

Delphy Innovative Soft Fruit Centre Berry Research

Jordbærkonference 2022



Worldwide Expertise for Food & Flowers

Introduction

- ✦ Delphy since June 2017
- ✦ Manager Delphy ISFC
- ✦ Main activities:
 - Research
 - Consulting
 - Events
- ✦ Focus:
 - High-Tech
 - Substrate cropping
 - Strawberry, raspberry, blackberry & Blue berries



Introduction Delphy

- ✦ Knowledge Development
- ✦ Knowledge Implementation
- ✦ Independent Experts

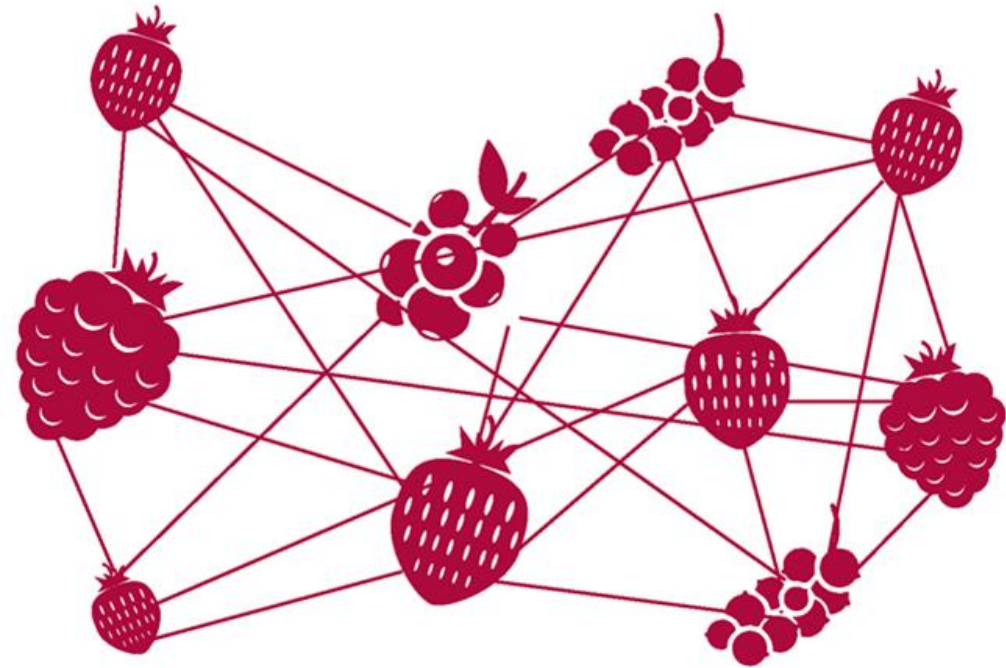
Worldwide Expertise for Food & Flowers

- ✦ 250 employees
- ✦ All plant related sectors.
- ✦ Advice, training, research & international project development.
- ✦ International



Delphy Innovative Soft Fruit Centre (ISFC)

- ✦ What do we want to be?!
 - Breeding ground for knowledge & Innovation
 - Meeting place for the soft fruit industry
 - Connecting research and practice



- ✦ International hotspot of the soft fruit industry!

Delphy ISFC knowledge development

- ✦ Base elements:
 - High-tech till mid-tech
 - Focus on soft fruit
 - Private, public and private-public research
 - Connection practice and research
- ✦ Facilities:
 - 3.000m² greenhouse
 - 2.000m² outdoor production systems
 - 1.000m² propagation field
- ✦ Team:
 - Delphy ISFC → 5 FTE
 - Delphy Consultancy team's soft fruit



