The Nursery Papers

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Reducing the labour costs of potting

A report on the research project of Voytek Radajewski and Dennis Brown of the Queensland Department of Primary Industries (QDPI).

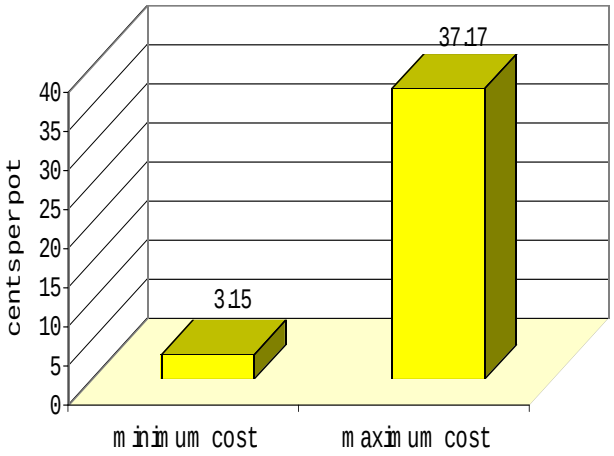
Research into the labour costs associated with the potting process, funded by the Nursery Industry Association of Australia (NIAA), the Horticultural Research and Development Corporation (HRDC) and the QDPI, has revealed that many nurseries can reduce potting labour costs and increase profit margins by improving the efficiency of their potting production systems.

Every nursery operator is aware of the strict relationship that exists between nursery labour costs and the profit margin of the business. The longer it takes to produce a plant for sale, the higher the labour costs become and the lower nursery profit will be. To maximise nursery profits, labour costs must be kept to the lowest possible level without compromising plant quality goals.

The 'Optimum Work Methods in the Nursery Potting Process' project has involved research at 35 nurseries which revealed that potting labour costs vary greatly from one nursery to another.

The labour cost of 'total potting' for 140mm pots ('total potting' includes preparation for potting, potting and taking plants to the field and putting them down) varied from a minimum of 3.15 cents to a maximum of 37.17 cents per pot.

Total potting labour cost - 140mm pot



Cost not reflected in sale price

It is interesting to note that the sale price of the plants produced by nurseries where labour costs were higher was not proportionally higher than the price of plants produced at the lower labour cost.

Within total potting labour cost, the cost of the potting stage (inserting potting media and plant stock to pot) was also found to vary greatly from one nursery to another. Labour costs for the potting stage only for 140mm pots varied from a low of 1.02 cents per pot to a high of 28.13 cents per pot.

The large variation in total potting labour costs found in such a small sample of nurseries indicates that, in the wider nursery industry, a significant number of nurseries must be paying far more than they need to in the area of potting production.

Could your nursery increase its profits by making potting production more efficient?

Why do potting labour costs vary so markedly between nurseries?

Some factors affecting potting labour costs are inherent to the type of potting production carried out, others can be reduced with better management.

For example, certain types of plants are more time-consuming to pot than others as they require more care during removal from the propagation container and insertion into the pot, extra attention to root trimming or pruning, etc. Potting into large-sized pots is generally more time-consuming than potting into small pots.

As the difference between the size of the propagation container and the size of the pot into which the plant stock is being potted into decreases, potting also becomes more time-consuming. When potting up from a 140mm pot to a 175mm pot, the space between pot edge and plant stock edge is narrow and inserting media is difficult.

Potting into large-sized pots will also increase the time needed to handle the potted plant and increase the frequency with which potting materials (eg: potting media, fertiliser) need to be replenished.

Plant stock grown in tubes usually takes longer to remove from the tube and insert to the pot than stock grown in cell trays. When potting from tubes, there is also the additional task of disposing of each tube.

Yet, even allowing for the fact that plant types, propagation containers and pot size do affect potting time, it does not adequately explain why potting labour costs vary so greatly between nurseries. Clearly, there are other factors operating which serve to increase a nursery's potting labour costs.

