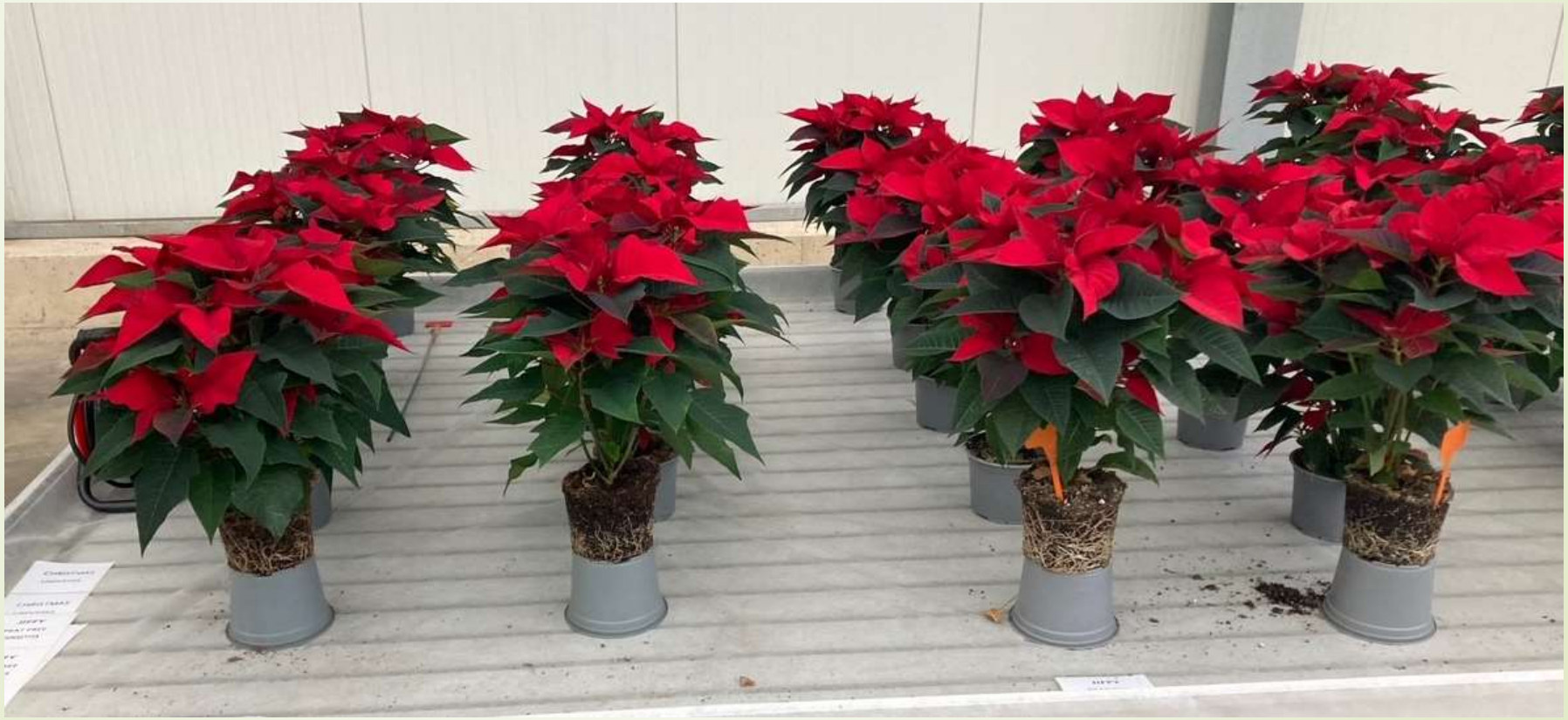
Challenges in development and use of PF mixes for growers

