



BPOA Technical Seminar

Muck and Magic

“What do responsibly sourced growing media look like?”

(Work in Progress)



Paul Alexander and Neil Bragg

Background

- White Paper 2011
- Sustainable Growing Media Task Force (est. Oct 2011)
 - All stakeholders represented
- 12 Projects envisaged.



The 12 projects defined by the task force

- P1 Defining and agreeing the environmental problem we are trying to resolve,
- P2 What are the non-market methods for protecting peat bogs?
- P3 Clarifying the greenhouse gas emissions associated with growing media,
- **P4 What does a sustainable growing media look like?**
- P5 Sustainable growing media stewardship, principles and certification,
- P6 What is the role of public policy?
- **P7 Performance standards for amateur products,**
- **P8 What are the 'cost issues' for growers?**
- P9 Consumer messages and green claims
- P10 How to measure success and progress,
- P11 Engagement and Commitment – establishing a charter,
- P12 What will the Horticultural sector look like in 2030?

P4: What do sustainable growing media look like?

- Work in progress
- All stakeholders, Manufacturers,
 - NGO's, Retailers, GC's, Growers,
- What would we seek to achieve with a "scheme"?
 - **"Make horticultural production in the UK more sustainable"**
 - **Reduce reliance on any one substrate**
 - **Shouldn't disadvantage UK horticulture**
- Define "sustainable"
 - philosophical and technical discussion



Responsible not sustainable

- Project 4: **“What do responsibly sourced growing media look like?”**
- The “aspiration”
 - Differentiate a more responsible product from a less responsible one
 - Compare similar materials from different sources
 - Compare materials evenly
 - Voluntary scheme
 - Practical & simple
 - Robust & meaningful



P4 Industry Group - “The Promise”

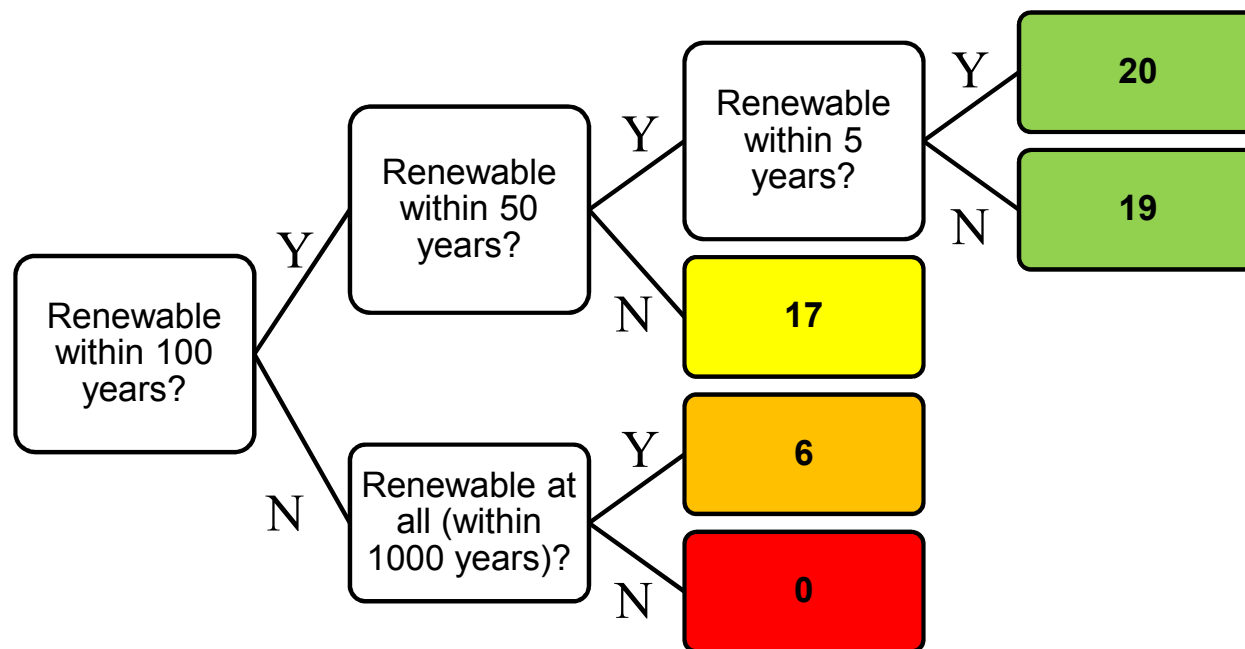
- **All growing media¹ are made from raw materials² that are sourced³ and manufactured⁴ in a way that is both socially and environmentally responsible⁵.**
1. Substrate at the point of being mixed but not bagged, excluding need for consideration of packaging, transport from the manufacturer to the retailer (or direct to the customer), transport by the customer from the retailer, use by the customer and disposal and decomposition.
 2. Including all bulk ingredients (organic and inorganic)
 3. To cover the processing of the raw materials up to the point of arriving at the growing media manufacturer.
 4. To cover the processing of the raw materials from arrival at the growing media manufacturer to the point of being mixed but not bagged, e.g. processing of wood chips into wood fibre, etc.
 5. **Economics and price dealt with by the market. As we are not covering that pillar of sustainability using the term responsible rather than sustainable.**

