



HDC Project CP 22b

Industry standard returnable container pooling system
for the horticultural amenities supply sector

Final Report 2005

Contents

<u>Page</u>	<u>Section</u>
1	Grower summary
13	Science section
13	Introduction
26	Methods
26	Results
30	Conclusions
31	References
	 Appendix A – Integrated Flow Chart, logic diagram for nursery stock product flow (amenities sector)
	 Appendix B – Proformas
	 Appendix C – Datasheet: Interview responses from suppliers
	 Appendix D – Cost benefit template
	 Appendix E – Datasheet: Logistics companies
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University of Warwick
Coventry CV4 7AL

Project co-ordinator: Lindrea Latham, HDC

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Grower summary

CP 22b

Industry standard returnable container pooling system
for the horticultural amenities supply sector

Final report 2005

CP 22b

Industry standard returnable container pooling system for the horticultural amenities supply sector

Headline

- Up to 400 per cent savings in materials handling costs have been reported in case study exercises conducted with current users of the containers proposed in this solution. Consolidation of distribution is also possible for several of the suppliers within this report.
- The majority of UK nursery plant suppliers to the amenities sector do not have sufficient quantities of orders, nor the appropriate delivery profiles for participation in a container pooling scheme based on the solution outlined in this report.
- There may be scope for redesigning suppliers' logistics systems to accommodate more appropriate primary packaging – most notably 2 or 3 litre plant pots; this research has identified a maximum of 6 suppliers who may currently be suitable to participate in the proposed system.

Background and expected deliverables

Research problem

Currently there is a perceived need to save time and costs within the nursery amenities supply sector, in materials handling, within the distribution phase (from plant bed to customer specified site), including outbound transport.

Plant suppliers are operating individual materials handling systems, notably the use of wooden crates, cardboard packaging. Four suppliers to date have been identified as users of the sloping metal containers as seen in Figure 1, however they must manage the availability of containers, maintenance and loss (purchase cost approximately £250 each). Results of case studies conducted with these suppliers (during 2004) are the basis for much information within this report.



Figure 1: Sloping metal container

Proposed Solution

An industry standard container pooling system in the nursery amenities sector, controlled and managed by a third party logistics service provider.

The container

Figure 1 shows an example of one proposed container, which is transported around sites by tractor individually on a trailer, or as part of a ‘train’, or alternatively can be transported by hand using a simple frame with wheels. Containers are usually transported to and from sites using larger trucks (16t-artic). Each container is currently used to handle approximately 350 x 3L pots or 400 x 2L pots (equating to 1.1t when fully loaded). On limited occasion larger pots (5L-15L) may also be included in the load. The load equates to approximately £500 sales value.

The advantages of using these sloping containers include:

- Material handling efficiency is increased at the suppliers’ and contractors’ sites saving time and cost, a current user reported a 400% saving in materials handling costs, refer to Appendix A for process flow analysis.
- Stackable, modular design allows good utilization of truck space: Artics can currently hold 18 containers each with a capacity of 350 x 3 litre pots or 400 x 2 litre pots, more containers could be carried on Artics if they were stackable (design and loading considerations include dynamic loading restrictions and maximum loading restrictions). Truck conversions cost approximately £20,000.
- Collapsible container design enables 120 empty, collapsed containers on an artic when backhauling, thus facilitating a ‘milk round’ type collection and despatch service of empty containers.
- Reliability of product quality from robust design – a current user reported a zero defect service as opposed to using wooden crates where stacking plants leads to crushing; cardboard packaging may also reduce overall quality.
- Re-use of sustainable resources.
- Savings from reduced use of packaging (e.g. cardboard/wood)
- Compliance with EU Producer Responsibility Directives on Packaging and Packaging Waste.
- Improved safety from robust design.

The disadvantages of using these containers include:

- Requirement to get them back in good condition: small numbers of containers delivered to one-off, remote locations is not considered viable.
- Suitability to larger transport due to their fully loaded weight of 1.1 t
- Requirement to have available large numbers (by a factor of 3 times total required at one time, due to containers awaiting collection after delivery to contractors site/yard and those in maintenance).
- Limited application: relatively fragmented market with small market share owned by proposed participants (chosen because of largest market shares individually): constituting around 10 percent of the total Amenities market share; non-generic application of containers to other sectors (e.g. retail sales).

Expected Deliverables

- Establish delivery profiles: whilst a systems model has been proposed based on existing pooling schemes, further research is required in each of the proposed container pooling scheme participant companies for delivery patterns to be established in order to prove the business case and infrastructure requirements.
- Conduct risk analysis for contingency planning after project implementation: determine attitudes to change and degree of change required. Establishing a project or scheme leader within each is recommended.
- Roll-out of container system into UK plant suppliers: needs considerable buy-in not just from those plant suppliers, but also from their contractors and landscape architects.
- Assess benefits to the sector as a whole: if more participants can be identified a further phase may involve a roll-out to the sector as a whole using a UK or European 3rd party logistics (3PL) company to control the pool of equipment.

However at this stage, the plant suppliers with the largest UK market share have already been proposed.

Project Summary

Invitation to suppliers to participate

Telephone surveys conducted in February 2005 resulted in 9 suppliers stating their interest in participating in a data collection exercise to establish delivery profiles. Results are hereby included.

Background to participant companies

- All participants own their fleet and outsource when required to a favoured transport contractor, not shared by other suppliers.
- The majority of companies own 7.5-16t capacity trucks, a small number of participants own Artics which are the most suitable form of transport.
- Participants state they would not want to dedicate their owned fleet to a pooling system currently.
- Generally, up to 10% of participants' customers want supply within 2 days delivery notice. Up to 2 weeks notice often given for orders, 1 week is usual though.
- Supply coverage is predominantly UK wide for each participant.
- Seasonal period is from November to March, out of season period is April to October.

Delivery Profile Mapping

A questionnaire proforma sheet (Appendix B) was distributed to interested companies requesting delivery profile information for 6 weeks: 3 weeks in and 3 weeks out of peak season, where anomalous weeks have occurred they have been substituted with a more typical week. The results of completed proformas are shown as follows:

Order profile of pooling system

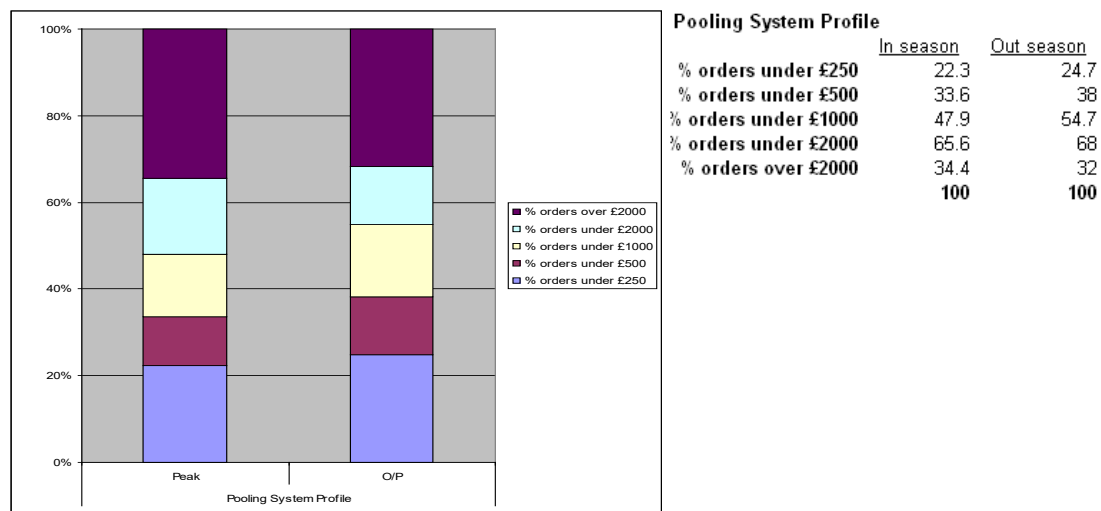


Figure 2: Average % of order profiles for all participants in proposed pooling system

From Figure 2 we can see that there is no significant difference between the two profiles: in and out of season.

