Calonectria a Cydalima – pokusy o toleranci různých kultivarů zimostrázu a Alternativy zimostrázu pro nízké plůtky – výsledky Pokusu

Heinrich Beltz
in cooperation with
Björn Ehsen and Dr. Thomas Brand

At the conference Zdravý Buxus
11/09/2024 Průhonice
12/09/2024 Kroměříž

Landwirtschaftskammer Niedersachsen

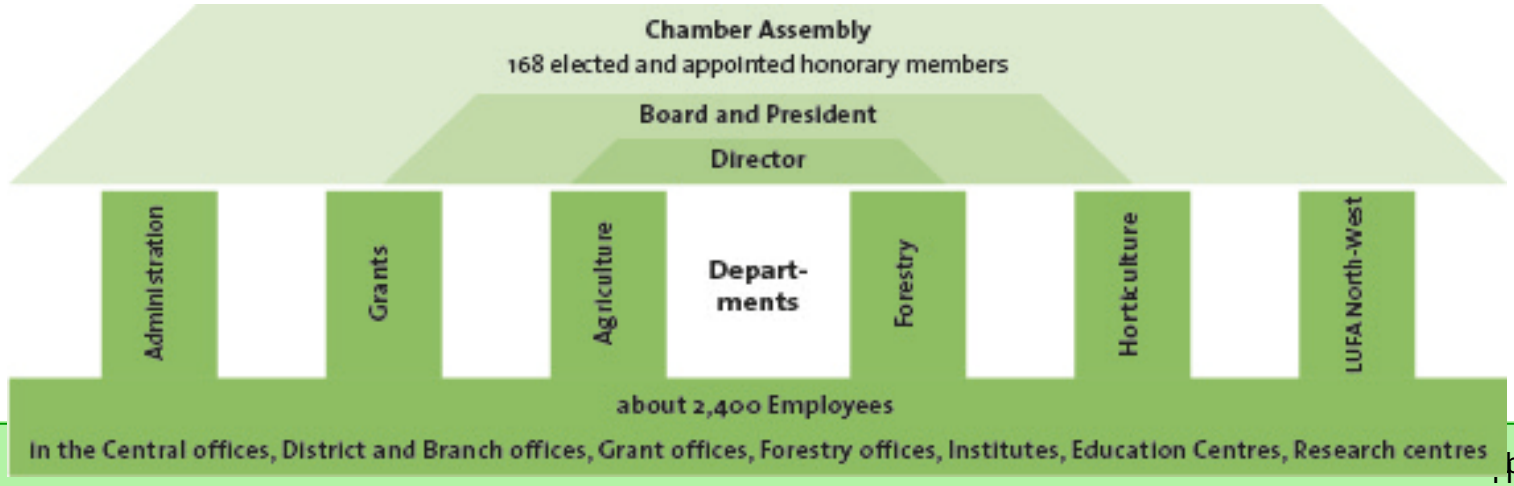
Chamber of Agriculture Lower Saxony:

self-government organisation for agriculture

main objectives:

- **professional training**
- **applied research, analysis**
- **advisory service**

appr. 2.400 staff members (appr. 150 in horticulture)



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Bad Zwischenahn Research Station

Lehr- und Versuchsanstalt für Gartenbau
Hogen Kamp 51
D-26160 Bad Zwischenahn
Germany

appr. 6 ha, 20 staff members

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Objectives of hardy nursery stock research :

Crops:

- container plants
- evergreen ornamentals (*Rhododendron* etc.)
- conifers
- heathers (*Erica*, *Calluna* etc.)

