BIOFRUITNET

Boosting Innovation in ORGANIC FRUIT production through stronger networks

POME FRUIT - PEAR

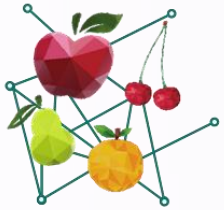
ONLINE WORKSHOP, 19/10/2021

Co-funded by the Horizon 2020 programme of the European Union

BIOFRUITNET PROJECT

Grant Agreement No. 862850

Presentation Outline

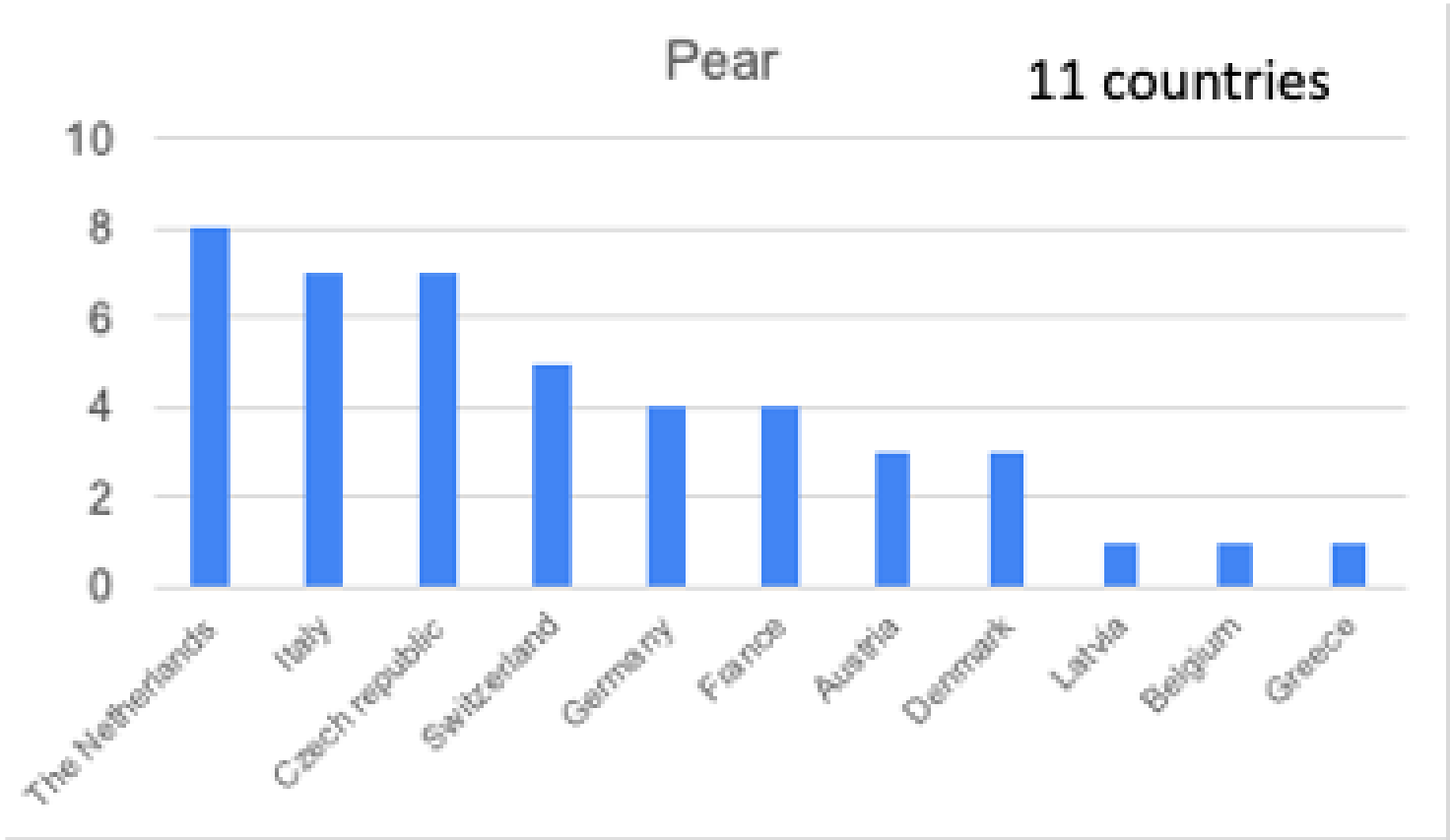


Key Topics for discussion

1. Introduction
2. Diseases
3. Pests

Responses

Pear 45 responses (11 countries)
Apple 143 responses (17 countries)



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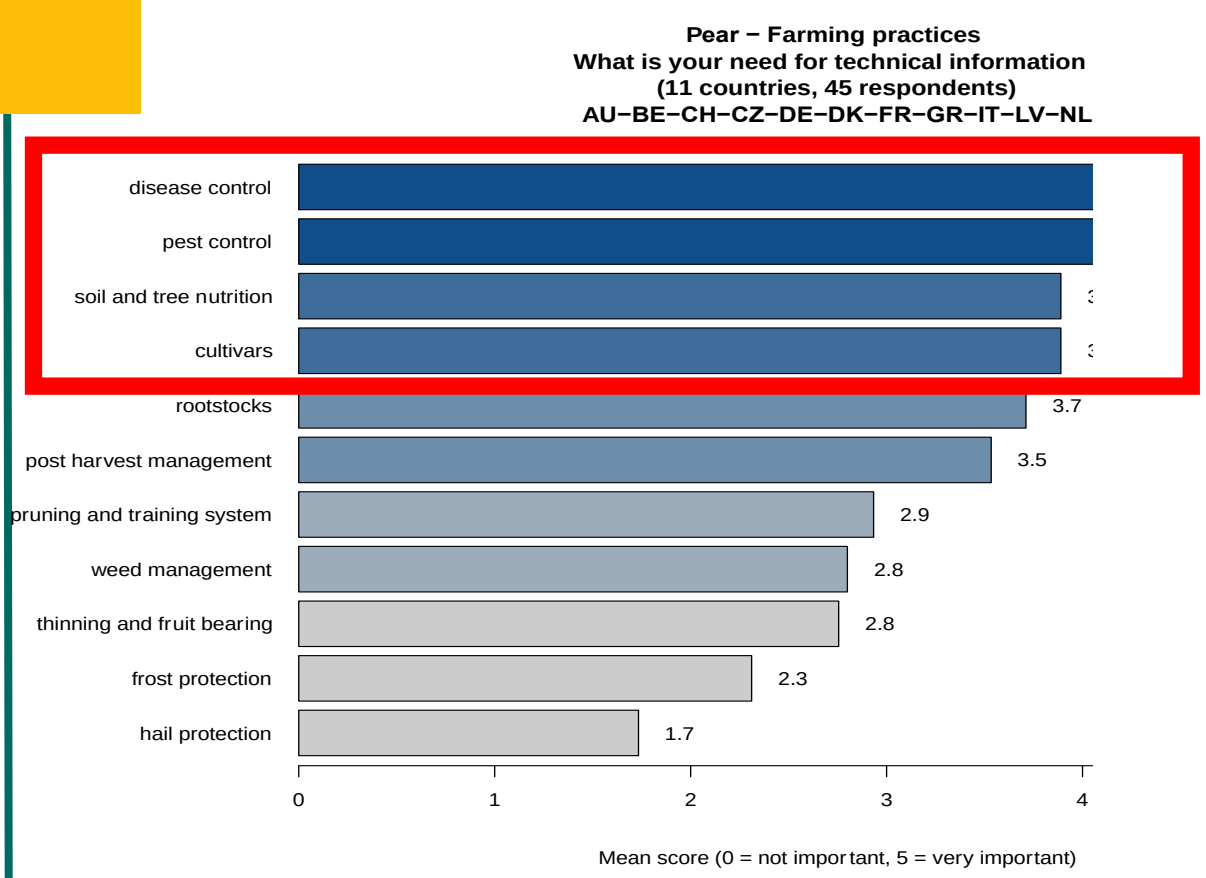
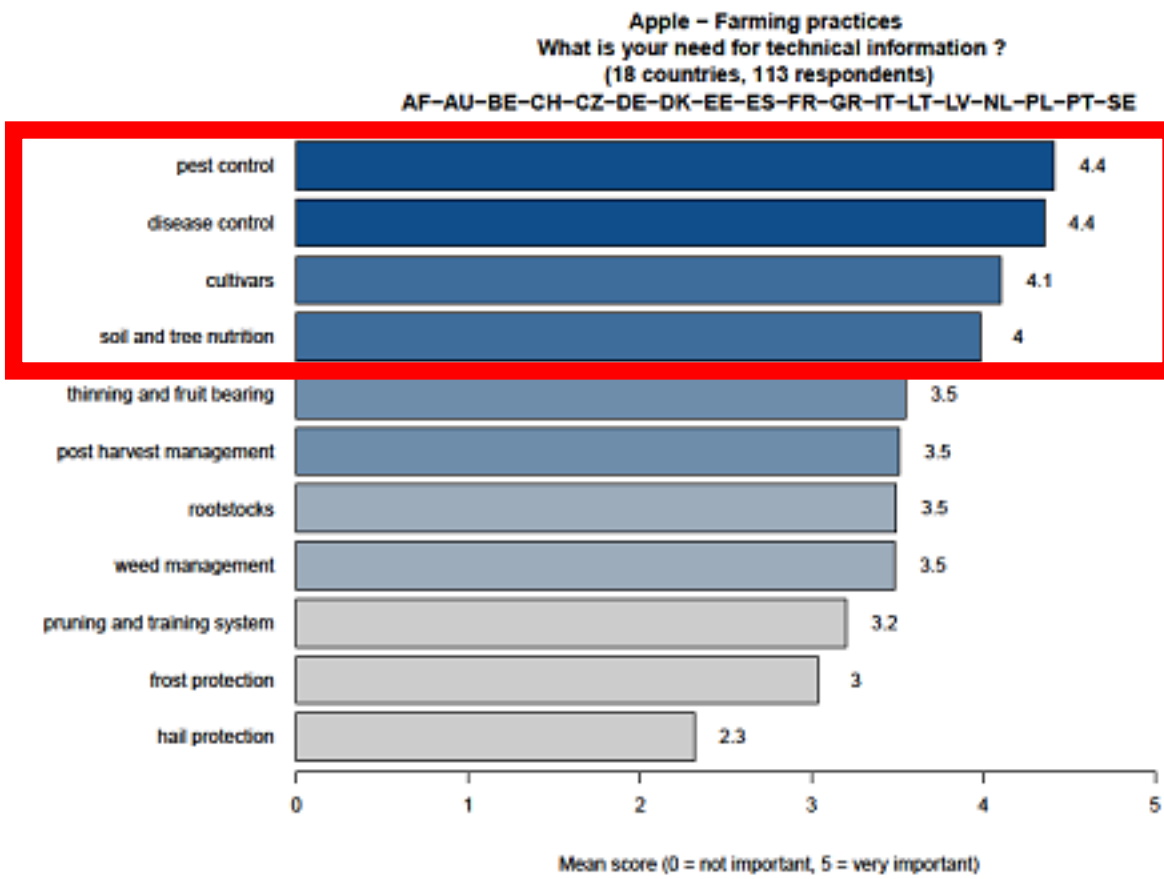
Main needs – Technical information

PEAR



APPLE

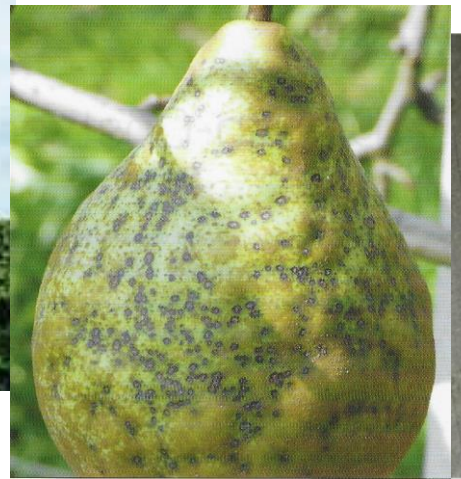


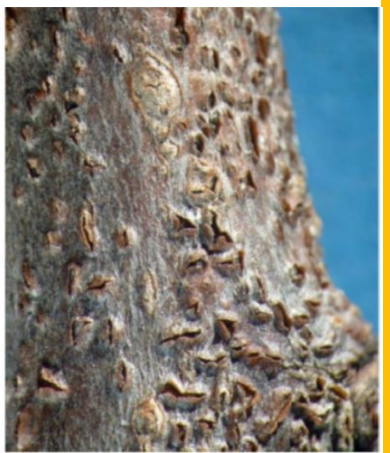
Diseases

Pear scab (black spot of pear)
Fire blight
European pear rust
Fruit canker
Stemphylium (brown spot of pear)
Powdery mildew