The percentage of orders under the minimum sales value equating to one full container load of £500 is between 33.6 and 38 per cent. Orders above £1000: equating to approximately two container loads, is around 50 per cent of total orders. The percentage of larger orders (over £2000) is less than 35 per cent.

Figure 3 demonstrates the wide range of delivery profiles for participant companies within the sample data. *Participant 1* comprises a large percentage of orders below £250 (44 per cent) with only 13 per cent of orders above £2000. *Participant 2* however comprises very few orders below £2000 (41 per cent) with the majority above £2000 (59 per cent). *Participant 2* with larger orders, using larger trucks, would most likely be more suited to the use of returnable containers.

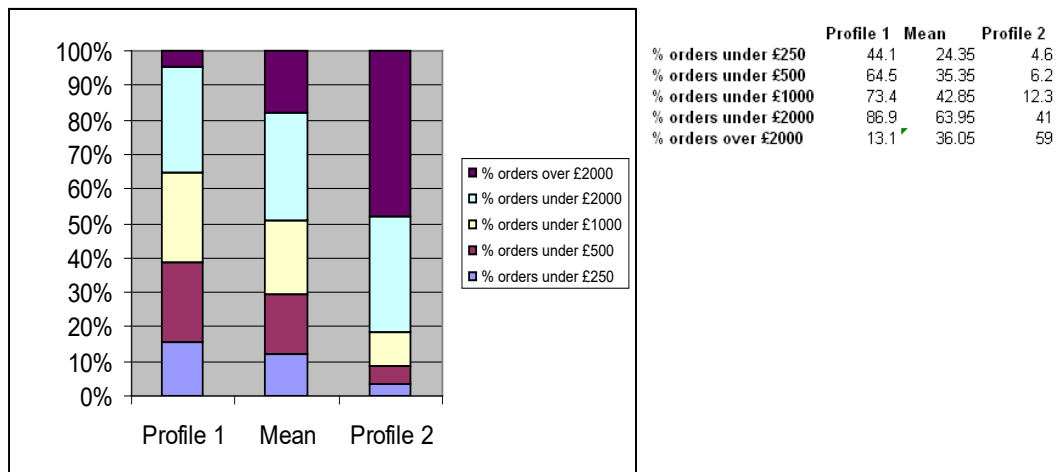


Figure 3: Analysis of range of samples

Primary packaging used in pooling system

The proposed containers (Figure 1) are most suited to handling 2 or 3 litre size plant pots. Results of an analysis of the proformas is shown in Figure 4, whereby 26.2 per cent of orders listed in the 3 weeks Peak period contained enough 2 or 3 litre pots to fill at least one container; or for those orders that had slightly less than the required minimum quantities, had a sales value that exceeded £500 for the relevant size pots: therefore justifying their use. Other considerations included the use of containers for a small number of larger pots that would make up the difference in quantities of sales value. The percentage of suitable orders in the Off-Peak period rose slightly to 38.5 per cent.

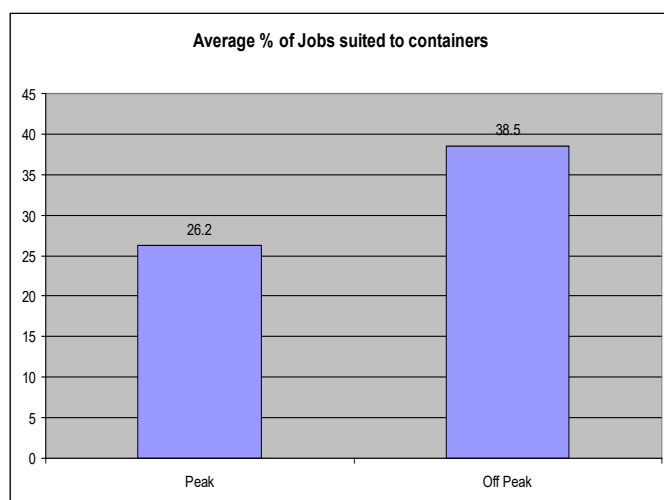


Figure 4: Average percentage of orders suited to containers

Location Analysis

Figure 5 demonstrates a moderately high percentage of orders fulfilled by individual suppliers to the same location (54%), which increases (to 64.5%) when all locations are included for all participants. Only 35.5 per cent of all orders are to non-repeated locations.

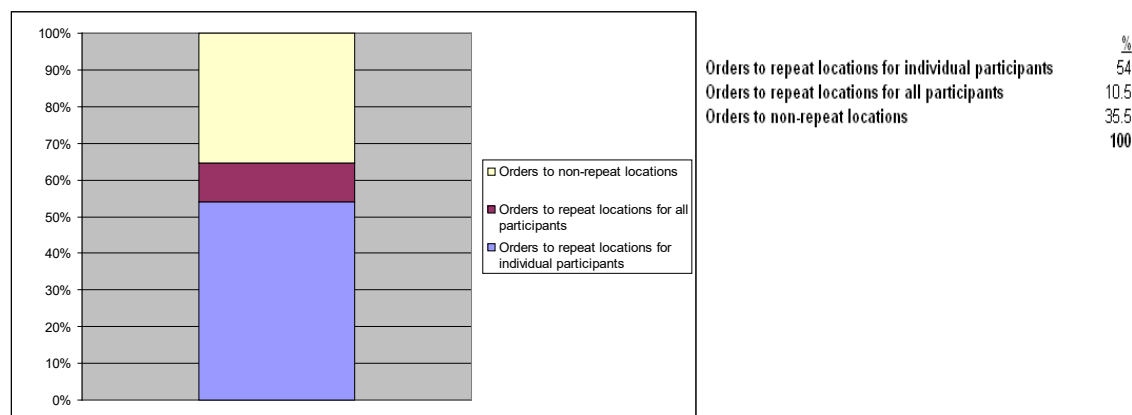


Figure 5: Percentage of orders from all participants' proformas to repeat locations

Discussion of results

An attempt to validate the results obtained from the completed proformas was subsequently conducted (with other suppliers identified who had not completed a proforma to date) via telephone interviews (23/05/2005).