Responsibility Criteria To Date

1. **Energy use** (in extraction, transport and production)
2. **Water use** (in extraction, processing and manufacturing)
3. **Social compliance**
4. **Habitat and biodiversity** (impact of gaining the materials)
5. **Pollution** (effluents as a result of production processes, not fuel use)
6. **Renewability** (feedstock material)
7. **Resource use efficiency** (source of material and waste generated in processing)



Example - Renewability



5 years: "annual" crops

50 years: softwood v hardwood

100 years: common cut off for renewable (human lifespan)

1000 years: geological time frame (perlite etc)

Example - Renewability

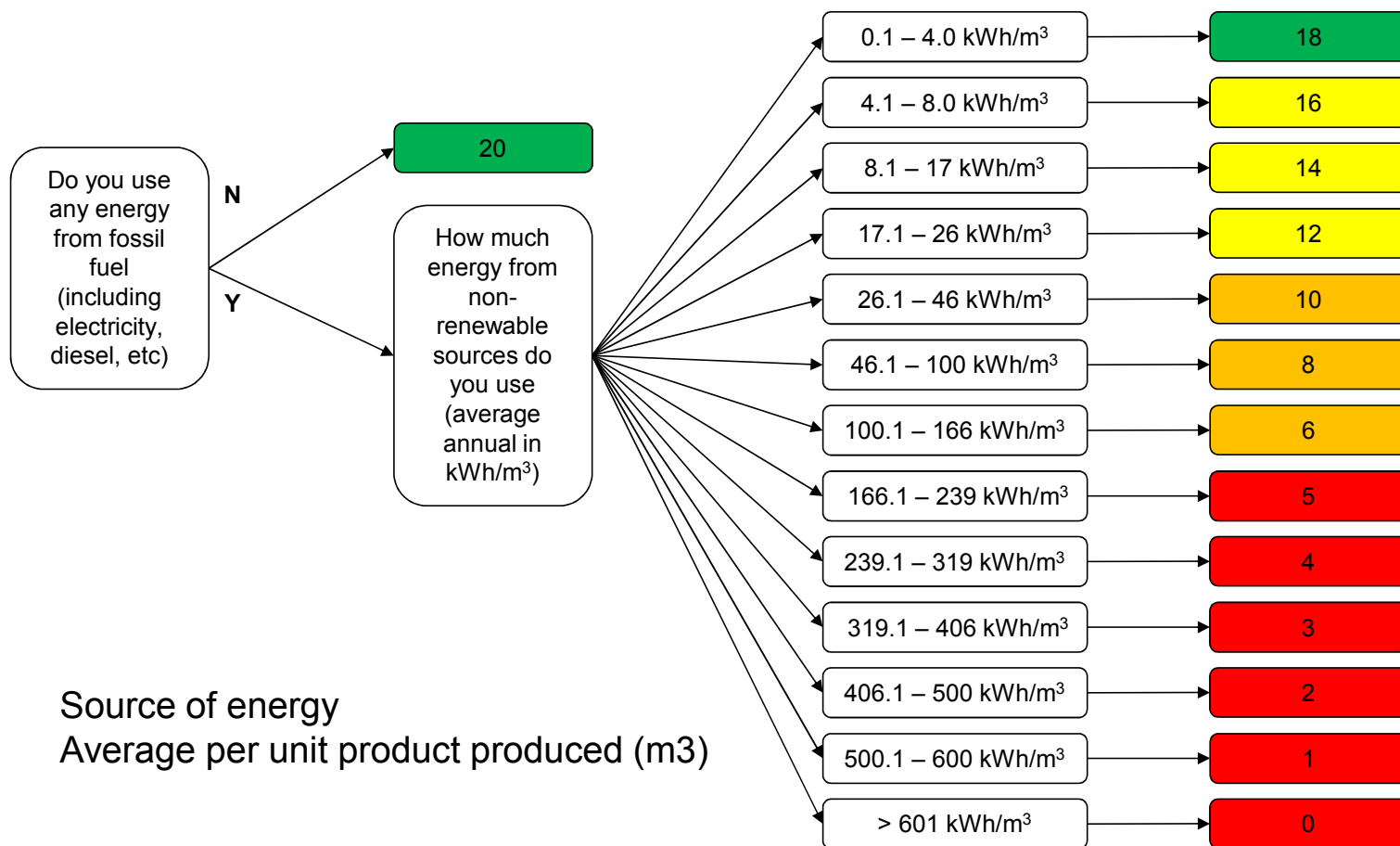
1. This is the replacement time of the material within living cycles at the same site. It is also a proxy for the impact of the material on atmospheric carbon dioxide levels and carbon cycling through the period over which emitted carbon dioxide is recaptured through the regrowth of the raw material on the same site.
2. Renewable materials are considered to be those with a replacement time at the same site within 100 years. For a material to be 'renewable at all' it has to have a replacement time at the same site within 1000 years.
3. Unless demonstrated otherwise, on an individual site peat is not normally considered renewable within 1000 years.
4. There is no improvement process for a material within this criterion as a material cannot be made more renewable. Improvement is achieved by replacement of non- or less-renewable materials with more renewable materials.

