

A guide to best practice in handling bought-in plants

Andrew Hewson, ADAS UK Ltd

This factsheet provides guidance for growers on dealing with bought-in plant material. More specifically, it provides advice on goods-in procedures, documentation, nursery hygiene, plant care and the bio-security measures necessary to help maintain plant quality and ensure plant health requirements are met.

Background

Most nurseries now supplement their own production with bought-in plant material as they seek flexibility of supply to meet changing market requirements (Figure 1). Whilst this has advantages, it also brings with it some important considerations so far as plant health, plant quality and consistency of supply are concerned. Pests and diseases are a particular concern, some of which

may be quarantine organisms and subject to inspection by Plant Health officials (Defra for England & Wales and the Scottish Government for Scotland). Weed contamination from bought-in plant material is a further consideration, particularly for growers of longer-term nursery stock crops.

To help control such problems and satisfy increasingly stringent traceability requirements throughout the supply chain, nurseries should implement documented checking-in

and recording procedures for all bought-in plant material. This applies to both young plants for growing-on and finished plants for re-sale. The aim of this factsheet is to brief ornamentals growers on how to do this. It focuses on dealing with plant suppliers, managing holding areas, documentation, plant health requirements including plant passports, nursery hygiene, waste management and plant care.



1 Most nurseries supplement their own production with bought-in plant material

Plant suppliers

When choosing where to buy plants from, be guided by the following principles:

- Plants should be procured from reputable suppliers who are able to provide high quality material on a consistent basis.
- Plants should be free from pests, diseases and weeds, and meet specified quality requirements regarding plant size and shape. Where possible, source locally grown plants, which are less likely to harbour alien pests and diseases.
- Suppliers should also be able to meet quantity requirements and maintain high levels of customer service.
- Make sure your suppliers know what you expect and keep

you informed of progress or any anticipated problems.

- Visit your main suppliers on a regular basis to review progress, ensure your requirements are being met and develop a good working relationship with them. Developing good supply networks is the key to success.
- Agree your requirements in writing, including your trading terms and conditions.
- Check whether your suppliers are part of an industry certification scheme and have traceability systems in place, which include records of cultural work and pesticide applications.

Many nurseries still rely on verbal agreements with suppliers rather than written specifications agreed by both parties. This makes it more

difficult to resolve any subsequent difficulties should they arise. Where crops are grown to order, draw up an agreement and specify clearly what you require in terms of plant quality (size, shape, health status etc), order quantities and service levels (delivery dates etc). Include in the agreement a copy of your standard trading terms and conditions. If necessary, have the document verified by a solicitor to ensure it is legal and correct.

Quarantine/holding areas

When handling bought-in plant material, it is good practice to provide a dedicated quarantine or holding area, where stock can be checked and monitored before being introduced onto the nursery, moved or sold. In some situations, such as licensed imports or where specific statutory controls are imposed against a serious pest or disease, such quarantine measures may be compulsory. Too often, bought-in plants are set down and 'lost' amongst other nursery crops without being properly checked and accounted for (Figure 2). Mixing bought-in plants with other nursery crops not only poses plant health and weed contamination risks, but also makes it more difficult to resolve any subsequent concerns with suppliers, in respect of quality issues or order shortfalls.

Position of quarantine areas

- The quarantine or holding area should be sited well away from public access points, other nursery

stock and areas of high traffic such as entrances or offices. Outer boundary locations can be considered, providing they are accessible and regularly checked.

- If space is limited, give priority to imported plants requiring quarantine and those known to be important host plants for major pests or diseases. Some of these may be difficult to control, or are notifiable, and so need reporting promptly to government Plant Health officials if problems are suspected or found.

Distance from susceptible plants

- In the case of potential carriers of quarantine organisms, ensure the holding area is at least 10 metres from any susceptible genera, or a distance specified by Plant Health officials. For protected crops, a separate building or secure section should be used. This is also a useful guide for non-quarantine organisms, where space allows. Should a pest or disease be confirmed on any plants, then only the block immediately around them is likely to be subject to statutory

control measures. Plants within 2 metres may have to be destroyed and those within 10 metres held in a quarantine area for a longer period: in the case of *Phytophthora ramorum*, at least three months.

Requirements of the area

- Ensure the holding area has irrigation, is kept clean, tidy and weed free, is well sheltered and has good drainage.
- Depending on the nature of the plant material and time of year, protected structures and frost protection facilities may be required. Also, if there is a possibility of flying insects (particularly, non-native species) emerging from plants, then protected structures are advisable in order to reduce the risk to established plants in the wider environment; once a non-native species reaches established plants, it is much harder to detect and eradicate.
- Disinfect the area regularly as well as tools and equipment. If possible, install dedicated equipment such as hose pipes to minimise

risks of contact transmission of disease pathogens from the quarantine area.

