



Which tray suits your forestry operation?

There is an ongoing debate as to which tray option is the best, M128, M128 Deep or the Model 98?

The Model 128 tray has become the most popular tray in recent times, largely due to the reduced cost of the seedlings and the fact that nurseries prefer producing M128 seedlings as the space requirement is considerably less. The Model 128 Tray has produced billions of seedlings and has a proven track record.

The ideal seedling size is a reflection of the diameter and volume of the container it is grown in. Thus a M98 seedling is typically larger than an M128 seedling and this is referred to as the leaf: shoot ratio. Another important aspect is the Collar Diameter of the stem, and this is widely used in the United States to grade seedlings before dispatch. Several studies show that an increased plug volume and collar diameter result in less transplant stress; higher survival rates and better growth after transplanting. A comparison of the tray options is found below:

Model Tray	Depth (mm)	Tray Size (mm)	No. of Cells	Volume (ml)
Model 128	61	344 x 676	128	36
Model 128 (Deep)	90	344 x 676	128	52
Model 98	95	344 x 676	98	80

As can be seen from the table above, the Model 98 tray has a plug that is roughly double the volume of the conventional Model 128 plug. Due to the increased volume and increased spacing between seedlings in the tray, the stem collar diameter and root biomass is greater for a M98 seedling. The increased collar diameter and root biomass translates to the better performance of the seedlings when planted, especially on marginal planting sites. Another advantage of the M98 seedling is that its holdability in the nursery is much better. Therefore if adverse weather conditions prevail or silviculture operations are delayed for any reason, a M98 seedling can be held back for longer and is less likely to become root bound.

The main disadvantage of the M98 tray is the additional seedling production costs as well as higher transport costs in getting the seedlings to the plantation. The M98 Tray is also heavier and more difficult to handle in the nursery and during silviculture operations.

The Model 128 Deep tray is a compromise between the M128 and M98 trays and was used extensively by one of the major forestry companies. A disadvantage is the shape of the plug, where the plug is more narrow and deep. This can lead to an increase in J-rooting in the field.

A summary of the above can be found below:

	Model 128	Model 98	Model 128 (Deep)
Advantages:	<i>Cheaper seedlings & transport</i>	<i>Improved field survival</i>	<i>Increased plug volume, but not as expensive as the M98.</i>
	<i>Proven track record</i>	<i>Higher MAI/ha</i>	
	<i>Shorter seedling production time</i>	<i>Better nursery holdability</i>	
Disadvantages:	<i>Higher transplant stress</i>	<i>Higher seedling cost</i>	<i>Tap root more easily bent due to the plug shape</i>
	<i>Increased blanking requirements</i>	<i>Higher transport cost</i>	
	<i>Less holdability in nursery</i>	<i>Difficult to handle when planting trays</i>	

In conclusion, a silviculture manager should take into account the site to be planted; climatic conditions; budget constraints and whether the seedlings are likely to be taken on the ordered date. For further information please contact Sutherland Seedlings on (039) 8341953 or email at: admin@sutherlandseedlings.co.za

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