Scoring (draft approach)

- 0-5 = **Red** (worst practice)
- 6-11 = **Orange**
- 12-17 = **Yellow**
- 18-20 = **Green** (best practice)
- Every ingredient in a product assessed proportionally
- None of the flow charts return all 20 possible scores (flexible)
- May set limits in certain criteria for unacceptable



Example - Energy



Format of the Questions

Renewability	20
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Question

Renewable within 100 years?	Yes
Renewable within 50 years?	Yes
Renewable within 5 years?	Yes
Go to next criteria	

Resource Use Efficiency	4
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Question

Is it a virgin material?	Yes
Is it a bi-product?	Yes
Is waste generated in production?	Yes
Is >80% of the waste recycled?	No
Waste <5%?	No
Complete	

Summary Table

Manufacturer /
Supplier:

Product:

Scores

Materials	Sheet Id	Material	Vol.	Energy	Water	Social Compliance	Habitat & Biodiversity	Pollution	Renewability	Resource Use Efficiency	Material Total
	Material 1	Coir	50.0%	8	6	5	0	6	20	4	25
	Material 2	Green Compost	50.0%	5	20	19	20	20	20	6	55
	Material 3										
	Material 4										
	Material 5										
	Material 6										
	Material 7										
	Material 8										
	Material 9										
	Material 10										
	Material 11										
	Material 12										
	Material 13										
	Material 14										
	Material 15										
	Totals * :		100.0	6.5	13	12	10	13	20	5	

* Criteria totals shown and colour coded as weighted average

Responsible Sourcing and Manufacture of Growing Media Calculator												
Manufacturer / Supplier:		Bulrush				Product:		HNS mix1				
Scores												
Materials:	Sheet Id	Material	Vol.	Energy	Water	Social Compliance	Habitat & Biodiversity	Pollution	Renewability	Resource Use Efficiency	Material Totals	
											un- weighted	weighted
	Material 1	Peat	50.0%	12	20	20	12	20	1	13	98	49
	Material 2	Bark	30.0%	14	18	15	10	12	17	16	102	31
	Material 3	Green Compost	20.0%	10	18	19	20	20	20	18	125	25
	Material 4											
	Material 5											
	Material 6											
	Material 7											
	Material 8											
	Material 9											
	Material 10											
	Material 11											
	Material 12											
	Material 13											
	Material 14											
	Material 15											
Totals * :			100.0	12.2	19	18.3	13	17.6	9.6	14.9	105	
* Criteria totals shown and colour coded as weighted average												

Proposal - How could the scheme work?

- Establish a company limited by guarantee
 - Board of directors
 - Appoint Auditors (BOPP)
 - Technical committee
 - Continual improvement mechanism?
 - Revise minimum score?
- Stakeholders AGM and report from auditors.



Influencing practice more widely

- Retailers
 - Choice edit for consumer(?)
- Growers
- Combine P4 and P7?
 - QA “guarantee”
 - Responsible sourcing
- Overall
 - What will encourage change?



P4 – Current Position

- Stakeholder Workshops held, Nov-Dec 2014,
- (NGO's, Retailers, Growers, Manufacturers)
 - Reported back Jan 2015, revised tables and scores being amended,
- Overall feedback:
- Not ruling in or ruling out any material
- Differentiate a more responsible product from less responsible product
- Supply chain improvements
- “Make horticultural production in the UK more responsible”
- Reduce reliance on any one substrate ingredient,



European Context

- EPAGMA and EU Organisations have set up RPP group as a stand alone company,
 - Very much focused on peat issues,
 - Based around responsible use and management of peat bogs,
- Has not considered other materials used in GM's
- **The general consensus is that both the Defra Task Force and RPP should work together, and develop a robust model for the future use of all materials in Growing Media.**
 - **Thank you and any questions**



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defra
Department for Environment
Food and Rural Affairs



Transition to responsibly sourced growing media use within UK horticulture

**Dr Barry Mulholland (ADAS) & Professor Keith
Waldron (IFR)**



Dove Associates

**Susie Holmes
Consulting Ltd**

**PAUL WALLER
CONSULTING**



www.adas.uk

How does the **RSGM** link with recent and current work?