Plant propagation trayfield



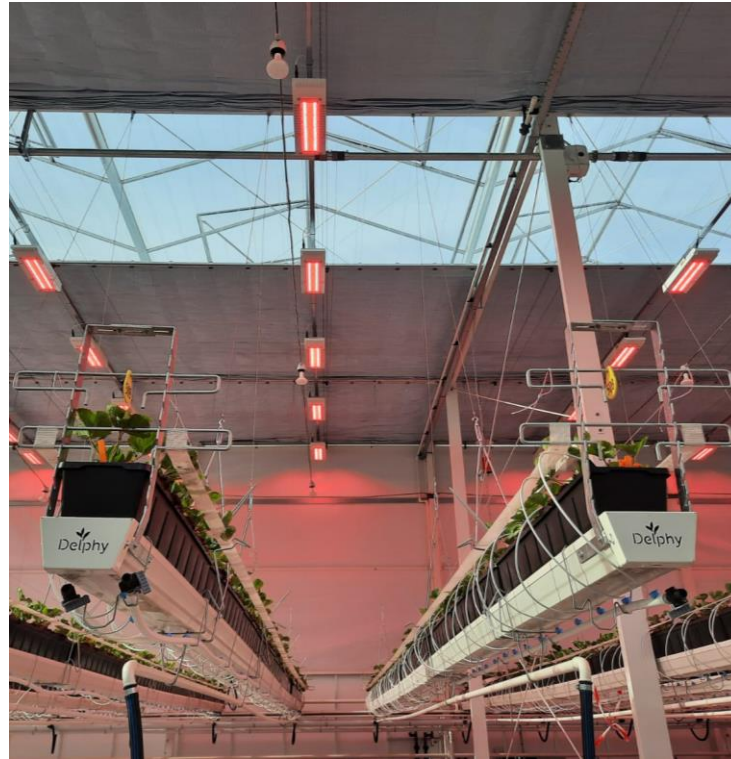
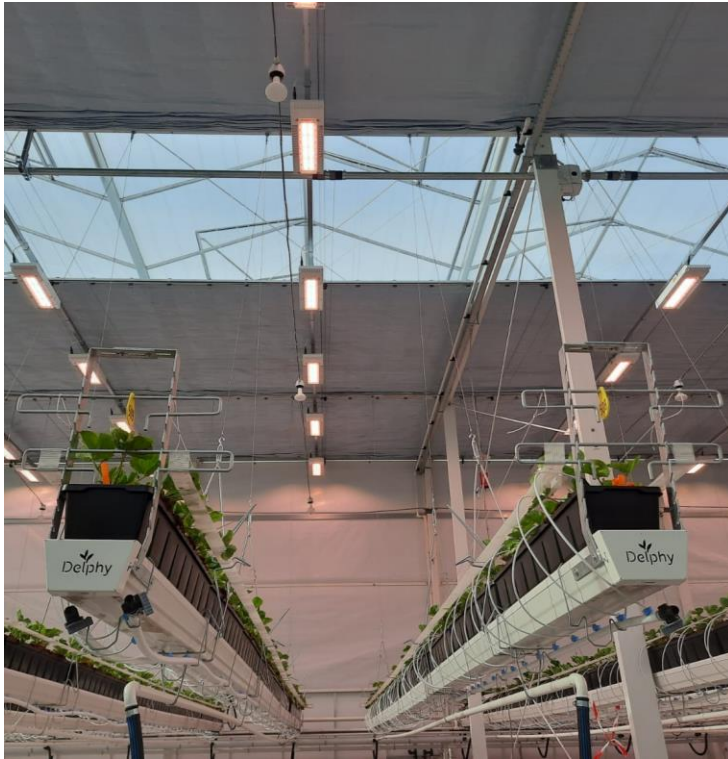
Trayfield strawberry



Raspberry rain shelters – Strawberry tabletops



High-Tech greenhouse compartments



High-Tech greenhouse compartments



Delphy ISFC Innovationpartners

- ✦ Innovators of the soft fruit industry
- ✦ Working together on knowledge development & innovation
- ✦ Driving force for open research
- ✦ Themes:
 - New cropping strategies soft fruit
 - Resilient cropping
 - Innovations
 - Digitalization
- ✦ Benefits:
 - Knowledge
 - Exposure

Delphy ISFC Innovation Partners



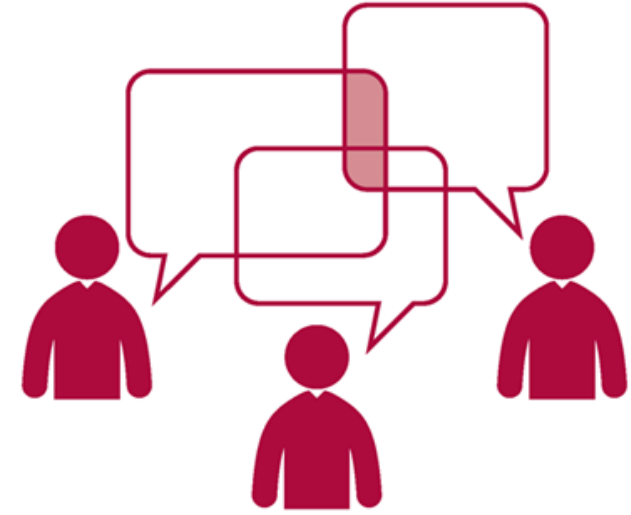
Knowledge implementation

✦ Connection with consultancy teams

✦ Events:

- 2 November 2022: ISFC Knowledge Event
- 12-13 January 2023: International Soft Fruit Conference + Field trip
- 29 March 2023: ISFC Knowledge Event
- 8-9 June 2023: ISFC Field Day + Field Trip

✦ Delphy ISFC magazine



Delphy ISFC Knowledge Event



Delphy ISFC Field Day



Delphy | isfc

Field **Day** June 8 2023

Field **Trip** June 9 2023

WELCOME!

Seminars

- Interactive knowledge exchange
- Relevant soft fruit topics

Networking

- Exhibition floor with broad range of companies
- Meet your partners from the soft fruit sector

Experience

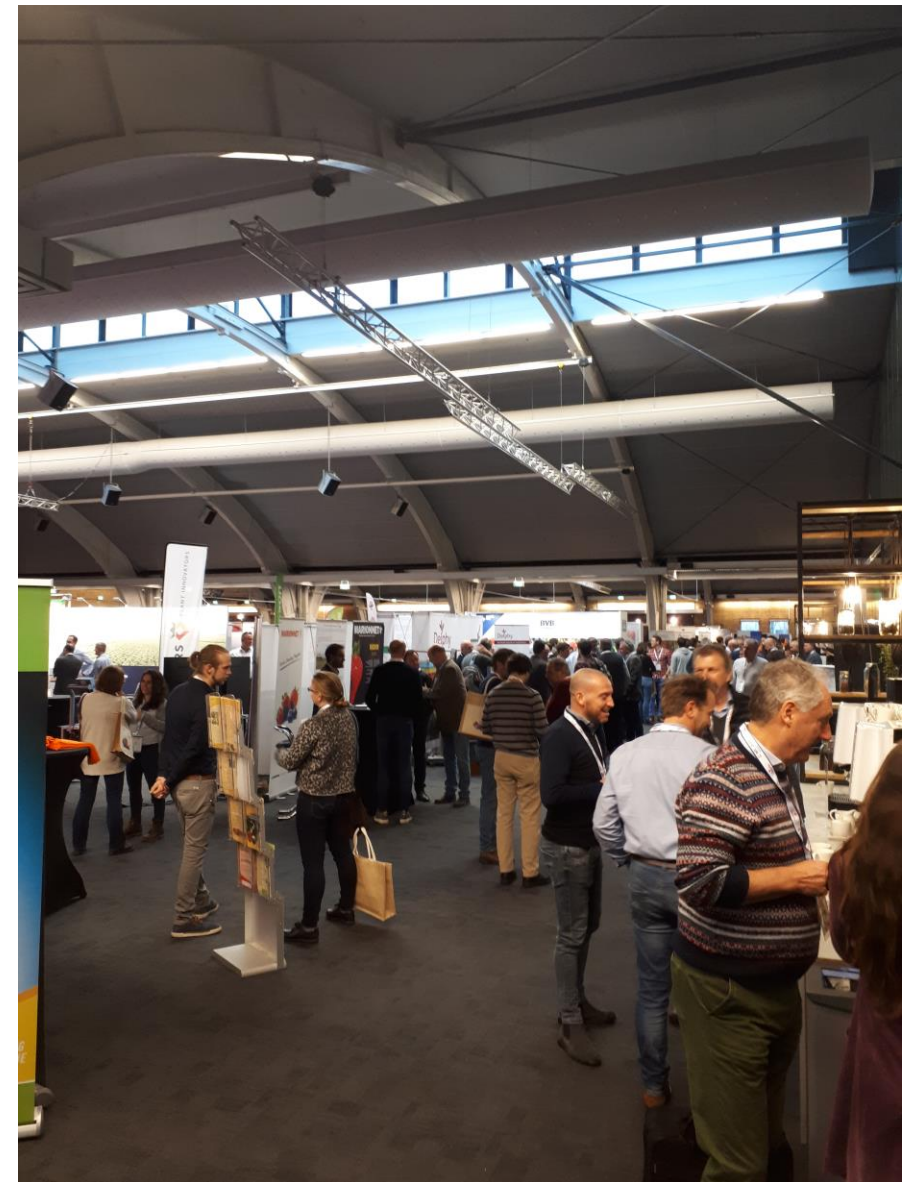
Unique opportunity to visit research & innovative practice in greenhouses, shelters soft fruit and tabletops strawberry