Presented by Neil Bragg

Poinsettia being successfully grown in Peat free mixes – Nov 2023

- Peat free plants



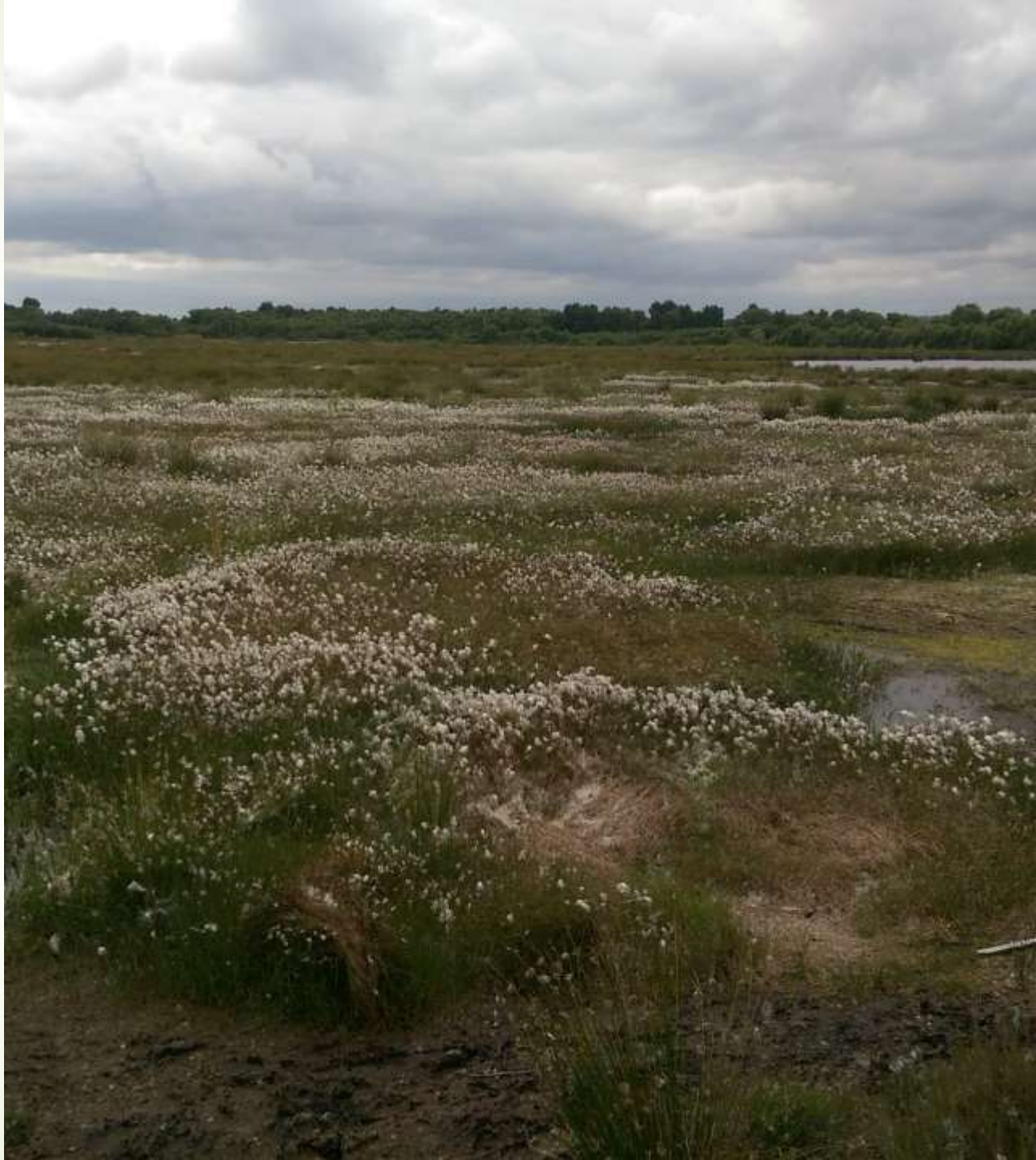
Materials currently available for mixes

- Wood/timber residues
- Coir
- Barks
- Composted GW
- AD
- Bracken
- Cork

  - Details around the materials can be found in the guidance doc for the RSS

What made peat so different:

- Was it the 5-10,000 years in the bog soup
  - Did the plant material become a fossil?
  - Was the process one of tannerlisation?
    - Preservation of the cellular structures
- The result was relatively stabilised OM
  - With good moisture retention properties
  - Relatively low available nutrients –
  - Extremely good long term shelf life



Fresh organic materials

- All newer organic materials are more susceptible to microbial breakdown, i.e. more easily composted- but note some young peats also show this tendency
- Therefore the available ‘N’ can rapidly be immobilised by microbial action
  - Therefore extra ‘N’ is needed in mixes and additionally in WS feeds

Nutrient loading:

- Fresh organic materials generally have high of specific elements:
  - Such as Potassium, chloride and sulphates, but are often low in available Calcium, Magnesium and Phosphorus,
- Therefore feeding needs to reflect the available nutrients and certainly high Potassium feeds are unnecessary and may limit the uptake of Calcium and Magnesium

Typical analysis results – using 1:5 by vol water extraction.

Sample Name	Order No	DENS	pH	COND	NH4-N	NO3-N	TON	Cl	K	Mg	Ca	Na	Fe	P	Cu	Mn	Zn	B	SO4
		g/l		us/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
COMPOST SEDUM PEAT FREE	POOR	371	7.3	86	<0.6	<0.6	<0.6	11.6	53.8	1.9	2.9	18.5	3.42	3.8	0.02	0.04	<0.02	0.16	57.2
COMPOST SEDUM PEAT FREE-GND	POOR	371	7	319	33.2	45.1	78.3	17.3	159.5	10.1	19.7	36.2	3.59	24.5	0.35	0.09	0.23	0.29	242.4
COMPOST SEDUM PEAT	GOOD	464	6.7	112	2.1	7.5	9.6	10.4	47.8	8	29.8	27.3	1.02	8	0.03	0.05	0.04	0.13	187.4
COMPOST SEDUM PEAT - GND	GOOD	464	6.4	436	41.5	58.4	100	16.9	128.1	21.3	88.3	42.2	0.72	33.7	0.4	0.15	0.21	0.3	462.9

Analysis of fresh PF mixes – what to look for and why

Sample Name	DENS	pH	COND	NH4-N	NO3-N	TON	Cl	K	Mg	Ca	Na	Fe	P	Cu	Mn	Zn	B	SO4
PEAT FREE 2KG MIX 12.29	254	5.90	571	80.40	148.8	229.20	55.50	366.9	31.90	39.50	48.4	2.17	35.20	1.16	1.79	0.7	0.72	423
PEAT FREE 2KG MIX 14.53	268	6.10	640	108.40	159.3	267.70	60.40	379.6	34.70	39.30	53.5	2.41	54.60	2	2.07	0.89	1.02	504

Typical European analysis

Resultaat		analyse	bij EC streef	laag	goed	hoog	basis schema	correcties	water + drain	A+B bak	totale gift
	pH	6,2									
mS/cm 25°C	EC	1,3									
Kationen mmol/l	NH_4	4,7	84								
	K	3,3	128								
	Na	0,7									
	Ca	0,3									
	Mg	0,3									
Anionen mmol/l	NO_3	2,3	142								
	Cl	0,5									
	S	2,9									
	HCO_3	< 0,1									
	P	0,55									
Spoor-elementen µmol/l	Fe	10									
	Mn	7,7									
	Zn	4,2									
	B	19									
	Cu	0,6									
	Mo	< 0,1									
mmol/l	Si	0,11									

Leachability and Water holding

- Many of the mixes of new ingredients have good AFP's
  - However this may also mean that they do not retain soluble nutrients as well and excess overhead watering can lead to leaching of nutrients,
- The retention of water may well be less than peat based mixes and so the use of wetter and or swell gels may be desirable,
- The factors above may well reflect shorter shelf life of products

So what are the challenges

- Get to know the new materials and mixes
- Run trials of the new mixes but to optimise their use
- Have regular analysis of the fresh mixes to become familiar with the available nutrients,
- Select a regular feeding program to avoid deficiency creeping in,
- Look at the watering of the new mixes very carefully.

Thank you for listening

- Any Questions?