Growing Media Task Force

P4 What does sustainable growing media look like?

P7 Performance standards for amateur products.

P8 What are the cost issues for growers?

RSGM Project

GMMs to reliably source wood fibre, bark, coir and green compost.

GMMs to develop a range of high quality blends for professional use.

Growers to have access to consistently high performing growing media at least cost.

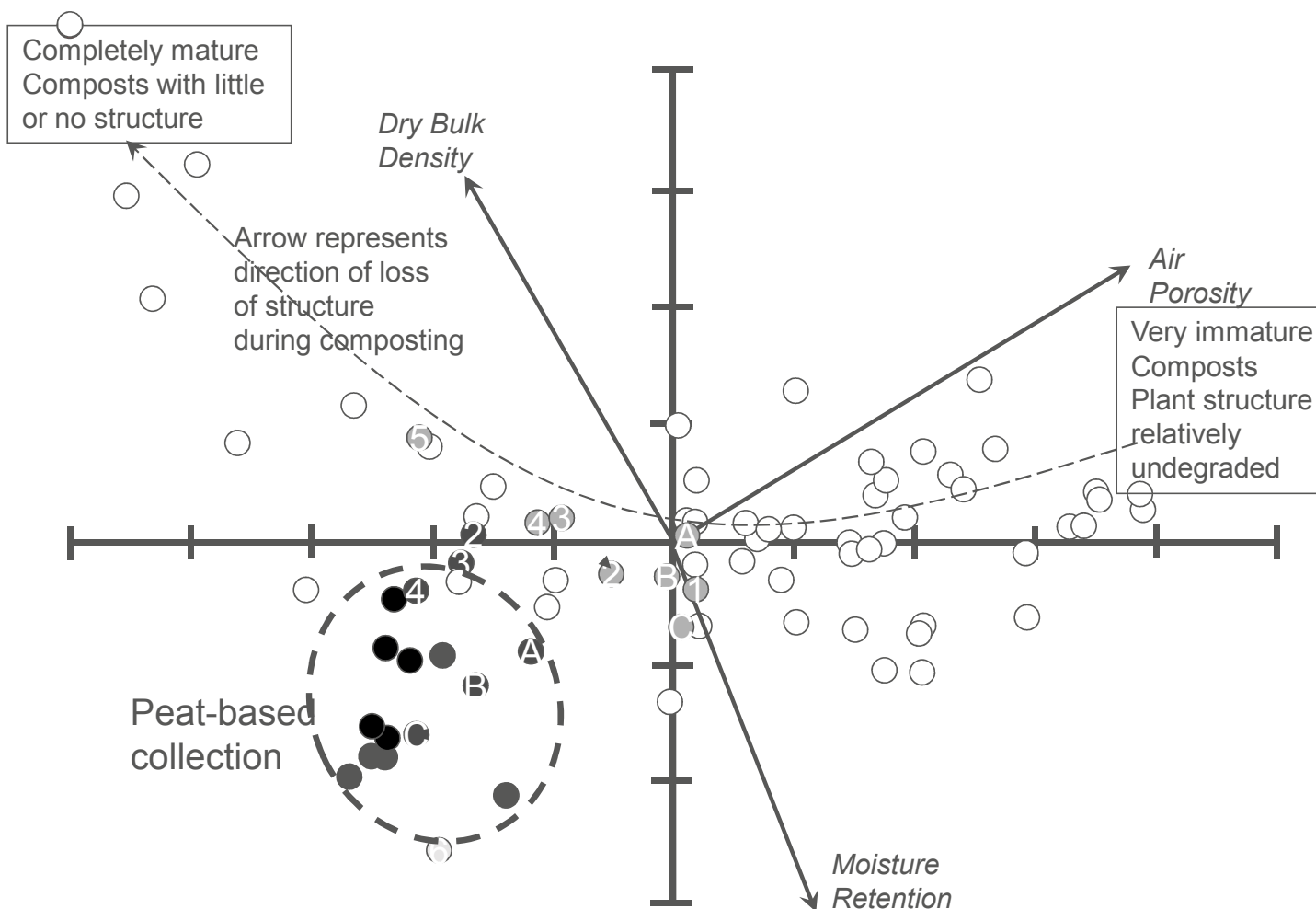


RSGM Key Features