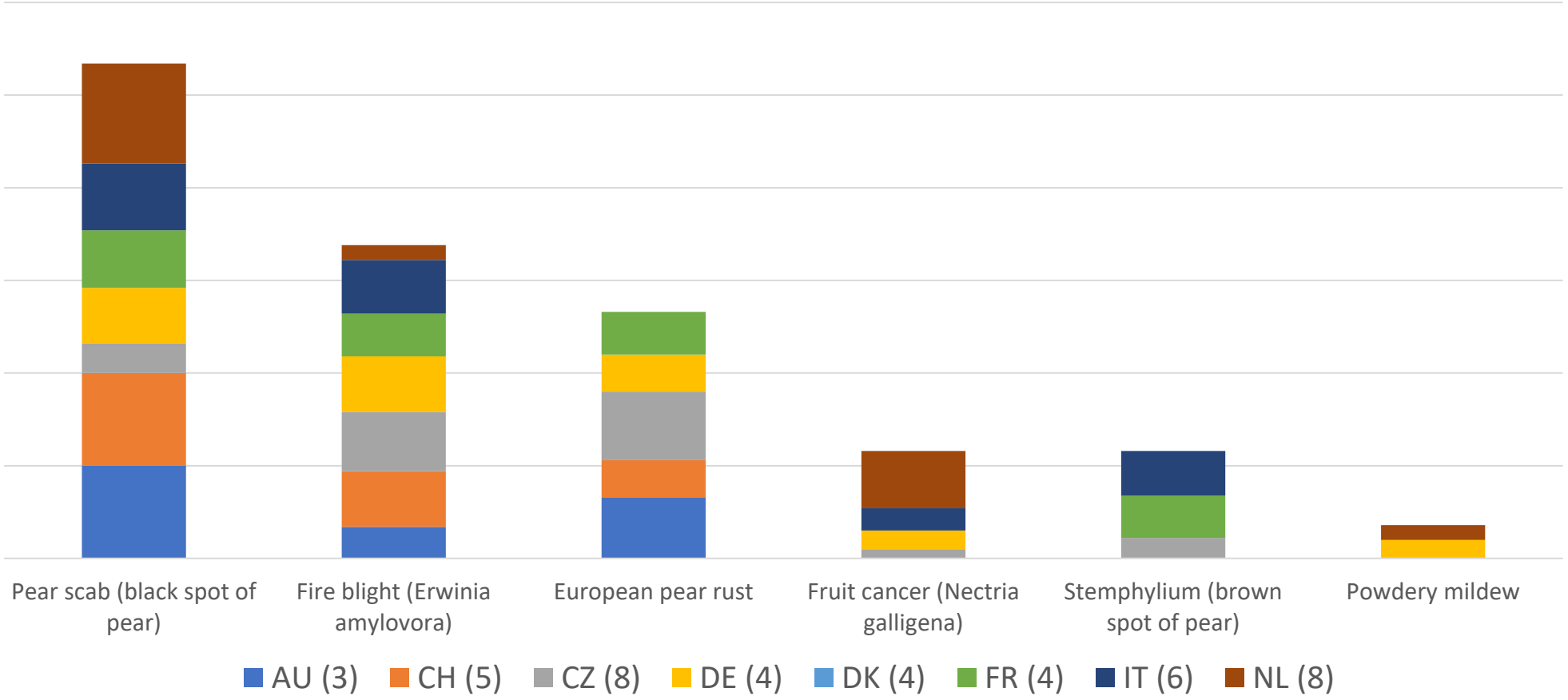
Also mentioned

Pear decline (AU, DE)
Heat damage Conference (DE)
Pseudomonas (DE Xenia, IT)
Post harvest diseases (NL)
Diplodia Stemcanker (*D. bulgarica, D. malorum, D. seriata*) (DE)
Entomosporium mespili/Diplocarpon mespili (Xenia) (DE)





Growers answers on **diseases** of pear per country (% of importance mentioned in answers)



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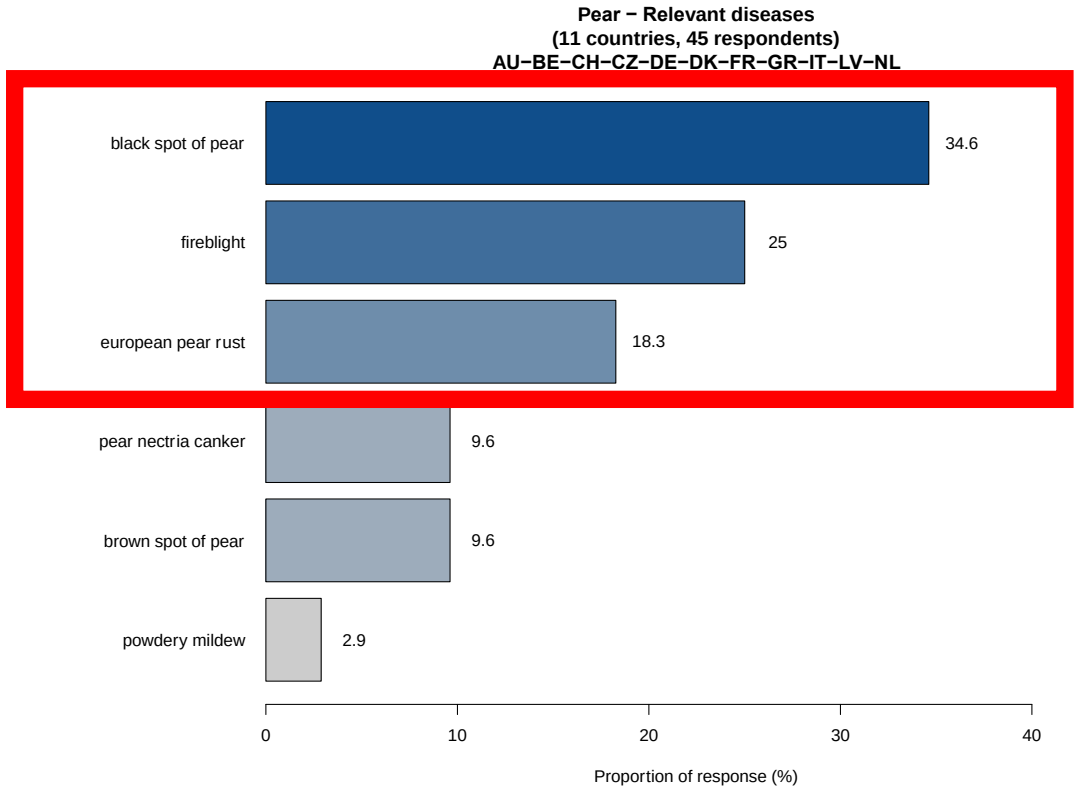
Diseases: which to discuss



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Poll experts (1 most important, 5, 6,7 least important)

	AU	BE	CH	DE North - South		DK	IT	NL
Pear scab (black spot of pear)	1	1	1	1 (conf & alexander l.)	1	1	1	1
Fire blight	5 (in some years)	5	2		5	3	3	
European pear rust		7	3			5 (some years ago a problem, not now)		
Fruit canker				3		2	4	2
Stemphylium (brown spot of pear)							2 (Abaté, conference)	
Powdery mildew								
Also mentioned								
Pear decline (AU, DE)	3 (in regions with old pear treas)	5		2	2		5	
Heat damage Conference (DE)								
Pesudomonas (Xenia) (DE, NL)	2 (conference, xenia)	2		4 (xenia)	3	4		3 (Xenia) , 2021 also Conference
Diplodia Stemcanker (D. bulgarica, D. malorum, D. seriata) (DE)								
Entomosporium mespili/Diplocarpon mespili (Xenia) (DE)	4				4			

Poll experts (1 most important, 5, 6,7 least important)

On basis on the poll of experts the main diseases in pear are

1. Pear scab
2. Fireblight
3. Pseudomonas
4. Stemphylium (IT)

Experts in the meeting

Gerjan Brouwer	Delphy, NL
Clémence Boutry	FiBL, CH
Stefano Caruso	Plant protection service of Modena, IT
Hanne Lindhard Pedersen	Hortiadvice, DK
Renske Petré	PCFruit, BE
Alfredo Mora Vargas	Laimburg/Biofruitnet, IT
Eva Kohlschmid	Naturland, DE
Peter Heyne	ÖON, DE
Niklas Oeser	ÖON/Biofruitnet DE
Karl Waltl	Bio-Beratung Obstbau Steiermark, AU
Thomas Arnegger	KOB, DE

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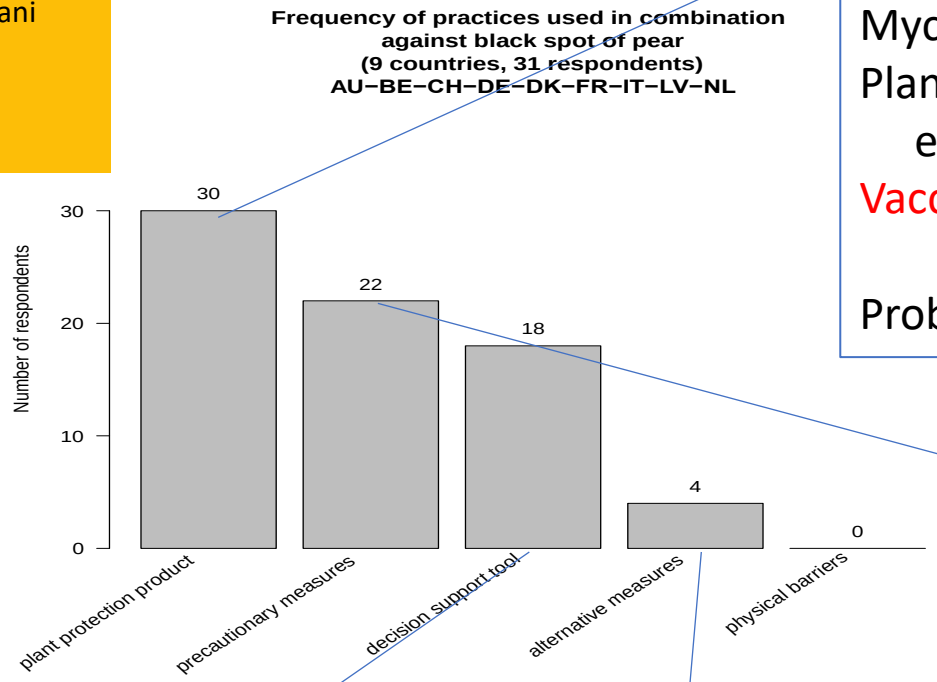
Pear scab

Among other plant protection product to be used and to be tested are:
1) Prev-Am or LIMOCIDE (sweet orange essential oil) + to be applied with a reduced amount of copper based product
2) Wood tannic extract (alone or in combination with reduced amount of copper based product)
(IT) R.Buciani



Copperoxychloride/hydroxide (AU, CH, DE, FR, IT, NL, BE)
Cu + S (AU, CH, DE, FR, IT, NL, Be)
Limesulphur (AU, CH, DE, FR, IT, NL)
Liquid S (AU, IT)
Potassiumbicarbonate (CH, IT, NL, AU, BE)
Mycosin (CH)
Plant strengtheners: Vacciplant (laminarin, Serenade B. subtilis) (NL)
effects/experiences other countries? IT: serenade against Fire blight, Vacciplant scab – low efficacies. No experience of other countries
such base products are also used against Pear brown spot and apple scab R. Bugiani

Problem DE, FR, NL: high amount of applications

Rimpro
Welte
Agrometeo
Fruitweb
Rimpro pear

Nettle (CH) not specific for pear, overall strenghtener
Plantstrengtheners ?

