Growing media- future outlooks and trends

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Topics

- What is the Horticultural market in EU, main figures.
- What share do Baltic Peat Moss and Peaty substrates have from the total EU Growing media market
- Which alternative growing media products and volumetric additives are we using today and their advantages/disadvantages
- Where they are coming from and how sustainable is the source
- Main challenges for the Horticultural industry
- Production of which crops is growing today?
- Food factories
- Future challenges for the Peat Industry

Horticulture market in EU

The total value of the modern Horticultural market in EU is evaluated at approx. 72 Billion.€.

This figure includes:

➢ Sales of fruits (including melon and watermelon) :	ca. 21,5 Billion. €
➢ Sales of Flowers and Plants:	ca. 18,0 Billion €
➢ Sales of vegetables:	ca. 32,5 Billion. €
➢ Total EU	72,0 Billion €

The total turnover of the Growing media sector in EU based on the figures of Growing Media Europe is 1,3 Billion € (ca.23-25 €/m3)

- To create this figure approx. 55-57 Mio.m3 of substrates were used.
- From this amount, approx. 40 Mio.m3 of Peat as a raw material was used

Input in Total volume from Baltic States

Year	Estonia		Latvia		Lithuania		**Total**
	mT	M3	mT	m3	mT	M3	**M3**
2014	829 700	3 318 800	907 260	3 629 040	641 400	2 565 600	**9 513 440**
2015	716 200	2 864 800	1 222 280	4 889 120	719 000	2 876 000	**10 629 920**
2016	517 000	2 068 000	812 774	3 251 096	587 500	2 350 000	**7 669 096**
2017	645 700	2 582 800	851 594	3 406 376	626 750	2 507 000	**8 496 176**

From the total processed volume the Baltic Peat is approx. 20-25% of the total.

Coir and Fiber:

- Limited availability in general. I believe that there will be no significant increase in volume.
- Highly impacted by the climate change factor. Increasing length of the monsoon period decreasing production capacity
- Very Big problems with the environment due to pollution of chemicals used for washing and buffering of fibre.
- Problems with clean water availability in some regions of production.
- High risk of pollution by nematodes, human pathogens etc.
- High demand of the chemical industry for fibre
- Horticultural Industry basically using residue from cocoa production.

Consumption – 5 Mio.m3 per year

Wood-fiber:

- Rapidly growing demand on the product, due to „unlimited“ availability.

  For some reason, we are convinced by this statement !!!
- Widely used in hobby products because of the environmental lobby
- Having several disadvantages such as very low water absorption capacity, nitrogen absorption complex, a risk of growing fungi. (mainly Leucocprinus Bilaumii)

Total use of Wood-Fiber ca. 1,8-2,0 Mio /m3

Problems:

- **The demand of the energy sector increases rapidly**
- **Prices for wood-chips increased in the last 8 months by 42 % from 12 to 17€ / MWh!!!**
- **Availability is very LIMITED !!! Most of the wood formerly used as fire-wood is used today as cellulose timber due to the very attractive price.**

EU consumption of „alternative“ raw materials for production of Growing Media

- Rockwool and Polyurethanes foams

- Clean
- Inert
- Available in unlimited volumes
- Suppliers providing to the grower full service, starting from sales, delivery up to utilization afterwards.

Used ca. 1 Mio /m3

- From 45 kg of a mix of Basalt+Diabaas+Coke = 1 m3 of Rockwool

- Compost

- Heavy
- Having not very stable chemical properties even from the same supplier
- Mainly used in the hobby substrates
- At the moment popularised by some of the professional substrate companies

Used ca. 1 Mio /m3

Which main challenges can our industry see ahead?

How to feed the World in 2050?

- In 2050, the earth's population will be 9 billion, 70% of whom will be living in urban areas. This growing urban population will need access to healthy food.
- Continuous and increasing demand for land resources has had a negative impact on the area and quality of land available for food production.
- Less than 1% of the earth's fresh water is easily available and suitable for human use. 70% of that water is used for irrigation in agriculture.
- The human race is “trapped in a vicious circle”, we will need to grow 50% more food by 2050 to feed 9 billion people ... but agriculture, which is paradoxically vulnerable to climate change, generates 25% of heat-trapping greenhouse gas emissions that lead to climate change.
- According to Stephen Hawking prognosis made in 2017, humanity has only 30 harvests left in conventional way of agriculture.

How can we achieve this?

- **To achieve this, we have to triple our yield per m2**
- **This target can only be reached by shifting plain open soil crops towards to cultural – grown in substrates.**
- **We will need to produce much more young plants starting from Lettuce and herbs up to Young Tree first grown in Cultural conditions using substrates.**

Which crop production are growing ?

