

Degradation of stabilized propagation media in the landscape

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An unpublished draft report for the Young Plant Research Center

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Objective:

To evaluate degradation/persistence of stabilized liner media after going through a cycle of liners, pots, landscape planting.

Design of experiment:

Sixteen stabilized media were included in the study:

Stabilized Media	Components
Ellepot AP	Paper-wrapped pot. Paper consists of cellulose with an admixture of polyester for reinforcement, and treated with fungicide. Greenway peat/perlite/vermiculite medium. 35 mm diameter.
Ellepot EP	Paper-wrapped pot. Paper consists of cellulose fibres with an admixture of polyester for reinforcement. Greenway peat/perlite/vermiculite medium. 35 mm diameter.
Ellepot FC	Paper-wrapped pot. Paper consists of cellulose with a synthetic binder. Greenway peat/perlite/vermiculite medium. 35 mm diameter.
Ellepot FP	Paper-wrapped pot. Paper consists of almost pure cellulose fibres with an admixture of polyester for reinforcement. Greenway peat/perlite/vermiculite medium. 35 mm diameter.
Ellepot Knox	Ellepot AP paper. Perlite peat, perlite and vermiculite medium. 40 mm diameter.
Ellepot Coco Press	Compressed coconut coir that quickly expands with water. 42 mm diameter.
Fertiss	Paper-wrapped pot (cellulose fibers, non-woven net), peat/perlite/vermiculite. 72-count
Grow Tech HF	Polymer / Peat hand-filled tray, 50-count
Grow Tech IP	Polymer / Peat, 50-count
Grow Tech MF	Polymer / Peat machine-filled tray, 50-count
IHT Excel	Polymer / Peat, 72-count
IHT Q Plug	Polymer / Peat, 72-count
Jiffy	Paper-wrapped pots with peat/perlite, peat/rice hulls, or coir, 72-count
Oasis	Oasis foam, 10-count strips
Preforma	Polymer / Peat, 50-count

Osteospermum ecklonis 'Lemon Symphony' unrooted cuttings were received from InnovaPlant, Costa Rica, in April 2008, and were planted into 50-count trays (72-count for Fertiss and Jiffy) at the University of Florida research greenhouses, Gainesville, FL 32611. Plants were grown with the following schedule:

Action	Date	Days after sticking	Light (moles/m ² /day)	Average Air Temperature (F)
Stick date into liner trays	April 9 2008	0	13.7	74.1
Pinch date	May 8 2008	29	13.4	78.4
Potting into 4-in diameter pots	May 27 2008	48	21.7	74
Planting date in garden	June 24 2008	75		80
Harvest for data collection	Sept 1 2008	145		81.3

This schedule resulted in approximately 7 weeks in the liner tray, 4 weeks in 4-inch pots, and 10 weeks in the garden.

Mist Schedule

The following mist schedule was run after sticking cuttings, with the day time mist frequency modified by light level (more frequent misting with high sunlight):

Date	Day	Night
April 9 to 14	8 to 20 min, 6 sec	35 min, 6 sec0
April 15 to 17	15 to 35 min, 6 sec	60 min, 6 sec
April 18 to 20	20 to 40 min, 6 sec	90 min, 6 sec
April 21	Off	Off

Fertilizer: Mist was applied using clear water.
 17-5-17 at 75 ppm N was applied with each irrigation during the liner stage once plants were off mist.
 15-5-15 at 150 ppm N was applied with each irrigation during the 4-in pot stage
 20-10-20 fertilizer at 300 ppm N was applied once weekly during the garden stage
 A soil test on 4 pots using a 1 soil:2 water test on June 9 had a pH of 6.5, and an EC of 0.3 mS/cm. Two weeks later, on June 24, the pH and EC were 6.5 and 0.44 mS/cm, respectively.