Delphy

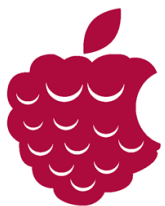
Delphy ISFC Field Day



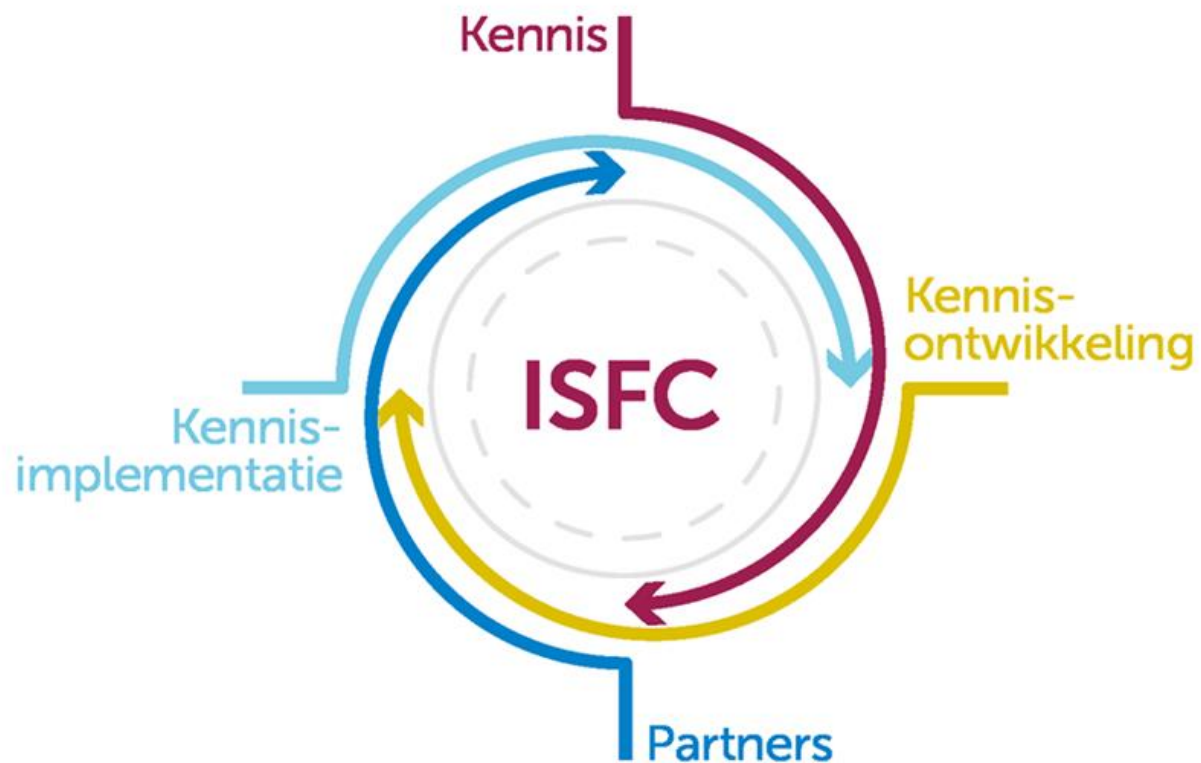
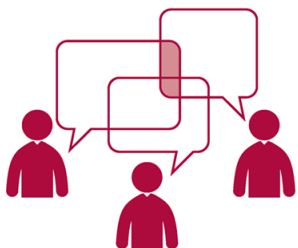
International Soft Fruit Conference



Summary Delphy ISFC



Think different.



Future of high-tech soft fruit in North-West Europe?



Current situation

✦ Challenges:

- Energy crisis
- Inflation
- Our 'regular' challenges like: sustainability, labour etc.

