

From Forest Nursery Notes, Winter 2013

**3. Nursery costing: the "easy" way.** Ehrich, L. International Plant Propagators' Society, combined proceedings 2011, 61:43-48. 2012.

## Nursery Costing: The “Easy” Way<sup>®</sup>

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**Costing in the nursery industry is a powerful tool to identify the potential profitability of your business. But is it possible to cost each and every one of your product lines down to the last cent? The recording of production activities by the staff on a specific crop during cultivation up to its sale can specify at least a large portion of this crop’s cost. But how to grasp the more difficult-to-determine expenses of a product, such as the running of an administration office, plant protection, or water management/irrigation? Different approaches to this topic are presented as well as the methods used to record production activities using Microsoft Access at New Plant Nursery, situated in George, in the Southern Cape, South Africa. The conclusion remains: product line specific costing involves considerable administrative effort, but is a non-regrettable exercise for every grower to be aware of where profitability begins and ends.**

### INTRODUCTION

Why should we know what the costs are for growing the crops we produce? “To know whether the crops we have chosen to grow are profitable” is probably the first answer that comes to mind. However, this topic needs to be looked at in more depth. We growers need to constantly know which of our plants are our so-called “bread and butter” lines that account for much of our turnover. But even more important, we need to know which lines are highly profitable, since these crops should receive most of our attention. Naturally, no costing can be done without considering the competitor’s prices — if we cannot offer a special service connected to our product, we have to be extremely good at marketing and branding to sell our product at a much higher price than our competition. However, the next question arises, namely whether our fellow growers in return have done any costing for their products? After all, the client should not be the only winner in this equation.

There is general consensus between the South African wholesale growers that not enough effort is being put into the costing of our products — and that this should be urgently addressed on an association level. This is especially important since most production work is still done manually, with little automation, and labour costs are higher than in other African countries. The most common approach is to examine the competitor’s pricelists and then decide on a price “in line with” the competitor. In so doing, two risks are taken simultaneously: either the chosen price might be too low for our own nursery and not result in any profit — or we could possibly offer the product at a more competitive price due to favorable climatic conditions at our specific nursery (South Africa’s climate varies considerably from region to region) or due to a better organized work force. Both these scenarios lead to a loss of profit, which no grower can afford, especially at this point in the world economy. At the same time, when setting prices, there is a responsibility towards securing the sustainability of the national ornamental horticultural industry.

## METHOD

There is a list of several items that need to be considered when attempting to cost accurately. These items shall be described in “semi-professional” language to gain the understanding of a larger group of readers:

- 1) Input costs: costs of young plant/seed, growing medium, container, stake, etc.
- 2) Initial labour cost to plant and pack at the nursery site.
- 3) Costs to grow the young plant on to a finished product (includes fertilizing, pruning, spacing, etc.).
- 4) Costs to maintain the product while on the nursery site (includes direct costs on the products, namely labour to weed, water, control pests, etc., as well as indirect costs to run the nursery as a whole, namely expenses for water, electricity, administration, sales, dispatch, etc.).
- 5) The average loss on the batch.

Additionally to these five factors, it is very important when the batch of plants gets sold, namely whether it gets sold immediately once it is ready, or one, two, three, or more months later, since every extra month in the nursery translates to extra maintenance costs listed under Point 4 above. Unfortunately, contract grown plants account for the minority in comparison to the crops grown “on spec” at most South African wholesale nurseries, i.e., most nurseries do never really know whether they will actually manage to sell their products or not.

## THE MICROSOFT ACCESS DATABASE

For the further understanding of the method of costing applied to determine the costs described in Points 2 and 3, a short description of the Microsoft (MS) Access database developed by New Plant Nursery follows. One of the MS Access database modules has been designed to input daily production tasks of each member of production staff. Specific and non-specific activities get handwritten into a form and then entered into the database. Non-specific activities would include weeding, watering, cleaning — these are activities not directly linked to a selected plant/container combination. Information about specific activities describes in detail which activity (e.g., pruning) was done on which specific plant/container combination (e.g., *Acacia xanthophloea* in 10-L bags). All specific activities in the nursery have rates, i.e., the amount of work completed by a member of staff will then translate to a productivity figure for him/her. This information can then be drawn for any period of time to produce a report on the productivity of a staff member (e.g., for the period of a day, Fig. 1) as well as to produce a report for a specific plant/container combination listing all the specified activities done on that plant/container combination for any period of time (e.g., for the period of a day, Fig. 2). The latter report can then be used to calculate costs listed under Points 2 and 3 above, namely by totaling the time spent on these activities on a specific product and multiplying it by an average wage figure for the staff working with this crop within a team.