Main Topics

- substrates (peat reduction)
- fertilization (crf, organic)
- weed control
- certain pests/diseases (*Phytophthora*, boxwood blight etc.)
- assortments

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Susceptibility to *Calonectria*

Calonectria pseudonaviculata **(syn.** ***Cylindrocladium buxicola*** **G 1)**
Calonectria henricotiae **(syn.** ***Cylindrocladium buxicola*** **G 2)**

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Susceptibility to *Calonectria*

3 assortment trials

2007 – 2011

2014 – 2019

2020 – November 2024

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Trial designs

Randomized blocks
3 replications
10 plants each
natural infection from the soil (most likely *Cal. pseudonaviculata* (= *Cyl.* G 1))
trimming 2 x per year to small hedges 20 x 20 cm

Evaluation each year in fall

grades 1 - 9

1 = no infection visible
2 = few leaf spots, no defoliation
3 = 1 – 5 % defoliation
4 = 6 – 10 % defoliation
5 = 11 – 30 % defoliation
6 = 31 – 50 % defoliation
7 = 51 – 70 % defoliation
8 = 71 – 99 % defoliation
9 = 100 % defoliation

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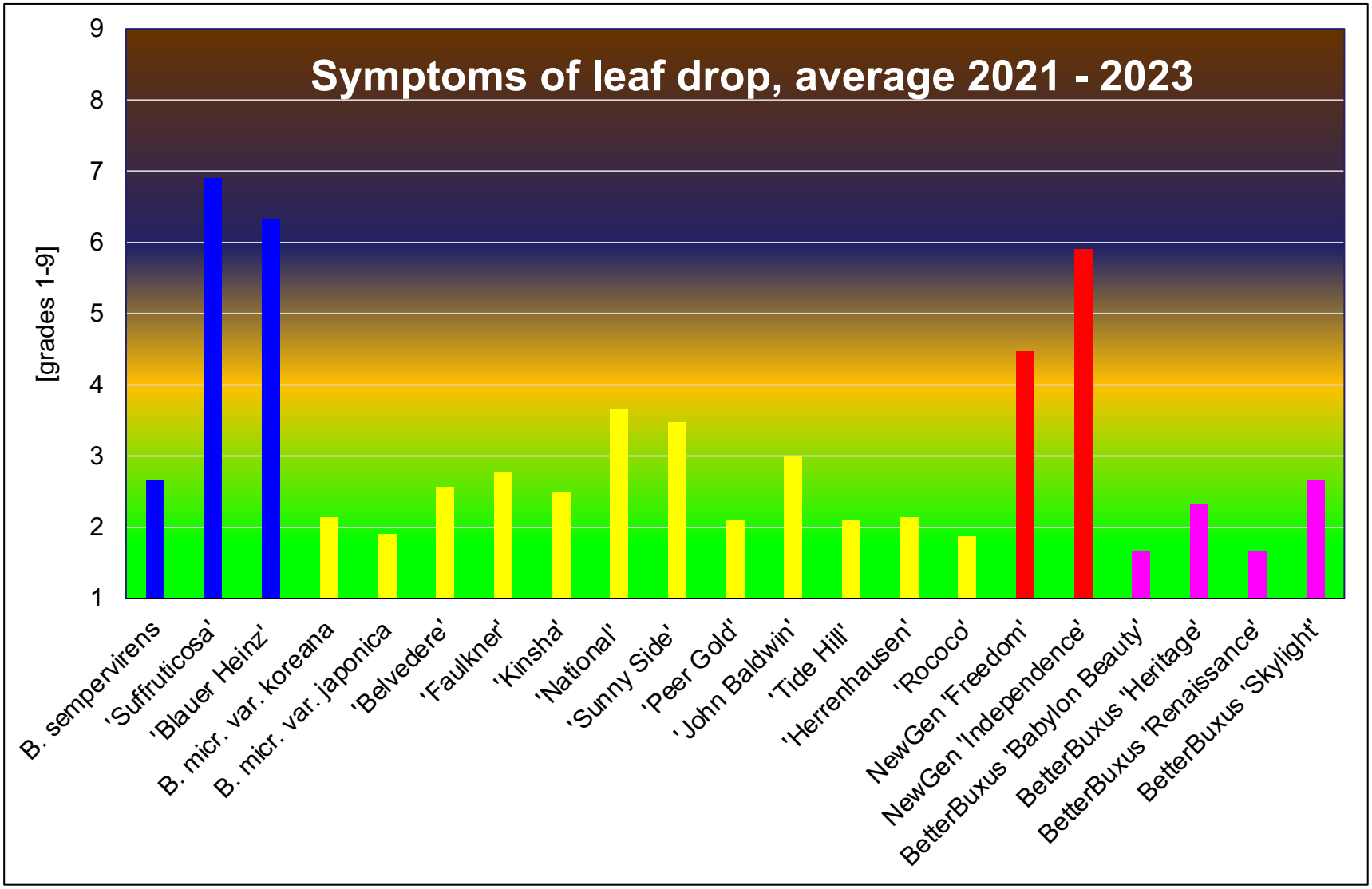