Vinasse leaf composition (DE, NL)
Tolerant varieties (CH)
Research on scab resistance and fysioi's (NL) no projects in IT
Cultivar (CH)
Growth regulation, pruning, rootcutting for calm trees, open (CH, DE, FR, NL)
Fertilization, not too vigiurous trees (NL)
Soil tillage, (CH, NL) in IT increased for control Stemphylium
Leaf decomposition (CH, DE, NL)
Plastic cover (IT, DK) – trials running, increase of stemphylim? Not in conference
Plastic roof tried in DK, had a significant positive effect on reduction .

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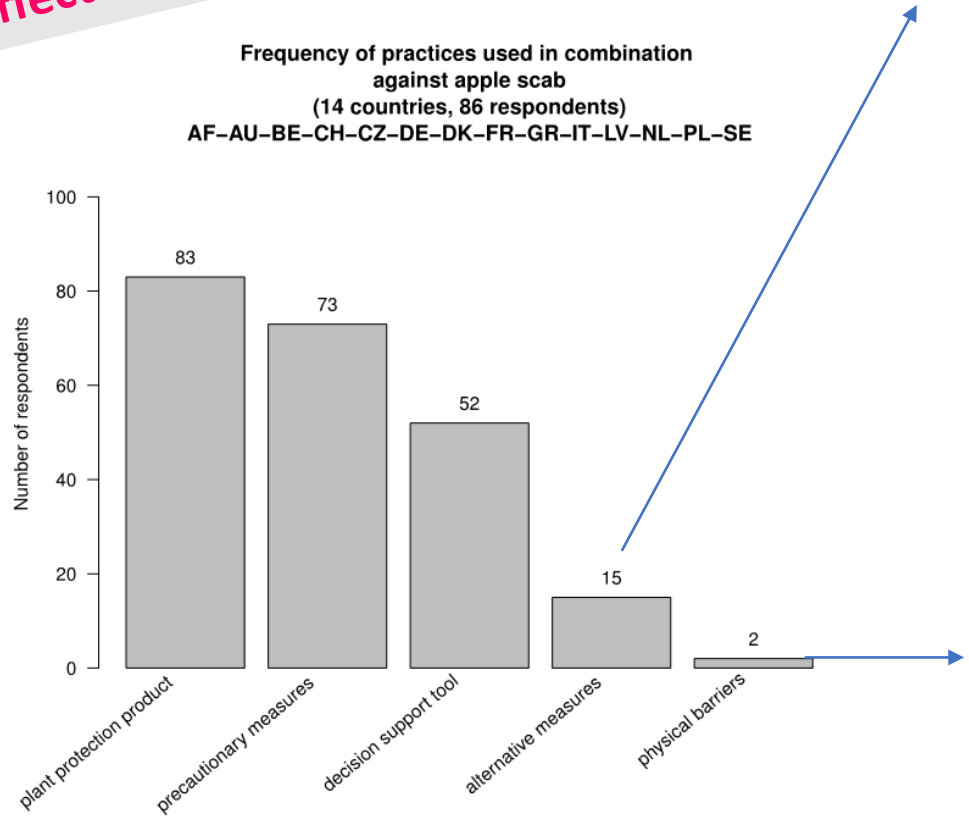
APPLE SCAB (*Venturia inaequalis*) BARI MEETING

Outcome of apple discussion. We agree, but would like to see research on pear. Phytotoxicity? Effectiveness? Trials in BE 2022.



- **Plant strenghtener products** (AU,CZ, Sacharomyces cerevisiae, Memcomba; Lactobacillus ssp. Altela)
- **Nettle liquid manure** (AU,DE)
- ***Bacilus subtilis*** (CZ)
- **Biostimulants** (CZ)

Research needed

- **sulphuric acid clay mixed with horsetail tea and garlic tea** (CH)

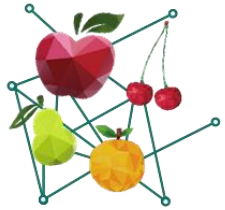
No evidence from research, one single grower

- Neudorff product Pelargonic acid. Not so good as preventive (I), good preventive (D) But good as Stop spray (D, I).
- Chitosan was tested in I with low efficacy. NL in 2021 no effect in small research in the field.
- Additives to enhance copper effect and to be able to reduce the amount of copper (Cover Crop is allowed in NL, D in pear?)
- Additives to enhance the efficiency of sulphur

INNOVATIVE SOLUTIONS

Physical barriers?= SINGLE ROW?? /MULTIPLE ROW?? (ITA)

Pear scab – best practice



- **Direct control**

  Preventive: copper, sulphur, acid clays (if authorized)

  Stop: Lime sulphur, sulphur

  Curative: Sulphur, bicarbonates

- **Precautionary measures**

  Cultivar choice, less susceptible or robust

  Sanitary measures (remove leaves, enhance decomposition process, mechanical treatment)

  Use of forecasting models

- **Alternative measures/innovations**
- **Gapsc**
- **Needs for research**

  Research on scab resistant/robust varieties

  Lifecycle of Venturia pyrina, twigscab!

  Yeast for leaf decomposition (cheaper yeast?)

- **Application technique**
- **Alternatives to copper**

pelargonic acid?

in our experience in Italy twig scab has never been found. the only scab primary infections are due to infected leaf litter (IT) R. Bugiani

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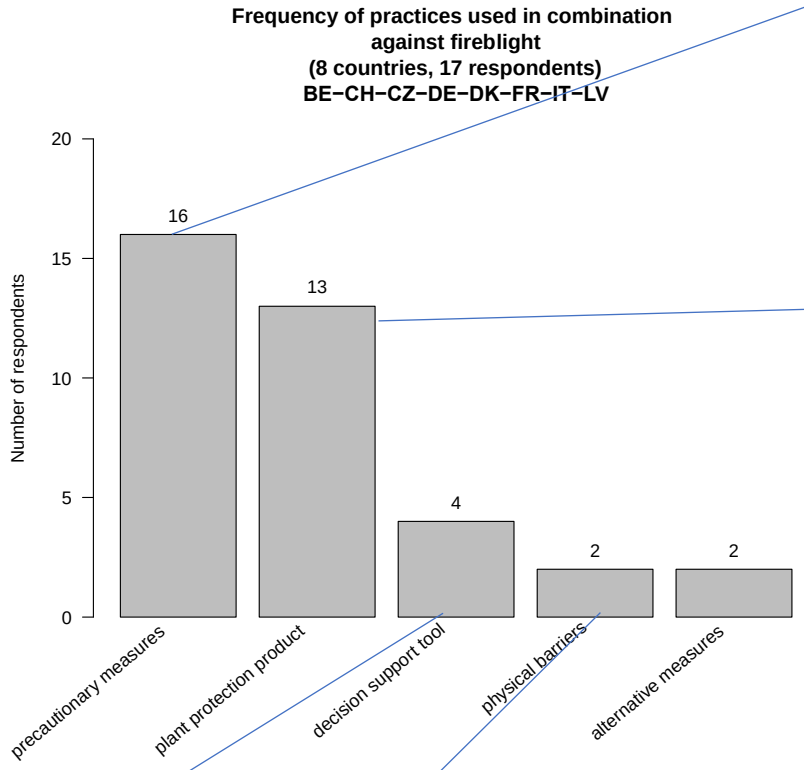
Pear - Fireblight



Mycosin (CH)
Blossom Protect (CH, AU on brown pears, DE)
Vacciplant (CH, FR, DK, AU: resistance) Myc+vacciplant good efficacy
Copper from flowering till late June (FR, IT – for scab till june; automn spray for cancer & fireblight (IT, DE). In be and NL no cu in automn).
Bacillus subtilis not effective (IT) (side effect next to scab)
Amylo-X (B. amyloliquefaciens) (IT no efficacy)

Resistant varieties (CH)
Resistant rootstocks (CH,
Cultivar (CH)
Hygiene (all countries AU, BE, CH, DE, NL, IT)
No overcrown irrigation young trees (DE)
Do not plant to late in spring to avoid late bloom!
Avoiding, clearing infected surrounding plants (DE)
Remove secundary bloom (all countries DE, IT)
Don't introduce via nurseries! (DE, all agree)
Visual control (all, DE, FR, IT)
Remove infected branches, winter/after flowering, burying infected material (all, DE, FR, IT)

Maryblight (CH, AU, IT),
not much used yet Rimpro (NL, BE)

~~Netting during bloom~~ Pollination with bumble bees or wild bees inside (CH, IT) single row nets Complicated and not used.

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Fireblight – best practice

- **Control**

Copper, Blossom Protect, Vacciplant, Serenade, Amilo-X (??)

Mycosin if registered

- **Precautionary measures**

Cultivar choice and rootstock choice

Visual control!

Avoid over-crown irrigation

Check new planting material (nurseries)

Avoid late planting

Sanitary measures (remove infested material, surroundings, nurseries, process, mechanical treatment)

Use of forecasting models

- **Alternative measures/innovations**
- **Gaps**
- **Needs for research**

product, new and the ones registered, effectivenes, side-effects etc)

- **Application technique**
- **Alternatives to copper ?**

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Pseudomonas

Disease not mentioned in de questionnaire, but was added by several growers and came in de expert-poll as third important disease.

Susceptibility varies between cultivars, Xenia is very susceptible, Conference medium. Trees in poor condition more susceptible.

Mainly a problem during wet cold conditions in and around the blooming period. But ia also possible in summer (wet and warm) (AU – main problems 2021 warm, dry summer – 2 days rain → massive infection)

DE: Xenia during flowering – frost protection over-crown irrigation no infection. Same experience in NL. AU: in 2016 same experience.

- **Control**

  Copper products during the blooming period in wet cold weather conditions, 2-3 sprays in spring (IT)

  Vacciplant during bloom under wet cold weather conditions (NL)

- **Precautionary measures**

  Good pruning, removal of infected parts

- **Alternative methods/Innovation**
- **Gaps**
- **Needs for research**

  Effectiveness of Vacciplant, and other plantstrengtheners. Combination with copper?

- **Application technique, Alternatives to copper**

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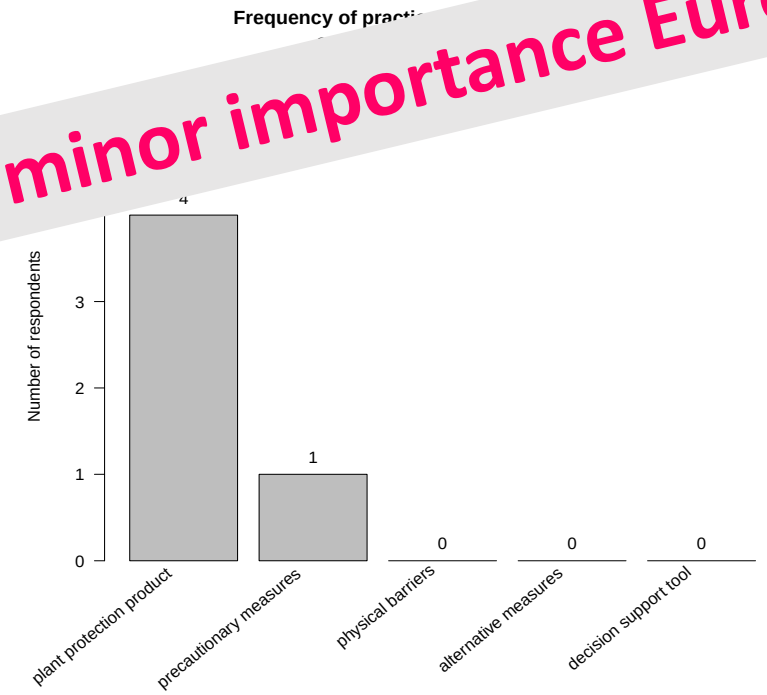
European pear rust

Of minor importance Europe – poll experts



…ect op scab stretegy (AU, DE)
CuOH, S and LS

Not relevant !?

