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Name : Christmas trees without root ball
Origin : Veldhuizen & Bisselink Christmas trees

Key word : EC05329 * T440-P4507 * CHRYSAL CHRISTMAS TREES WITHOUT ROOT BALL * VELDHUIZEN & BISSELINK CHRISTMAS TREES * EASY FIX *

Aim

Test the effect of Chrysal Tree Food on Christmas trees without root ball

Method

The test has been set up according to the testing schedule.

Beh	Standard	Removal of bark / drilling	Product	Topping up	Numbers
1	Cross	Drilling	None	-	1 - 2
2	Universal	No	Water	Water	3 - 4
3		Yes (10 cm)			5 - 6
4	Easy fix	Drilling			7 - 8
5	Universal	No	T440-P4507	Water	9 - 10
6		Yes (10 cm)	(30 mL/L)		11 - 12
7	Easy fix	Drilling			13 - 14
8	Universal	No		T440-P4507	15 - 16
9		Yes (10 cm)		(30 mL/L)	17 - 18

10	Easy fix	Drilling			19 - 20
11	Universal	No	T440-P4507	Water	21 - 22
12		Yes (10 cm)	(60 mL/L)		23 - 24
13	Easy fix	Drilling			25 - 26
20 °C 12 hours of light 1 tree/standard 1.5 L/standard n=2					

Treatment Code Dose Date

Chrysal Christmas trees without root ball T440-P4507 See test schedule

Observations

Day 0 is the start of the consumer phase
Tree quality on Days 17, 24, 31, 38, 45, 51 and 58
Shelf life of the tree

Write-off criteria

more than 50% of the needles have fallen off or turned brown.

Comments

The test was set up in a room above the factory (where Ethylene Buster gas-flushing normally takes place), this room is not conditioned.

Results

The experiment was terminated on Day 58. The trees that had not been written off on that day were assigned a shelf life of 65 days.

The results are summarised in the graph and table 1-4.

An obvious effect on the shelf life and quality was observed when the trees were placed in a solution compared to dry storage. Removal of the bark was found to have an even greater effect than administering T440, however the combination yielded the best results (see table 1-4).

The water uptake was very high particularly at the start of the test and again it was clear that the removal of the bark had a positive effect on the uptake, with the best uptake seen when product was also administered and topped up.

Shoots were observed in several trees, but these developed best when a product was used. When using water only, these shoots remained small and dried up. Again, removal of the bark had a positive effect.

Graph 1: Quality (1=poor; 5=good) over time in relation to the treatment.

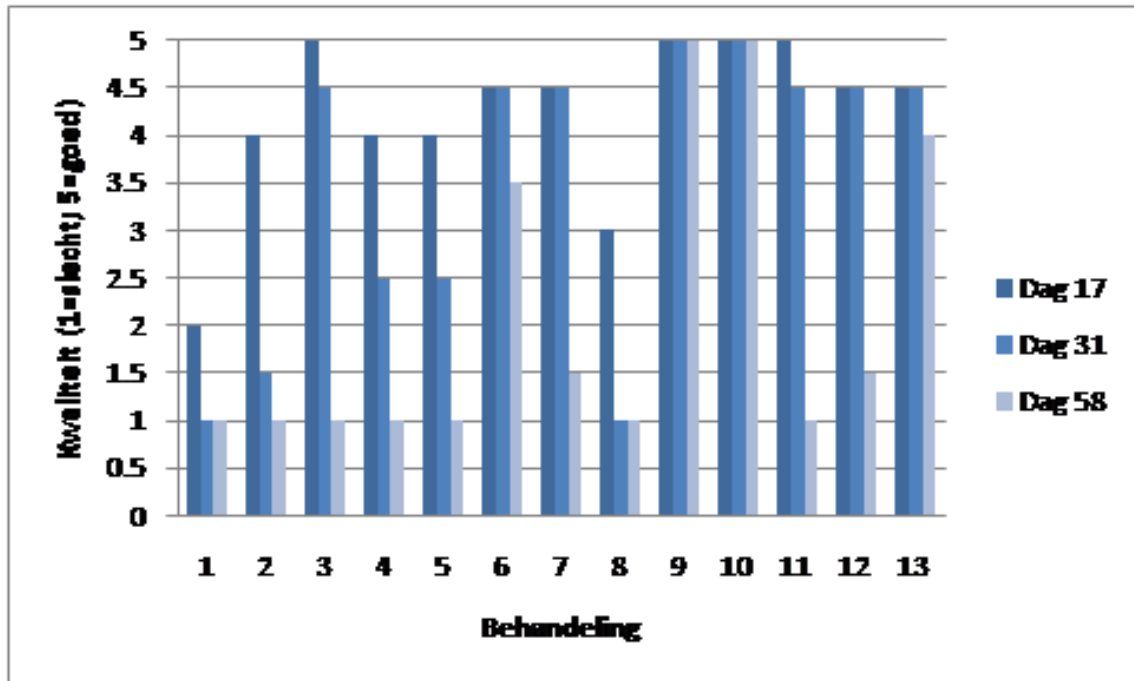


Table 1: Shelf life [days] and quality (1=poor; 5=good) over time in relation to the treatment.