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Susceptibility of *Buxus* to *Calonectria*

Conclusions

- **No cultivar is immune towards infections of *Calonectria.***
- **Cultivars of *B. microphylla* and the tested hybrids (BetterBuxus®) were far more resistant than cultivars of *B. sempervirens* and the tested cultivars of NewGen®**

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Susceptibility of *Buxus* to *Cydalima perspectalis*

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Susceptibility of *Buxus* to *Cydalima*

Tests in LVG Heidelberg 2016 – 2018 in cooperation with LVG Bad Zwischenahn:
***Cydalima* preferred cultivars of *B. sempervirens* (*B. sempervirens*, *B. s.* 'Suffruticosa'), but afterwords also defoliated cultivars of *B. microphylla* (*B. m.* var. *koreana*, 'Herrenhausen'/'Rococo' and 'Faulkner')**

Trials in Belgium (Hermans et al. 2020): *Cydalima* may feed on *B. microphylla* but cannot multiply on it?

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Trial design Bad Zwischenahn

2 trials March 2021 – fall 2023 (4 generations of butterflies)
April 2022 – fall 2024 (4 generations of butterflies)
Randomized blocks
4 replications
25 plants each (1,0 m²)
covered with nets
inoculation with
25 larvae each
only at the beginning

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Trial Cydalima 2021 – 2023

1.	*Buxus sempervirens* var. *arborescens*
2.	*Buxus microphylla* 'Herrenhausen' (= 'Rococo')
3.	*Buxus microphylla* 'Faulkner'

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Trial Cydalima 2022 – 2024

1.	*Buxus sempervirens* var. *arborescens*
2.	*Buxus microphylla* var. *koreana*
3.	*Buxus* Hybr. BetterBuxus® 'Babylon Beauty'
4.	*Buxus* Hybr. BetterBuxus® 'Skylight'
5.	*Buxus* Hybr. BetterBuxus® 'Heritage'
6.	*Buxus* Hybr. BetterBuxus® 'Renaissance'

