

Alternative methods for insect control to reduce the dependence on insecticides

2nd joint meeting: EUFRUIT NETWORK – EUFRIN WG
Sint-Truiden, 29th- 30th May 2017

Hinrich H. F. Holthusen

Content

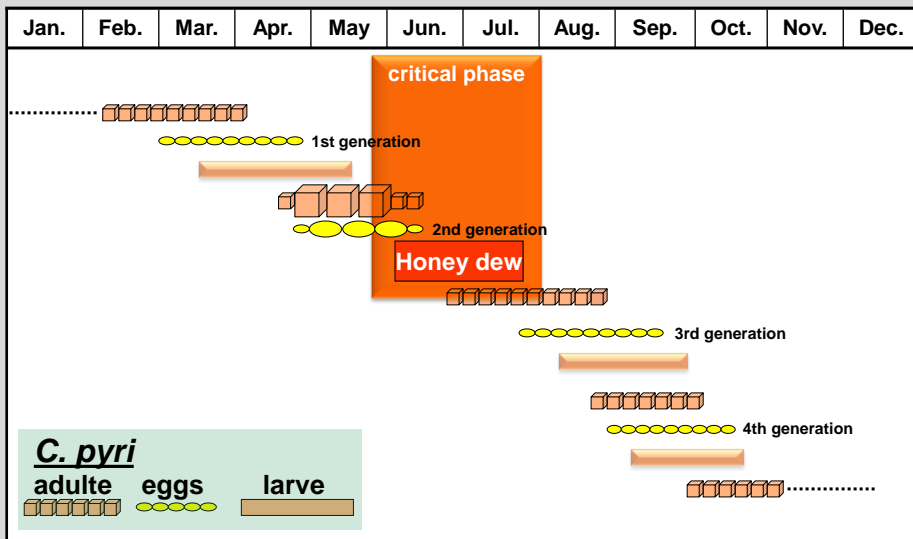
1. Alternate alleyway mulching to promote beneficial insects against pear leaf sucker (*Cacopsylla pyri*)
2. Control of the common green capsid (*Lygocoris pabulinus*) on apple by summer mowing of herbaceous plant borders

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Life cycle of the pear leaf sucker (*Cacopsylla pyri*)



Fruit damage caused by the pear leaf sucker



photo: Dorothee Mohr

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Most important predator found: Flowerbug (*Anthocoris* spp.)



photo: Alina Appel

1 - 3 generation
per year

Alternated alleyway mulching of an pear orchard



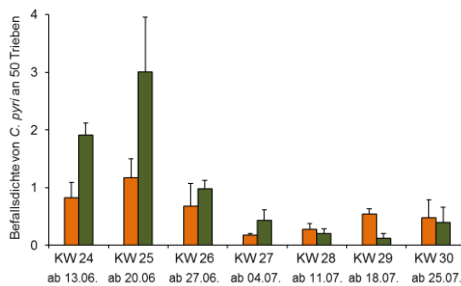
photo: Alina Appel

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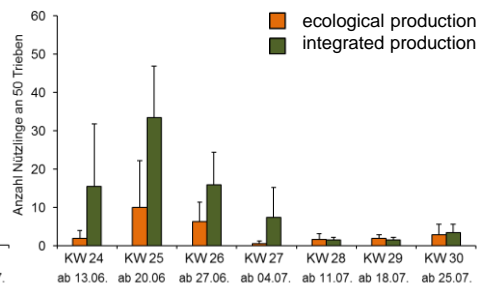
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Prey- predator relationship

C. pyri



beneficials



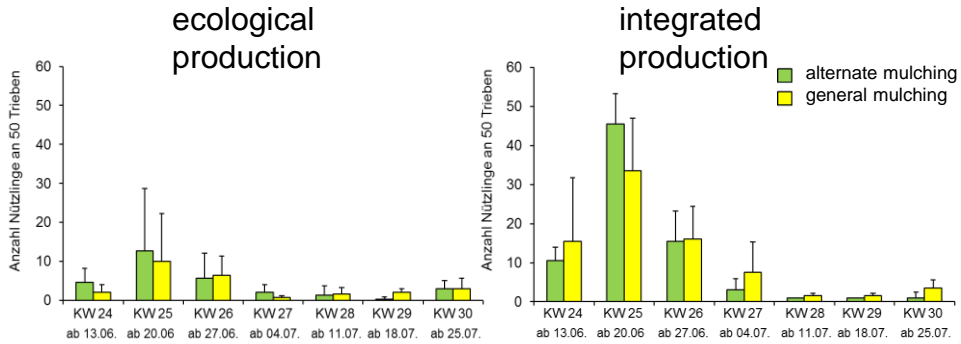
classes:

(0) zero (1) 1 to 5 (2) 6 to 10 (3) 11 to 50 (4) 51 to 100 (5) 101 to 200 larvae

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Abundance predators

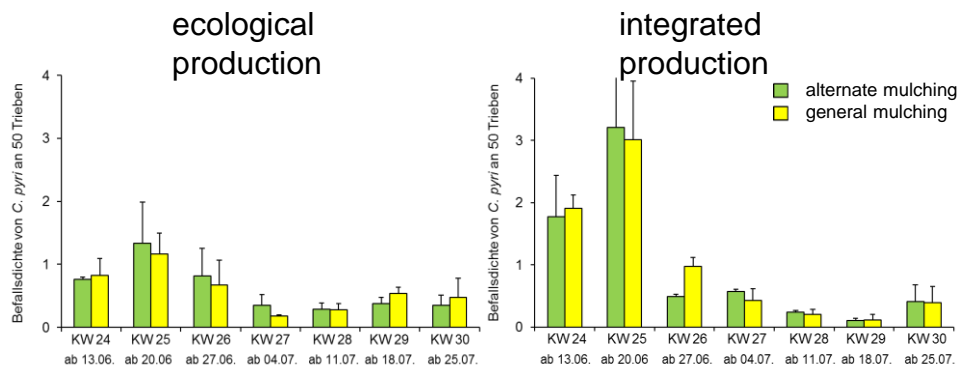


mod. Appel & Weber (2017). *Mit. d. OVR* 72: 85-89

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Abundance *Cacopsylla pyri*



mod. Appel & Weber (2017). *Mit. d. OVR* 72: 85-89

classes:

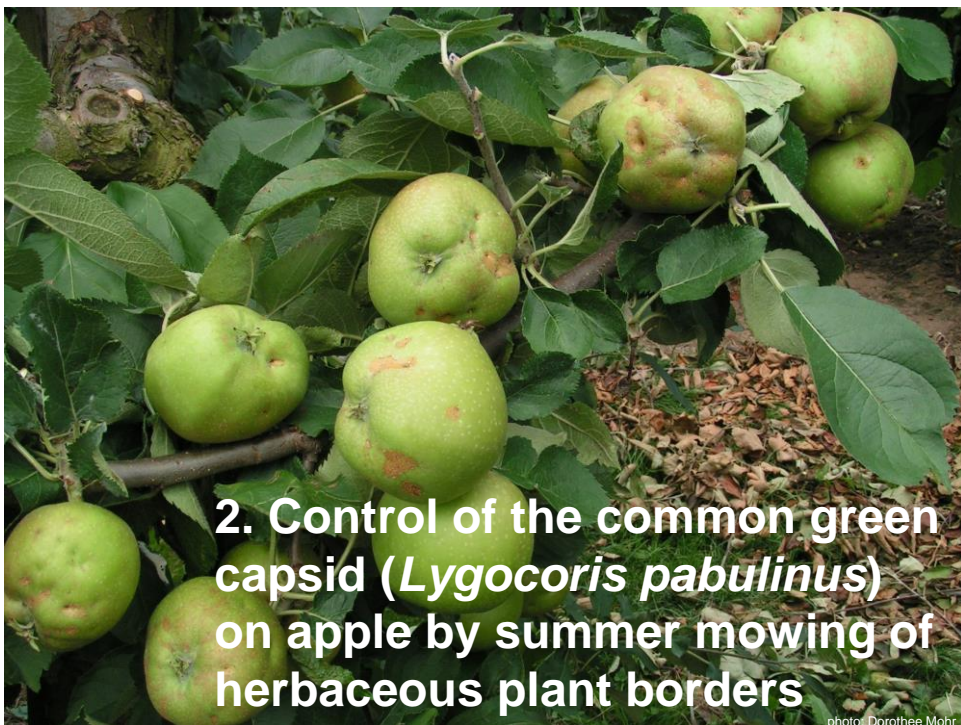
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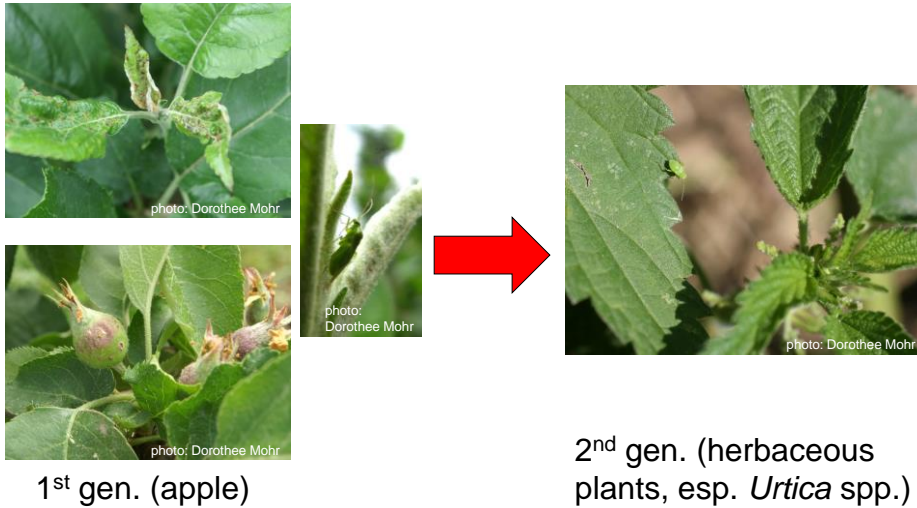
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Conclusion