All respondents confirmed that their order profiles did not significantly change between Peak and Out of Peak season (Refer to Figure 2 for results and Appendix C for datasheet). All respondents confirmed the range of order profile percentages as being true; variations in percentages ranged broadly between the upper and lower limits (Refer to Figure 3 for results and Appendix C for datasheets). All responders except one confirmed that the percentage of orders with at least 350 x 2 or 3 litre pots (or a quantity of those sizes of pots totalling at least £500), as stated in Figure 4, was between 26.2 and 38.5 per cent. The exception reported a lower percentage (20%). Half of the responders confirmed that the percentage of orders to repeat locations was true at 54%, whilst half reported lower percentages.

Conclusions

With the 9 UK companies sampled in this report: representing approximately 10 per cent (established during telephone survey conducted with suppliers in November 2004) of the total UK amenities supply market (equating to a value estimated from telephone survey to be from £25-75m per annum), the hypothesis that an industry standard returnable container pooling system for Amenities being a viable solution in the UK is disproved at this time.

The number of companies still interested in participating remains at 9 and one industry-specialised logistics service company would still be interested (PDQ Horticultural Logistics). However the number of the total orders that consist of plants in suitable primary packaging (e.g. 2 and 3 litre plant pots) is relatively low (mean average of 32.35%). There is wide variation between all suppliers, it may suggest that a large number of nurseries are using other primary packaging and the potential for replacing the current standard for 2 and 3 litre pots should be established individually, on a supply-chain wide basis: noting all affected handling activities. A sounder business case can then be made from more comparable results for all nurseries. The wide range of delivery profiles makes the precision and therefore generic applicability of a returnable container solution less certain. However the larger the number of containers (and 2 or 3 litre pots) in use, the more cost effective it will be to use the containers, particularly to repeated locations.

The percentage of orders under the minimum sales value equating to one full container load of £500 is between 33.6 and 38 per cent. Those suppliers with order profiles comprising a significant percentage of such small orders should not participate in the solution at this time.

Orders above £1000, equating to approximately two container loads, is around 50 per cent of total orders. This is considered the minimum for delivery locations of any significant distance, particularly to remote, non repeatable locations.

The percentage of larger orders (over £2000) - most suitable to the use of containers - is less than 35 per cent in total. Those suppliers with order profiles comprising a significant percentage of such large orders would be most suitable to participation in the solution. Transport costs to collect empty containers would be most likely, in this case, to be optimised using a 3PL contractor within a sufficiently sized pool. Only 50 per cent of suppliers in this report reported such a profile however.

The number of repeat locations increases when all the participants' delivery locations are considered collectively. Non-repeatable locations (within the 3 week period analysed from the proformas) accounts for 35.5 per cent of the total for all participants.

Change management issues (e.g. a means of supplier coordination, standard reporting and communication, are significant in several of the suppliers). Probability of success is low that this solution will work for more than 5 or 6 of the suppliers in this report. A non-returnable container (e.g. made from cheap materials such as cardboard and wood) with similar physical handling characteristics as shown in Figure 1 may be a more viable option for participants.

Financial benefits

From the case studies conducted with current users of the containers, the results suggest a 400% efficiency saving in materials handling, for the individual supplier. When combined with a number of suppliers in a pooling system as proposed, logistics efficiencies increase through consolidation of transport and logistics provision (e.g. 3rd party management of containers).

It is hard to determine at this point the size of a potential pool, however to date it seems likely that if a maximum of 6 of the major UK suppliers in this sector are suitable as participants in the proposed solution, this constitutes an approximate minimum of £18m market share, which equates to approximately 1400 containers in a pool based on results of case studies conducted with existing users (Capex = £350,000).

What growers must do differently to get benefits.

- Consider pooling system in a supply-chain context
 - Consolidating transport and distribution costs with other users, managing packaging costs sustainably, using a 3PL company as a partner to manage container pool.
 - Calculate cost savings from minimising waste through zero defect quality.
- Consider physical logistics issues
 - Containers should be part of an integrated materials handling/logistics system from plant bed to customer site and back. Therefore address primary packaging (e.g. consider a switch to 2 or 3 litre pot sizes where appropriate and use on larger orders, at least over 700 pots).
 - Materials handling will be affected: if orders are collated using different methods at the bed area to Appendix A. Loading/unloading of full containers weighing 1.1 t approximately.
- Consider training requirements for users of pooling system.
- Refine data collection – in easy format on computer via email.
- Consider external help
- Knowledge sharing, meetings. Other practical references (e.g. NBIS – HTA)

SCIENCE SECTION

Introduction

The problem

Currently there is a perceived need to save time and costs in the use of transport and materials handling equipment within the distribution phase (from plant bed to customer specified site) of the nursery amenities sector. Dispatch and transport is a particularly labour intensive phase of the supply-chain.

Nurseries are operating their own materials handling systems, notably the use of wooden crates, cardboard packaging, and a small number are using sloping metal containers as seen in *Growers Summary*: Figure 1, however they face problems of managing the availability, maintenance and loss of containers.

Proposed solution

An industry standard container pooling system in the nursery amenities sector, controlled and managed by a third party logistics service provider.

The container

Figure 1 (*Growers Summary*) shows examples of such a container, which is transported around individually on a trailer using a tractor, or alternatively can be transported by hand using a simple frame with wheels (produced in-house or very cheaply at a fabricator – costings are not included in this report).

The advantages of using these sloping containers include:

- Re-use of resources
- Compliance with EU Producer Responsibility Directives on Packaging and Packaging waste.

- Improved safety from robust design.
- Reliability of product quality from robust design – a current user reported a zero defect service as opposed to using wooden crates where stacking plants leads to crushing.
- More efficient material handling is achieved both at the suppliers and contractors site saving time and cost, a current user reported a 400% saving in materials handling costs, refer to Appendix A for process flow analysis.
- A stackable, modular design allows good utilization of truck space: Artics can hold 18 containers each with a capacity of 350 x 3 litre pots or 400 x 2 litre pots, as compared with Artics ability to carry 56 wooden crates of capacity 200 x 2 litre pots or 125 x 3 litre pots. More containers could be carried on Artics if they were stackable. This would require design and loading considerations include dynamic loading restrictions.
- Collapsible container design enables 120 empty, collapsed containers on an artic when backhauling, thus facilitating a ‘milk round’ type collection and despatch service of empty containers.

The disadvantages of using these containers include:

- Requirement to get them back in good condition: small numbers of containers delivered to one-off, remote locations is not viable.
- Suitability to larger transport due to their fully loaded weight of 1.1 tonnes.
- Requirement to produce large numbers (by a factor of 3 times total required at one time, due to containers awaiting collection after delivery to contractors site/yard and those in maintenance).
- Relatively fragmented market with small market share owned by proposed participants and non-generic application of containers to other sectors (e.g. retail).

Container manufacturers

There are a number of producers of the containers, each currently costs between £240 and £260 (for collapsible model) to manufacture.