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Pests

- Fruitmoth
- Pear psylla
- Pear sawfly
- Pear bud weevil
- Pear gall midge
- Pear bedstraw aphid
- Brown marmorated stink bug
- Pear leaf blister mite
- Common twist moth (P. heparana)
- Pear leaf midge
- Oriental fruit moth
- San Jose Scale
- Mediterranian fruit fly

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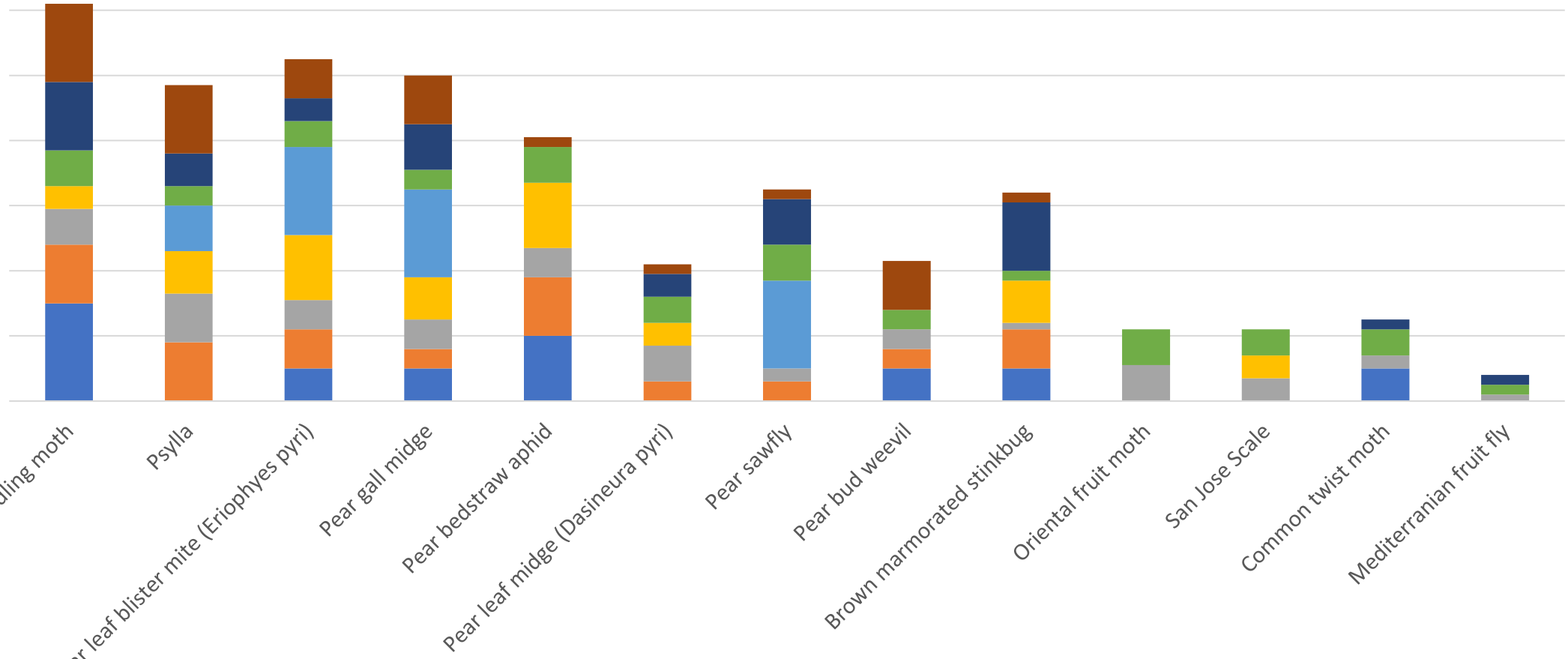
Other pests

Epidiaspis leperii
European pear scale, Rote Austernförmige Schildlaus (DE)

Grapholita lobarzewski (AU)
Green apple aphid (AU)
Agrilus sinuatus (FR)
Stephanitis pyri (IT, could be big problem, leaf drop)
Anuraphis farfarae (IT, not big problem)
Metcalfa pruinosa Citrus Flatid Planthopper (IT)

Pentatoma rufipes Red legged stink bug (DE, NL, BE)

Growers answers on **pests** of pear per country (% of importance mentioned in answers)



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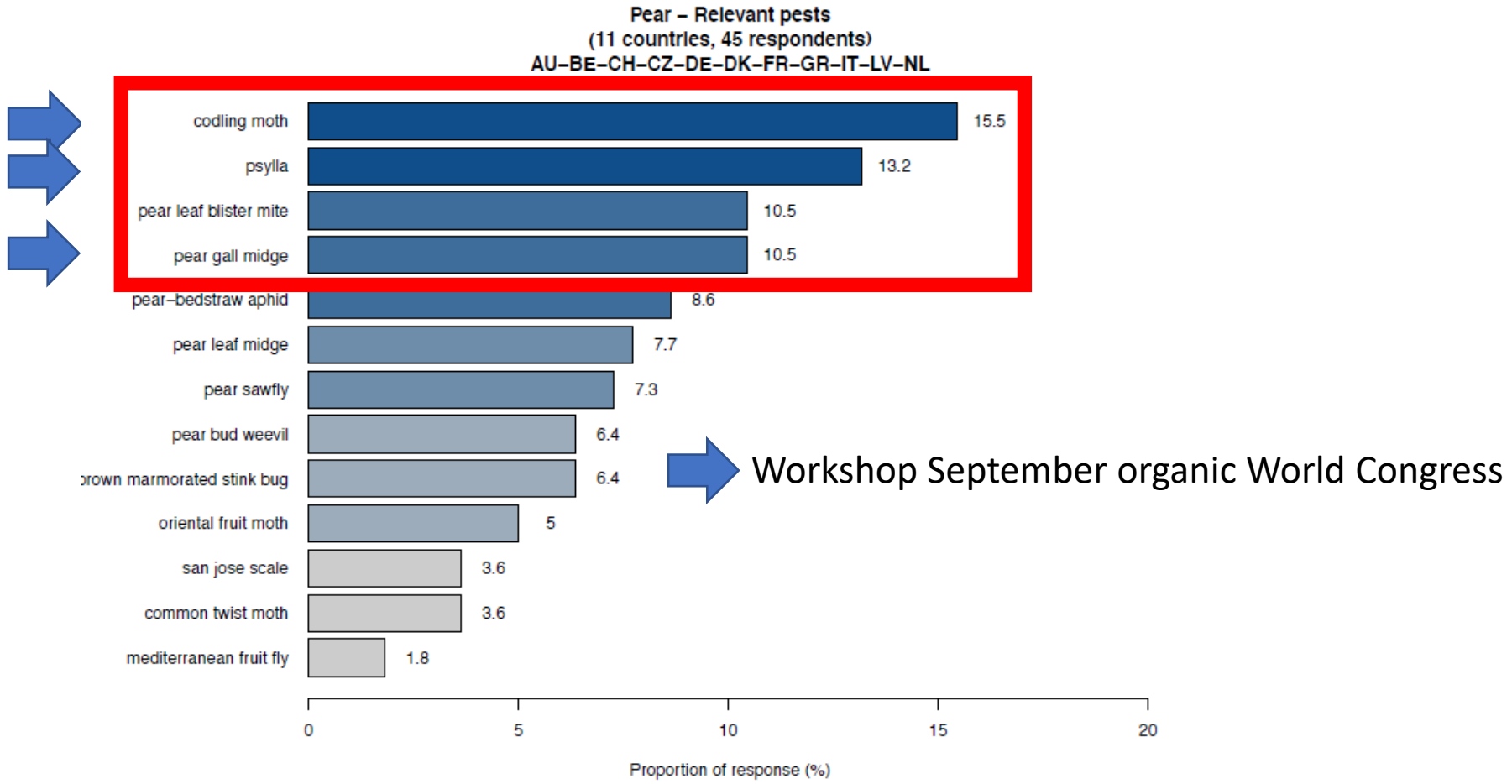
Pest control: which to discuss



Workshop September organic World Congress

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Poll experts (1 most important, 5, 6, 7 least important)

	AU	BE	CH	DE North	DE – South	DK	IT	NL
Codling moth	1 (problem when not controlled)	2	3	3	2	2-3 no problem with pheromone	4 no problem when controlled	6 (do not stop to early)
Pear psylla	5 (not big problem)	5	1	2	1	not in organic	5 (decrease org)	5
Pear leaf blister mite			4			4		
Pear bedstraw aphid	4 (no problem with Neem, otherwise Quassia)		2					
Pear gall midge		3		1	4	3	1	1
Pear sawfly	5 (no problem with quassia)	3		4 (quassia needed!)	3	1	3	2
Pear leaf midge								
Pear bud weevil		3						3
Brown marmorated stink bug	2 (pentatoma)		5		5	not yet in fruit & berry	2	
Oriental fruit moth	5 (isomate, OFM) in very hot summers							
San Jose scale					6		-	
Common twist moth								
Mediterranien fruit fly								
Also mentioned								
Grapholita lobarzewskii (DE)	Isomate works but not so good							
Green apple aphid (CH)								
Pentatoma rufipes (NL, BE, DE)		2 (when in orchard)		5 (grey)				4
Agrilis sinuatus (FR)	in young orchards, irrigation is the key							
Stephanitis pyri (IT)								
Anuraphis farfarae (IT)								

Poll experts (1 most important, 5, 6,7 least important)

On basis on the poll of experts the three main pests in pear are

1. Pear gall midge
2. Codling moth
3. Pear sawfly
4. Stinkbugs (native stinkbugs and brown marmorated stinkbug)

Experts in the meeting

Gerjan Brouwer	Delphy, NL
Clémence Boutry	FiBL, CH
Stefano Caruso	Plant protection service of Modena, IT
Hanne Lindhard Pedersen	Hortiadvice, DK
Renske Petré	PCFruit, BE
Alfredo Mora Vargas	Laimburg/Biofruitnet, IT
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Peter Heyne	ÖON, DE
Niklas Oeser	ÖON/Biofruitnet DE
Karl Waltl	Bio-Beratung Obstbau Steiermark, AU
Thomas Arnegger	KOB, DE

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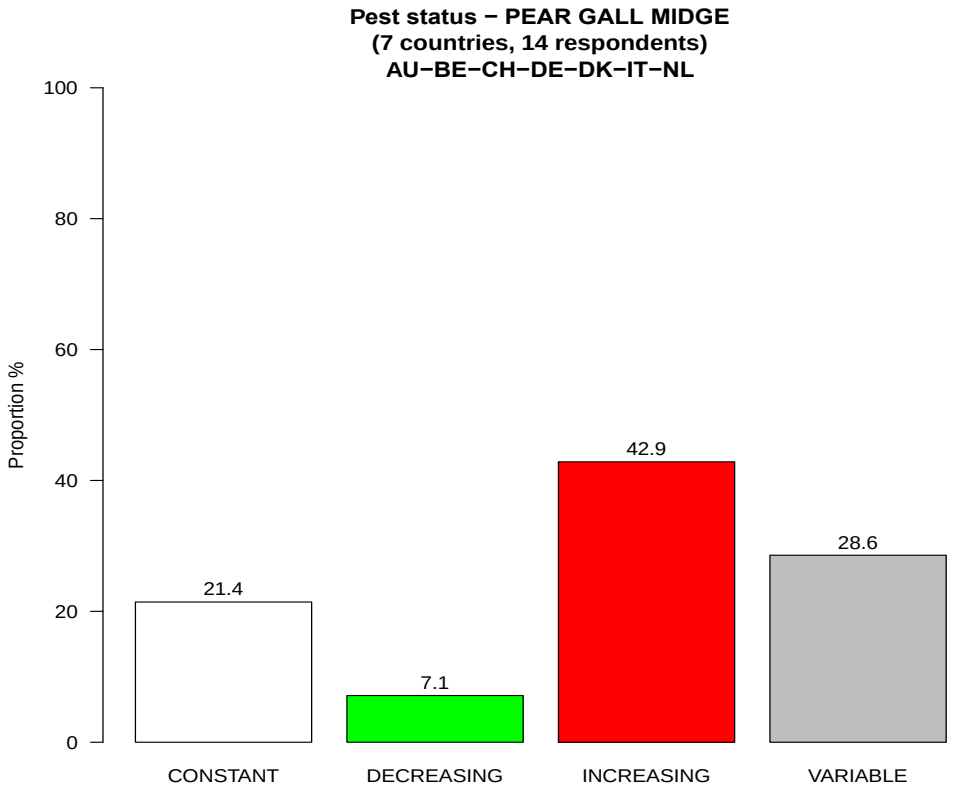
Pear gall midge