- Difference between ecological and integrated managed orchards
- Flowerbugs and spiders were important
- Strong relationship predator-prey
- No effect of alternate alleyway mulching on *C. pyri*
- Results from only one years



Life cycle of the common green capsid (*Lygocoris pabulinus*)



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Critical phenological data of the common green capsid development in the Lower Elbe region

Year	1 st gen. (apple) – start of egg hatching	1 st gen. (apple) – peak of egg hatching	First bugs on herbaceous plants	2 nd gen. (herbaceous plants) – start of egg hatching	Mowing of plant borders
2013	06 May	09 May	no data	no data	29 Jul
2014	09 Apr	25 Apr	02 Jun	30 Jun	15 Jul
2015	24 Apr	04 May	no data	No data	31 Jul
2016	26 Apr	11 May	07 Jun	05 Jul	20 Jul

mod. Mohr et al. (2016). *Mit. d. OVR* 71: 335-340

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Fruit damage caused by *Lygocoris pabulinus*



photo: Dorothee Mohr

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Mowing of herbaceous plant borders



photo: Dorothee Mohr

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Three years mowing field trial in cv. Elstar (IP & Eco)

Year	Fruits damaged by <i>L. pabulinus</i> [%]		Comments
<i>IP production</i>	<i>Mowing previous summer</i>	<i>No mowing</i>	
2014	0	0	Plots mowing/ not mowing were switched in summer 2015
2015	0	0.3	
2016	0.5	8.8	
<i>Eco production</i>	<i>Mowing previous summer</i>	<i>No mowing</i>	
2014	0.5	7.5	Plots mowing/ not mowing were switched in summer 2015
2015	0	6.5	
2016	0	1.8	

mod. Mohr et al. (2016). *Mit. d. OVR* 71: 335-340

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One year mowing field trial in cv. Elstar (IP & Eco)

Year	<i>L. pabulinus</i> found by 100-hits [number] / fruit damage [%]		Comments
<i>IP production</i>	<i>Mowing previous summer</i>	<i>No mowing</i>	Only half side of trees were treated with insecticides againgst <i>L.</i> <i>pabulinus</i>
2016	7.0 / 9.7	26.0 / 31.3	
<i>Eco production</i>	<i>Mowing previous summer</i>	<i>No mowing</i>	
2016	2.3 / 33.7	13.0 / 61.0	

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Impact on biodiversity?



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Conclusion

- Effect of mowing herbaceous plant borders on *L. pabulinus* life cycle was clearly demonstrated
- Fruit damage caused by *L. pabulinus* could be reduced
- Exchange of pesticide use by moving procedure is possible
- Negative impact of the moving procedure on biodiversity?
 - Herbaceous plant borders are know for high biodiversity

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