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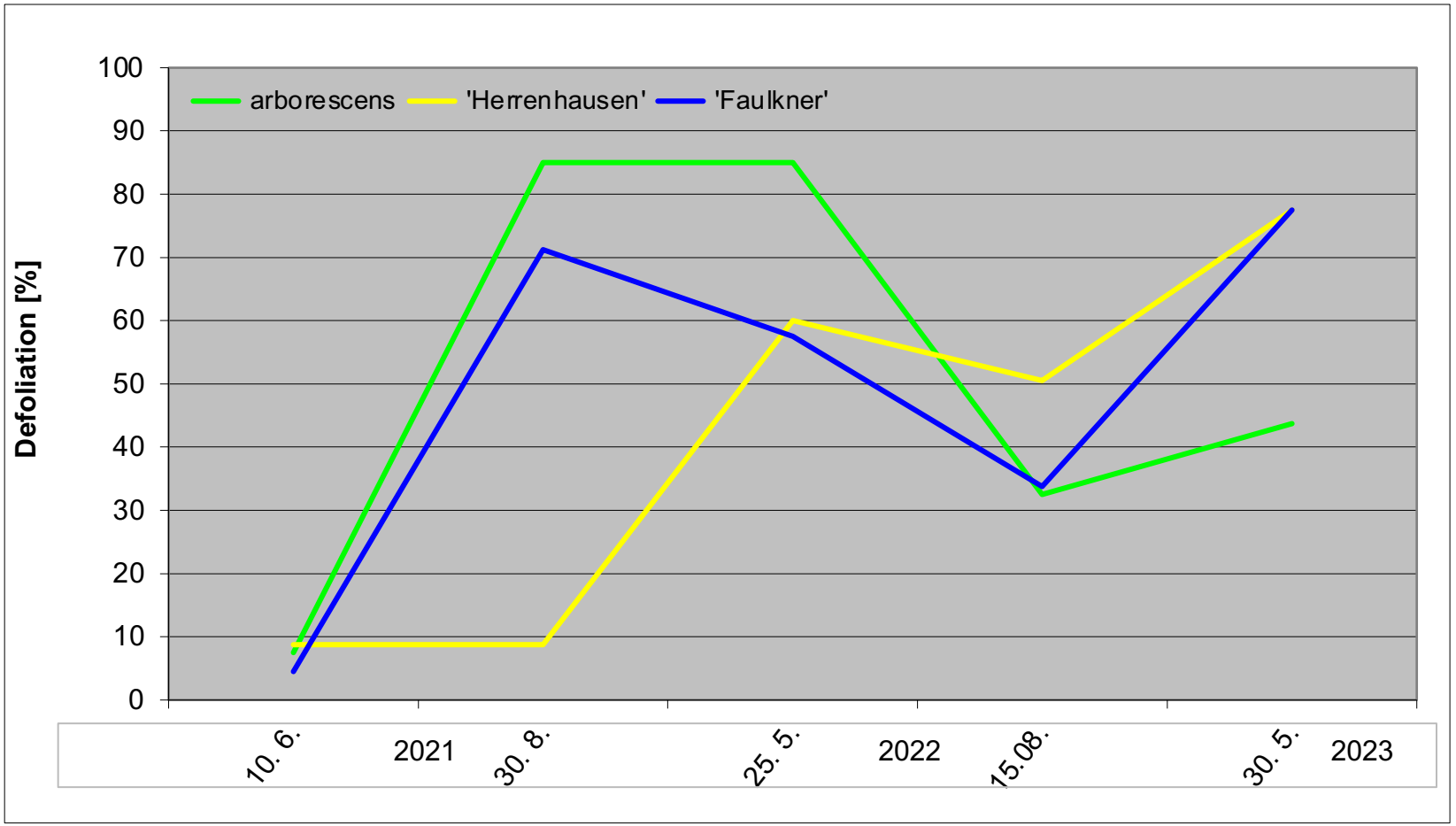
Mean defoliation 2021 – 2023