Increasing pest

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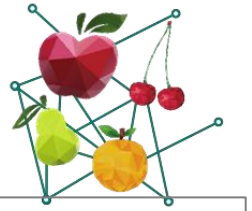
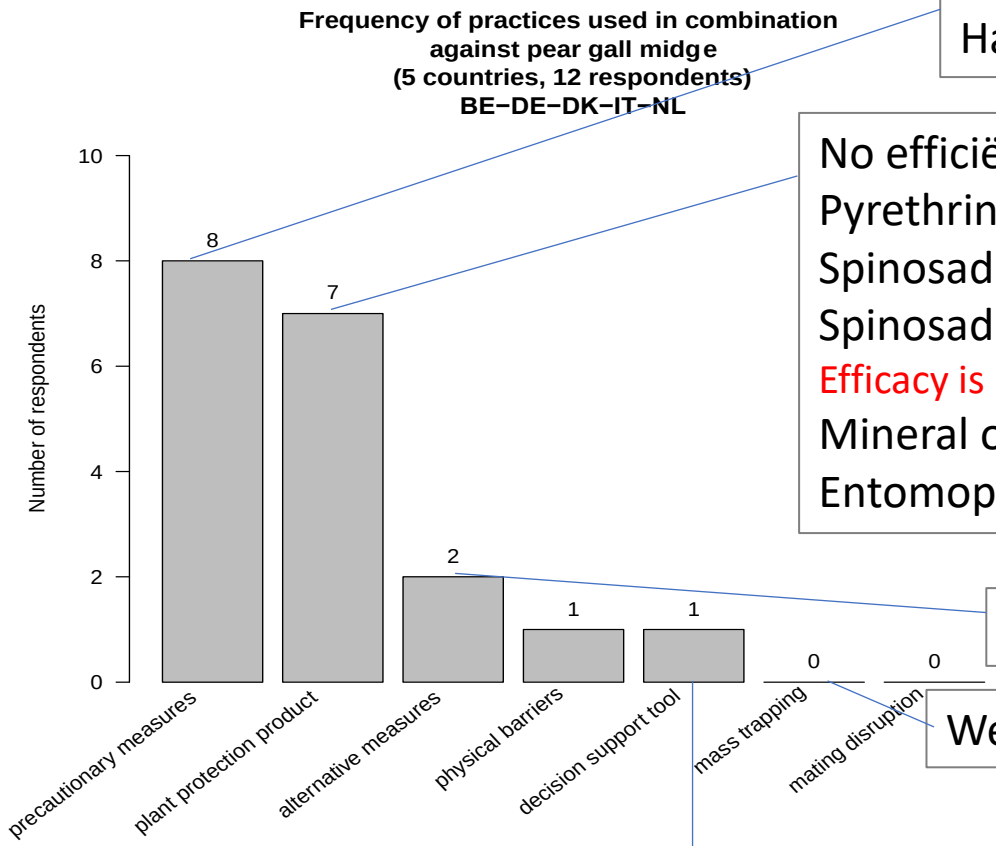
Pear gall midge



In Italy could be a good strategy (IT) S. Caruso

~~Tillage under row (IT)- does it work??~~
Handpicking infested fruit after bloom (BE, DE, DK, NL, IT)



No efficiënt plant protection control method (AU, CH, DK NL, IT, NL)
Pyrethrine before bloom (DE, IT)
Spinosad 1-2 days before bloom (IT)
Spinosad 2x after bloom (IT)
Efficacy is low (oil, spinosad, pyrethrine: timing is difficult, not easy to treat!)
Mineral oil 2-3x before bloom (IT)
Entomopathic nematodes 1x in May (IT) – no efficacy of last results

Searching potential antagonists/beneficials is necessary

We tried mass trapping 1 year, no result untull now (BE, NL)

Monitoring with ~~yellow~~ white chromotropic traps (IT); works better than Delta
Pheromones to be tested (BE, NL)

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Pear gall midge

- **Control**

  Pyrethrine, Spinosad, mineral oil

  Efficiëncy of all measurements is low

- **Precautionary measures**

  Monitoring with traps? Pheromons?

- **Alternative methods/Innovation**

  Hand picking infested fruits (much work)

  Trials with pheromones and mass trapping in BE/NL

  Nematodes do not work (IT)

- **Gaps**

  Knowledge of appearance, right time of possible control/spraying

- **Needs for research !!**

  Effectiveness of pheromones

  Possiblities mass-trapping?

- **Application technique**

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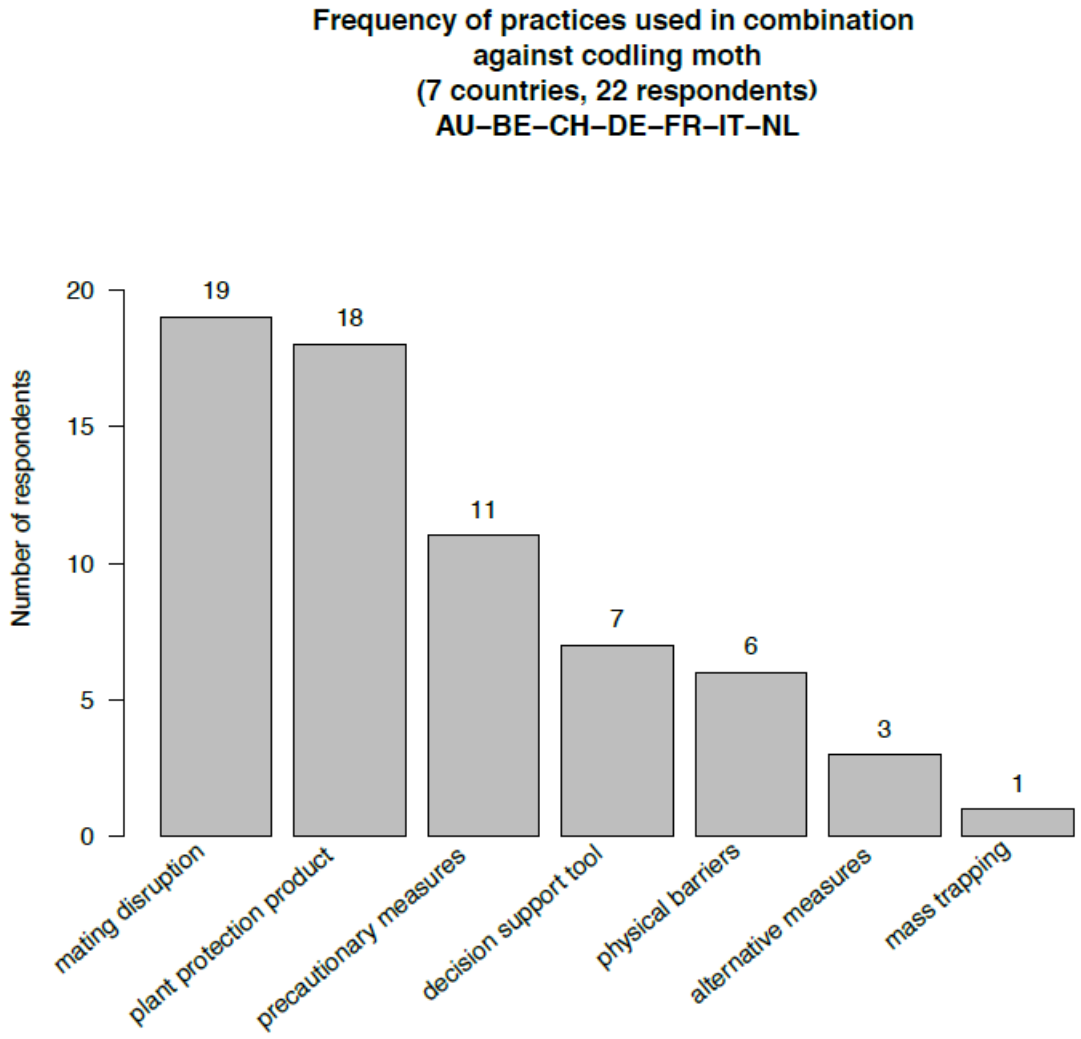
Strategy Codling moth pear

(50 % constant, 27 % increasing, 18 % decreasing, 5 % variable)



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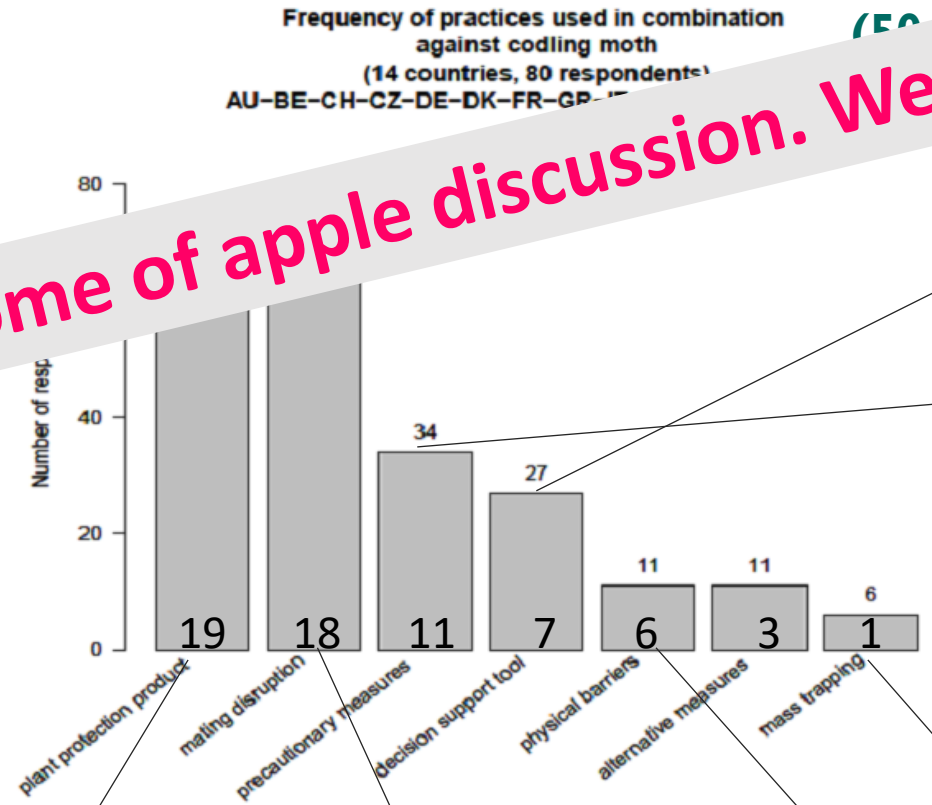
Strategy Codling moth

(50 … 27 % increasing, 18 % decreasing, 5 % variable)

Outcome of apple discussion. We agree



pear

Visual control (I) ~~yellow traps (I),~~ model (RimPro and fruitweb and others), pheromon traps, mass traps for control or monitoring (CZ)

- Avoid bambus sticks and wood piles (use acacia or metal or plastic or beton) in the plantation (D)
- Manual picking of infested fruits with living larvae. Remove these fruits from the orchard (D)
- Enhancement of beneficial insects and bats e.g. by biodiversity, e.g. flowering strips (D, CH)
- Mulching of infested apples (CZ)
- Cardboard strips (F)
- Grinding of thinning wood (CH)
- Donot store the stems and piles of the uprooted orchards and storage boxes (plastic better than wood) near orchards in production (if not evitable then use nematodes or nets to reduce the pressure).
- Variety: There are differences in varieties (research result from Laimburg) but it has not really practical relevance.
- Avoid high trees in the orchard or at the border since they increase the pressure and make mating disruption more difficult.

In Italy good results with green oil and summer mineral oil (IT) S. Caruso

GpGV (all)
Spinosad only N-Italy (3 gen.), not allowed everywhere, side effects on beneficials! (I, F)
Nematodes (D, I, A, F)
~~*Bacillus thuringiensis* (F, EST)~~

Dispenser (I, D, NL, B, F, CZ, PL, CH, DK)

Puffer (I, D, NL)

Insect nets (F, I….)

Kairomon traps (S)

Does this show the current practice, is there anything important missing?
What should we remove as best practices, what should we add?