## THE MANAGEMENT ACCOUNTS

In addition, another module was designed in the MS Access database to record stock levels and the grading of stock present in the nursery. These stock takes get carried out monthly and the figures are subsequently entered into the database. This not

ACTIVITY DETAILS FOR: Nothini							
ACTIVITY	PLANT	CONT.	QTY	RATE	PROD HRS	STD HRS	
<b>Thu, 29 Apr 2010</b>							
<b>Trees</b>							
<i>TYPE 2 - Pict-base, productive</i>							
Plant 09cm	Apodytes dimidiata	9cm	48.00	106	0.45		
Plant 09cm	Pterocelastrus tricuspidatus	9cm	43.00	106	0.41		
Plant 09cm	Gymnosporia buxifolia (=Mayte)	9cm	36.00	106	0.34		
Plant 09cm	Nuxia floribunda	9cm	231.00	106	2.18		
<b>TYPE TOTAL</b>						<b>3.38</b>	
<i>TYPE 1 - Non Pict-based, productive</i>							
Plant 09cm			89.00	106	0.84		
Plant 09cm			247.00	106	2.33		
<b>TYPE TOTAL</b>						<b>3.17</b>	
<i>TYPE 0 - Hour-based, non-productive</i>							
Watering			0.50	1	0.50		
Weeding			1.00	1	1.00		
Cleaning			1.00	1	1.00		
<b>TYPE TOTAL</b>						<b>2.50</b>	
<b>POINTS FOR DAY: 44</b>			<b>DAY TOTAL</b>		<b>9.05</b>	<b>8.50</b>	

Figure 1. Microsoft Access database report according to staff member.

ACTIVITIES CARRIED OUT ON: Pterocelastrus tricuspidatus						
FROM: Thu, 29 Apr 2010			TO: Thu, 29 Apr 2010			
DATE	WORKER NAME	TEAM	ACTIVITY	QTY	HOURS	
<b>9cm</b>						
Thu, 29 Apr	Nothini	Trees	Plant 09cm	43.00	0.41	

Figure 2. Microsoft Access database report according to plant/container combination.

only generates an updated availability list, but it can also translate into a stock value figure. The stock value figure is very important not only for the process of preparing management accounts for the nursery every month, but also to know the quantity of plants in the nursery to establish a formula to determine the costs listed under Point 4 above. Since the nursery is divided into nine separate sections, these management accounts get summarized in a table listing the sections as well as the grand total. From these figures, the costs listed under Point 4 above can be calculated in the following way: Average figures over a period of 4 months are used for:

- 1) The individual section's total wage bill minus the costs already attributed to the product through the specified MS Access recordings.
- 2) Remainder of Nursery's wage bill (dispatch, growers, overtime, etc.) split between the sections according to set percentages.
- 3) Nursery's expenses (water, electricity, admin, sales reps, fuel, repairs, etc.) split between the sections according to set percentages.

These figures calculated for each Nursery section are then each divided by the average amount of plants in the section drawn from the monthly stock takes. This then produces an average maintenance figure for an average sized plant in the section.

## RESULTS AND DISCUSSION

Two examples of products were chosen, namely a cultivar of the *Osteospermum* “FlowerPower” range in 15-cm pots (saleable within 4 months from planting) as well as *A. xanthophloeae* in 10-L bags (saleable within 24 months from young plant). As can be seen from Table 1, the figures are relatively different for products with a different grow-on time, like the two products chosen. Also, the need for specific fungicide drenches of the *Osteospermum* influences the profitability. But the most impressive differences arise when comparing the profitability of the two products when standing longer in the nursery than the respective 4/24 months until ready for sale: The figures decline rapidly for the *Osteospermum*, but stay above 50% for the *Acacia* for up to 4 months after the product has become ready for sale. Although to a degree this lies in the nature of the product and its shelf life (bedding plants versus tree), it makes it crystal clear how important that realization should be to any grower.