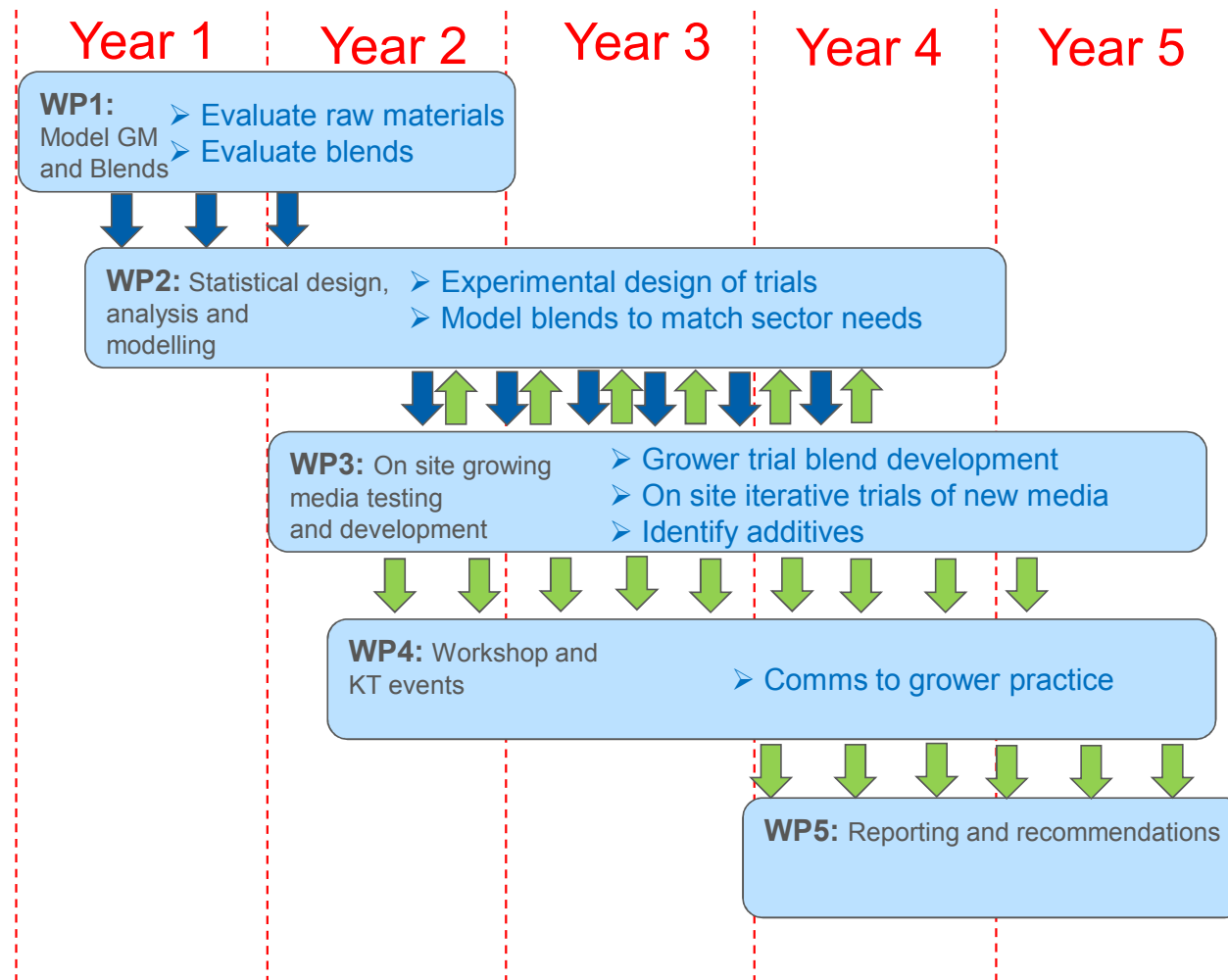
- 5 year co-innovation project, funded by Defra, GMMs, HDC and Growers to move towards RSGM
- The key deliverable is a **model** which will predict the performance of raw material blends (wood fibre, bark, coir and green compost)
- The project will facilitate large-scale grower hosted trials across all sectors of Horticulture
- Data will be used to provide the evidence base to **predict high performing blends at least cost for growers**