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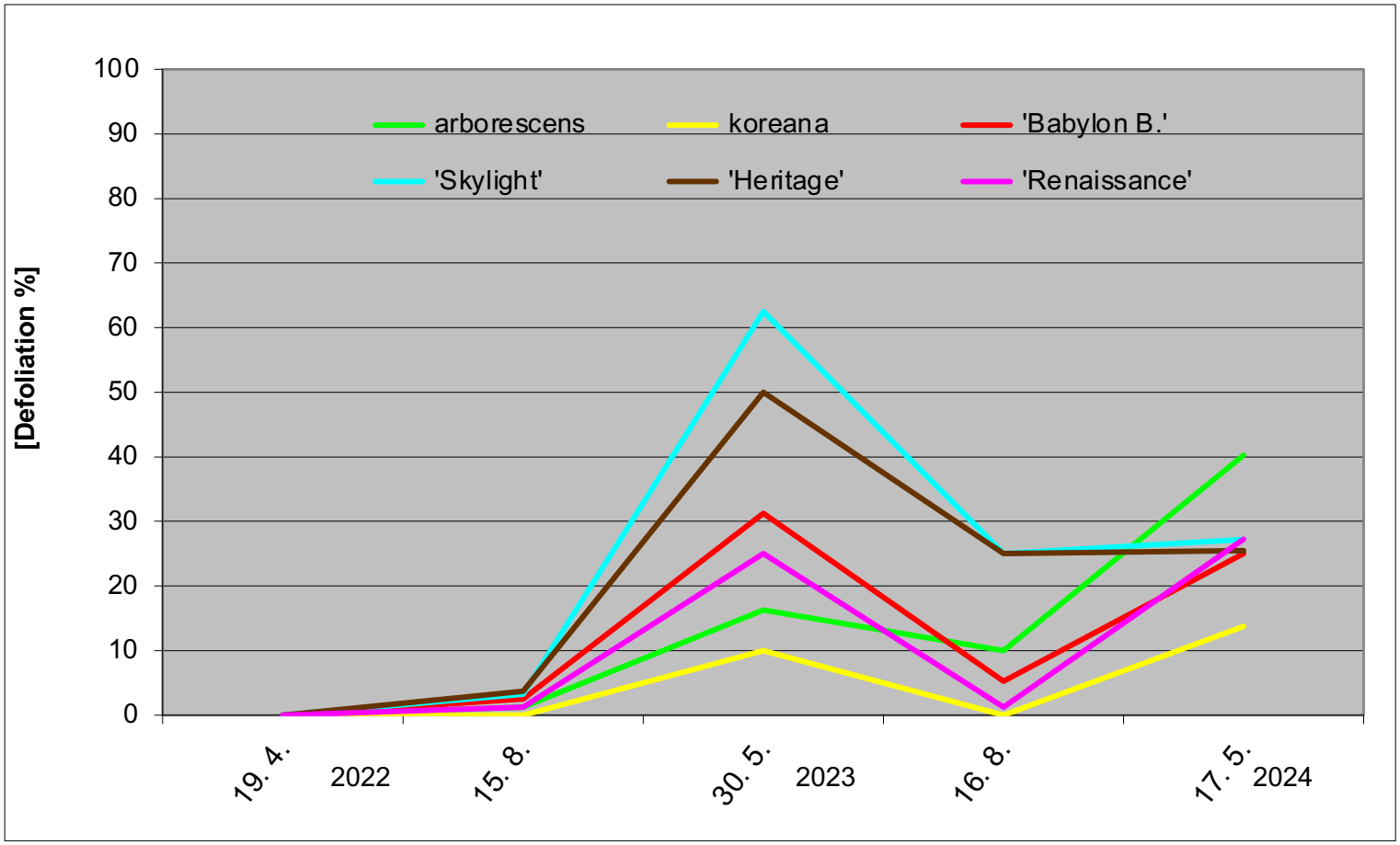
Mean defoliation 2022 – 2024



