Strategies to flatten labour peaks in strawberry cultivation

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08/01/2026

ISFC – ‘s Hertogenbosch

ondernemen in west-vlaanderen

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ONDERZOEK & ADVIES IN LAND- & TUINBOUW


Tomato
Estimated workload
Production
Time


Strawberry
Estimated workload
Production
Production
Production
Time




Challenge

- Qualitative labour forces are getting scarcer
- High dependency on seasonal labour force
- Labour cost is increasing

Towards a solution

- Predictability of workload is essential in optimizing deployment
- Flat production curves bring stability
- Controlled environment propagation (CEP) offers opportunities

Interreg
Vlaanderen-Nederland

Gefinancierd door de Europese Unie

PlantGoed

02/’24 – 01/’27

Higher efficiency in soft fruit cultivation through system innovations and on demand plant propagation

van der Avoird Trayplant
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Research question: How can we benefit from CEP to flatten production profiles

New production strategies ask for innovative propagation strategies

- Cooled plants

+ Relative low propagation cost

  ‘ to the rhythm of nature ’

+ Well established

– Dependent on outdoor conditions
– Risk of fridge failure
– Slow degradation of quality
– Planning year in advance

- Fresh plants

+ Freedom to operate
+ More control over characteristics

  ‛ JIT and on demand ’

+ Limited cooling cost and risk

– CEP required (GH / VF)
– Higher operational cost
– New strategies to be developed

New production strategies
ask for innovative propagation strategies

planting date - cultivation system
cultivar (HC-JB / LC-JB / EB)
substrate volume (P, MT, T)
fertilisation
propagation length

NEW
light (daylength, intensity, spectrum)
temperature
RH

- Fresh plants

+ Freedom to operate
+ More control over characteristics
  ‘ JIT and on demand ’
+ No cooling costs and risk

– CEP required (GH / VF)
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Co-creation

- Idea collection
- Specify product(ion) requirements
- Prioritising
- Reflection and discussion

- Stakeholders
  - Strawberry growers
  - Soft fruit plant propagators
  - Crop advisors
  - Product organisations

Idea collection

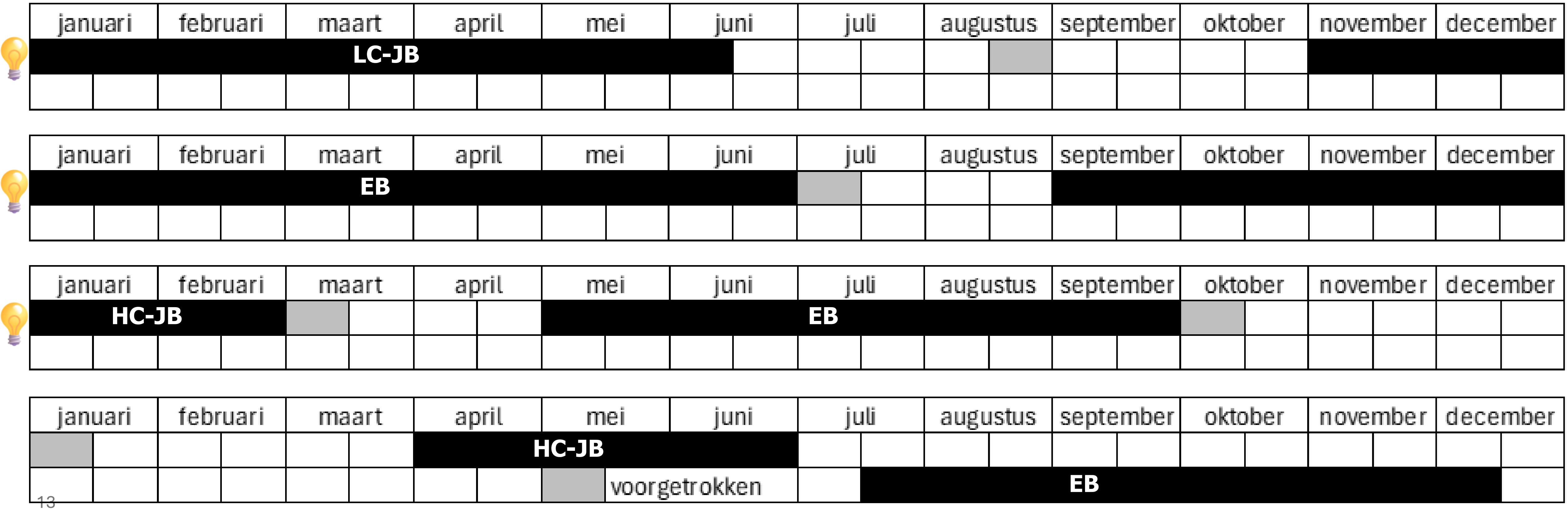
- which (combination of) cultivation systems exist

Listing requirements
- what do we want ideally?