Factors affecting potting labour costs

Certain factors affecting potting labour costs are not inherent to the type of production carried out by a nursery, but rather are the result of the manner in which the nursery organises and operates its potting system.

A nursery's level of potting production efficiency (ie: its ability to minimise potting labour costs) will be influenced by issues such as:

- the location of the potting area relative to the growing area
- the appropriateness of the potting system to the type and number of plants being produced
- the technique of potters
- the operating speed of the potting machine
- the allocation of tasks to potting staff
- the elimination of non productive time in potting production
- worker health and safety levels
- worker comfort levels
- worker skill levels
- the quality of information coming from management to potting staff
- the handling of potting inputs and potting outputs

The good news for nursery operators is that, once you know what to look for, problems affecting potting efficiency can be easily identified and remedied.

Evaluating your own potting efficiency

Objectively evaluating the efficiency of a production system one works in can be difficult, so the project researchers have developed an evaluation system that nurseries can use to identify areas where they can potentially reduce potting labour costs.

The efficiency evaluation steps are:

- carrying out a rapid diagnosis of potting efficiency by answering a set of questions relating to potting production at your nursery
- calculating the potting labour cost in cents per pot at your nursery
- carrying out an efficiency evaluation at your nursery using specially prepared forms
- calculating the cost benefit of introducing improvements to the potting system.

The form requires the assessor to give a score between 1 and 9 to a number of areas in each step of the process, with 1 = very poor, 5 = average and 9 = excellent. Reasons for the given scores should be recorded as also should suggested improvements.

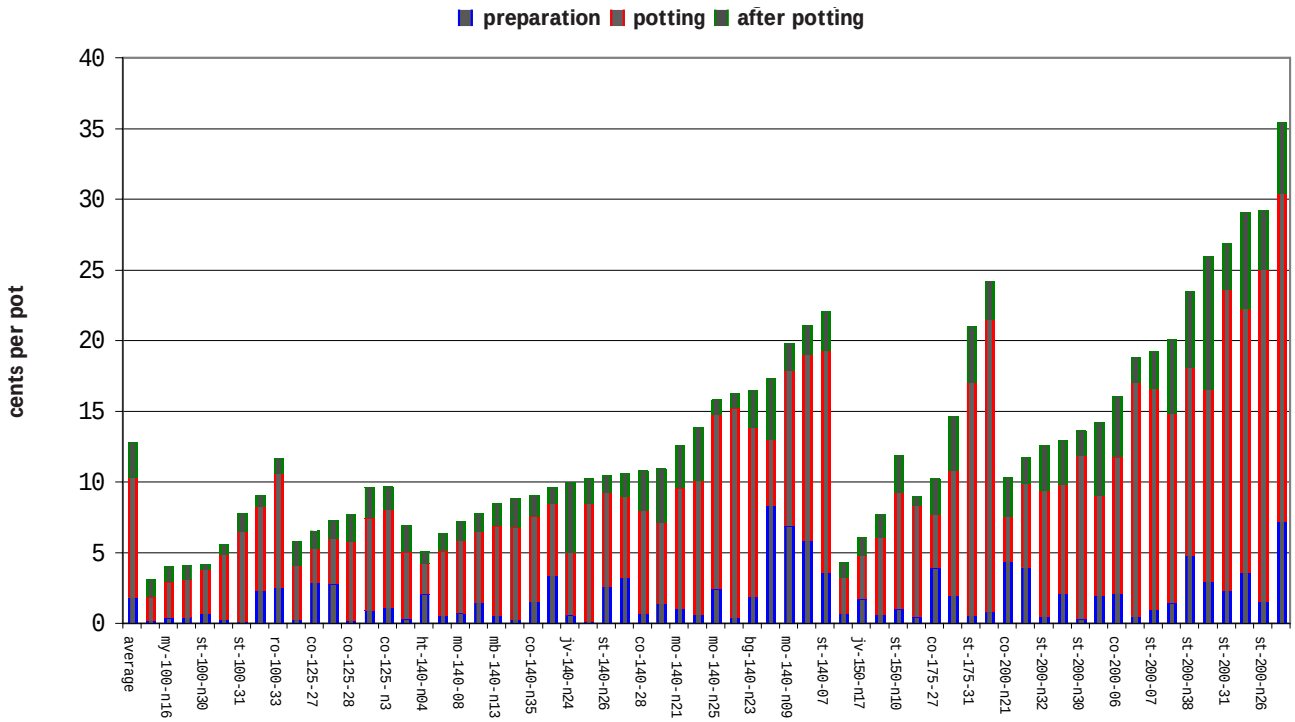
After completing the form you can contact Denis Brown on (07) 3286 1488 to discuss the results.