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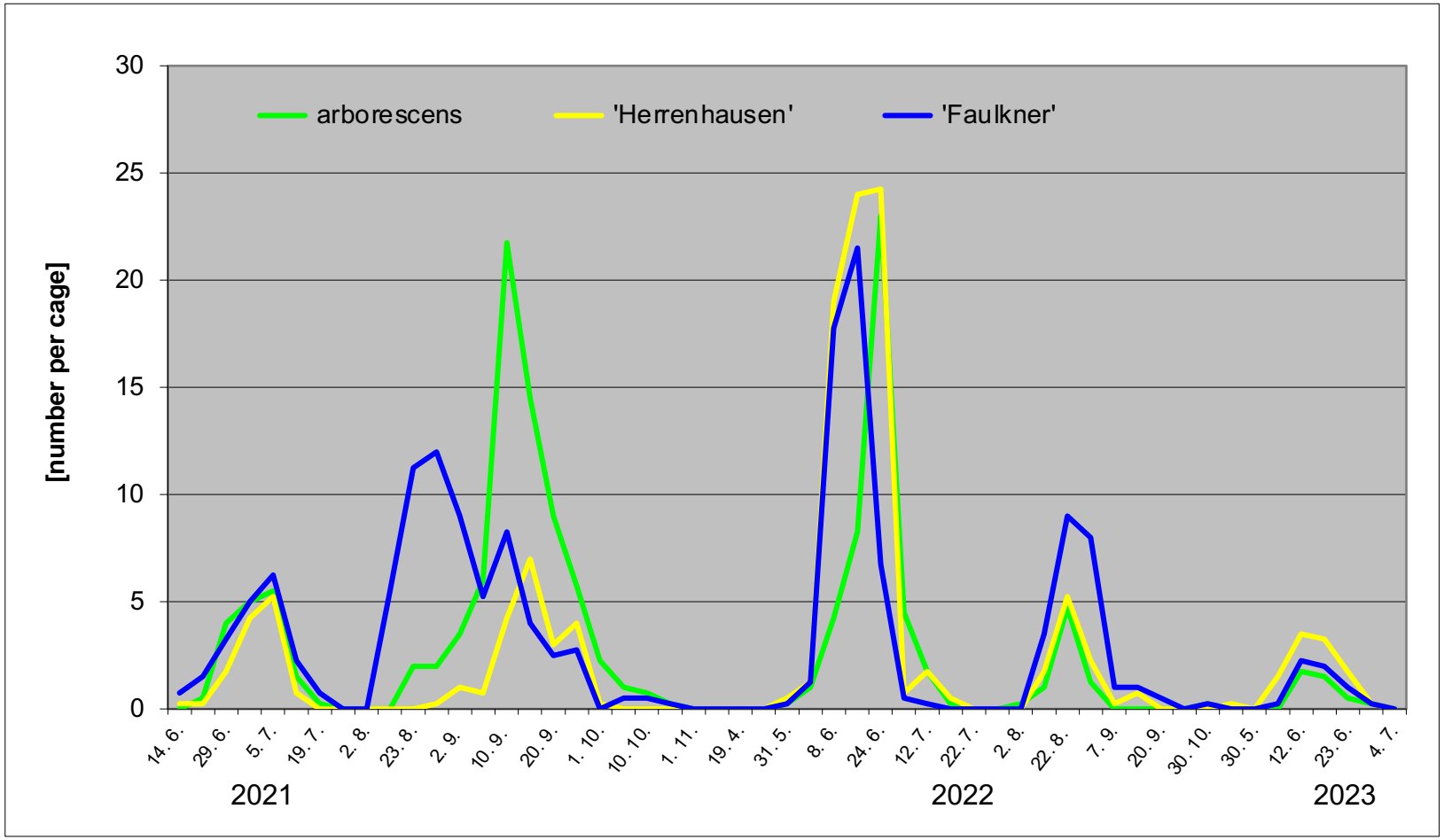
Visible butterflies 2021 – 2023



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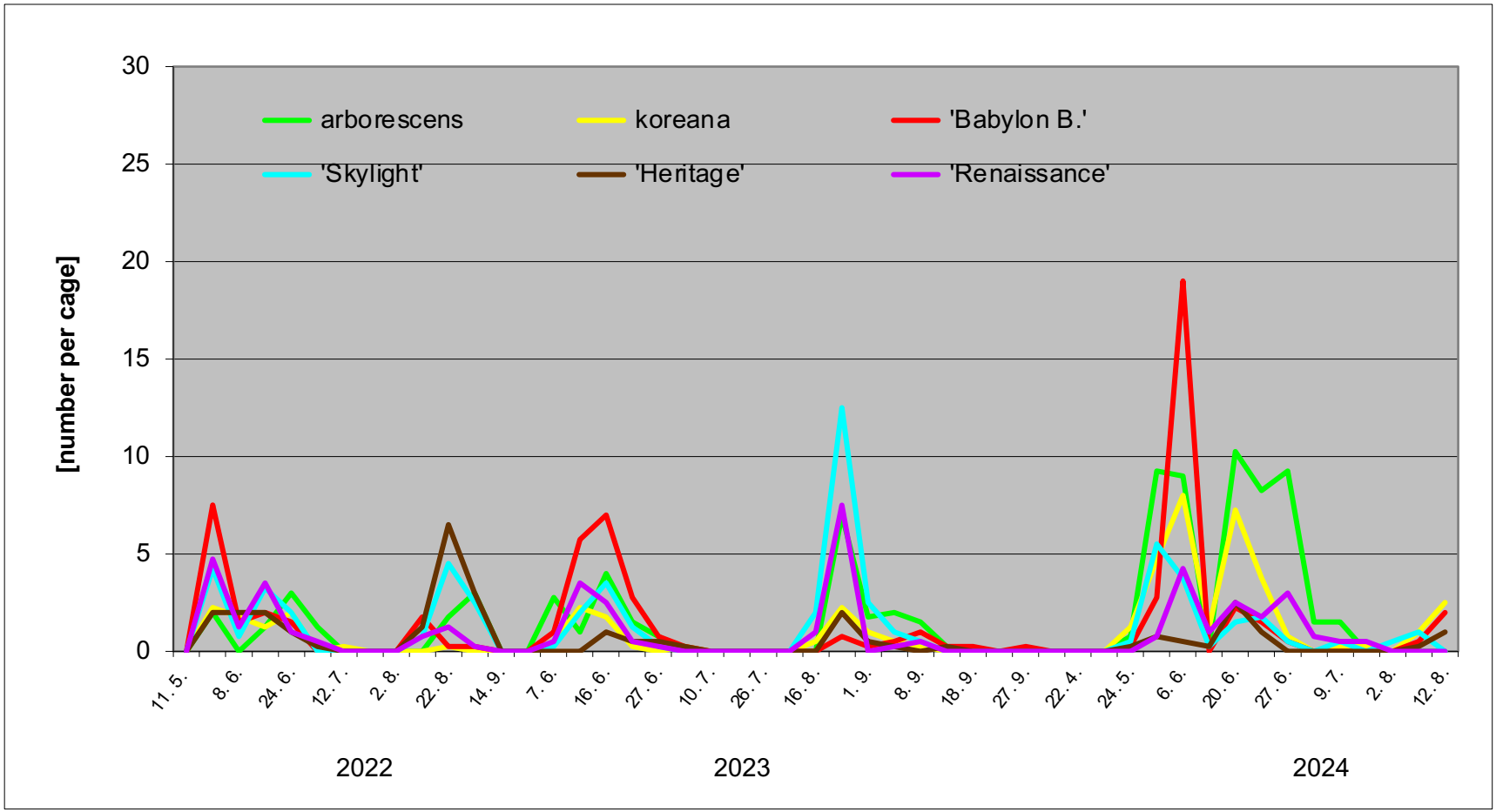
Visible butterflies 2022 – 2024