Reflection and discussion

A list of interesting production strategies

Some of the ideas…



Benchmarking new production strategies

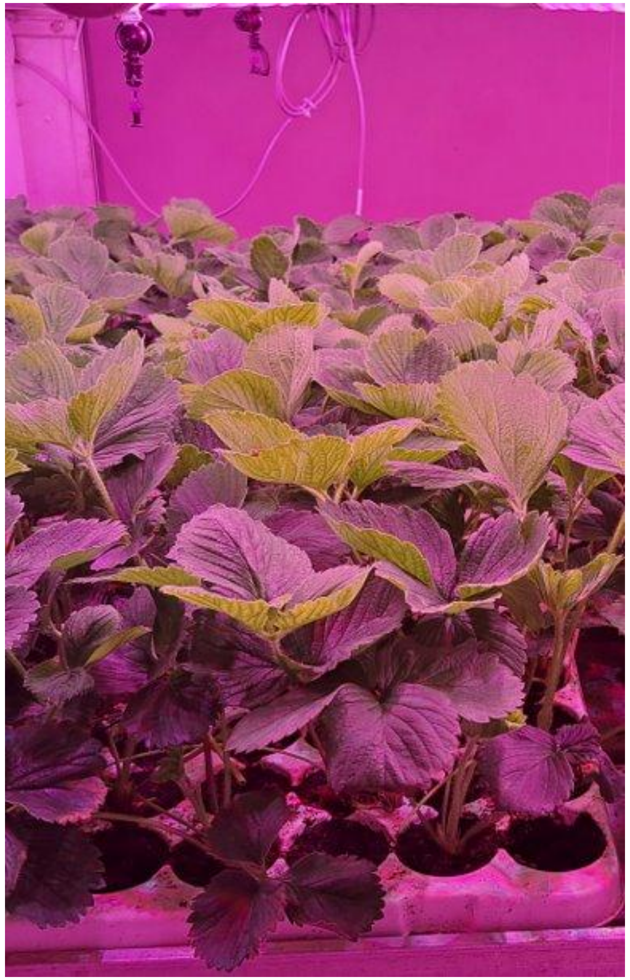
- LC-JB 'Inspire' – Lighted winter-spring cultivation

Cutting date: wk 26 in VF

Planting date: wk 38 (10 pl/m, type minitray)

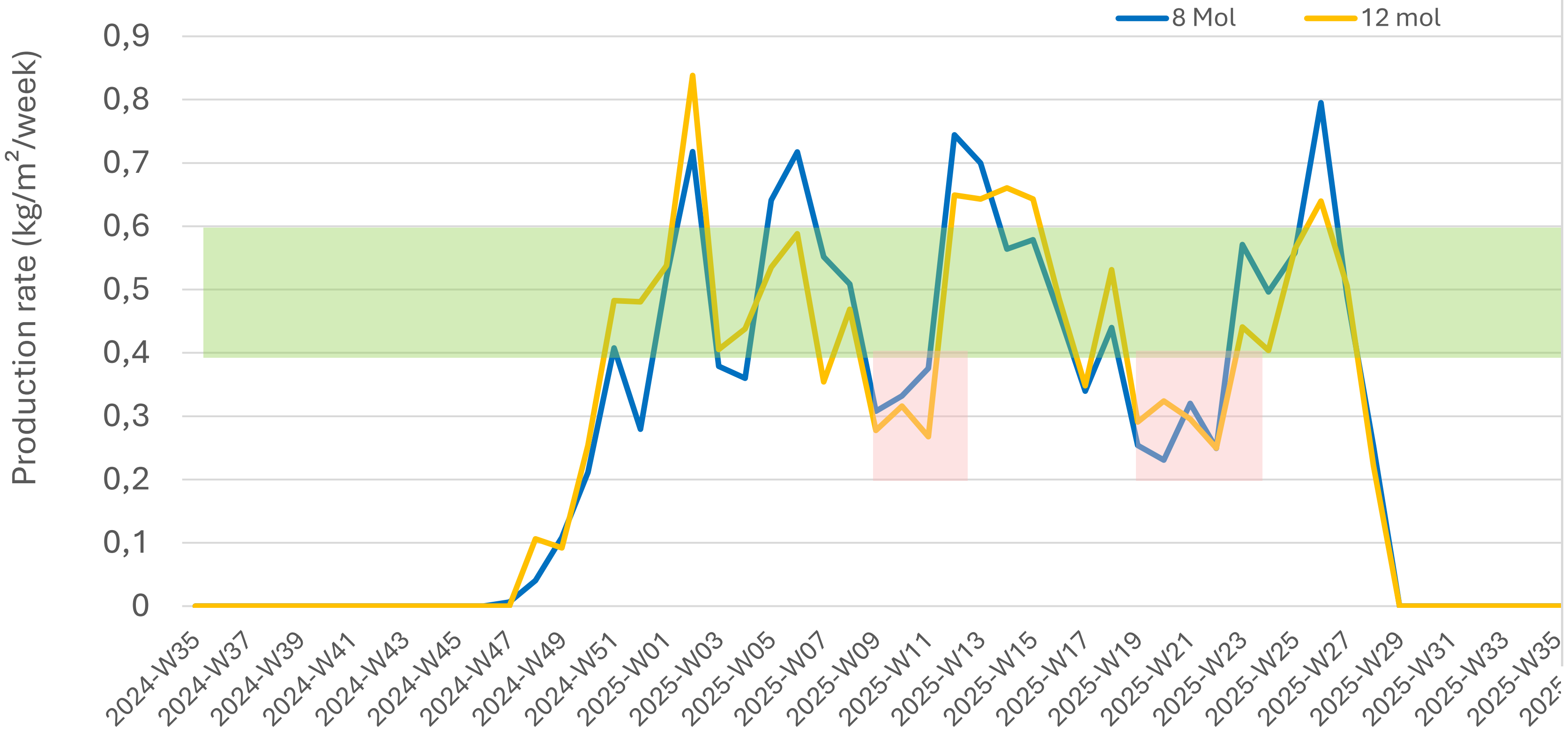
Propagation specs:

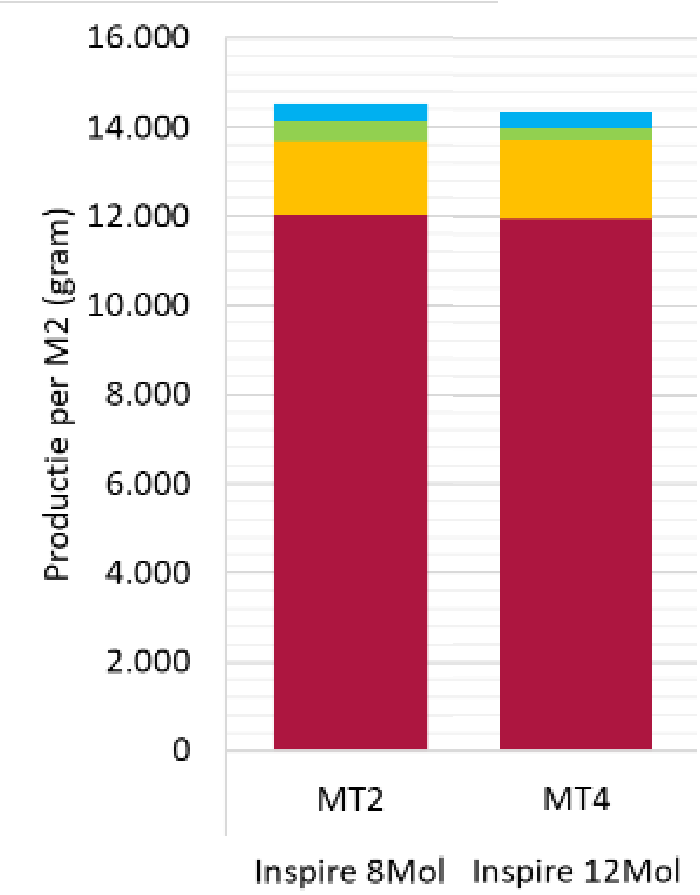
- RH: first 2 wk in plastic bags (100%), next 65-70%
- Daylength: first 5 wk 16h, next 12h
- Light intensity: **8 and 12 mol**
- Spectrum (RGBFr): 75 – 10 – 10 – 5
- Daily temperature: 20,3 °C



Benchmarking new production strategies

- LC-JB 'Inspire' – Lighted winter-spring cultivation





Benchmarking new production strategies

- EB 'Florice' – lighted year production

Cutting date: wk 26 in VF

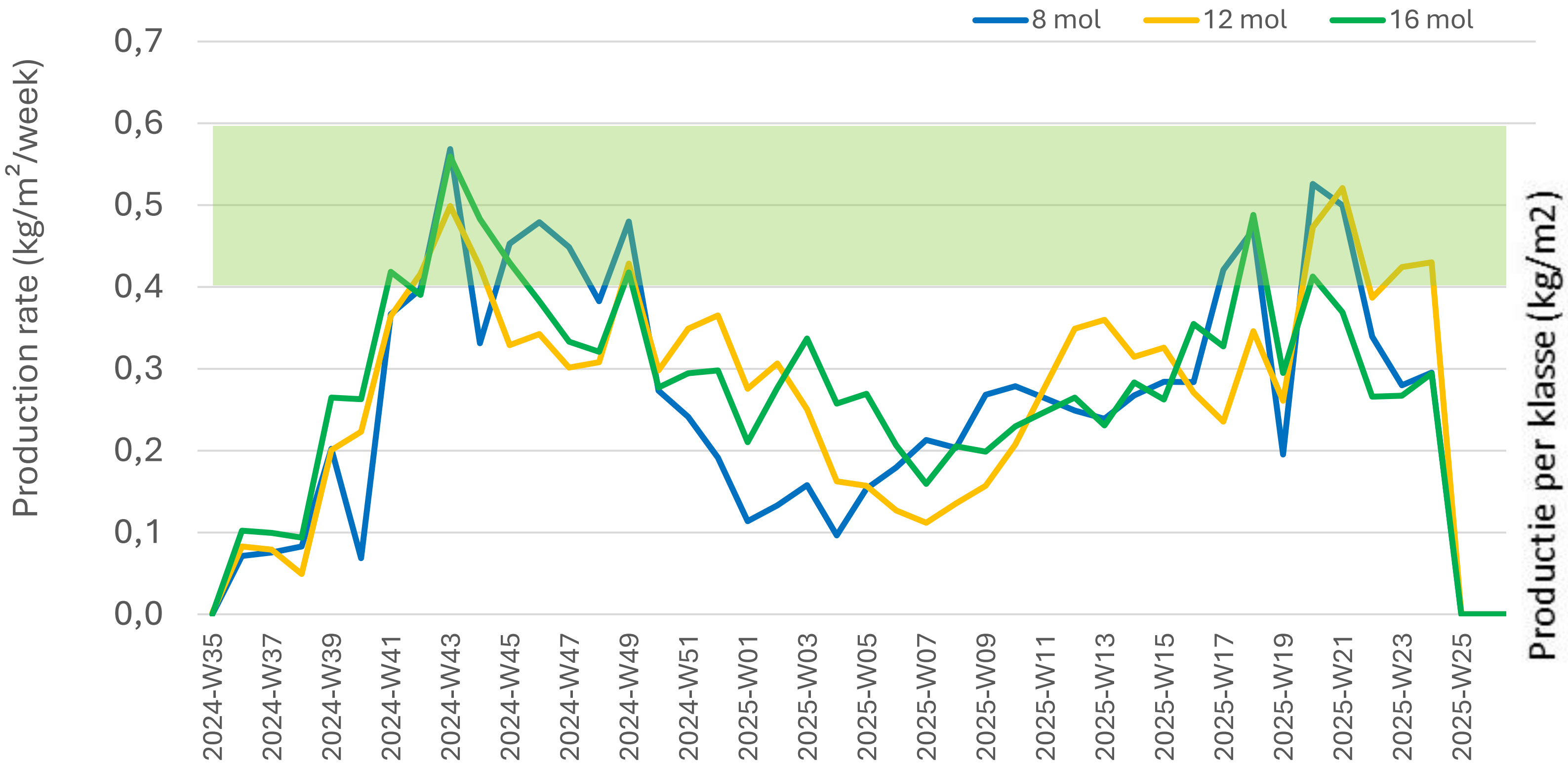
Planting date: wk 32 (8 pl/m, type minitray)