The complete evaluation procedure, as well as detailed project findings to date and general recommendations for reducing potting labour costs, are contained in the booklet *'Useful Ideas for Reducing Potting Labour Costs at your Nursery'* available from the Centre for Amenity and Environmental Horticulture, PO Box 327, Cleveland, Qld, 4163, or download it for free from NIAA's website:

http://www.niaa.org.au/np/index.html

Name: **Nursery:**	**Score 1-9** 1 = very poor 5 = average 9 = excellent	**Reason for your score**	**Suggested improvements**
System design		GENERAL ORGANISATION OF POTTING	
1. Location of the potting area	( )		
2. Layout in the potting area	( )		
3. Potting work station design	( )		
4. Layout of the growing area	( )		
5. Suitability of potting method	( )		
Suitability of equipment used			
6. For planting stock handling	( )		
7. For media handling	( )		
8. For potted plant handling	( )		
Information communication		POTTING PRODUCTION	
9. Staff knowledge of requirements	( )		
Allocation of tasks to staff			
10. Elimination of non productive time	( )		
11. Coordination of tasks	( )		
Effectiveness of potting technique			
12. Organisation of work bench	( )		
13. Ejecting plant stock	( )		
14. Handling media on the bench	( )		
15. Inserting fertiliser to pot	( )		
16. Handling the potted plant	( )		
Health & safety		WORKER RELATED ISSUES	
17. Safety levels in equipment use	( )		
18. Safety levels material handling	( )		
19. Safety levels in work practices	( )		
Worker comfort			
20. Comfort levels in potting area	( )		
21. … in transport to growing area	( )		
22. … in the growing area	( )		
Worker skills			
23. Level of workers' skill	( )		
Worker motivation			
24. Level of workers' motivation	( )		
Empty pot handling		METHODS OF MATERIALS HANDLING	
25. Pot to potting station	( )		
Plant stock handling			
26. Stock to potting station	( )		
Media handling			
27. Delivering to potting station	( )		
Fertiliser handling			
28. Delivering to potting station	( )		
Potted plant handling			
29. In the potting area	( )		
30. Watering/transport to field	( )		
31. In the growing area	( )		

Average total labour cost of potting



In the chart above, the average total cost of potting is shown in the first bar. The bars then range (left to right) from 100mm pot size to 200mm pot size across a variety of potting systems - 'standard bench (st)', 'modified bench (mo)', 'mobile bench (mb)' and a number of potting machines including as Comet (co), Javo (jv) and Mayer (my). eg the right hand most column is marked 'st-200-n26' which is code for 'standard bench potting of 200mm containers at nursery no.26'.

The bottom line

The project findings indicate that most nurseries can achieve a reduction in their total potting labour costs by improving some aspect of their potting production systems.

In an efficient potting production system labour costs are kept to a minimum by:

- use of a potting system appropriate to the nursery's production profile
- the efficient organisation and operation of the potting system
- the efficient handling of potting materials (potting media, empty pots, fertiliser, potted plants, etc.)
- maintaining high levels of worker comfort
- maintaining high levels of occupational health and safety

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Nursery Industry Association of Australia

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