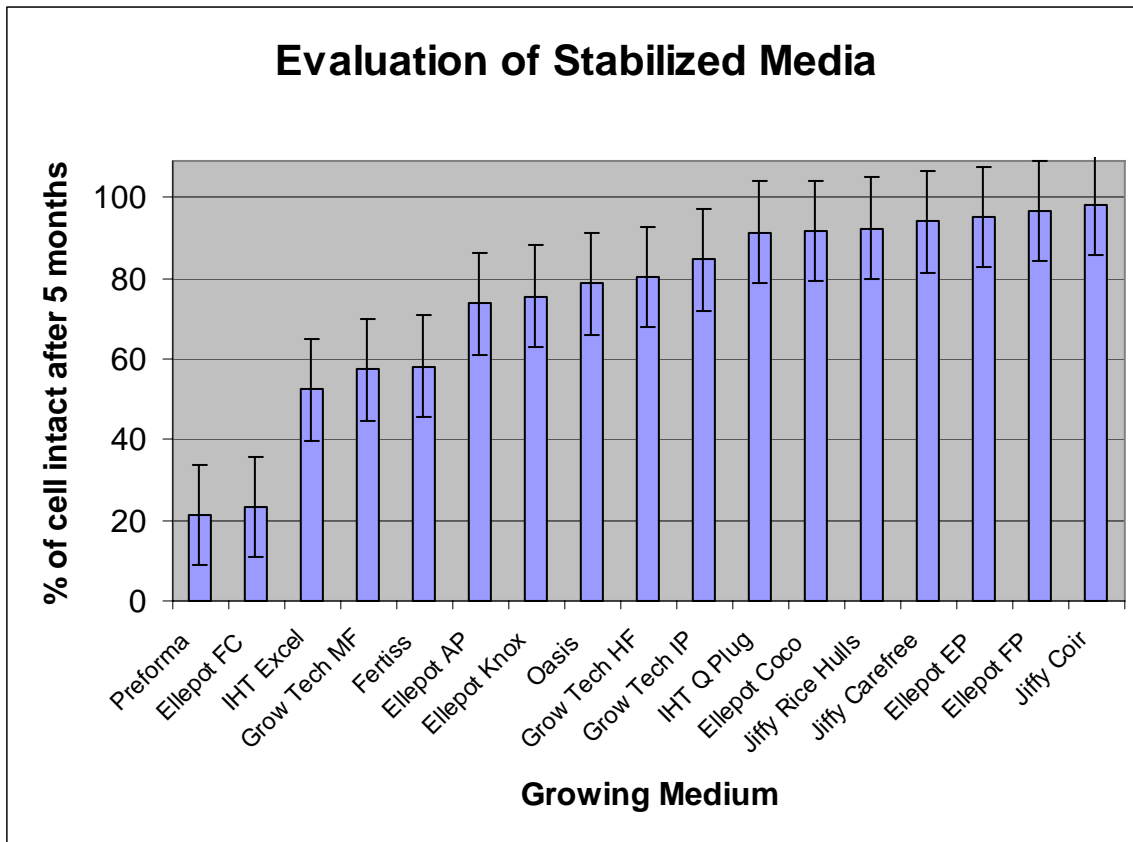
Cuttings were planted with one tray of each medium, with trays randomly located on the bench and re-randomized after 14 days. Twelve cuttings per tray were removed from each tray 29 days after sticking, were planted into 4-inch diameter pots with Fafard 1P media, and were then completely randomized. 75 days after sticking, plants were transplanted into a rectangular garden plot, with a sandy loam amended with compost, with drip tape and covered with bark mulch. A randomized complete block design was used in the garden, with four blocks each containing three randomly-located replicate *Osteospermum* plants per stabilized growing medium. On September 1 2008, plants were removed from the garden plot, media was air-dried for 1 week in the greenhouse, and roots were carefully cut away from the growing media. Media were placed next to original, unused growing media as a comparison. The percentage of the growing media still intact compared with the original liner cell was visually evaluated to the nearest 5%.



An example 4-in-diameter pot at the stage when plants were transplanted into the garden plot. This example is for a plant propagated in an IHT QPlug.

Results

Percent of stabilized media intact after removal from the garden plot on Sept. 1 2008. The error bars in the chart at 95% confidence intervals.