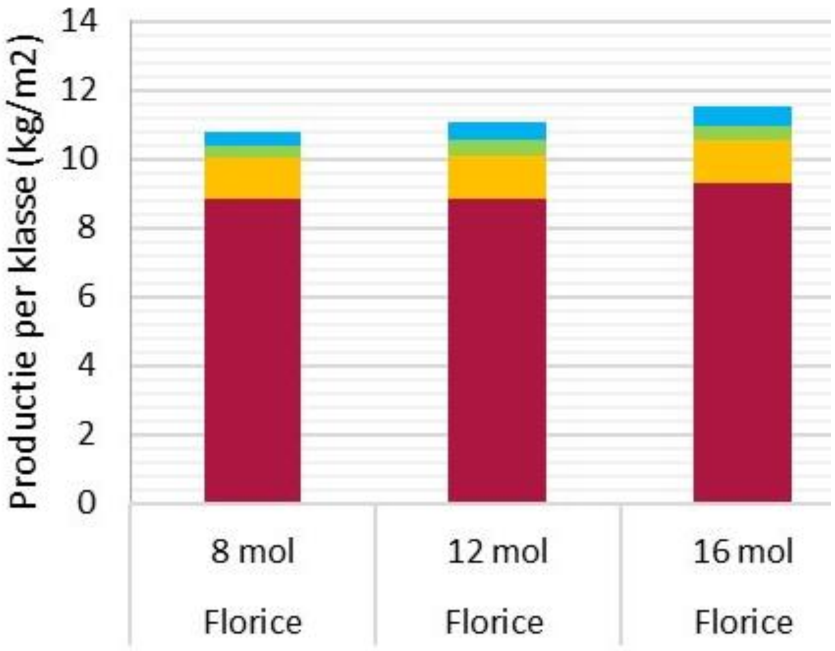
Propagation specs:

- Daylength: 16h
- Light intensity: **8, 12 and 16 mol**
- Spectrum (RGBFr): 75 – 10 – 10 – 5
- Daily temperature: 20,3 °C

Benchmarking new production strategies

- EB 'Florice' – lighted year production





Benchmarking new production strategies

- EB 'Florice' – March/May planting following winter/spring cultivation

Cutting date: wk 4 & 13 in VF

Planting date: wk 10 & 19 (6 pl/m, type minitray)

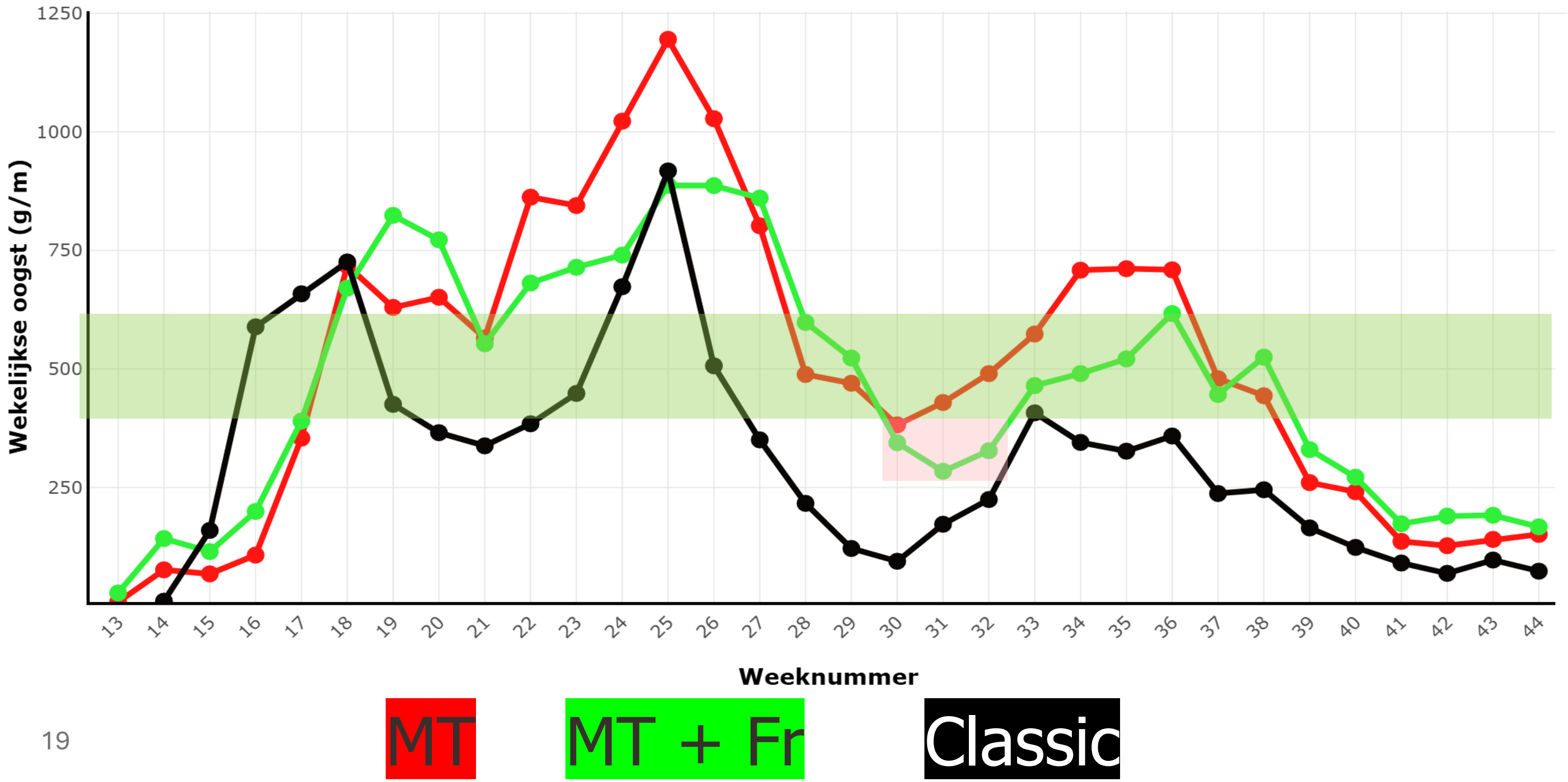
Propagation specs:

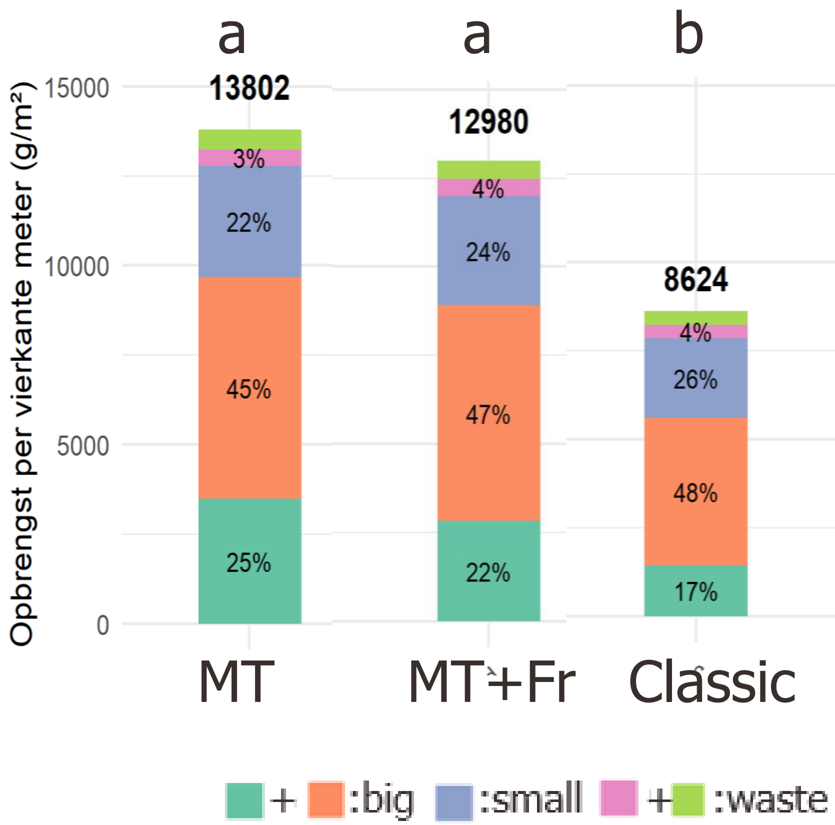
- RH: first 1 wk in plastic bags (100%), next 70% (for rooting)
- Light intensity: 11 mol

	first 3 wk (veg)	last 3 wk (gen)
- Daylength:	10h	16h
- Spectrum (RGBFr):	80–10–10-0	80-7-13 (±50 µmol Fr)
- Daily temperature:	21,3 °C	22 °C

Benchmarking new production strategies

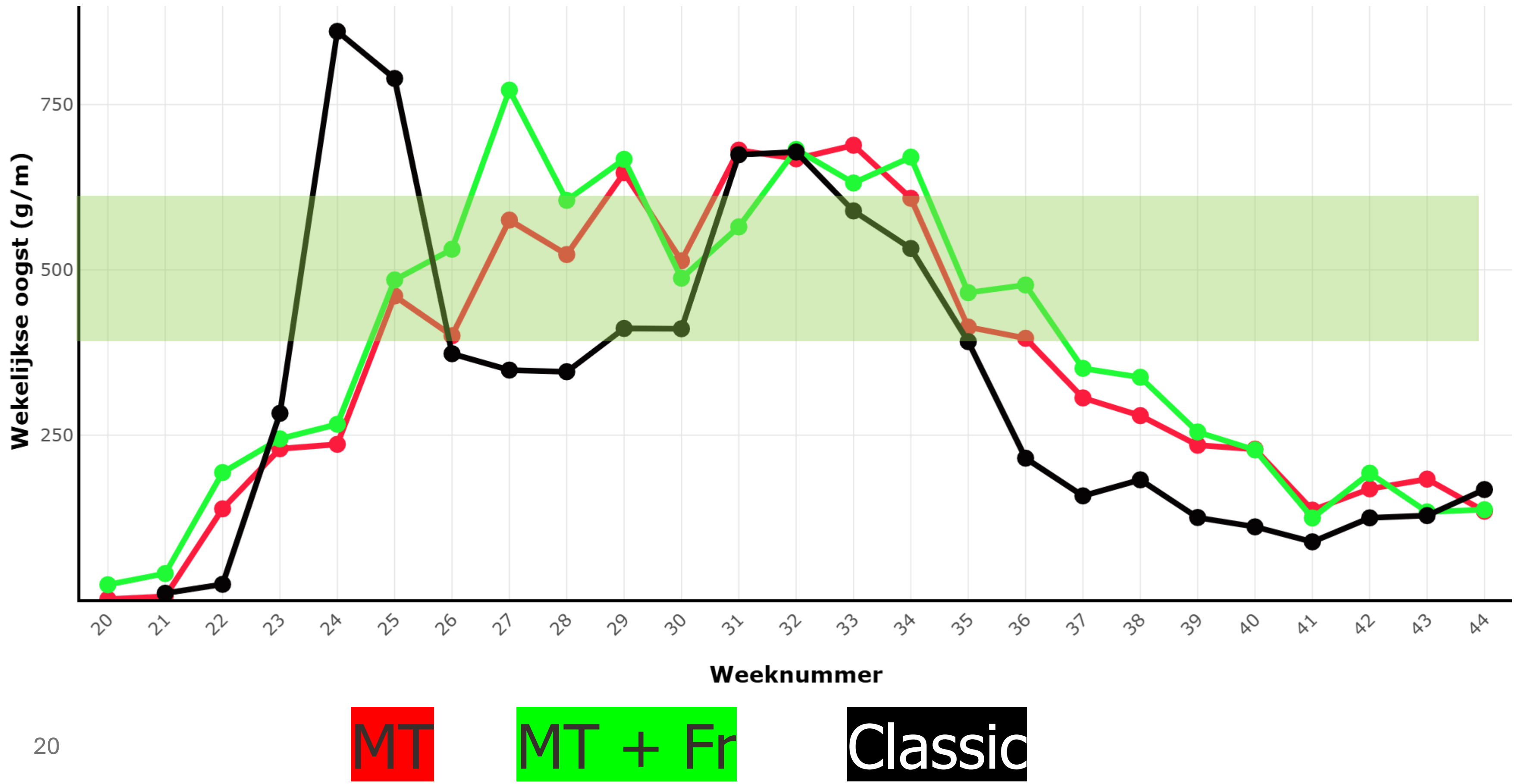
- EB ‘Florice’ – **March** planting following winter cultivation

