to be left where plantings are going to be carried through. This cane in the majority of cases will be susceptible to damage by raspberry cane midge and blackberry leaf midge.

Pheromone traps for these pests will need to be positioned in the plantation 1-1.6 m above the ground from early April onwards to determine when the first generation of midges have emerged, when/if sprays for control are necessary. Trapping will allow you to determine whether numbers are sufficiently high to warrant an insecticide application, 30 adult male midges caught/trap/week is currently considered to be the threshold for spraying, however, the actual threshold may need to be lower where the rind of the primocane readily or has split.

With early plantings of long cane (March or April) it may be possible, where the variety is known to be a vigorous and plentiful provider of primocane (e.g. Glen Ample), to remove at least the first flush of primocane using Shark, leaving part of the second to carry through to crop the following summer.



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## Phytophthora

The majority of raspberry cultivars are susceptible to *Phytophthora rubi*. Many growers are unable, except for the earliest plantings, to use Paraat or SL567A for root rot control in either outdoor or protected plantings of long cane as there is insufficient time between placing and the start of harvest. Both metalaxyl-M i.e. SL 567A (EAMU 2195/07) and dimethomorph (Paraat) have a three-month harvest interval, so applications will have to be made shortly.

## Floricane Disease Assessments

This is an ideal time of year to assess the floricane of summer and carried through (late spring/early summer fruiting) autumn fruiting raspberry plantations for the presence of over-wintered fungal diseases i.e. *Botrytis*, spur blight and cane spot.

### *Botrytis*

Long silver/white lesions both around buds and extending between buds. Black fruiting bodies (round or oval in shape) are often found superimposed on these lesions along with patterns of concentric circles.



### Spur blight

Pale, steel grey lesions around individual buds. The grey colouration is covered in tiny black-speckled spore bodies.



### Cane spot

Grey-edged, sunken spots in cane rind. Where significant numbers of spots are present, they may have coalesced and there may be signs of splitting.

## Strawberry

As the weather is starting to warm, now is the time to start looking at your strawberries and check their condition before the season starts. Get up to a high viewpoint and look out over your whole crop – look for a healthy, uniform green colour and watch out for any dry patches. You should also check your drippers to make sure none are blocked, and begin to monitor the electrical conductivity (EC) of your feed water and runoff daily. As you start feeding, the water in the slabs will be displaced so you should see a steady rise in EC – you should be looking at 1.5 m/s (or 1500  $\mu$ /s) in the runoff, and certainly above 1 m/s. Aim to record this frequently to track changes over time. If crops have been overwintered on the ground these should be lifted and placed on tables. Check for vine weevil larvae, and treat with a nematode drench if required.

## Pest & Disease Management

Start to think about your pest and disease management strategy.

Good spray coverage and an early start to regular weekly sprays are key. Early applications before the canopy has developed can also improve efficacy. You may consider preventative sprays (e.g. Charm and Luna Sensation) although check for a mixture of FRAC codes to prevent resistance development, and watch out for maximum treatment numbers and harvest intervals.

## Powdery Mildew

Look out for signs of leaf curling in your crop as this may be an early sign of powdery mildew, and there are early signs in Elegance, Elsanta, Centenary, Vibrant and Flair. There is a higher risk of PM with higher humidity



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as tunnels are starting to dry out from the winter, or in tunnels with tall grass under benches – grass can be burnt off with a Roundup spray, but only if the plastic has not yet been put on. You should begin PM sprays now to ensure robust control later. Systhane is a good choice and Talius is available under EAMU (0210/17), a spray should be applied every two-three weeks, although this could be increased if disease pressures are high, and within a week of first planting. Should a bad infestation develop, this can be treated with a remedial spray of bicarb.



Leaves show typical cupping associated with early signs of powdery mildew

### Aphids

You should regularly inspect for aphids. In overwintered plants, they will congregate in the centre – look out for curled-up plants as an early warning. Batavia can be an effective choice (spirotetramat 100g/L, 1 L/ha max), although it can be used no later than 14 days before flowering and can only twice per year. It is reported to be safe for beneficials, unlike other products such as Hallmark. Control is best achieved through biological control (e.g. *Aphidius*) which can be applied as conditions warm.



### Mites

You should also look out for mites on the backs of leaves, especially on older leaves, using a hand lens. Overwintered mites emerging from hibernation will appear brick red and can be difficult to control, so it is best to target eggs and young motiles. Some acaricides are available i.e. Envidor (EAMU 1600/17) and Apollo 50SC (clofentezine) which can be used for early control, however before use, consult EAMU 0620/18 as there are specific restrictions in the method of application & HI. Effective control is best achieved using Phytoseiulus, so you should aim to establish this in your crop as conditions warm towards May.



### Crown Rot & Red Core

Crown rot is more of a concern in newly planted crops. Check new plants for bright orange colouring in the crown before planting. You should also periodically open slabs to check the roots are a strong white colour. Paraat can be applied only as a drench, but it has a 35-day harvest interval. Phosphites can also suppress spread (e.g. Hortiphyte).

### Weed Control

Check for weeds early in field-planted crops, as these will be harder to control later. As soil crops break, dormancy products like Stomp, Wing P and Shark are likely to scorch the crop. However, an early season application of Wing P can be made immediately after planting a new crop to control fresh weeds. Centurion Max can be used for grass weeds e.g. couch grass, annual meadow grass under EAMU (3640/19) but needs to be used before flowering. This may scorch the crop a little but early application avoids flower/fruit damage, and won't impact the crop unless it's very weak to start with. Dow Shield can be used for many weeds and works best when the weather is warm (unlike residuals like Wing P) after which pre-flowering Dual Gold application can be used for topping up.



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## Disclaimer

Every effort is made to ensure the accuracy of information and recommendations given in these notes. All applications of crop protection chemicals should be made in accordance with label recommendations, which should be consulted before spraying. Some of the pesticides mentioned in these notes may not be supported by label recommendations for their use on pumpkin crops but are permissible via Extension of Authorisation for Minor Use (EAMU) in the UK under 'The Revised Long Term Arrangements For Extension Of Use (2002)'. In these cases, the use of the pesticide is at the risk of the user. The references to on-label approvals and EAMUs for the use of pesticides in pumpkin crops are correct at the time of writing. These are subject to change and approval may be withdrawn at any point. It is the grower's responsibility to check approvals before the use of pesticides. If in doubt a grower should seek advice from a BASIS-qualified advisor.



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