Project Scope

Nine plant suppliers have been identified as potential participants in the container pooling scheme. They have been selected because of their expression of interest in the project in a telephone survey (November 2004) and because of their respective sales turnovers within the Amenities sector. Their combined turnovers amount to between £25-75m per annum, constituting approximately 10 per cent of the Amenities supply market in the UK. The peak period of sales is generally from November to March and the remainder constitutes the ‘quite period’. Refer to Figure 6 for participants of scheme. A container’s capacity is 1.1 tonnes of plants in pots when fully loaded with approximately £500 of stock in sales value:

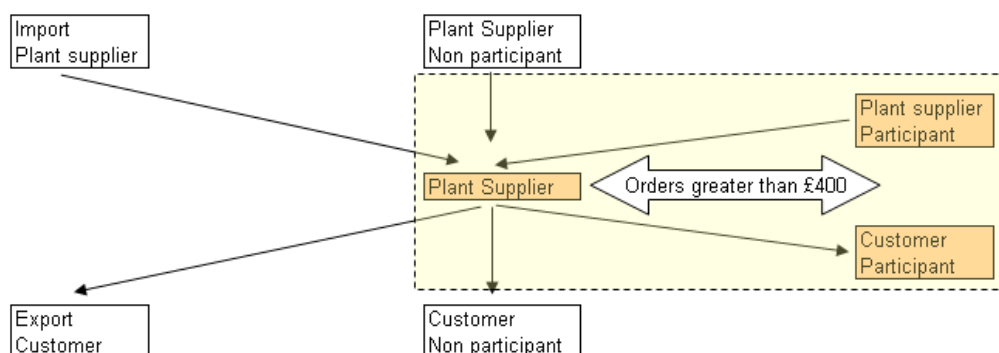


Figure 6: Scheme participation

From a telephone survey conducted in November 2004, with the nine suppliers it has been established by the author that the delivery patterns and size of orders is broadly similar, however more detailed research is recommended to validate assumptions, through a delivery schedule mapping exercise. It is hereby assumed that each nursery involved in the system (excluding import and export movements) would require approximately proportionate numbers of empty containers per week, based on sales turnover.

ETSU (1998) in their report: *Choosing and managing reusable transit packaging*, state that it is not unusual for the number of containers required in a pool will equal that number required by all the participants to fulfil their combined orders plus a factor of 3. This includes the requirement to store empty containers at plant suppliers, at customers whilst they await return, those in transit, those that are damaged, and the capacity for unexpected peaks. This proportion corresponds to the numbers required at the aforementioned supplier currently. Costings are included in *Growers Summary, Section: Financial Benefits*.

Managing re-usable packaging

Current industry standard pooling systems

The most relevant container pooling schemes in existence include: Chep Pallet Pool System, Danish Trolley System, Dutch Black Crates System, ISO container system.

The scope of these models consists of supply of containers only, rather than supply of fully loaded containers with products/plants. Third party transport companies such as PDQ Horticultural Logistics Limited are used by Container Centraalen Ltd. (CC) to transport their Danish Trolleys to the required destinations in the UK, which may be the suppliers, their customers, washing or maintenance facilities, or waiting in storage at PDQs warehouse. The Danish Trolleys are tagged with identification chips (other tracking technology used in pooling systems include 2D bar codes, magnetic memory chips and tags, RFID tags), however Chep pallets are generally issued and received using a physical check and balance amendment system, whereby the quantity issued must equal the quantity received back over a period of time, or an extra charge for losses is charged by Chep to the user. In both models, the receiver is charged for leasing the containers, which may include transport costs and pays an annual maintenance fee.

Suppliers of plants from Holland that utilise the “black crate” stipulate that the customer must return them on the backhaul journey, or a charge is incurred, plant

suppliers own those crates and expect them back from their customers. CC operate a similar model for the Danish Trolley system: it is the participants' responsibility to reclaim the trolleys they were issued with and return them to CC. CC charge participants a repair and maintenance fee.

In all cases, the container pools are relatively much larger than the proposed scheme, for example CC will manage a company's container requirements for quantities of 6000 and above. Some of the larger logistics service providers in the UK provide a dedicated pooling management service for customers based again on much larger quantities of containers.

The case for third party logistics (3PL) management

The Food Manufactures Association launched a pallet pool in the 1970s whereby each large company had a pallet champion. The scheme ran for 3 years and failed because each company tried to gain extra trips from each pallet in order to keep costs to a minimum therefore the pallet quality was sub-standard. (Interview with Warner Cohn, Chep, 22/7/4)

In the Chep case study, whereby savings of 30-40% were achieved in the first year, the scheme was set up with selected companies who were traditionally purchasing and managing their own pallets. The companies faced huge difficulties in keeping their pallets and damage was greater than budgeted for initially.

Chep gathered letters of intent from these companies and launched the business. They raised the profile of the pallets with junior as well as senior participants' employees.

Responsibility was defined for each participant: who is responsible for returning the containers (plant suppliers or their customers/contractors). Chep defined how to enforce this responsibility when valuable customers are reluctant to pay costs/fines for non-return: stipulate upfront in contract or provide option of disposable packaging to customers. Ensure all players and their employees are fully aware of benefits (transport costs, packaging costs, environmental costs, material handling costs).

Ensure all fully support the project. Encourage them to contribute their ideas for a workable scheme.

Chep charges using a combination of:

- Issuing pallet to customer,
- Day rate charge (estimate based on industry sector and typical days before receiving back),
- Recovery rate (based on where empties are left for Chep to pick up (small volume plus long distance is high charge which constitutes trip fee for number of pallets used).

Logitech (Linpac's pooling arm for retailers) operate a pooling scheme whereby hygiene is important, so Logitech have washing centres. They use Hays and Christian Salvesens to transport the containers

Therefore there are several slightly different pooling schemes currently in operation. Containers may be tagged depending on their value and that of their products, otherwise charged and issued on a difference of balance basis. Distribution companies are used to transport the empty containers to the participants and to and from the maintenance or washing centre.

Model Proposed on Existing Case Studies

A proposed model for the amenities sector is shown in Figure 7 with an option (2) to outsource all transport to a 3PL:

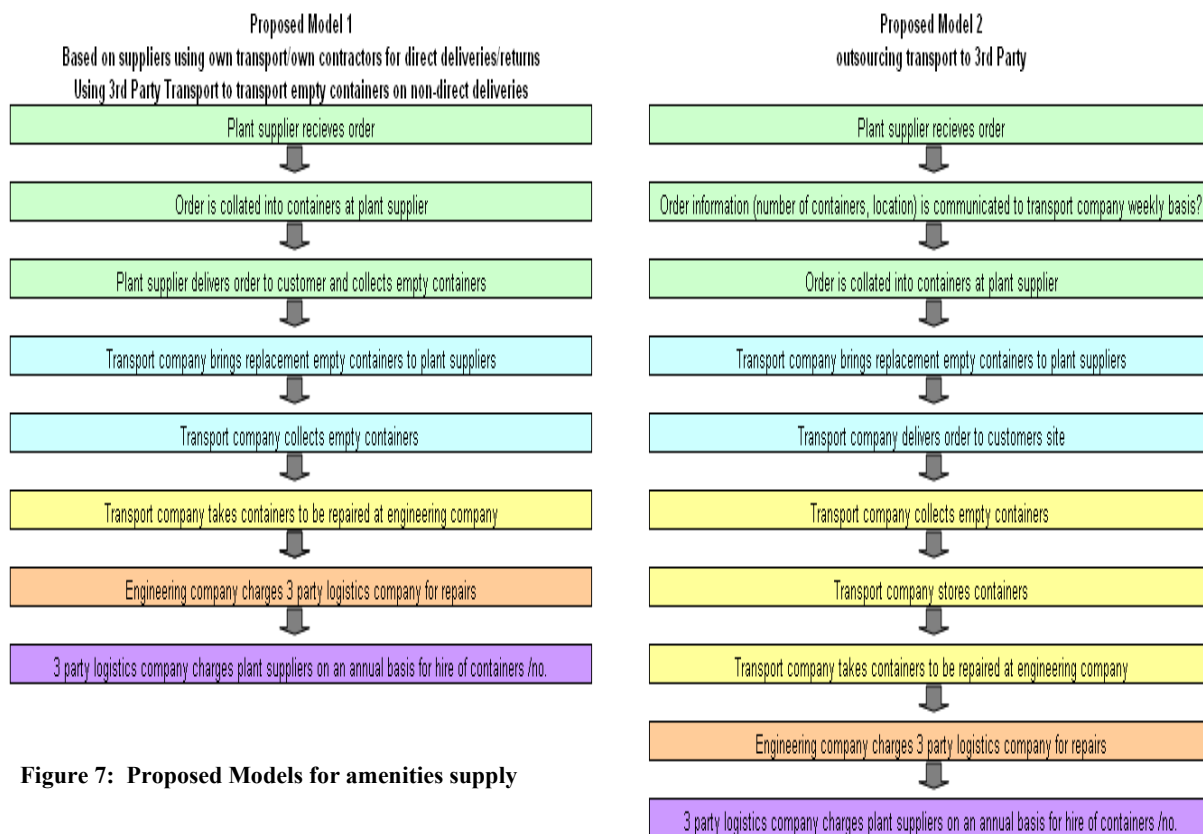


Figure 7: Proposed Models for amenities supply

Distribution locations and frequencies required for developing a pooling system

Important questions that should be asked when setting up a new system are: will the deliveries be to the same location every time? If delivering to a temporary site, can the contractor get containers back to their central yard? If not, plant suppliers may need to get customers’ commitment up front to have containers safely collated when empty, ready for collection from planting site by the supplier or 3PL company. Defining responsibilities before hand is critical. Small numbers of containers to one-off remote locations is not cost viable.

The use of returnable containers requires repetitive journeys to the same sites, unless transport can be scheduled to pick up empty containers on a dedicated basis, or contractors can be persuaded to take all empty containers to their own central site if appropriate, to await mass pick up. Therefore there will be limited location applicability, limited product lines and customers. These limitations require further

research through conducting delivery schedule mapping exercise on the remaining plant suppliers.

Getting support from amenities suppliers, landscapers, contractors, site controllers, logistics companies

There is evidence of collaboration between some nursery suppliers. Both nurseries and prestigious landscape architects see returnable metal containers as preferable quality of service to cardboard containers on wooden pallets (plant quality, environmental considerations, plant handling efficiencies). Some architects and landscapers may not agree to use the containers. Many contractors will not agree to look after the containers on the planting site. In these instances the containers may have to be returned immediately after delivery with plants unloaded into wheelbarrows and holding areas or other materials handling transportation, thus causing extra delivery times for drivers.

Physical logistics issues

The metal containers are heavier than cardboard/wood and generally incompatible with 7.5t trucks or lighter vehicles, however there is a business case for larger trucks or Artics to be used. It may be possible to stack containers on top of each other using supports, this means less empty space in the truck, but a conversion internally in the truck would cost up to £20,000. The containers can be produced to fold up (collapse) thereby increasing the number that can be loaded onto the truck within its capacity for its return journey. However, production cost for each container is extra for this feature by around £20 per container.

There is a need to manage container stocks at each participant location at the correct level for demand with the minimum of transport costs therefore it is suggested that local depots (at plant suppliers) can help limit the cost of urgent deliveries by localising them. Transfer between participants using their own transport would be an

option. Customers could agree costs between them. The 3PL's would be recommended for longer journeys and for bulk transport of empty containers.

Implementation plan

Selection of participants and their roles

'A List' companies

'A List' nursery stock suppliers to the amenities sector, prestigious landscape architects who are customers of aforementioned suppliers and who use good, collaborative contractors.

Selected suppliers and landscapers include: Johnson's of Whixley, Boningale Nurseries Limited, Crowders Nurseries Limited, Palmstead Nurseries, James Coles Limited, Wyevalles Limited, with the possible inclusion of: Coblands, Tamar Nurseries, Dingles Nurseries Limited, James Coles Limited. There were no other landscapers identified at this point interested in becoming participants of the container system. It is recommended that a further search is conducted to establish potential participants.

3PL Company

It is likely that a 3PL service provider would be most appropriate to manage the system of empty containers (and full if required) as opposed to an existing container user with their own transport infrastructure (including own and out-sourced resources) acting as the transport contractor.

None of the larger companies listed in Appendix E when approached were interested as the container quantities are too small. Logistics companies that specialise in plant transport, container pooling systems and who have warehouse space include: PDQ Horticultural Logistics Limited and Horticultural Logistics Limited. Parcelforce may

be a further option. More companies need to be identified as potential interested participants.

System Management

The management of the system would be outsourced including the system control (currently one existing user operates a daily charge after 1 week of the customer having containers). They would invoice the customer for the maintenance of containers, purchasing costs, extra transport costs (empties that need collecting).

Establishing the business case

Undertake research into each of the above participants' supply patterns in and out of season, to understand exact trip quantities, order sizes and locations that would be suitable to using proposed containers. Ascertain the total quantities of containers required and additional transport requirements for each participant (e.g. extra journeys to obtain empty containers from central hub, to collect empty containers from customers and to deliver full orders in vehicles larger than those already used).

Obtaining statements of intent from participants

Get statements of intent from suppliers, their customers and the 3PL who will manage the system. Company container champions to be selected from each participant. Estimated required quantities for each supplier.

Submission of business plan

Submit business case to HDC HNS panel outlining process improvements over existing system and commercial savings (refer to Appendix D for cost benefits chart).

Promotion of system

Promote trial to selected suppliers, contractors and landscapers. Sell the concept to existing users of containers who may need many more containers, but cannot justify the cost of their purchase. It could be highlighted that this project had the potential to achieve an economies of scale cost reduction on transport thereby reducing the unit cost and potentially eliminating the need to purchase containers altogether if they are leased from a third party company.

Promotion to other plant suppliers would be useful. It could focus on the advantages outlined above and including those outlined in section: *the container*, also using the cost benefit data. Allude to potential recognition in trade journals/associations of their green credentials which may lead to more market share.

Promote to prestigious landscapers based on the advantages outlined above and including those outlined in section: *the container*, also using the cost benefit data.

Promote to contractors highlighting the reduction in disposal costs of packaging and the increased quality of plants, so less returns activities and delays in planting. They are perceived as a more difficult case, scheme promoter may need to go through their landscaper depending on the relationship of power in the supply-chain.

Project implementation

Obtain financing for production of containers. Plant suppliers will be the most likely candidates for investing in the scheme, alternatives include a new start up logistics business or a venture capital input. No existing logistics companies have yet been identified who are willing to invest in this scheme. In this model, the neutral 3PL would be responsible for storing the containers, maintaining them through a third party maintenance contractor, managing the dispatch of containers to nurseries as needed, managing the collection of empty containers from plant suppliers or their customers, managing the transportation of fully loaded containers from plant suppliers

to their customers if required. Participants would pay for this service on a monthly/yearly basis, any lost containers would be paid for also by the plant suppliers who they were issued to.