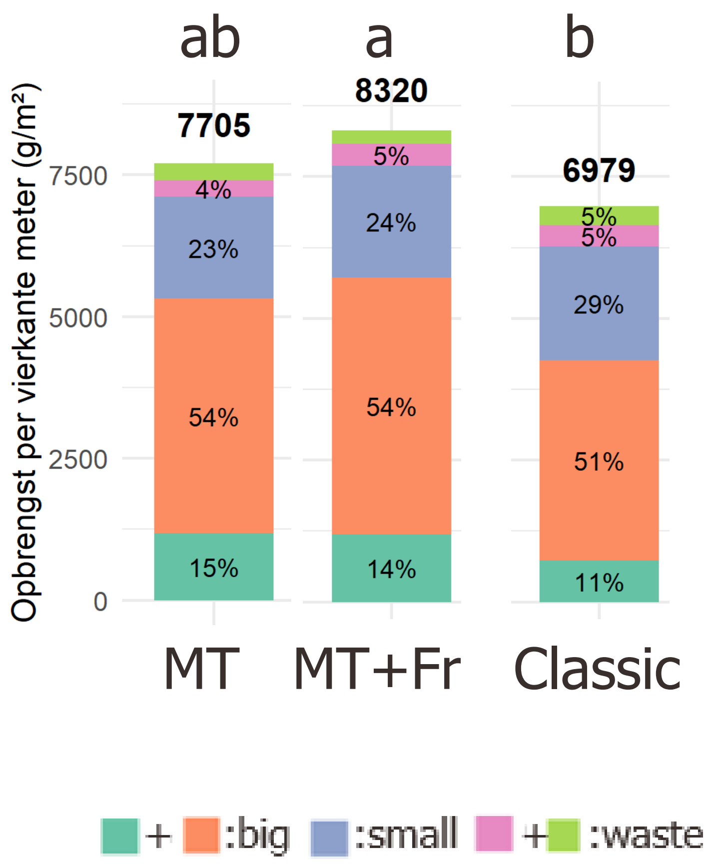




Benchmarking new production strategies

- EB ‘Florice’ – **May** planting following early spring cultivation





Benchmarking new production strategies

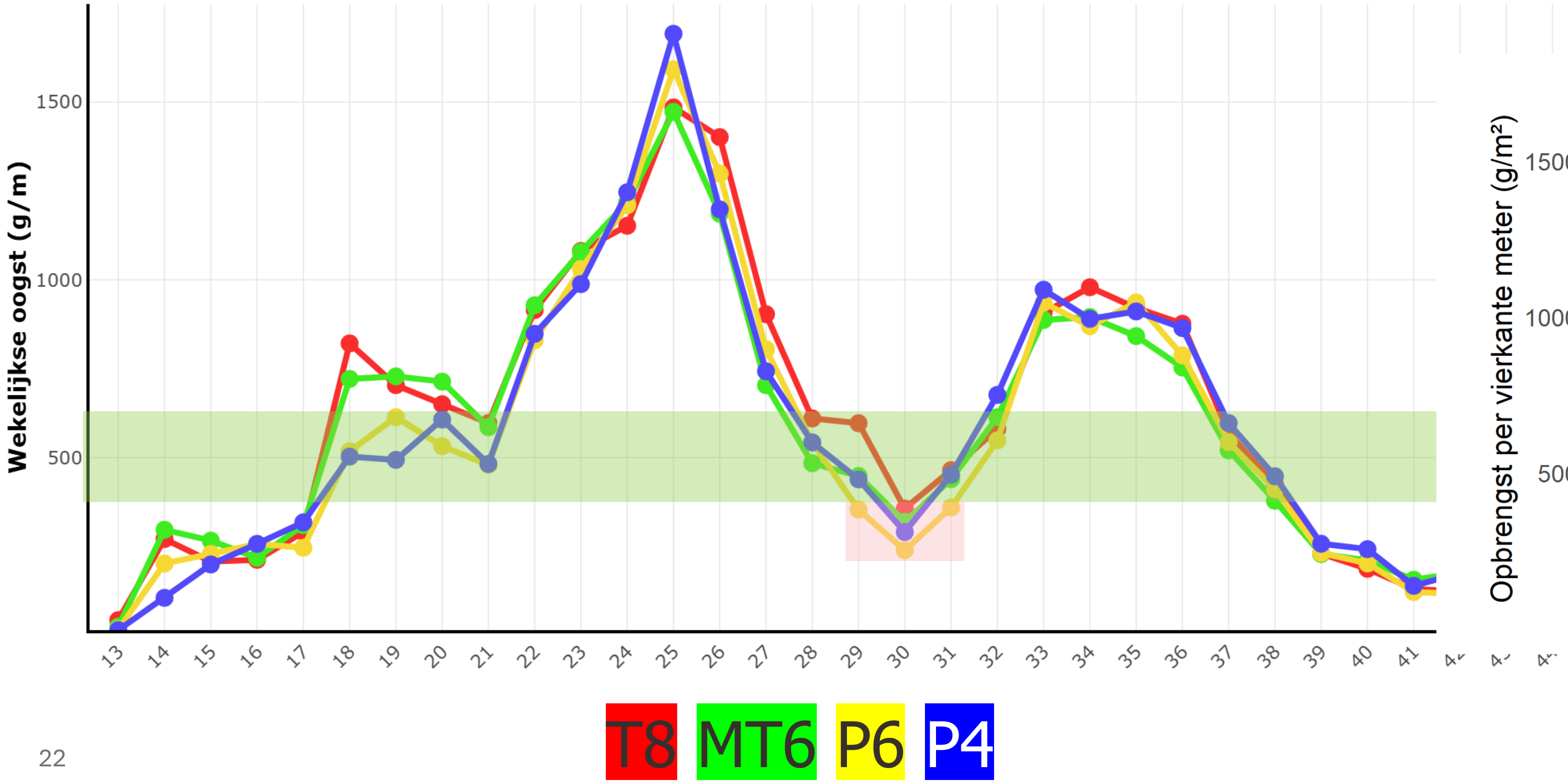
- EB 'Karima' – March/May planting following winter/spring cultivation