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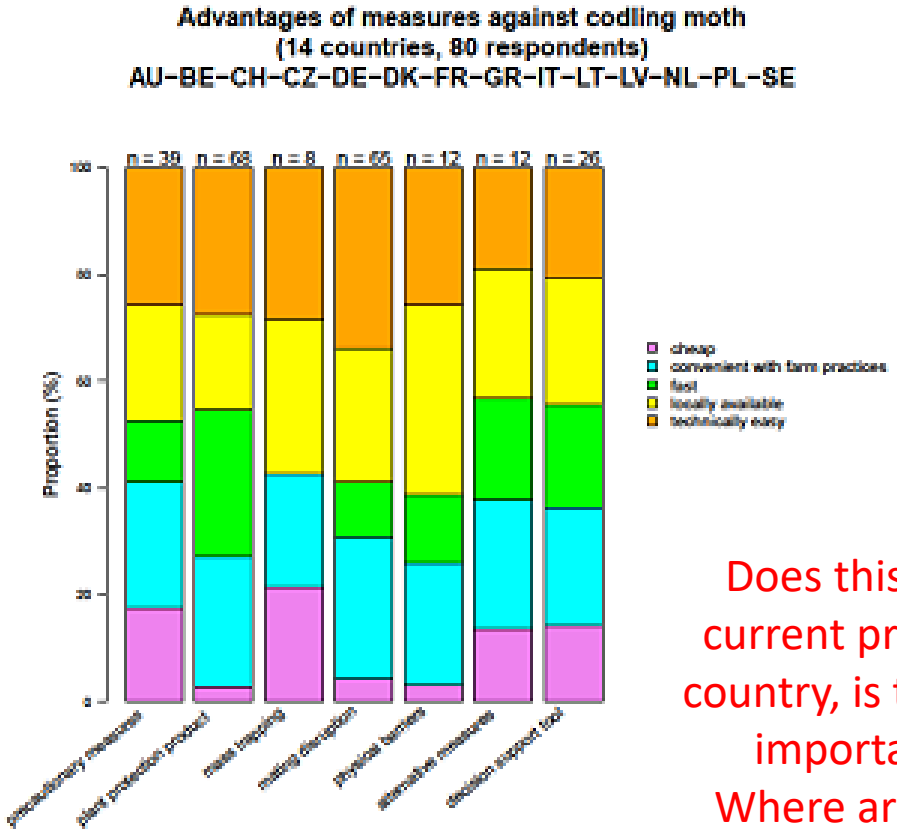
Outcome of apple discussion. We agree

Advantages

Available in all countries and technically easy to handle

Good integration in farm practice



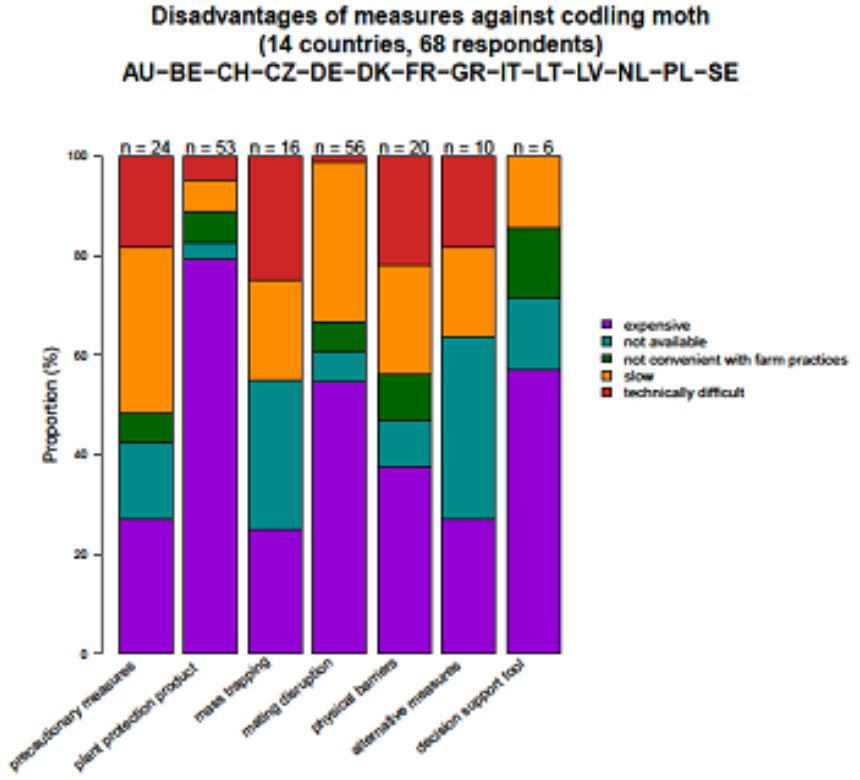
Disadvantages

Spinosad: problems with residues, high temperatures, rain, soil structure (I)

CpGV: not very effective (I). Virulence management!

Whole strategy is **expensive and slow**

Small plots with suroundings with extensive orchards the strategy does not work with the strategy

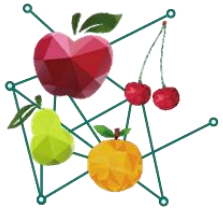


Does this respect the current practice in your country, is there anything important missing

Where are differences between countries/regions/zones?

Oils against Carpocapsa, they work quite well with pears, with the apple we had no positive results (IT) M. Kelderer

Exclusion netting is very wide spread in Italy and France (IT) S. Caruso



Alternative measures/innovations

- Fructose (F, E… ough experience
- Kaolin (F)
- Mass trappi…

Outcome of apple discussion. We agree.

Specific pear:

- **When is the fruit susceptible? Conference 10-14 days later as apple (NL research WUR 2013)**
- **Pear later more susceptable?**
- **Other varieties?**

Gaps and challe…

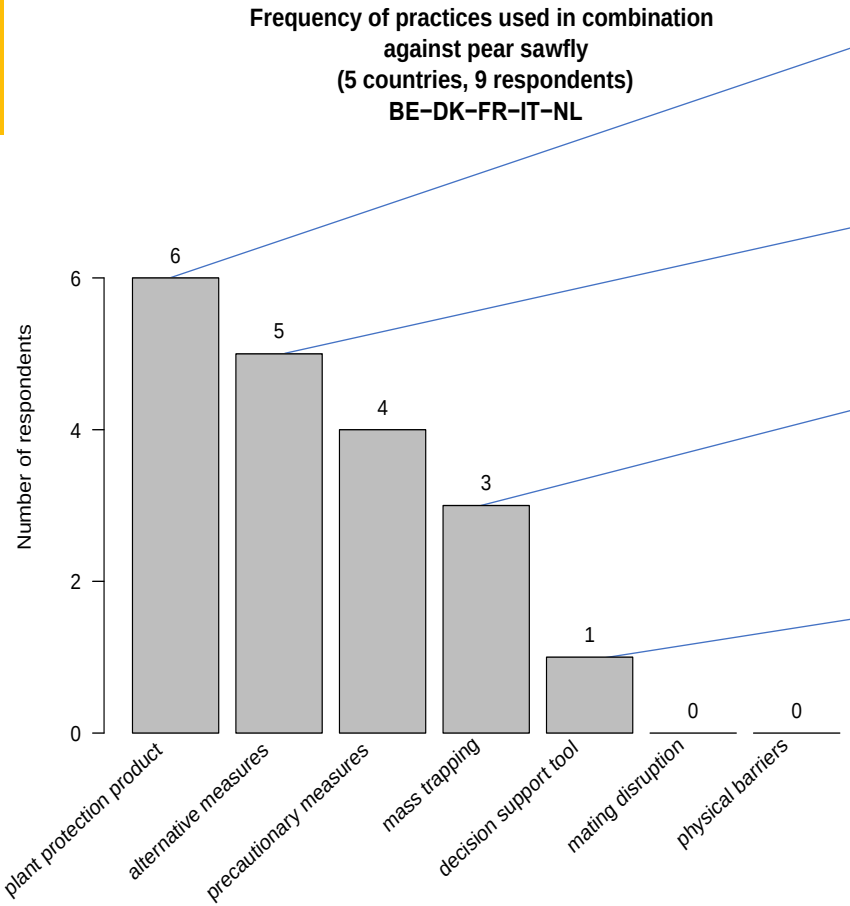
- Strategy for a lo… pressure is redu…
- Not apply CpG … products contain … resistance situation of each orchard. We have … ost … he
- Alternative control measures (D;I;A;F....), new MO from South Afric… on resistance but further research needed.
- Physical barriers (all), expensive, problems with other insects. How to minimize? Combine with rainroofs. Rainroofs make side effects worse. More research'! Effect of nets on natural enemies.
- Potential of mass trapping
- Potential of the enhancement of beneficial insects and bats e.g. by biodiversity, e.g. flowering strips (D)
- Mixed plantations of different fruit species,

  Mixed plantations of different apple varieties, varieties more attractant may be affected more.
- Easy method for disinfection of boxes
- Research on comparison of different mating disruption methods in different regions
- Hail nets on the side of the orchard to reduce the pressure from adiacent extensive orchards/single trees

Pear sawfly

(64 % increasing, 9 % constant, 27 % variable)

Quassia in not authorized in Italy (no products registered on the market) (IT) S. Caruso



Quassia (AU, DE, FR 2x), in other countries not allowed
Timing at petal fall (FR), DE later
Big dependancy on quassia!!
Nematodes 1.5 bll?ha at petal fall (FR), DE/NL no effect

Tilling soil when nymphes fall down (FR), experts expect no effect
Tillage under the row (FR)

Blue and white adhesive plaques 80 traps/ha (FR)
White plates to catch sawflies (NL), research ongoing

Used in Dk. Also smal trial, where the infestations was reduced H. Lindhard

Rimpro (NL), works quite good visual control is still necessary
White sticky traps (Rebel) (all countries)

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Pear saw fly

- **Control**

  Quassia

  Spinosad if authorized

  Neem not on the most varieties (p.a. on Conference very phytotoxisch)

The danish pear variety is also damaged by Neem (DK) H. Lindhard

- **Precautionary measures**
- **Alternative methods/Innovation**

  Mass – trapping

  Tillage ??

- **Gaps**

  Knowledge of effect mass-trapping

  Possibilities natural enemies, how to stimulate

- **Needs for research**

  Effect of mass-trapping

  Natural enemies, and how to stimulate them

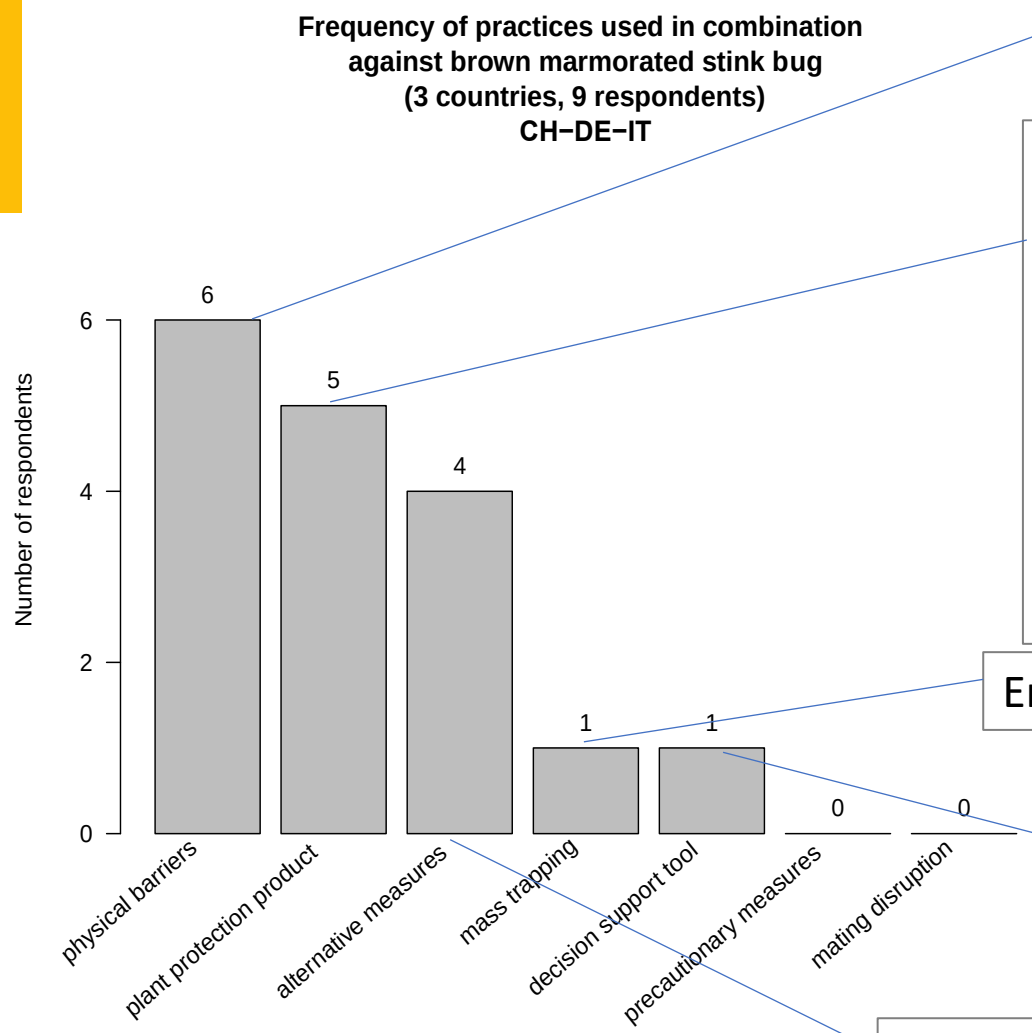
  Exact timing of quassia on pear

We had a little trial on timing at a growers site 3 years ago. We used apple sawfly timing from rimpro. good effekt, better to split the dose in two (DK) H. Lindhard