## CONCLUSION

“Why should we know what the costs are for growing the crops we produce? To know whether the crops we have chosen to grow are profitable.” These first two sentences of this article should now be reformulated: “What reduces the profitability of a crop below an acceptable level?” Noted here should be that the profit margin the grower strives towards is a subjective decision — it certainly is influenced by volume of plants sold as well as other factors prevalent on your (local) market — and last but not least your personality. Through the calculations in Table 1 it has become clear that although the grower can influence the costs of a certain chosen product to a degree by saving on the input costs (e.g., choosing a cheaper container) and the grow-on costs (e.g., higher productivity of staff), the most important impact can be achieved by accurate planning of batches to match market demand as much as possible or by finding a buyer for your product before it is even ready (e.g., through contract growing). The latter might be difficult in the South African context, since the contract growing for chain stores and other big retailers or landscape contractors is in its infancy. However, the wholesalers have an important role to play in joining forces to demonstrate to their customers that to grow plants “on spec” only is reducing their profit largely and is not sustainable in the long run. The situation is aggravated by the fact that since there are no formal nursery and plant quality standards in South Africa, plants that are much too old and overgrown may be sold and accepted by the customers. The grower knows that he/she can cut his product back two to three times and still has a chance to sell it, not realizing the waste of resources he has incurred during that time as well as the profit he has lost not using that space in his nursery more profitably. This situation is especially serious since most of the growers are reluctant to discard the plants they have grown with so much effort, not realizing that to maintain the plants past their sell by date in the nursery is arguably the biggest profit “killer.” In addition, they could be using that space in the nursery for the next crop already, thereby at least making up a portion of the loss they have incurred.

Table 1. Costing calculations for two selected species.

	<i>Acacia xanthophloea</i>	<i>Osteospermum</i> “Flower Power”
Size	10 L	15 cm
Time in nursery	from planting to finishing 2 years	4 months
<b>A. INITIAL COSTS AT PLANTING:</b>		
A1. Container	from supplier R 1.07	R0,83
A2. Plug	from supplier R 2.50	R3,04
A3. Mix	R150/m <sup>3</sup> R 0.95	R0,15
A4. Stakes	R48/100 R 1.10	R0
A5. Tags	R68.40/1000 R 0.34	R0
<b>B. MAINTENANCE OF PLANTS:</b>		
Number of fertilizer applications	every 6 to 8 weeks 12x	2x
<b>B1. Terramax × number of applications</b>	<b>R0.02 per 15 cm</b> (or proportional)	<b>R0,04</b>
Number of fungicide drenches	0x	3x
<b>B2. Costs of fungicide × number of applications</b>	<b>R0.07/15 cm</b>	<b>R0,21</b>
Hours spent directly on product (planting, pruning, opening)	from MS Access PAR module 0.258h	0.073h
Average hourly wage of team	before deductions R 13,95	R15,02
<b>B3. Wages direct on product</b>	<b>R 3,60</b>	<b>R1,09</b>
Average wage per month per plant in section	average over 4 months R 0,15	R0,24
<b>B4. Average wage per plant × months less wages direct (B3.)</b>	<b>R 0,00</b>	<b>R0,13</b>

Table 1. Continued.

Wages indirect to team average per month per plant in section	growers, drivers, dispatch	R 0,21	R0,40
<b>B5. Average indirect wage of nursery × months</b>		<b>R 5,04</b>	<b>R1,60</b>
Other expenses of nursery average per month per plant in section	admin, water, phone, rent, etc.	R 0,52	R0,83
<b>B6. Average expenses of nursery × months</b>		<b>R 12,48</b>	<b>R3,32</b>
Sub-total maintenance per plant		R 17,88	R5,30
<b>TOTAL A &amp; B</b>		<b>R 21,82</b>	<b>10,41</b>
Average loss on batch	estimate	3%	1%
<b>Costs of loss</b>		<b>R 0,65</b>	<b>R1,04</b>
<b>TOTAL COSTS (incl. loss)</b>		<b>R 22,48</b>	<b>R11,45</b>
Average maint. cost of product for each month in the nursery	total work / months	R 1,54	R1,59
<b>Plant price incl. delivery to Cape Town excl. VAT</b>		<b>R 44,42</b>	<b>R18,04</b>
<b>Profit margin in % if sold after 4 / 24 months</b>		<b>98</b>	<b>58</b>
Effect on profit margin for 1 extra month in nursery	in %	85	38
Effect on profit margin for 2 extra month in nursery	in %	74	23
Effect on profit margin for 3 extra month in nursery	in %	64	11
Effect on profit margin for 4 extra month in nursery	in %	55	47
Effect on profit margin for 5 extra month in nursery	in %	47	-7
Effect on profit margin for 6 extra month in nursery	in %	40	-14
Effect on profit margin for 7 extra month in nursery	in %	33	-20
Effect on profit margin for 8 extra month in nursery	in %	28	-25