- Ideally, use a concrete or solid floor to aid cleanliness.
- Ensure the areas are well signed to

avoid confusion and plants being removed by mistake for orders, or mixed with other nursery stock.

- Rabbits and other damaging pests (foxes, deer, rodents etc) must be excluded as they can cause considerable damage (Figure 3).

- Multi-site nurseries should have a dedicated quarantine area and implement goods-in procedure at each site, assuming goods are delivered and unloaded directly there.



2 Bought-in plants should be checked and properly accounted for before being set down on the nursery



3 Rabbits must be excluded from quarantine areas to prevent any plant damage from occurring

Inspection and monitoring

- Inspect plants carefully on arrival, using a standard check sheet (Table 1).
- Inform suppliers promptly of quality concerns or order discrepancies.
- Inform Plant Health officials immediately if the presence of non-native pests or diseases is suspected (this is a legal requirement) and take steps to isolate the risk.
- Take photographs to record your concerns.
- Remove diseased plants promptly.
- Bought-in plants and quarantine or holding areas need to be checked at least twice weekly and managed by responsible, qualified staff with delegated responsibility.
- Clear lines of communication are important, especially in respect of sign off procedures for goods-in, and liaising with suppliers.
- Staff should be trained in the recognition of major pests and diseases (especially, quarantine organisms), follow goods-in procedures correctly and work closely with other, qualified nursery staff. They should also be able to recognise major weeds.
- Staff should also understand why precautionary and statutory control measures are required, particularly in terms of quarantine organisms and notifiable pests or diseases.
- Before plants are introduced to the main nursery area, they should be held and monitored for at least two weeks, longer if possible and ideally six weeks. When monitoring for specific quarantine organisms, plants should be held for a period specified by Plant Health officials before they are introduced to the main nursery area, moved or sold.
- If possible, when ordering plants and arranging delivery dates, allow at least two weeks between deliveries. This will allow time for most pests and diseases to become apparent and subsequently dealt with before a new consignment arrives (Figure 4). It will also help ensure that healthy consignments are not unnecessarily caught up in any eradication or control programme. Ideally, there should not be an overlap between new consignments of plants entering and leaving the quarantine area.



4 The use of sticky traps in quarantine areas will highlight the presence of insect pests

Documentation

Clear and concise documentation for bought-in plants is an essential part of an effective goods-in procedure. It should record what goods have arrived, when and from which supplier, and note any shortfalls or quality concerns which should be raised promptly with suppliers. Documentation should also be dated and signed off by authorised staff when checked. This also applies to delivery notes and other correspondence relating to the goods such as order specifications, payment arrangements and plant passports. Goods-in systems should also provide clear lines of communication and follow up procedures for dealing with suppliers and Plant Health officials, ie which staff member is responsible for what and when.

Recording systems

Some nurseries have quite detailed recording systems for bought-in plants as part of their goods-in procedures, whereby the plants are assessed for pests, diseases, weeds, nutrition, plant numbers and quality (size, shape etc). Results and comments are then sent back to the original supplier. This can help to build stronger supplier relationships and provide a better idea of plant material requirements. Most importantly, agree clear, meaningful specifications with your suppliers from the start, against which the orders should be checked on arrival. An example recording sheet for checking bought-in plants is illustrated in Table 1.

Using record sheets

In the example in Table 1, a simple scoring system is used to assess plant quality. There is also a comments box to note any particular points and follow up actions such as complaints or returns to suppliers and where product falls below the agreed specification or order quantity. This should also be used to record any corrective actions that may be required and evidence that this has been completed, particularly where quality management and/or certification schemes are in place.

Which documentation should you keep?

When completed, copies of this form should be kept on file together with

Table 1 Example recording sheet for checking bought-in plants

Recording sheet for bought-in plants						
Order number						
Batch number						
Supplier						
Carrier						
Delivery date						
Checked by						
Signature						
Date						
	Number of plants	P&D	Weeds	Nutrition	Size	Comments inc. corrective actions where required
Abelia	250	5	3	4	5	Number ok, good quality, some weeds.
Acer	200	5	4	5	5	Number okay, very good quality.
Astilbe	500	2	2	3	4	Number ok but have vine weevil. Speak with supplier.
Anemone	500	2	1	2	2	Poor quality, below spec. Speak with supplier.
Aucuba	350	4	4	4	5	Good quality but number shortfall (500 ordered), speak with supplier.