- **Application technique**

Brown marmorated stinkbug

(64 % increasing, 27 % constant, 9 % variable)



Whole orchard netting (CH, IT)
Single row netting (IT)

Spinosad (CH, IT)
Pyrethrum (CH, IT, DE) 5-6x during season
Spinosad, pyrethrum not effective (DE, CH, IT)
Kaolien (Cutisan, Surround) in spring (IT) 2-3x after bloom
Prevention egg laying aginst H.Halys (start in May)
FiBL trials with kaolin on pear against Halyomorpha
https://www.bioaktuell.ch/fileadmin/documents/ba/Agenda/Agenda_2021/Kurs_2021/4-Cahenzli_Obstbautagung_2021_FC_oeffentlich.pdf

https://orgprints.org/id/eprint/38834/

End of summer shelters with neck panels (IT)

Visual control (IT)

Release of beneficials (samurai wasp) (IT), trial stage

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Other stinkbugs

- Red legged stinkbug Pentatoma (BE, DE, NL)
- Grey stinkbug (AU)

- Increasing problem, more and more problems
- Urgent action needed!
- Trials running in DE, BE
- Not in all orchards and varies from year tot year
- Damage can be enorm, growers are afraid.

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Strategy brown marmorated and other stinkbugs

- **Control**

  Pyrethrine, Spinosad, kaolien

  Efficiëncy of pyrethrine and spinosad is low

  Kaolien at trial stage (BMS). Possibilities other bugs?

- **Precautionary measures**

  Netting (marmorated efficiënt, trials BE Red legged no results)

- **Alternative methods/Innovation**

  Release of beneficials (trial stage BSM). Other stinkbugs (research DE)

- **Gaps**

  Lifecycle

- **Needs for research**

  There is a lot of research on-going on BSM mainly!

  Kaolien further research

- **Application technique**

Mg silicate used also as plant strenthgtener on pear brown spot have a side effect on psila (IT) R. Bugiani

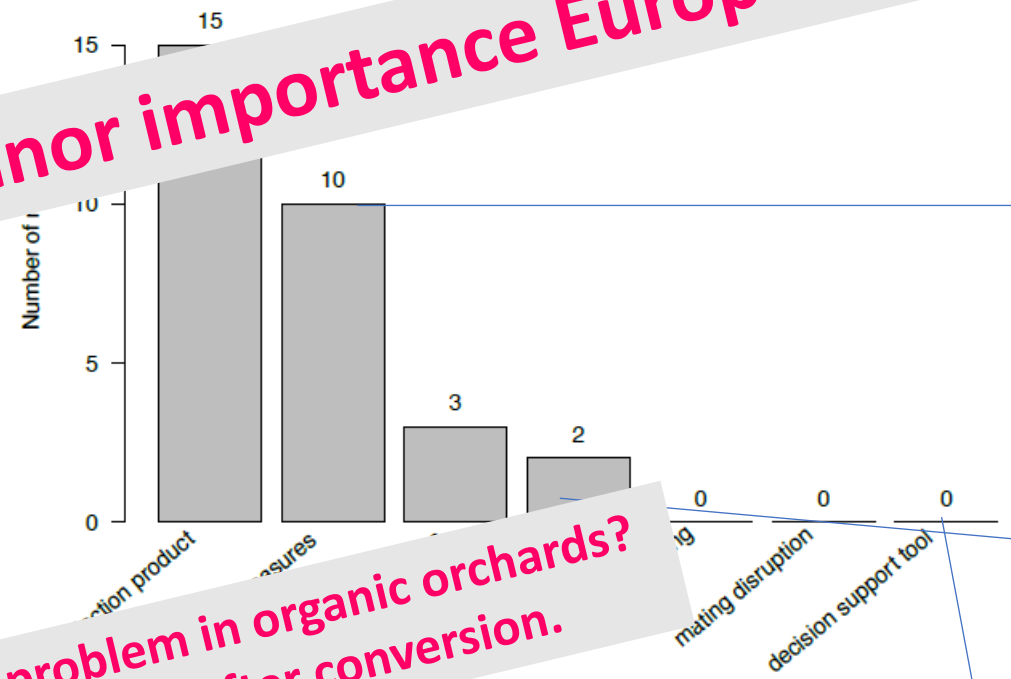
Strategy Psylla

(22 % constant, 11 % increasing, 67 % variable)

Soaps – cocana, flipper, Neudosan (CH, DE, NL)
Formulated potassiumbicarbonates (DE,
Kaolien (Cutisan, Surround) in spring (NL, BE, CH, IT, AU)
Prevention egg laying aginst H.Halys (start in May)
FiBL trials with kaolin on pear against Halyomorpha
https://www.bioaktuell.ch/fileadmin/documents/ba/Agenda/Agenda_2021/Kurs_2021/4-Cahenzli_Obstbautagung_2021_FC_oeffentlich.pdf

...org/id/eprint/38834/
... spring (NL, IT)
Spinosad (CZ, IT) – against codling moth (3 generations). Summer mineral oil or green oils against codling moth with side effect to psylla
Wetting agent with much water/washing (DE, NL, BE, IT)
Pyrethrum (IT)

Frequency of practices used in combination against psylla
(7 countries, 16 respondents)
BE–CH–CZ–DE–DK–IT–NL



Of minor importance Europe – poll experts

Attract beneficial insects (CH, DE, IT, NL, BE)
Launch Anthocoris (IT)
Long grass in alleys, alternative mowing (DE)
Varied hedgerows
Flowerstrips (DE, BE, NL)
Not too much nitrogen (NL)

Over-crown irrigation (DE, NL, BE, IT)

Psylla is a problem in organic orchards? The first 1-2 years after conversion.

Forecastmodel Psylla and natural enemies (BE)

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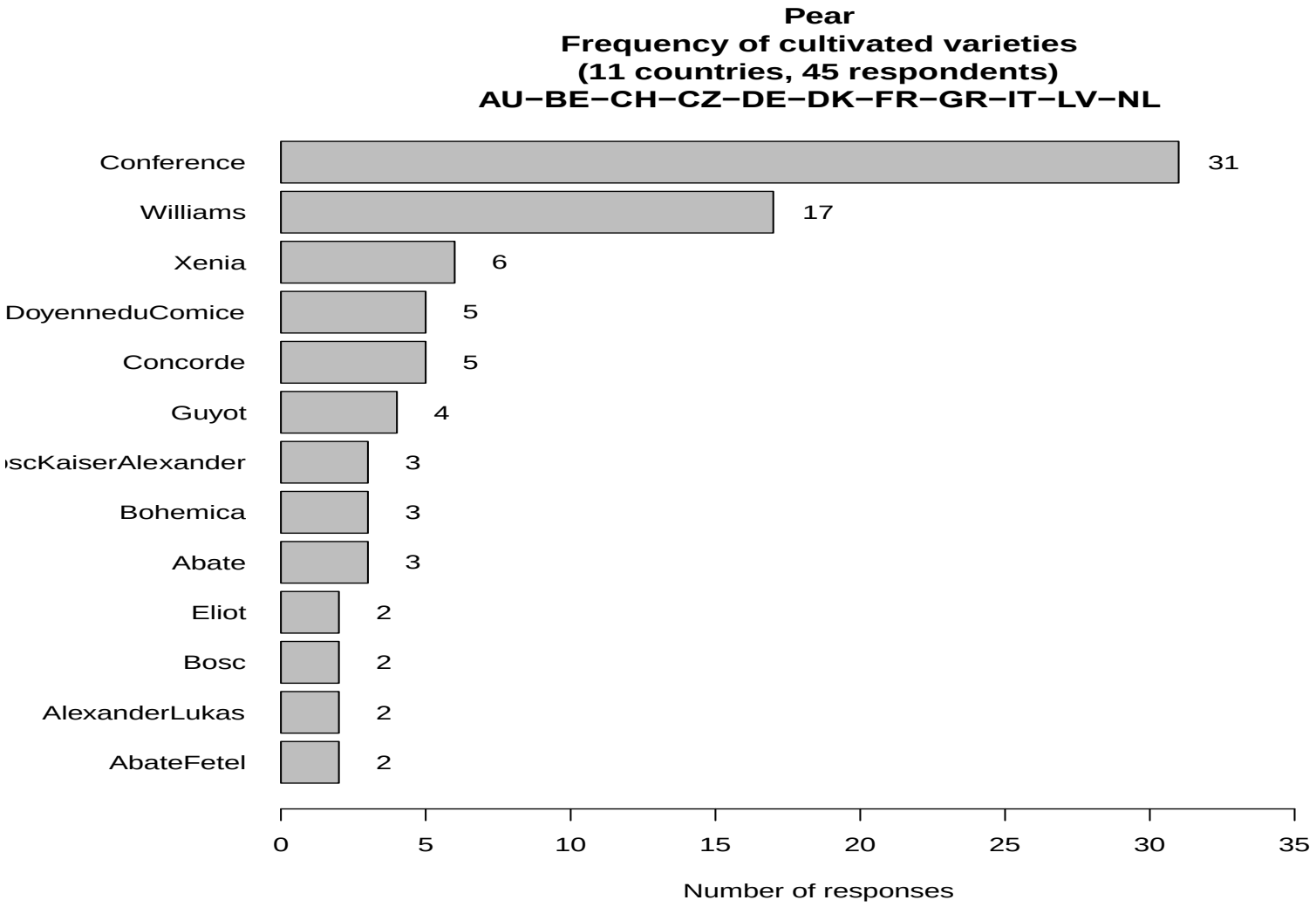
Varieties