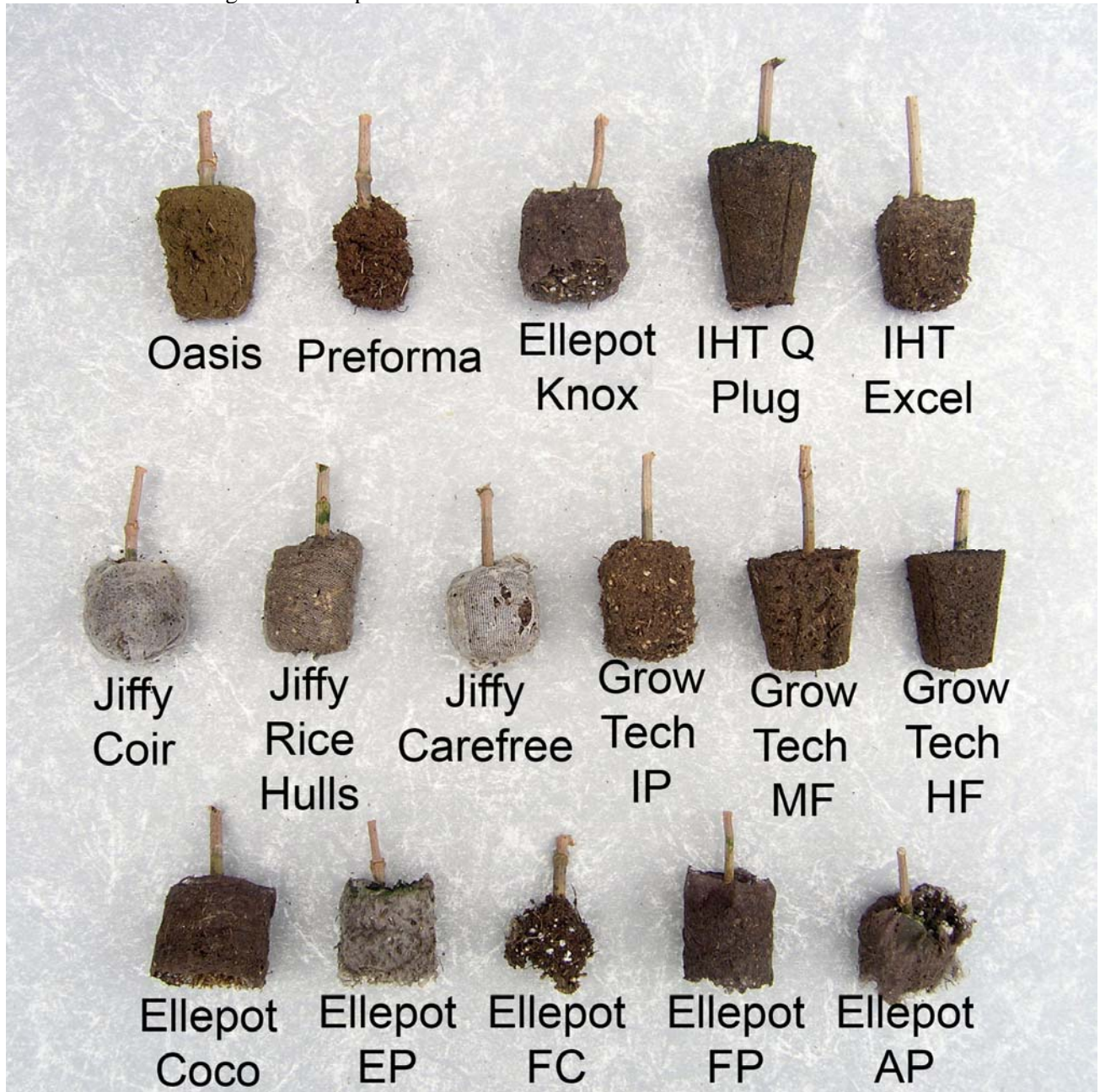
Media that share the same letters after their are not significantly different using Tukey’s HSD comparison at the p=0.05 level.

Media	Mean % intact
Ellepot FC	21.4 f
Preforma	21.7 f
Grow Tech MF	52.5 e
IHT Excel	53.3 de
Fertiss	60.8 cde
Ellepot AP	74.2 bcde
Ellepot Knox	77.1 abcd
Oasis	80.0 abc
Grow Tech HF	80.3 abc
Grow Tech IP	84.2 abc
IHT QPlug	91.7 ab
Jiffy Rice	92.2 ab
Ellepot Coco	92.4 ab
Jiffy Carefree	93.6 ab
Ellepot EP	95.1 ab
Ellepot FP	96.7 ab
Jiffy Coir	98.3 a

Overall, there were significant differences in the degradation of the different types of stabilized growing media.

Ellepot FC and Preforma degraded the most, followed by Grow Tech MF, IHT Excel, Fertiss, Ellepot AP and Ellepot Knox (also with AP paper).

Media taken from the garden on September 1 2008 with roots removed.



Ellepot paper removed from the media taken from the garden on September 1 2008.



Jiffy paper removed from the media taken from the garden on September 1 2008.