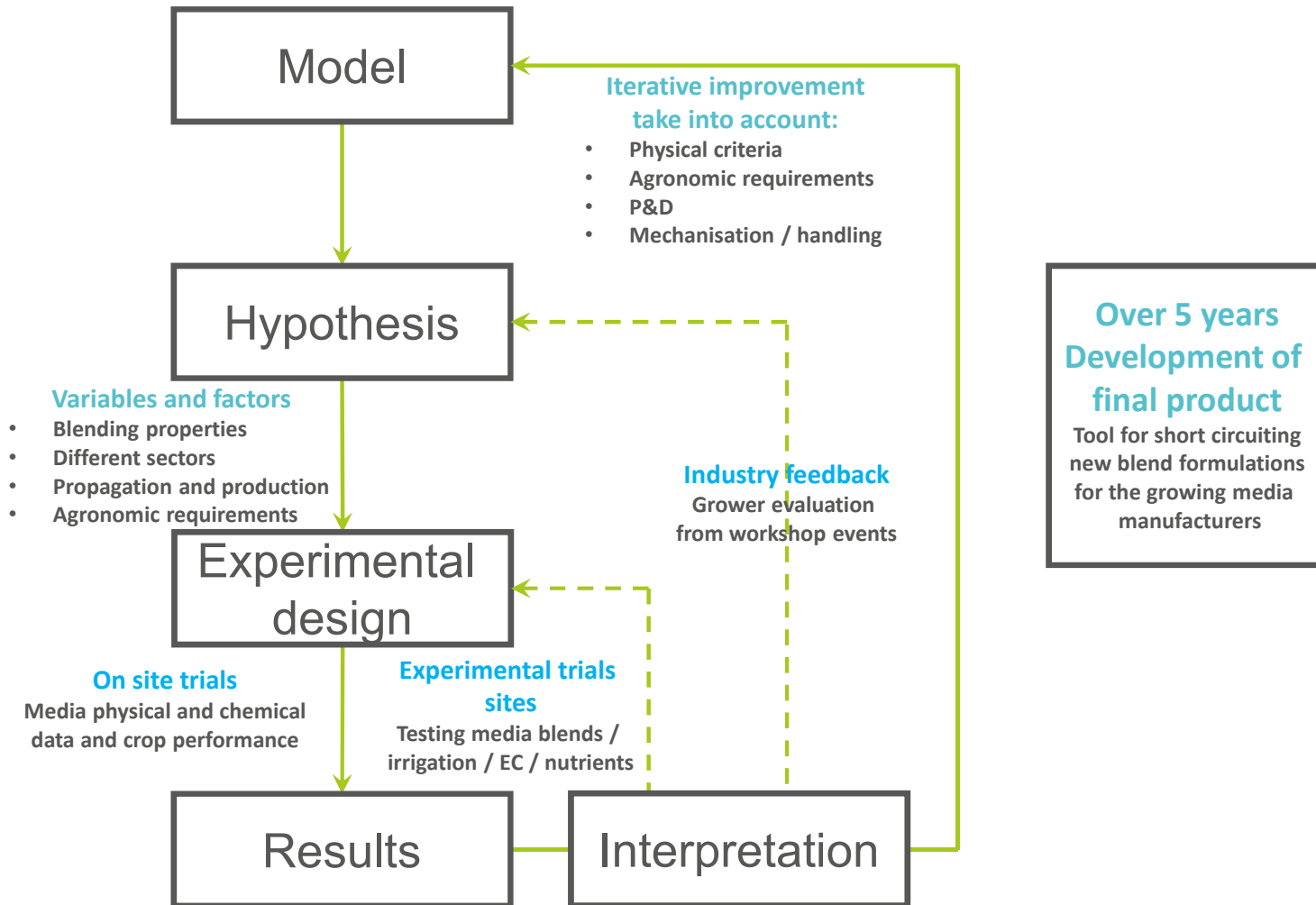
Commercialisation of **strategic** research



Programme of Work



Science



KT / Science - Workshop events

Sector	Year					Total
	1	2	3	4	5	
Mechanisation		Trial	Trial	Trial		3
FV		Trial		Trial	Trial	3
HNS (p)		Trial		Trial		2
HNS (m)		Trial	Trial	Trial	Trial	4
M			Trial		Trial	2
PE		Trial	Trial		Trial	3
PO (p)		Trial		Trial		2
PO (m)		Trial	Trial	Trial	Trial	4
SF (p)			Trial	Trial		2
SF (m)		Trial	Trial		Trial	3
TF			Trial	Trial		2
Total on site trial No.		7	9	8	6	<u>30</u>

Project workshop and trial events, where **p**, **m** and **w** denote respectively propagation, main growth phase and workshop respectively. Workshops will coincide with on site trials; there will be 30 trial / KT events in total.



Deliverables

- Final, interim reports, trade press articles, presentations and scientific papers which contain concise and accurate summaries of the project.
- Irrigation and nutrition requirements characterised for blend formulations.
- Mechanisation data related to modelled blend performance prediction to inform grower guidelines for practical use.
- Pest, disease and weed problems related to growing media blend type.
- Opportunities for growing media recycling identified.
- Post production or shelf life performance of plants of harvested products grown in selected media blends quantified and compared with MVM growing media performance predictions.
- Produce a reliable model for RSGM blends that will produce consistent, cost effective and high quality plants and plant products for growers.
- Useable guidelines for growers and GMMs to make robust and cost effective choices when selecting RSGM blends for selected plant types.
- To produce a range of growing media blends that will perform to a high standard for growers, but mitigates against the lack of availability of a single raw material.