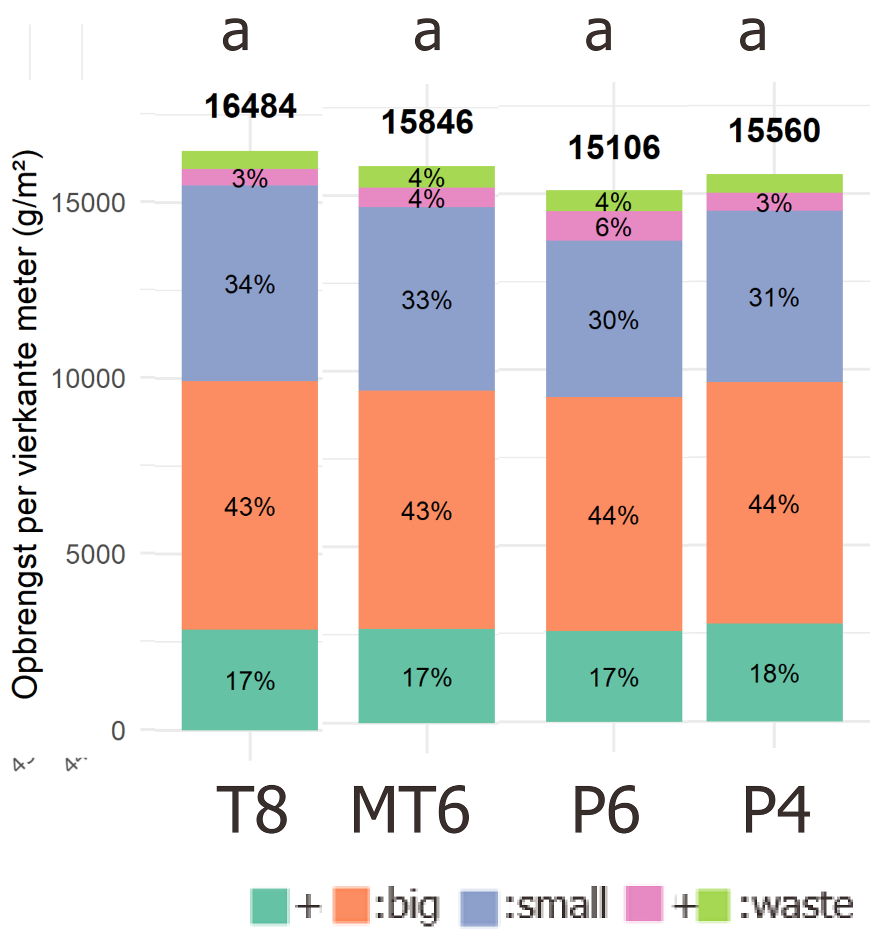
Planttypes: 8wk **tray** (T8)
6wk **minitray** (MT6)
4&6wk **plug** (P4-6)

	March	May
Cutting date:	wk 2-4-6 in GH	wk 11-13-15 in GH
Planting date:	wk 10 (6 pl/m)	wk 19 (6 pl/m)
Propagation specs:		
- Light intensity:	237 µmol	0
- Daily temperature:	14,5 °C	17,5 °C