✦ Impact:

- Netherlands/Belgium: less than 40% of the artificial lighted greenhouses soft fruit 2022/2023 lit
- Big differences between companies and strategies

✦ Innovation necessary for sustainable future

Position Delphy ISFC research on energy

✦ Assumptions future

- Price level of energy drops, but stays 'expensive'
- CO2 limited, but available
- Transition to longer cultivation period

✦ Focus points research:

- Increasing efficiency artificial lit crops
- Optimization current cropping strategies
- Development of new cropping strategies

✦ Knowledge Development <-> Knowledge Distribution



Think different.

Optimization current strategies

- ✦ Focus on double cropping \approx 2/3 greenhouse area NL
- ✦ Traditional:
 - Production: 12-15kg/m²
 - Energy consumption \approx 15m³/m²
- ✦ Aim project:
 - Production: 12-15kg/m²
 - Energy consumption max. 7,5m³/m²
 - CO₂ input efficient
- ✦ Game rules:
 - Greenhouse equipment close to traditional, small investments are allowed
 - Determine op front the growing strategy →
worst strategy = no strategy



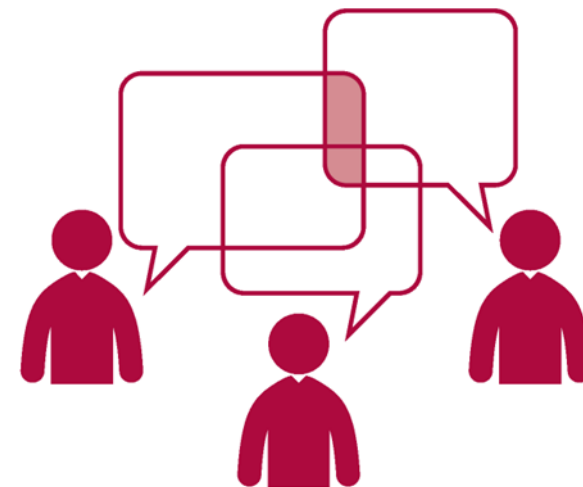


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Strategy energy efficient double cropping