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ARJAN VAN LEEST



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Coir - A Growers Experience

Chris Need
Roundstone Nurseries







Coir

- Great water relations - wets up well, holds water and good AFP
- Excellent rooting and establishment
- Very responsive to nutritional changes

The Development of Growing Media at Roundstone

- Peat, Loam and Slow release Nitrogen (5 Star)
- Peat, Clay and CRF
- Peat, Bark and CRF
- Peat, Woodfibre and CRF
- Coir

Base Nutrition

- Main Bedding Season one compromise mix – high enough levels to avoid nitrogen deficiency (always a potential risk with woodfibre) but low enough to give good establishment and minimise losses in Geranium and Antirrhinum due to root damage
- Now low start and each crop gets fed appropriately

Liquid Feeding

- With CRF in mix mobile Dosatrons for spot feeding
- With Coir - plumbed in Dosatrons feeding gantry irrigation on all owned sites usually with capability for two different feeds on demand

Tips

- Shows nutritional issues up very quickly
- Supply challenges
- Maturation and buffering must be done properly
- Need a good supplier





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The National Cut Flower Centre Ltd

HDC Project PO BOF 002

*Lily growing media work
package.*



Reasons for the trial

- Most boxed lily production uses peat.
- Looking for an alternative substrate for lily production because:--
- Peat is expensive and.....
- Environmental pressure to move away from peat.
- Very few independent trials have been undertaken in the UK!

First round of trials

- Boxed in week 21 using the variety “Dynamite” at a density of 18 per crate.
- Cold stored for 3 weeks and housed in week 24 with the growers commercial crops.
- Harvested and assessed in week 34.
- Overall stem length and weight when trimmed to 63 cm were recorded.

Treatments

- 100% lily peat.
- 100% Coir.
- 50% lily peat 50% Coir.
- Bulrush “Forest Gold” compost.
- 80% peat 20% Anaerobic Digestate (AD).
- 60% peat 40% (AD)
- Nb AD supplied by Staples and blended by Bulrush
- 50% lily peat “50% green waste”

Boxing Up



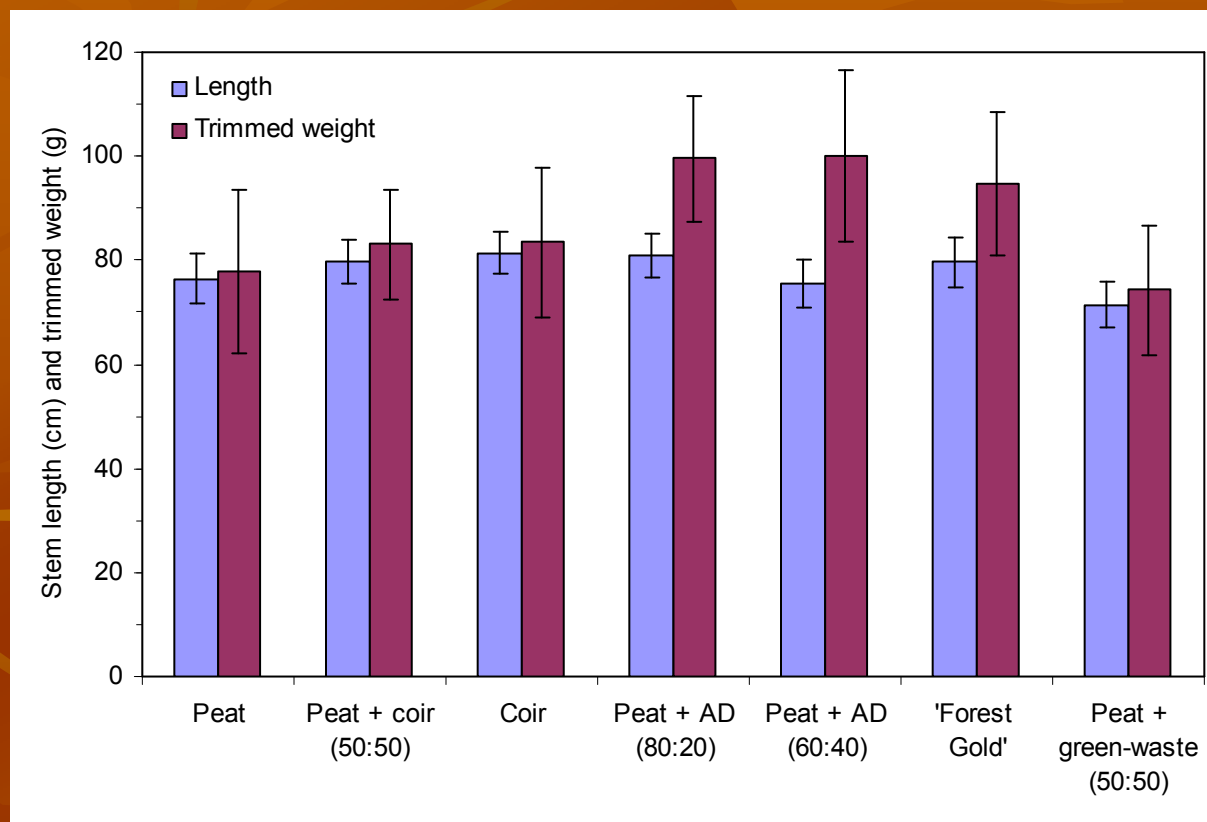
Boxing Up



Results (trial 1)

- All except for green waste produced stems as good as or better than standard peat.
- “Green waste” produced some stunted stems and chlorotic leaves.
- Slightly heavier stems in the AD and Forest Gold but could be due to base dressing.
- Coir performed as well as peat despite being consistently drier.