Key to scoring system: 1 = Very poor, 2 = Poor, 3 = Satisfactory, 4 = Good, 5 = Very good

other documentation specific to the order. This includes:

- supplier details
- despatch notes (Figure 5)
- agreed specifications
- records of complaints
- notes concerning order shortfalls
- quality issues
- general correspondence including Plant Breeder Rights details
- Plant Health documentation such as plant passport details (which must

be retained for at least 12 months), phytosanitary certificates (for imports) and records of plant health checks by Plant Health officials

Adequate documentation and records should also be kept to facilitate any re-exports or plant passporting that may be envisaged – contact your local PHSI office for further guidance. It is also good practice to keep a diary of correspondence with suppliers, and take photographs of samples of bought-in plants for reference, particularly in the case of quality concerns and potential disputes with suppliers.

Records of bought-in plant material should also comprise the previous

cropping history, including key pest or disease control treatments such as growing media incorporated pesticides or pesticide treatments applied prior to despatch. This is important information that you should seek from your supplier, for example in the case of vine weevil control. Another example would be if you plan to use biological pest control, where previous chemical treatments may adversely affect the levels of biological control achieved, particularly for example if pyrethroid insecticides have been recently used.

Necessary documentation checklist

- Order specification and reference number
- Records of cropping history, including pesticide treatments
- Photographs on arrival for reference, and to record any quality concerns
- Evidence of completed corrective actions, signed and dated
- Diary of correspondence with suppliers
- Trading terms and conditions, including payment terms
- Plant passports (where required)
- Phytosanitary certificates (where required)
- Plant Health documentation relating to plant health inspections
- Internal recording sheets and photographs used to assess plant quality
- Order/consignment notes from carriers
- Invoice correspondence



5 Keeping important documentation such as despatch notes is an important part of managing plant handling and movement

Plant passports

Certain plants moving within and between EC states require a plant passport and this must always accompany the plants. Ensure that your supplier provides a valid plant passport for such plants and keep this in a safe place. If problems are encountered with passported plants, inform your local PHSI office straight away.

What function does a passport have?

- It provides important documentary evidence that the plants concerned have been grown by a registered grower whose premises are regularly inspected and who is authorised to issue plant passports.
- It proves that the plants are, to the best of the supplier's knowledge, free from all quarantine pests and disease pathogens.
- The passport also provides documentary evidence that plants

imported from outside the EC have been landed by a registered importer, inspected on arrival in the UK or in another member state and found to be free from quarantine organisms prior to movement within the EC.

Retention of plant passports

- Passports should be retained for a minimum period of 12 months, sometimes longer, for example to meet the requirements of some industry certification schemes.
- For reference, plant passport numbers can usually be found on company letterheads, footers or accompanying documentation, such as delivery notes.

Further information and guidance can be found in the publication, *The Plant Health Guide to Plant Passporting and Marketing Requirements* which can be viewed on-line at www.defra.gov.uk or www.scotland.gov.uk for the Scottish version. Copies can also

be obtained from the PHSI (Email. planthealth.info@defra.gsi.gov.uk), or in Scotland from the Scottish Government Rural Payments and Inspections Directorate (SGRPID), Email. hort.marketing@scotland.gsi.gov.uk

Phytosanitary certificates and plant health inspections

Both plants as well as some categories of plant produce and products that are permitted to enter the UK from non-EC countries, must be accompanied by a phytosanitary ('plant health') certificate. Such a certificate provides proof that the plants:

- have been officially inspected in the country of origin (or country of despatch).
- comply with statutory requirements for entry into the EC.
- are free from certain pests or diseases.

Also, all consignments of plants and some plant produce imported into the UK from non-EC countries will be

subject to inspection by Plant Health officials on arrival.

Other material which does not require a phytosanitary certificate may also be liable to random inspection. Inspections may take place at the point of entry or inland at the point of destination, eg the importer's premises or nursery. Any consignments found to contain pests or diseases, which are landed in contravention of plant health legislation or where documentation is not adequate, may be subject to destruction, treatment or re-export at the importers own expense and risk.

The Defra publication *The Plant Health Guide for Importers* provides further, more detailed guidance – see www.defra.gov.uk/planth

Government Plant Health officials are an invaluable source of information and advice. Get to know them and maintain regular communication, as they are there to help you. Details of local offices can be found by Email. planthealth.info@defra.gsi.gov.uk or www.defra.gov.uk/planth/offices.pdf

For Scotland, contact:
Scottish Government Rural Payments and Inspections Directorate (SGRPID)
Horticulture and Marketing Unit
Pentland House, 47 Robb's Loan
Edinburgh EH14 1TY
Tel. (0131) 2446303
Email. hort.marketing@scotland.gsi.gov.uk

Nursery hygiene and plant waste in quarantine/holding areas

Clean stock and good hygiene are vital to achieve successful pest, disease and weed control. Diseased or pest infested plant material should be isolated, removed and destroyed promptly. Photograph the material first, in the event of queries with suppliers. Keep the area clean, weed free and regularly disinfected.