Select manufacturer of containers and order, lead times may be up to 6 months for large quantities.

Trial project for a year to experience commercial and management benefits. Measure savings from trial.

People Issues

- The new scheme would need to be promoted and clearly explained to the operational staff, transportation staff and warehouse staff to ensure that they were ‘on board’ with the new system and were clear about the new arrangements.
- Establish clear lines of responsibility and communication by appointing scheme leaders within each participant company, logistics company, container manufacturers and maintenance companies.
- Ensure 3PL involved in operational management and are accountable.
- Get input from everyone involved at system design stage to achieve buy-in from employees and managers.
- Scheme leader to ensure dedication from participants’ employees.

Financial issues

- Establishing up-front costs for participants (buying the containers, or get financed as a separate entity) – how many containers required will depend on how quickly plant suppliers can get back containers for re-use.
- Understanding the costs to plant suppliers for modifying their owned transport to take fully loaded containers.
- Understanding the cost to employ maintenance and cleaning staff.

- Identifying any additional costs incurred by logistics company for extra information systems.
- Establishing the leasing costs for participants, based on number of containers required.
- Understanding the participants' effort required to change from existing processes.
- Measuring the savings over the first year for transport and materials handling.
- Measuring the payback – is it on track as predicted in planning exercise?

Physical logistics issues

- Drivers should be driving not waiting, loading or unloading. Trucks should therefore have tail lifts and Artics should have curtain sides. Drivers should carry a few spare wheel adaptations for containers, for contractors to move to correct location in the absence of a forklift or equivalent (it would be more effective to contact the contractors before delivering to ensure appropriate materials handling equipment is available on site).
- It is better to collect empties when delivering full loads (ie. back loading), to achieve transport economies.
- Side loading is better if you are collecting empties within a 'milk round' so not to block full containers at the front of a lorry. Better if containers are collapsible as more can be collected at one time.
- Plant suppliers' customer needs to be made to be responsible for collating the empties ready for pick up. This could be achieved by stipulating in contract each others' responsibilities and including penalties for non-compliance.
- Tracking of containers would be done on a receipt/issue basis rather than using data capture technology, such as bar codes and RFID.

Methods

The proposed model is based on case studies of current users of containers and case studies of other pooling schemes currently in existence.

An initial survey was conducted by telephone (November 2004) to establish potential participation. Nine companies were identified as being the largest UK suppliers (FAME Database), comprising approximately 10 per cent of the total market share.

A questionnaire was subsequently distributed to the nine companies via post and email (April 2005). A proforma template is contained in Appendix B. The purpose of this exercise was to establish the order and delivery profiles of individual participants and the whole collectively. Only 3 datasets were received back and the offer for the author to conduct the collection exercise was not taken up by any company.

A subsequent telephone survey was conducted in April 2005 to try and validate the results from a significantly small sample size. There were several discrepancies reported from the responders, all which actually served to support the final result of the data analysis from the questionnaire exercise: there are very few suppliers in the UK who have appropriate order profiles.

Further analysis would have included financial payback and Net Present Value/Internal Rate of Return calculations to make a business case, however the scale of the system does not justify this currently.

Results

A questionnaire proforma sheet (Appendix B) was distributed to interested companies (April 2005), requesting delivery profile information for 6 weeks: 3 weeks in peak season and 3 weeks out of peak season, where anomalous weeks have occurred they have been substituted with a more typical week. The results of completed proformas are shown as follows:

Order profile of pooling system

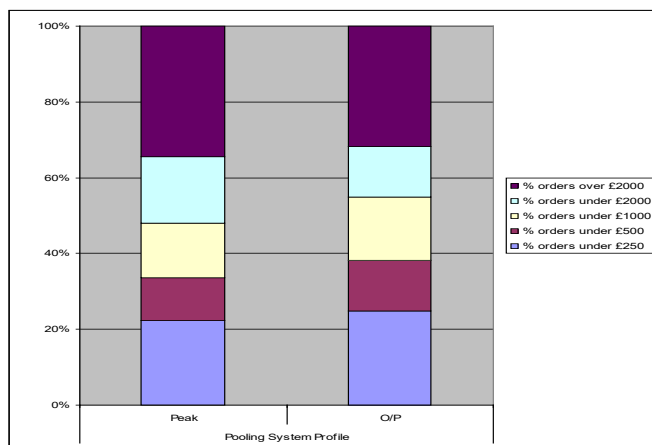


Figure 2: Average % of order profiles for all participants in proposed pooling system

From Figure 2 we can see that there is no significant difference between the two profiles: in and out of season.

The percentage of orders under the minimum sales value equating to one full container load of £500 is between 33.6 and 38 per cent. Orders above £1000: equating to approximately two container loads, is around 50 per cent of total orders. The percentage of larger orders (over £2000) is less than 35 per cent.

Figure 3 demonstrates the wide range of delivery profiles for participant companies within the sample data. *Participant/Profile 1* comprises a large percentage of orders below £250 (44 per cent) with only 13 per cent of orders above £2000. *Participant/Profile 2* however comprises very few orders below £2000 (41 per cent) with the majority above £2000 (59 per cent). *Profile 2* with larger orders, using larger trucks, would most likely be more suited to the use of re-usable containers.

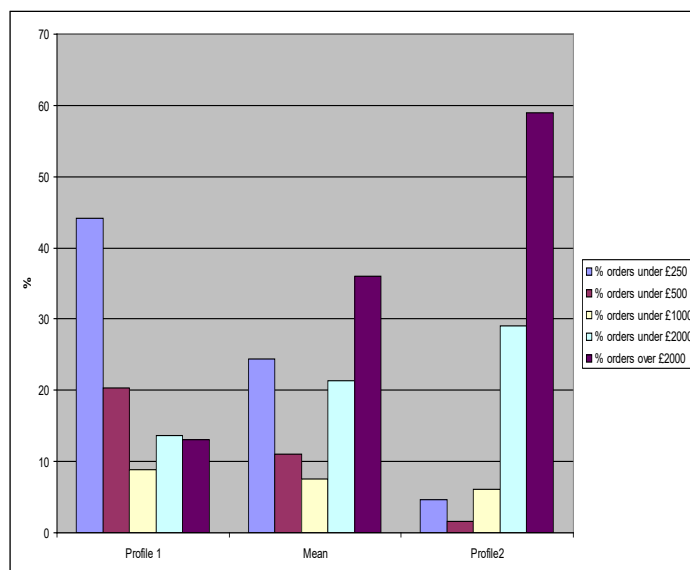


Figure 3: Analysis of range of samples

Pot sizes used in pooling system

The proposed containers are most suited to handling 2 or 3 litre size plant pots. Results of an analysis of the proformas is shown in Figure 4, whereby 26.2 % of orders listed in the 3 weeks peak period contained enough 2 or 3 litre pots to fill at least one container; or for those orders that had slightly less than the required minimum quantities, had a sales value that exceeded £500 for the relevant size pots: therefore justifying their use. Other considerations that the businesses surveyed had, were the use of containers for a small number of larger pots that would make up the difference in quantities of sales value. The percentage of suitable orders in the Off-Peak period rose slightly to 38.5%.