Standard	Removal of bark / drilling	Product	Topping up	BMH	Quality		
					Day 17	Day 24	Day 31
Cross	Drilling	None	-	24.0 a*	2.0 a	1.0 a	1.0 a
Universal	No	Water	Water	34.0 ab	4.0 a	3.5 abc	1.5 ab
	Yes (10 cm)			57.5 c	5.0 a	5.0 c	4.5 bc
Easy fix	Drilling			36.0 ab	4.0 a	3.5 abc	2.5 abc
Universal	No	T440-P4507	Water	33.5 ab	4.0 a	2.5 abc	2.5 abc
	Yes (10 cm)	(30 mL/L)		61.5 c	4.5 a	4.0 abc	4.5 bc
Easy fix	Drilling			58.0 c	4.5 a	4.5 bc	4.5 bc
Universal	No		T440-P4507	27.0 a	3.0 a	1.5 ab	1.0 a
	Yes (10 cm)		(30 mL/L)	64.5 c	5.0 a	5.0 c	5.0 c
Easy fix	Drilling			62.5 c	5.0 a	5.0 c	5.0 c
Universal	No	T440-P4507	Water	50.0 bc	5.0 a	4.5 bc	4.5 bc
	Yes (10 cm)	(60 mL/L)		57.5 c	4.5 a	4.5 bc	4.5 bc
Easy fix	Drilling			62.0 c	4.5 a	4.5 bc	4.5 bc
n				2	2	2	2
P				0.000	0.056	0.002	0.001

BMH = shelf life [days]

Quality = Visual quality day x (1= poor; 5= good)

Table 2: Quality (1=poor; 5=good) over time in relation to the treatment.

Standard	Removal of bark / drilling	Product	Topping up	Day 38	Day 45	Day 51	Day 58
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Cross	Drilling	None	-	1.0 a*	1.0 a	1.0 a	1.0 a
Universal	No	Water	Water	1.0 a	1.0 a	1.0 a	1.0 a
	Yes (10 cm)			4.0 b	3.5 ab	3.5 abc	1.0 a
Easy fix	Drilling			1.0 a	1.0 a	1.0 a	1.0 a
Universal	No	T440-P4507	Water	1.5 a	1.0 a	1.0 a	1.0 a
	Yes (10 cm)	(30 mL/L)		4.5 b	4.5 b	4.0 bc	3.5 ab
Easy fix	Drilling			4.0 b	3.5 ab	3.0 abc	1.5 a
Universal	No		T440-P4507	1.0 a	1.0 a	1.0 a	1.0 a
	Yes (10 cm)		(30 mL/L)	5.0 b	5.0 b	5.0 c	5.0 b
Easy fix	Drilling			5.0 b	5.0 b	5.0 c	5.0 b
Universal	No	T440-P4507	Water	4.0 b	2.5 ab	2.0 ab	1.0 a
	Yes (10 cm)	(60 mL/L)		4.0 b	3.5 ab	2.5 abc	1.5 a
Easy fix	Drilling			4.5 b	4.5 b	4.5 bc	4.0 ab
n				2	2	2	2
P				0.000	0.000	0.000	0.000

Table 3: Shelf life [days] and quality day x (1=poor; 5=good) in relation to the stripping of the bark

Removal of bark / drilling	BMH	Quality		
		Day 17	Day 24	Day 31
No	36.1 a*	4.0 a	3.0 a	2.4 a
Yes (10 cm)	60.3 b	4.8 a	4.6 b	4.6 b
Drilling	54.6 b	4.5 a	4.4 b	4.1 b
N	8	8	8	8
P	0.000	0.187	0.009	0.003

Table 4: Quality day x (1=poor; 5=good) in relation to the stripping of the bark.

Removal of bark / drilling	Day 38	Day 45	Day 51	Day 58
No	1.9 a*	1.4 a	1.3 a	1.0 a
Yes (10 cm)	4.4 b	4.1 b	3.8 b	2.8 a
Drilling	3.6 b	3.5 b	3.4 b	2.9 a
N	8	8	8	8
P	0.003	0.001	0.001	0.043

* The data were analysed using ANOVA (n and P: see table) followed by Tukey's honestly significant difference multiple comparison test (SPSS software). Different letters in a column indicate significant differences ($P < 0.05$).

Conclusions

- The quality of the trees clearly improves when they are placed in a solution.
- It is very important to remove the bark in order to maintain the quality.
- The use of "Chrysal Tree Food for Christmas trees without root ball" results in

noticeably improved quality, particularly when this product is also topped up.

Appendix II: Test conditions and scale used for observations

Conditions in cold cell

Temperature: 2°C
Relative humidity : 70-80%
Light: 0 Lux

Conditions in store / consumer phase*

Temperature 20°C
Relative humidity 60% +/- 10%

Light level 1000 Lux at table height
Day length 12 hours
Light colour Osram Cool White 840 HE / Philips
TL84