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Chlorosis symptoms

on ‘Herrenhausen‘/‘Rococo‘, and on all BetterBuxus®

	N	P	K
'Herrenhausen‘ green	2,36	0,15	1,79
'Herrenhausen‘ yellow	1,12	0,08	0,85

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Birds in the cages

sparrows, titmice

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Results

- large fluctuations between the number of butterflies in each replication
- in each replication several generations
- chlorosis symptoms after infestations at ‘Herrenhausen‘/‘Rococo‘ and all BetterBuxus‘®

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Alternatives to Boxwood

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Trial design

- **2014 – 2024**
- **41 different genera, species and cultivars**
- **randomized blocks**
  3 replications
  10 plants each
- **no plant protection**
- **trimming 2 x per year to small hedges 20 x 20 cm**

Results:

Each plant had it‘s advantages and disadvantages

Comparing good results in Bad Zwischenahn

- ***Berberis candidula***
- ***Euonymus fortunei* ‘Emerald‘n Gold‘ and ‘Emerald Gaiety‘**
- ***Ilex crenata* ‘Glorie Gem‘**
- ***Ilex aquifolium* ‘Heckenzwerg‘®**
- ***Podocarpus nivalis* ‘Red Tip‘ and ‘Blue Gem‘**
- ***Taxus baccata* ‘Renke‘s Kleiner Grüner‘®**
- ***Taxus cuspidata* ‘Lescow‘**
- ***Thuja occidentalis* ‘Mecki‘®**
- ***Teucrium* x *lucidrys***

Recommendation:

- **Select plants with attention to the individual situation at the plant site (soil, climate)**
- **Consider using „alternatives“ to *Buxus*, but don‘t ignore their specific demands and problems (temperature, water, pH, certain pests and diseases)**
- **Consider to use as „alternative to the alternatives“ cultivars of *Buxus microphylla* (‘Rococo‘) or BetterBuxus®, which are resistant to *Calonectria*, but be ready to use insecticides (e.g *Bacillus thuringiensis*) if necessary, especially in April and July/August („A = Alert!“)**

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Děkuji mnohokrát za
pozornost!