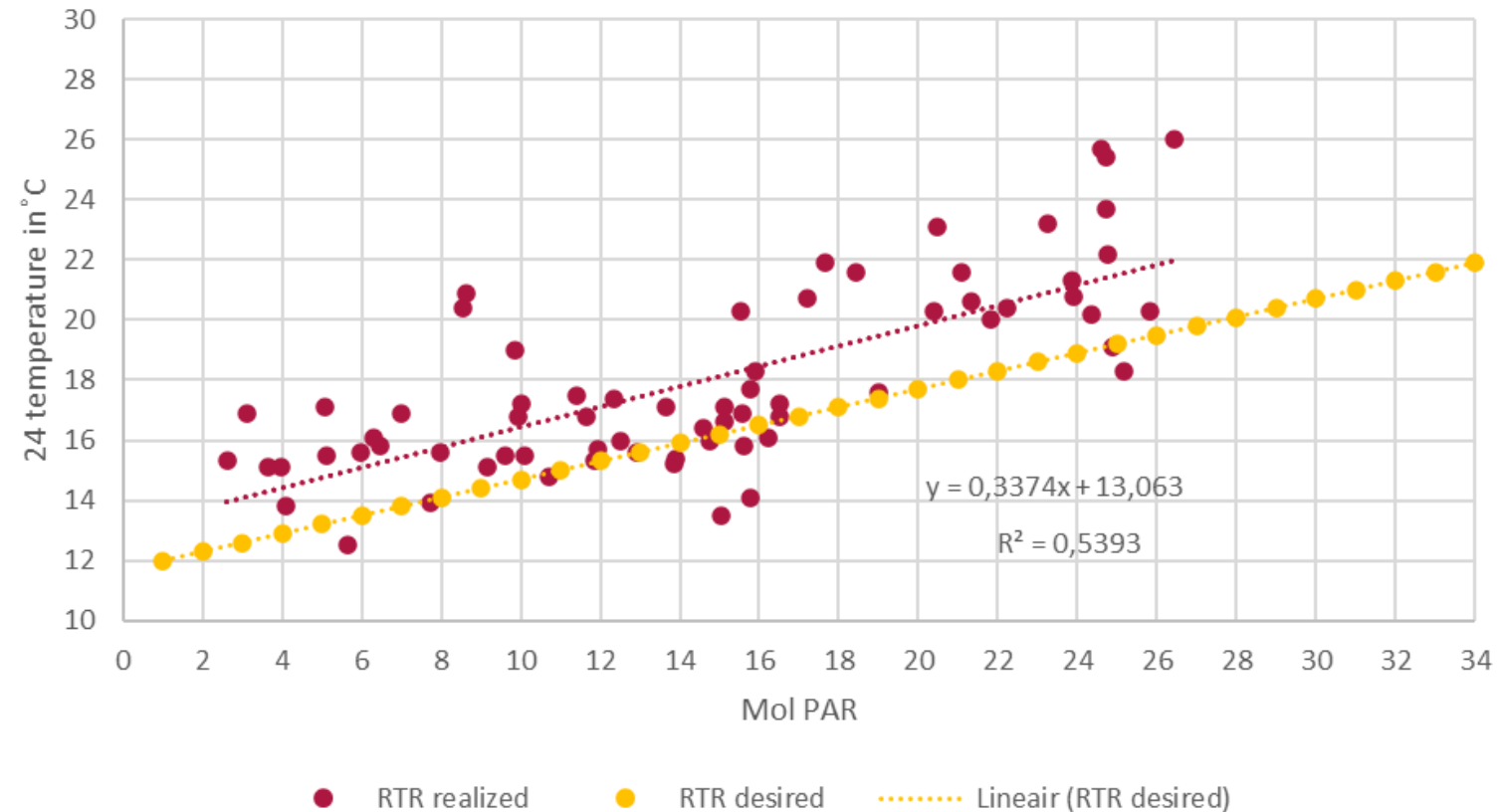
- ✦ Plant date: 16 August 2022
- ✦ Varieties:
 - Main variety = Elsanta
 - Borders: M. Centenary & fresh everbearers
- ✦ Different strategies in flower/bud removal:
 - 10 October, 17 October, 24 October en no removal
- ✦ Game rules:
 - 'Planned' growing by RTR approach → from planting till emptying!
 - No minimum pipe → replaced by air movement
 - Screening against irradiation (when desired) & as isolation
 - CO2 max. 800ppm, target value estimated by window position & radiation
 - Limited pipe temperature → higher heating surface



RTR strategy

	joule	mol	RTR	GDH	GDH cum.	BKO cum.
33	1.609	22,49	18,75	2.394	2.394	
34	1.453	20,31	18,09	2.284	4.677	
35	1.320	18,46	17,54	2.190	6.867	
36	1.212	16,94	17,08	2.114	8.981	
37	1.145	16,00	16,80	2.067	11.048	
38	1.087	15,19	16,56	2.026	13.073	
39	921	12,87	15,86	1.909	14.982	
40	793	11,08	15,32	1.818	16.801	
41	716	10,01	15,00	1.764	18.565	1.260
42	653	9,12	14,74	1.720	20.285	2.980
43	527	7,37	14,21	1.632	21.916	4.612
44	476	6,66	14,00	1.596	23.512	6.207
45	381	5,32	13,60	1.528	25.040	7.735
46	323	4,52	13,36	1.488	26.528	9.223
47	264	3,69	13,11	1.446	27.974	10.669
48	236	3,30	12,99	1.426	29.400	12.095
49	206	2,89	12,87	1.405	30.805	13.501
50	198	2,77	12,83	1.400	32.205	14.900
51	180	2,51	12,75	1.386	33.591	16.287

RTR evaluation autumn production (12 +3)



What have we learned so far?

- ✦ Humid control is more complex and dynamic
- ✦ Still on schedule for an energy efficient crop & cultivation result
 - Elsanta 1,6kg/m² & 275 set fruits and flowers left
 - Malling Centenary 2,3kg/m² & 135 fruits and flowers left
- ✦ Malling Centenary with good spread more ideal for this strategy
- ✦ Fresh everbearers has potential, but needs to be optimized

Other soft fruit?

- ✦ Blackberry energy demanding
- ✦ Trials with 'taste' varieties
- ✦ First trial promising
- ✦ Raspberry difficult in greenhouses
- ✦ Other challenges:
 - Quality plant material
 - Labour



Supplemental lighting?



What about new cultivation strategies?



Thanks for your attention!

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