What to look for on bought-in plants

- When checking bought-in plants, pay particular attention to those that may host key pests or diseases such as vine weevil (eg herbaceous perennials), *Phytophthora* (eg conifers) and downy mildew (eg Hebe – Figure 6).
- For quarantine/holding areas under protection, use sticky traps to monitor for pests such as whiteflies (Figure 7) and thrips.
- During the autumn and winter period, pay close attention to potential Botrytis problems and remove decaying plant material promptly.
- Pay close attention to young plants bought in for growing on such as liners and plugs, as these are a frequent starting point for pests, diseases and weeds (most notably, bittercress, liverwort – see Figure 8 and moss).
- Consider using raised benches, particularly for plug plants, as the plants are then more visible and easier to check.
- In the case of disease pathogens, overhead irrigation is a frequent means of spread (Figure 9), so water with care and where possible, consider low level systems such as capillary beds or drip irrigation (eg specimen container stock/trees).
- Implement any specific requirements for quarantine/notifiable organisms



6 Hebe is a host of the key disease downy mildew



7 Whitefly can be monitored using sticky traps

in accordance with Plant Health requirements as specified on any notice or licence. For example, in the case of *Phytophthora ramorum*, you may be required to keep blocks of susceptible plants separate and spaced at least 10 metres apart. In the case of findings of quarantine organisms, it may be necessary to use and maintain footbaths for cleaning and disinfecting footwear.

Dealing with plant waste

- Plants which are heavily infected with disease or infested with pests should be immediately removed from growing sites to limit the risk of spread to other plants and disposed of promptly.
- Soil or growing media from diseased plants should be removed and disposed of appropriately, or sterilised if it is to be re-used.
- Ensure that all plant waste legislative requirements are complied with.
- In England & Wales, ensure that waste management licenses or exemptions required under the Waste Management (England & Wales) Regulations 2006, are in place and that plant material under statutory notice is destroyed in accordance with conditions laid down by the notice. Usually, this will require the destruction of associated containers and the disinfection of all surfaces that have come into contact with infected plants.

The Defra Plant Health Code of Practice for the Management of Agricultural and Horticultural Waste (visit www.defra.gov.uk/planth/publicat/waste), describes measures for minimising plant health risks from waste and whilst voluntary, is a useful source of reference.

HDC factsheet 10/07 (*Guidelines on nursery hygiene for outdoor and protected ornamental crops*) provides further advice on nursery hygiene.



8 Look out for the presence of weeds such as liverwort in young plants



9 Overhead irrigation can be a frequent means of disease spread

Action points for hygiene in quarantine/holding areas

- Ensure quarantine/holding areas are kept clean, tidy and weed free.
- Disinfect standing areas, tools and equipment routinely.
- Keep tools and equipment separate to those used elsewhere on the nursery.
- Use a concrete floor surface to aid cleanliness, or one that

is permeable and can be kept clean and free of weeds/debris.

- Ensure the area is well drained and irrigated efficiently so that plants are not standing in water for any length of time.
- Check plant material regularly and at least weekly for pests, diseases and weeds.
- Remove unhealthy plants promptly.

- Implement any necessary hygiene measures specified by government Plant Health officials, for example in the case of quarantine organisms.
- Remove and destroy plant prunings and fallen leaf debris promptly.

Cultural management in quarantine/holding areas

Crop protection

To maintain plant health standards and quality, be sure to look after bought-in plants whilst they are in the quarantine or holding area. Any plants with high levels of pests, diseases or weeds on arrival should be kept well away from other nursery crops and returned to the supplier promptly (or, a credit note obtained for appropriate reimbursement). Otherwise, areas of bought-in plants should be included in routine pest, disease and weed control programmes. If you suspect the presence of a notifiable disease, inform your local Plant Health office so that any necessary control measures can be introduced promptly.

Nutrition, irrigation and winter protection

Ensure bought-in plants are provided with adequate nutrition, especially

in the case of plugs, liners or other young plants awaiting potting on. Careful water management is also crucial, particularly during dry periods when stock held in holding areas can easily be forgotten and quickly deteriorate. Ensure there is an adequate supply of good quality water readily available. There should also be adequate winter protection on hand, particularly in outdoor situations.