Results (trial 1)



Results –overall view of crop



Results (trial 1)

Lily Peat (Control)



100% Coir



Results (trial 1)

80% peat 20% AD



60% peat 40% AD



Results (trial 1)

Bulrush Forest Gold

50% peat 50% Green Waste



Second round of trials

- Boxed in week 28 using the variety “Dynamite” at a density of 18 per crate.
- Cold stored for 2 weeks and housed in week 30 with the growers commercial crops.
- Harvested and assessed in week 41.
- Overall stem length and weight when trimmed to 63 cm were recorded.

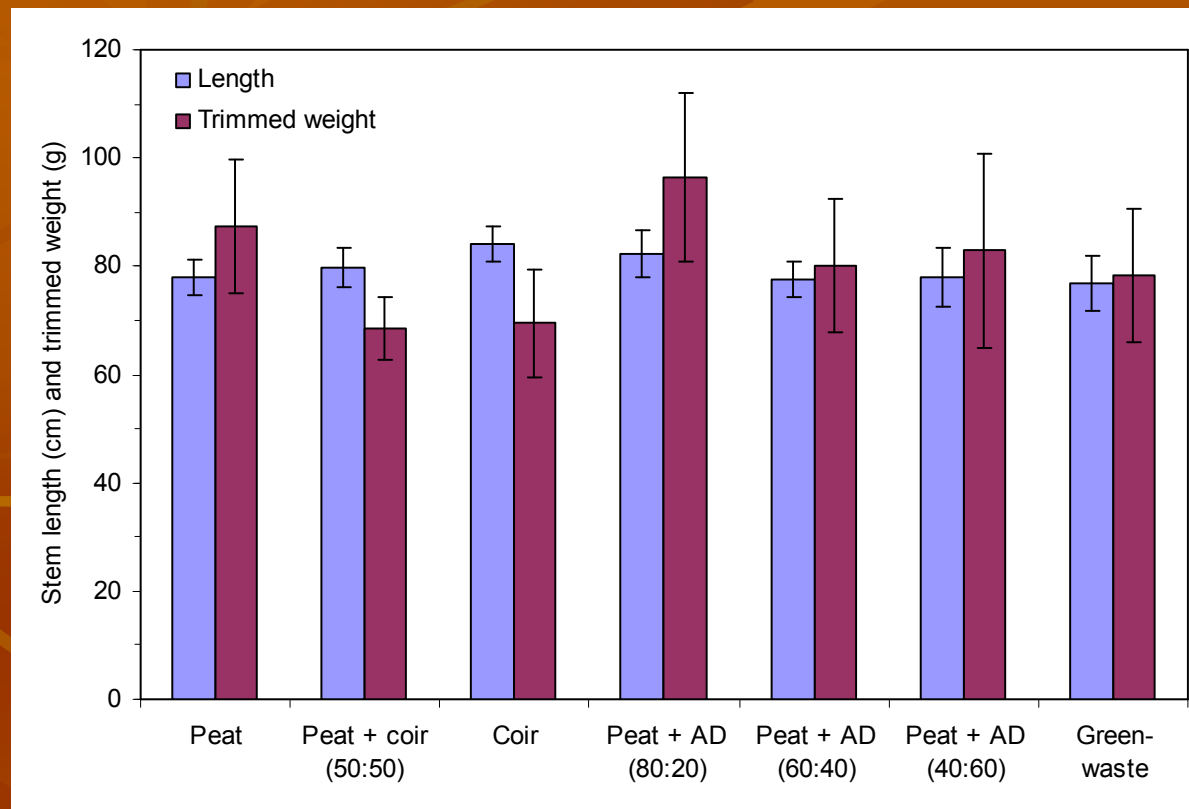
Treatments (trial 2)

- 100% lily peat.
- 100% Coir.
- 50% lily peat 50% Coir.
- 80% peat 20% Anaerobic Digestate (AD).
- 60% peat 40% (AD)
- 40% peat 60% (AD)
- Nb AD supplied by Staples and blended by Bulrush
- 100% “green waste” compost

Results (trial 2)

- All treatments produced stems that were marketable
- Coir produced slightly lighter stems in this trial but again they were drier than peat.

Results (trial 2)



2015 trials

- Repeat on a commercial nursery with larger plot sizes.
- If possible blend the AD with “lily peat” and no base dressing.
- Use only higher rates of AD (40, 60 and perhaps 80%).
- Use 50% lily peat and 50% of the second trial “green waste compost”.
- Try and price up the AD options.



Q&A