Soft Fruit production

- Rapidly growing need for substrates for Blueberries, because this fruits related towards healthy food. Very large surfaces are established in South Africa and South America. In Europe Hungary, Romania, Serbia, Macedonia. (EU Support)
- Very big increase on substrates for Strawberries. Mainly caused by the Worldwide reduction of use of pesticides and prohibition of open soil fumigation. Due to that, the strawberry is very sensitive after sales (accumulation of residue of pesticides.)

AS THE RESULT OF AN INCREASING DEMAND ON COARSE SUBSTRATES AND SODS!

Mushrooms

- Consumption of the Butter mushrooms increased in EU by 18,5% in the last two years. (Eurostat)
- Reason for increase – Popularization of vegan food.

AS A RESULT, INCREASED DEMAND FOR CASING SOIL!

Which markets are growing already today !

Production of broccoli and lettuce increasing in Spain, Portugal, Morocco by 3-4 % per year

(Spain giving 12,7 % of all vegetables in EU) Eurostat.

- Increasing demand for vegetarian food
- Healthy way of life

AS THE RESULT, INCREASED DEMAND FOR SEEDLING SUBSTRATES !

Needed Raw materials by 2050

Required amount of raw materials to fulfill the need by 2050 in Mio. m3:

	2017	2050	Sources
Peat Moss	40	80 ???	Russia/Baltics – Doubting!
Coir	5	35 ???	Absolutely Limited availably
Wood Fiber	2	25 ???	Most consumption -energy
Bark	1	10 ???	In Portugal not so many trees
Compost	1	5	Maybe
Perlite	1,5	10 ???	Shortage of Raw material
Stone wool	0,9	4	Maybe
Soils/Tuffs	8	33	Maybe, but mostly NOT
New		23	**Most likely !!!!**
Total:	**59**	**244**	

We are missing today from this calculation 120.000.000. m3 of Growing media !

„ Food factory“!

Multiple Layer Growing technology

- Benefits

- Reduce cultivation time
- Better controlled cultivation process
- Continues delivery all year around
- More efficient use of space
- Saving plant protection

Food factory

Food factory

Food factory

- In Japan since 2011-2013 more than 300 new food factories were built.
- What initiated this activity?

Food factory

- One of the biggest constructed Food factories in Holland has the following technical characteristics:

❖ Total surface	30000 m2
❖ Number of layers	11
❖ Total growing surface	330000 m2
❖ Planned output of lettuce	7.500.000. plants per year
	(20.500 plants per day !!!)

- Biggest Food factory in Singapore (Under construction at the moment)

❖ Total surface	50000 m3
❖ Number of layers	14
❖ Total growing surface	700000 m2
❖ Planned output of lettuce	12-14.000.000 plants per year
	(35-37.000 plants per day)

If every Hamburger requires 1,5 lettuce leaves, then daily production is good enough to feed every citizen of Tartu including newly born babies with 3 Burgers a day.

Food factory

New technology

- What problems can Peat Industry face with these particular technological developments?

➢ New „ Multiple layer technology“ practically not using peat substrates in the „common“ way

➢ New players appear on the market

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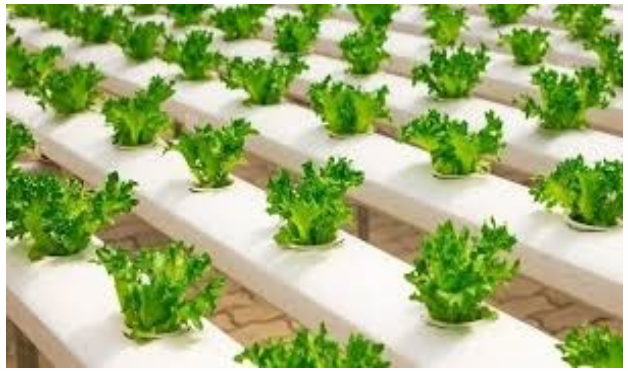
Who will be the winner ?

Who will be the winner of this race?

OR



Challenges for Peat Industry

- Peat Industry has to stand for the popularisation of their own product – IT´S ORGANIC and natural
- Need to develop a sustainable supply-chain for products. Maybe enter partly also in Farming and Growing business. Become a closed circle industry.
- We need to somehow minimise the weather factor which is becoming more and more important because of the climate change. **LAST SUMMER WAS AN EXCEPTION!**
- Need to invest in R&D for development of the harvesting methods - because of the growing demand, if we want to exist as an Industry in 20 years time, we will need to harvest also in winter months.
- Need to develop a completely new range of products based on Peat Moss, possibly with new organic/mineral additives – for example Baltic casing soil, Organic fiber plugs not as a unique product, but as a cheap and widely used product suitable for „Food Factories".
- **However good the harvest is now, it will not be enough to cover the need in 20 years.**

Thank you very much !!!