Weed control

Bought-in plants commonly introduce weeds which can quickly spread to the main nursery area. Instruct your supplier that weeds are not acceptable and include 'weed free plants' in your order specification. Whilst a few annual weeds may be tolerable and to a degree inevitable with large numbers of plants, high levels of weeds are costly to remove and are not acceptable. If the plants are likely to remain in situ for several weeks or longer before being handled, consider applying an appropriate weed control measure during this period. Ask your supplier to list any weed control treatments that have been applied to the plants prior to

despatch. Keep the quarantine or holding area clean and weed free too, to reduce background weed pressure.

The HDC Handbook *Practical Weed Control for Nursery Stock* (fully revised 2007) provides further advice.

Action points for growers

- Use a dedicated holding area for receiving bought-in plants.
- Locate it away from the main

nursery area and in the case of potential carriers of quarantine organisms, at least 10 metres from susceptible plant genera.

- Consider risks to neighbouring holdings and established plants, including those in the wild.

- Keep the holding area clean, tidy and weed free.
- Hold and monitor plant material for at least two weeks before introducing it to the nursery, but longer if possible and ideally six weeks.

- Monitor plants at least twice weekly, particularly during the growing season.
- Be aware of cropping histories including recent pesticide or growth regulator treatments.
- Implement routine cultural procedures to maintain plant quality.
- Agree an order specification with your plant supplier before taking delivery of plants.
- Use a recording system to assess plant quality on arrival.
- Develop good relationships with suppliers and talk to them regularly.
- Visit suppliers regularly to agree requirements and view crops.
- Raise any queries or complaints promptly with your supplier.
- Devise and implement a routine goods-in procedure.
- Ensure procedures are documented and keep records.
- Delegate responsibility for checking and managing bought-in goods to reliable, qualified staff with effective people skills.
- Ensure any Plant Health notification and eradication requirements are complied with promptly (eg implementation of statutory notices, notifiable disease pathogens etc).

Sources of information

Defra Plant Health and Seeds Inspectorate (PHSI)

King's Pool
Peasholme Green
York YO1 7PX
Tel. (01904) 455174
Fax. (01904) 455197
Email. planthealth.info@defra.gsi.gov.uk
www.defra.gov.uk/planth/ph.htm

The Scottish Government Rural Payments and Inspections Directorate

Horticulture & Marketing Unit
Pentland House

47 Robb's Loan
Edinburgh EH14 1TY
Tel. (0131) 244 6303
Fax. (0131) 244 6449
Email. hort.marketing@scotland.gsi.gov.uk

HDC

Bradbourne House
East Malling
Kent ME19 6DZ
Tel. (01732) 848383
Fax. (01732) 848498
Email. hdc@hdc.org.uk
www.hdc.org.uk

Horticultural Trades Association

19 High Street
Theale, Reading
Berkshire RG7 5AH

Tel. (0118) 930 3132
Fax. (0118) 932 3453
Email. info@the-hta.org.uk
www.the-hta.org.uk

Other useful publications and articles

- HDC factsheet 10/07 – Guidelines on nursery hygiene for outdoor and protected ornamental crops
- HDC Growers' Handbook – Practical Weed Control for Nursery Stock (Fully revised 2007)
- Defra Plant Health Code of Practice for the Management of Agricultural and Horticultural Waste (visit www.defra.gov.uk/planth/publicat/waste).
- The Plant Health Guide to Plant Passporting and Marketing Requirements. Available from the PHSI and in Scotland from the Rural Payments and Inspections Directorate: www.defra.gov.uk/planth or www.scotland.gov.uk/Topics/Agriculture/plant
- The Plant Health Guide for Importers. Available from PHSI or www.defra.gov.uk/planth
- Defra Plant Health publications – to assist in the identification of certain quarantine organisms
Defra Plant Health have produced a series of posters, information sheets, booklets and Quarantine Identification Cards (QIC Cards) which give detailed information of what they look like, where they are found and how they are spread. Most of this material can be viewed/downloaded as an ordinary web page or in pdf format. All the publications are free (except QIC Cards) and can be ordered from:
Defra Publications
Admail 6000
London SW1A 2XX
Tel. (08459) 556000
Email. defra@cambertown.com

The identification cards are intended for growers who are registered with

Defra to passport plant material under the EC single market arrangements. Registered growers will receive cards relevant to their commercial activities free from Defra Plant Health Division (PHD), but other individuals

or organisations, or registered growers requiring additional cards, can purchase these from Defra Publications as detailed above or:
**The Information Centre
Central Science Laboratory**

Sand Hutton
York YO41 1LZ
Tel. (01904) 462000
Email. science@csl.gov.uk.

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