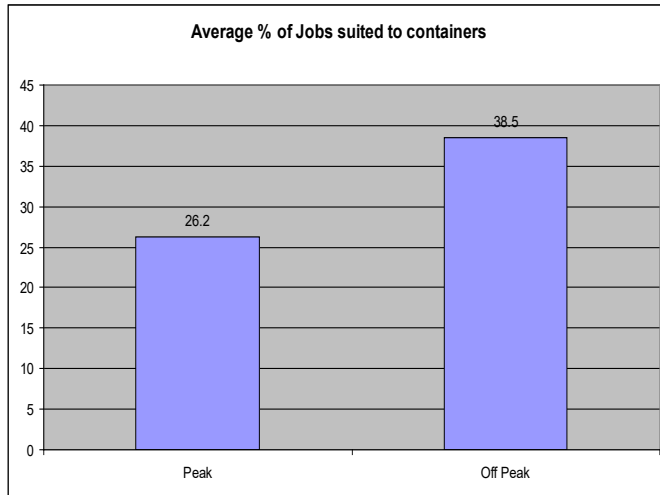


Figure 4: Average percentage of orders suited to containers

Location Analysis

Figure 5 demonstrates a moderately high percentage of orders fulfilled by individual suppliers to the same location (54%), which increases (to 64.5%) when all locations are included for all participants. Only 35.5 per cent of all orders are to non-repeated locations.

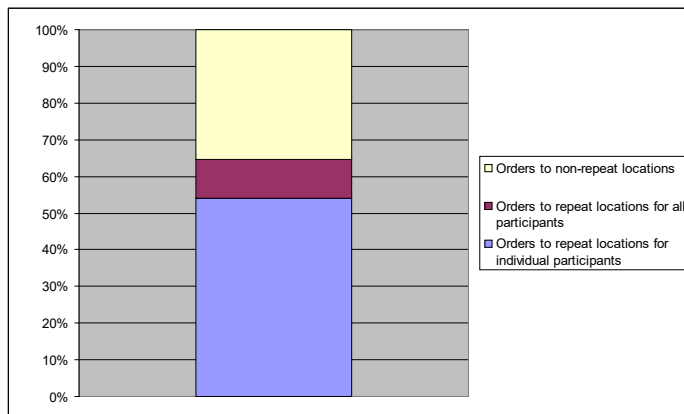


Figure 5: Percentage of orders from all participants' proformas to repeat locations

Discussion of results

An attempt to validate the results obtained from the completed proformas was subsequently conducted (with other suppliers identified who had not completed a proforma to date) via telephone interviews (23/05/2005).

Four of the nine suppliers confirmed that their order profiles did not significantly change between Peak and Off Peak season (Refer to Figure 2 for results and Appendix C for datasheet). All respondents confirmed the range of order profile percentages as being true; variations in percentages ranged broadly between the upper and lower limits (Refer to Figure 3 for results and Appendix C for datasheets). All respondents, except one, confirmed that the percentage of orders with at least 350 x 2 or 3 litre pots (or a quantity of those sizes of pots totalling at least £500), as stated in Figure 4, was between 26.2 and 38.5 per cent. The exception reported a lower percentage (20%). Half of the responders confirmed that the percentage of orders to repeat locations was true at 54%, whilst half reported lower percentages.

Conclusions

With the nine UK companies sampled in this report: representing approximately 10 per cent of the total UK amenities supply market (equating to between £25-75m per annum), the hypothesis that an industry standard returnable container pooling system for amenities being a viable solution in the UK is disproved at this time.

The number of companies still interested in participating remains at 9. However the number of the total orders that consist of plants in suitable primary packaging (e.g. 2 and 3 litre plant pots) is relatively low (mean average of 32.35%). There is wide variation between all suppliers, it may suggest that a large number of nurseries are using other primary packaging and the potential for replacing the current standard for 2 and 3 litre pots should be established individually, on a supply-chain wide basis: noting all affected handling activities. A sounder business case can then be made from more comparable results for all nurseries. The wide range of delivery profiles makes the precision and therefore generic applicability of this solution less certain. However the larger the number of containers (and 2 or 3 litre pots) in use, the more cost effective it will be to use the containers, particularly to repeated locations.

The percentage of orders under the minimum sales value equating to one full container load of £500 is between 33.6 and 38 per cent. Those suppliers with order

profiles comprising a significant percentage of such small orders should not participate in the solution at this time.

Orders above £1000, equating to approximately two container loads, is around 50 per cent of total orders. This value is considered the minimum for delivery locations of any significant distance, particularly to remote, non repeatable locations.

The percentage of larger orders (over £2000) - most suitable to the use of containers - is less than 35 per cent in total. Those suppliers with order profiles comprising a significant percentage of such large orders would be most suitable to participation in the solution. Transport costs to collect empty containers would be most likely, in this case, to be optimised using a 3PL contractor within a sufficiently sized pool. Only 50 per cent of suppliers in this report (less than 6) reported such a profile however.

The number of repeat locations increases when all the participants' delivery locations are considered collectively. Non-repeatable locations (within the 3 week periods analysed from the proformas) accounts for 35.5 per cent of the total for all participants, this figure may be lower if more data is collected from the non-participants of the proforma data collection exercise (potentially however, the data suggests that the average percentage of orders suited to the use of containers that will be delivered to non repeated locations is less than 35.5 per cent).

Change management issues (e.g. a means of supplier coordination, standard reporting and communication) are significant in several of the suppliers.

Probability of success is low that this solution will work for more than 5 or 6 of the suppliers in this report. A non-returnable container with similar physical characteristics may be a more viable option for participants.