Benchmarking new production strategies

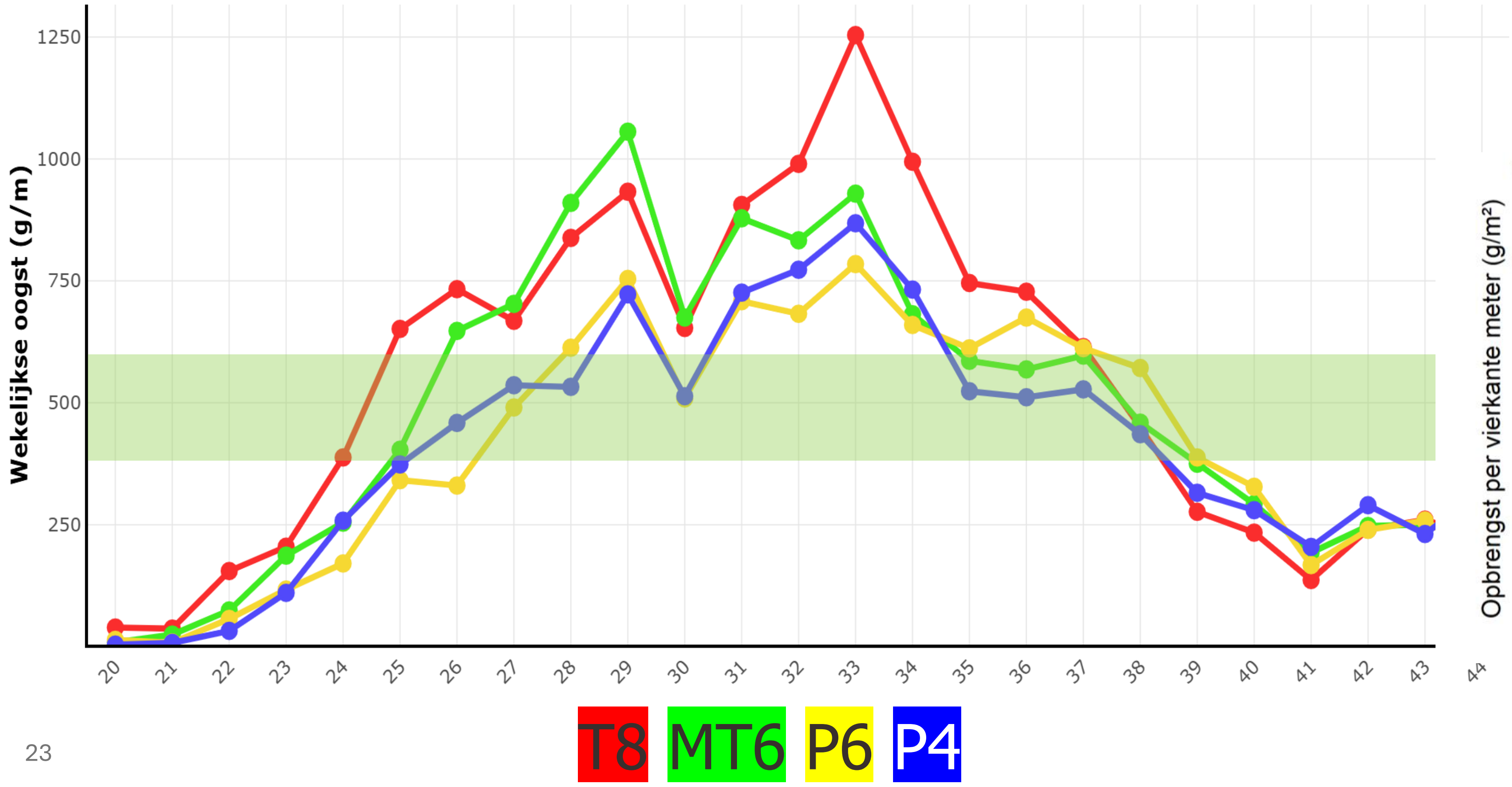
- EB 'Karima' – **March** planting following winter cultivation

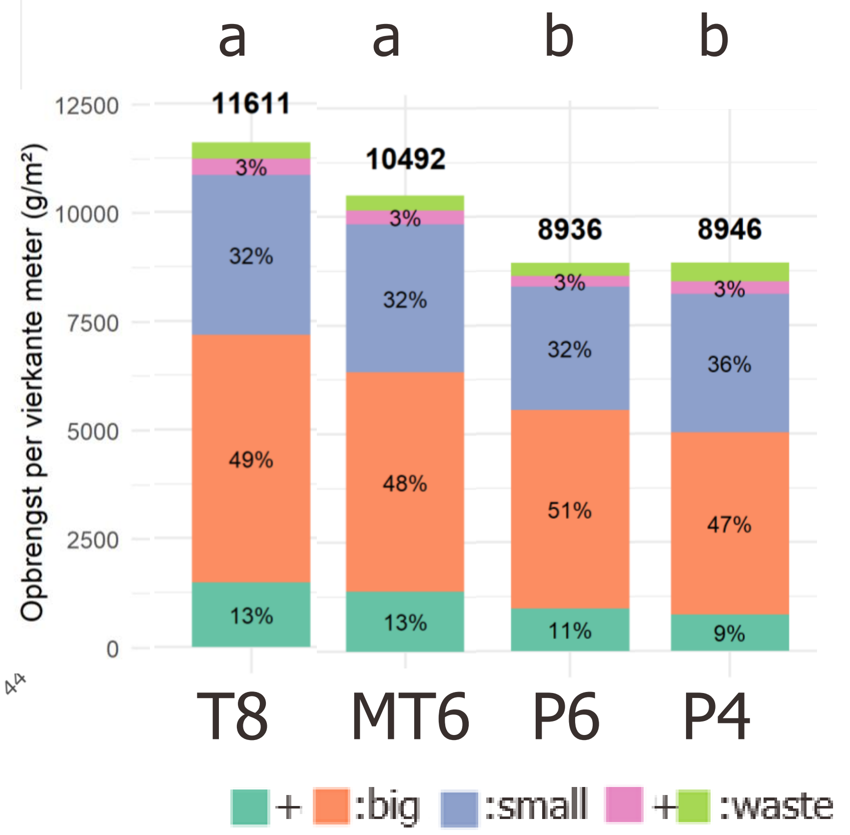




Benchmarking new production strategies

- EB 'Karima' – **May** planting following early spring cultivation





Take home messages

- Both EB and LC-JB have the potential to produce for a longer period
- More light during propagation doesn’t equal more production
- Try to avoid heavy plant load as it leads to inbalance
- Fresh plants show more gradual production start and less peaks
- Planting date determines optimal substrate volume

Future prospects of PlantGoed

- Co-creation: 21/01 @ ISFC Horst
- More benchmarking of innovative cultivation systems
  EB / LC-JB – lighted & unlighted
- Demonstrations in BE and NL
- Publishing our findings in the PlantGoed-vademecum

Thx to the PlantGoed team

van der Avoird Trayplant 'Focus on detail'

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Questions?

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> Or ask one of the partners about the project

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