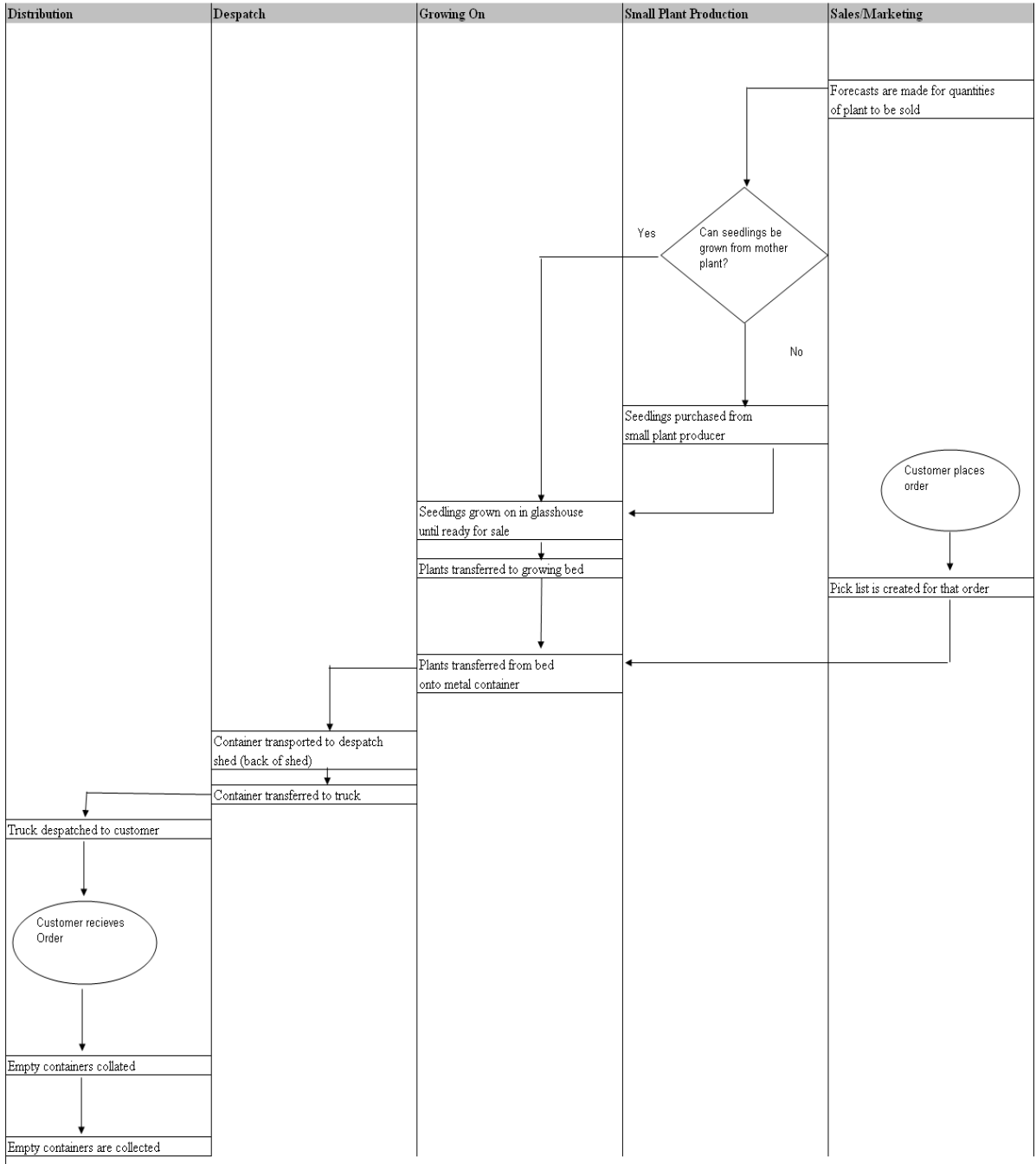
References

ETSU 1998, GG141, Choosing and managing reusable transit packaging, 1998/

Appendix A

Integrated Flow Chart - Logic Diagram for Nursery Stock Product Flow (Amenities Sector)

Plants to Landscaper/contractor





Appendix B - Logistical Efficiencies for Amenities Supply Sector

PROFORMA 1

Week commencing: 07/03/05

Order No.	Number of plants	x Size of pot (ltrs/other)	Sales value (£) of total order	Location of delivery (nearest town)		Number of loads for that order	Transport used; own/hired	Size of truck	Lead time given by customer
					Approx. mileage (to location)				
1									



PROFORMA 2

Week commencing: 14/03/05

Order No.	Number of plants	x Size of pot (ltrs/other)	Sales value (£) of total order	Location of delivery (nearest town)		Number of loads for that order	Transport used; own/hired		Lead time given by customer
					Approx. mileage (to location)			Size of truck	
1									



PROFORMA 3

Week commencing: 21/03/05

Order No.	Number of plants	x Size of pot (ltrs/other)	Sales value (£) of total order	Location of delivery (nearest town)	Approx. mileage (to location)	Number of loads for that order	Transport used; own/hired	Size of truck	Lead time given by customer
1									



PROFORMA 4

Week commencing:02/08/04

Order No.	Number of plants	x Size of pot (ltrs/other)	Sales value (£) of total order	Location of delivery (nearest town)	Approx. mileage (to location)	Number of loads for that order	Transport used; own/hired	Size of truck	Lead time given by customer
1									

PROFORMA 5

Week commencing:09/08/04

Order No.	Number of plants	x Size of pot (ltrs/other)	Sales value (£) of total order	Location of delivery (nearest town)		Number of loads for that order	Transport used; own/hired		Lead time given by customer
					Approx. mileage (to location)			Size of truck	
1									



PROFORMA 6

Week commencing:16/08/05

Order No.	Number of plants	x Size of pot (ltrs/other)	Sales value (£) of total order	Location of delivery (nearest town)		Number of loads for that order	Transport used; own/hired		Lead time given by customer
					Approx. mileage (to location)			Size of truck	
1									

PROFORMA: ()

Week commencing:.....

Order No.	Number of plants	x Size of pot (ltrs/other)	Sales value (£) of total order	Location of delivery (nearest town)	Approx. mileage (to location)	Number of loads for that order	Transport used; own/hired	Size of truck	Lead time given by customer
1									



APPENDIX C - Results of Telephone Interviews Conducted 22-23/05/2005 by Jim Rowley

	Supplier	1	2	3	4
Order profiles do not change significantly for In and Out of season periods?	Y	Y	Y	Y	
Percentage of orders over £2000 attribute for between 13-59% of total orders?	Y	45%	Y	15%	
Percentage of orders under £500 attribute for between 13-59% of total orders?	Y	2%	Y	65%	
Percentage of orders with at least 350 pots of 2 or 3 L (approx. £500 sales value) attribute for between 25-40%?	Y	Y	Y	NO: 20%	
Percentage of orders distributed to repeat locations is around 54%?	Y	Y	NO: 40%	NO: 20%	

Appendix D

Cost benefit of container scheme (ref: ETSU)

Expenditure	Staff Days	Day Rate	Staff Costs	Other costs	Comments
One-Off Costs					
Container purchase					
Transport modifications				£20,000/each	
Process modifications					
Scheme set-up (staff)					
Tracking system (computer, tags, communications)				no tags, fax	
TOTAL					
Annual Costs					
Container rental/lease					
In-house management					
External management					
Container inspection					
Container cleaning					
Container maintenance					
Container replacement					
Container disposal					
Compliance costs					
Additional transport costs					
-					
Annual benefits					
Reduced handling effort					
Reduced product damage					
Improved transport costs					
TOTAL					

Source: ETSU (1998)

Appendix E

Logistics Cos	Contact	Detail
Exel Logistics	Heather Simpson	Too expensive for small pool
T&B – now Exel		
ACR (Hays)	Caroline Beasley/Ian Collier	50,000 containers needed as minimum in their pool
Salvesen		Not in their remit
Fowler Welsh		Not in their remit
Gro continental		Not in their remit
Palletways		Not in their remit
PalletLink		Not in their remit
CC	Ian Kendall	Not in their remit
Wincanton	Tony.milburn@wincanton.co.uk	Send tender document into them
TDG	Colin Murray 07990 541429	No
TNT	0116 236030 or 2062	No
Parcelforce	Lead Management Team Regular collections Can manage Priority account managed by another company for Pforce	To pursue
PDQ Horticultural Logistics	01565 723640 Dave Rutter	Already operate Danish trolley system, interested
Horticultural Logistics Ltd		Interested