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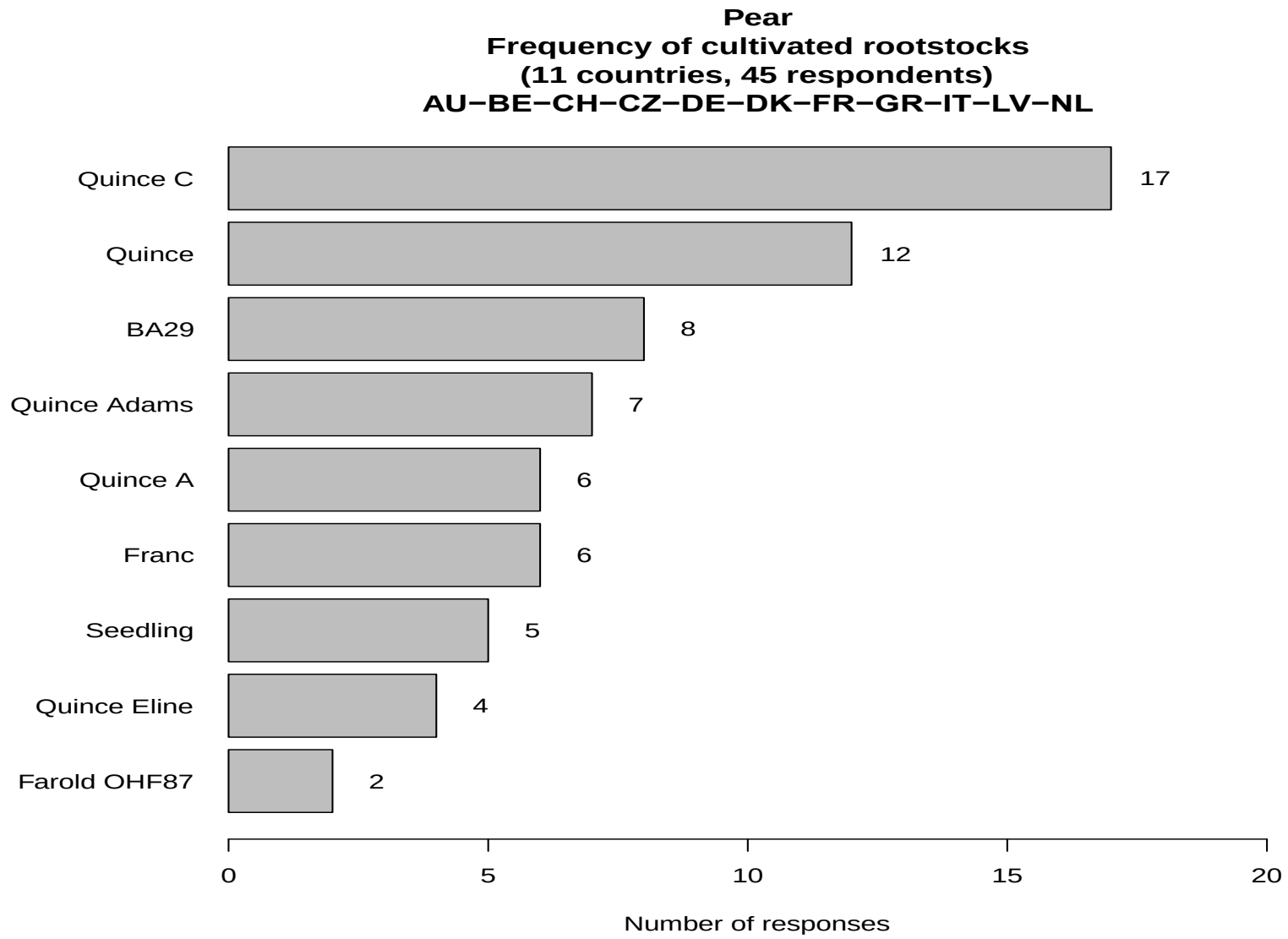
Rootstocks



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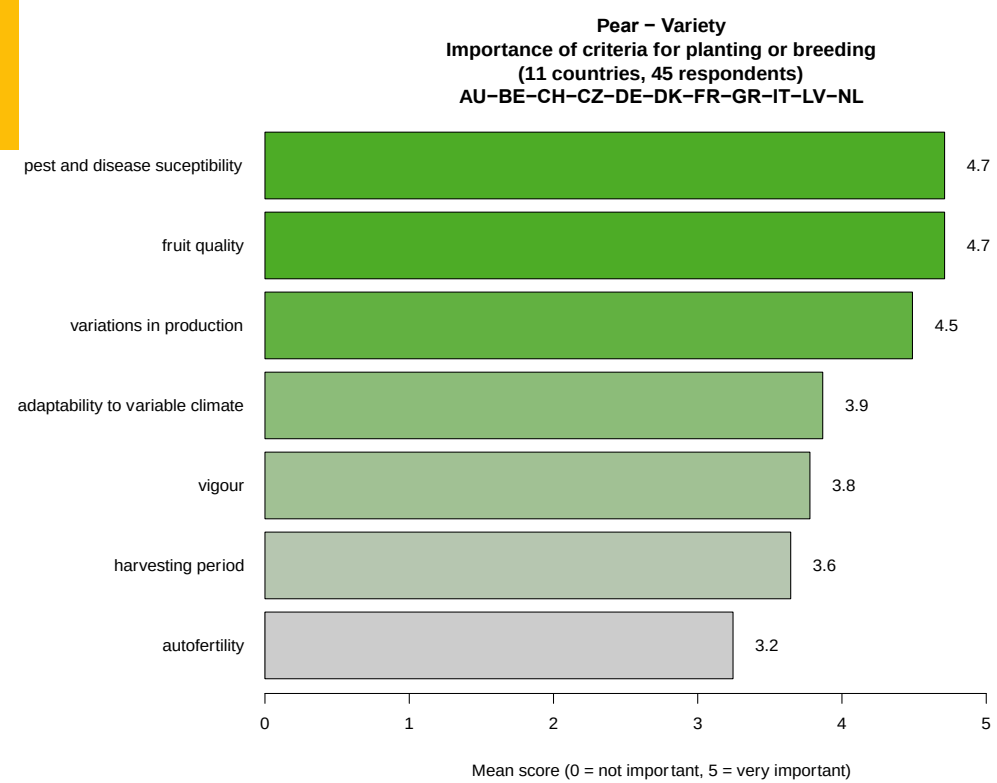
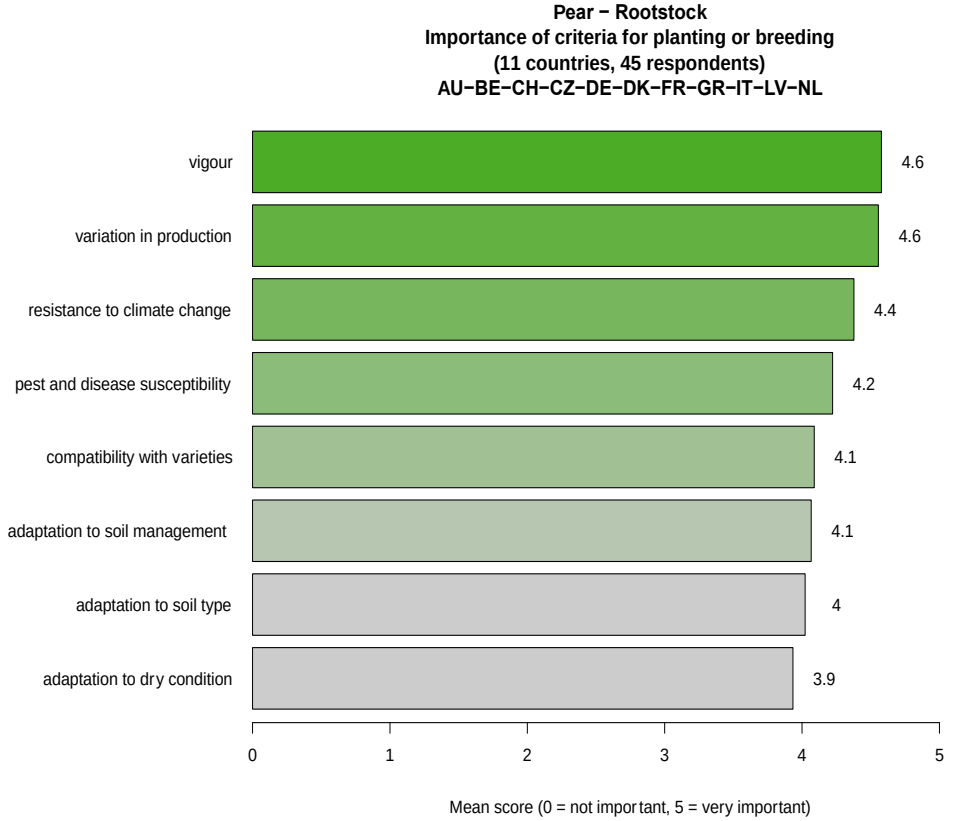
Criteria varieties and rootstocks





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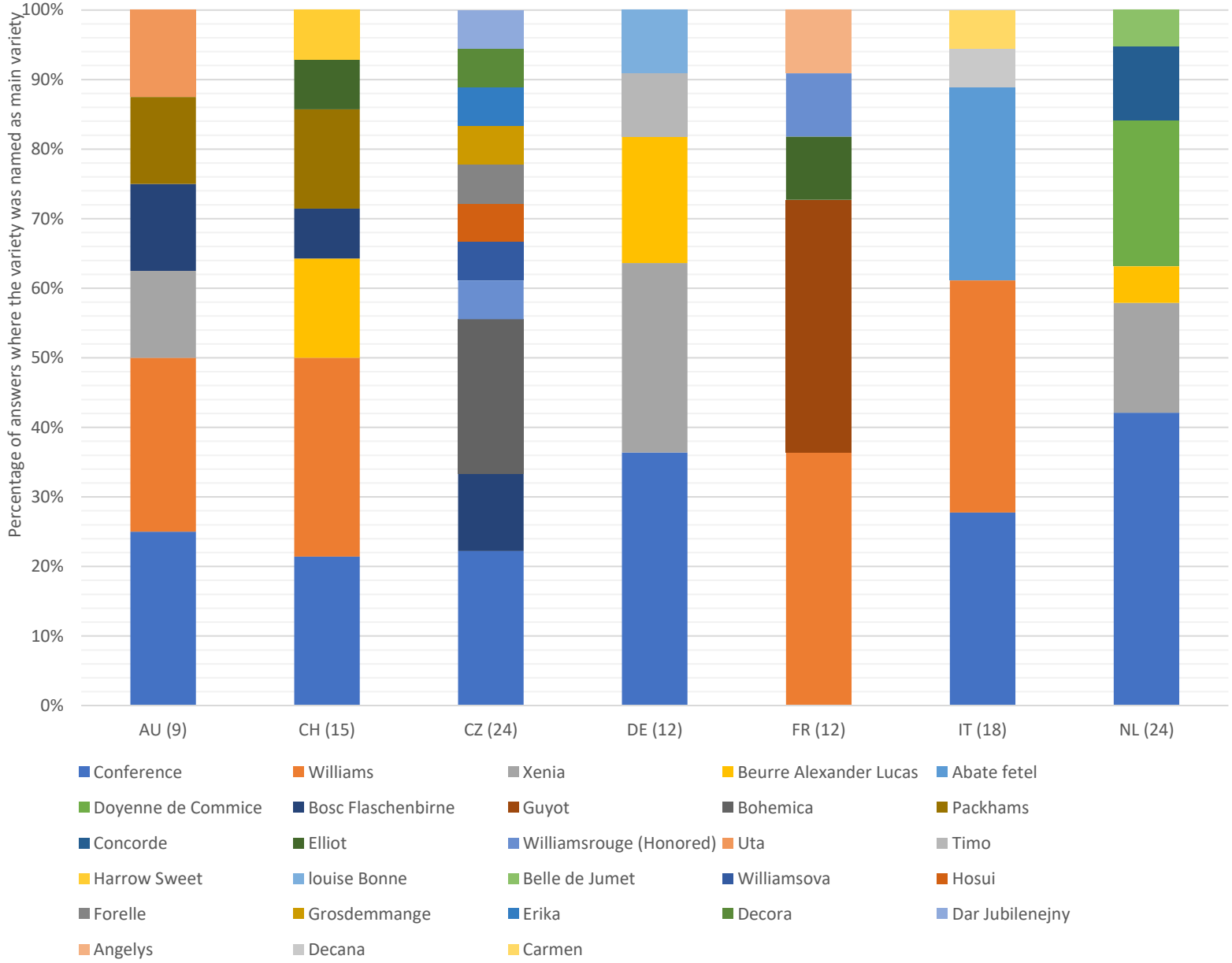
Main varieties pear per country



Does this show the current practice, is there any important variety missing?

In Italy Angelis, Carmen and Harrow sweet are also cultivated (IT) R. Bugiani

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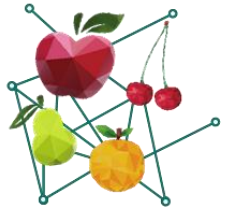
Apple discussion. Do we agree for pear



What can we learn from the variety mix for the best practices? Comments in red please!

- Intelligent mix of susceptible standard varieties and robust varieties needed. Xenia? Fred?
- Best practice is also what has a future for organic growing. We are prisoners to the market but we need to find a balance. Influencing the market is difficult. Really organic = organic varieties
- The variety spectrum has to change almost partly after conversion to organic → much more difficult for pear than for apple with a longer lifetime of pear orchards
- Can we give some recommendations for varieties suitable for organic farming?
  - general or per climate region?
- Robust varieties (Xenia) are less susceptible but how long will this last? Example Conference. 20-30 years ago not susceptable for scab and now very!!

We need a variety concept as part of the disease control strategy. Intelligent variety mix. We need a lot of research for this, may also result in more susceptibility for the resistant ones.

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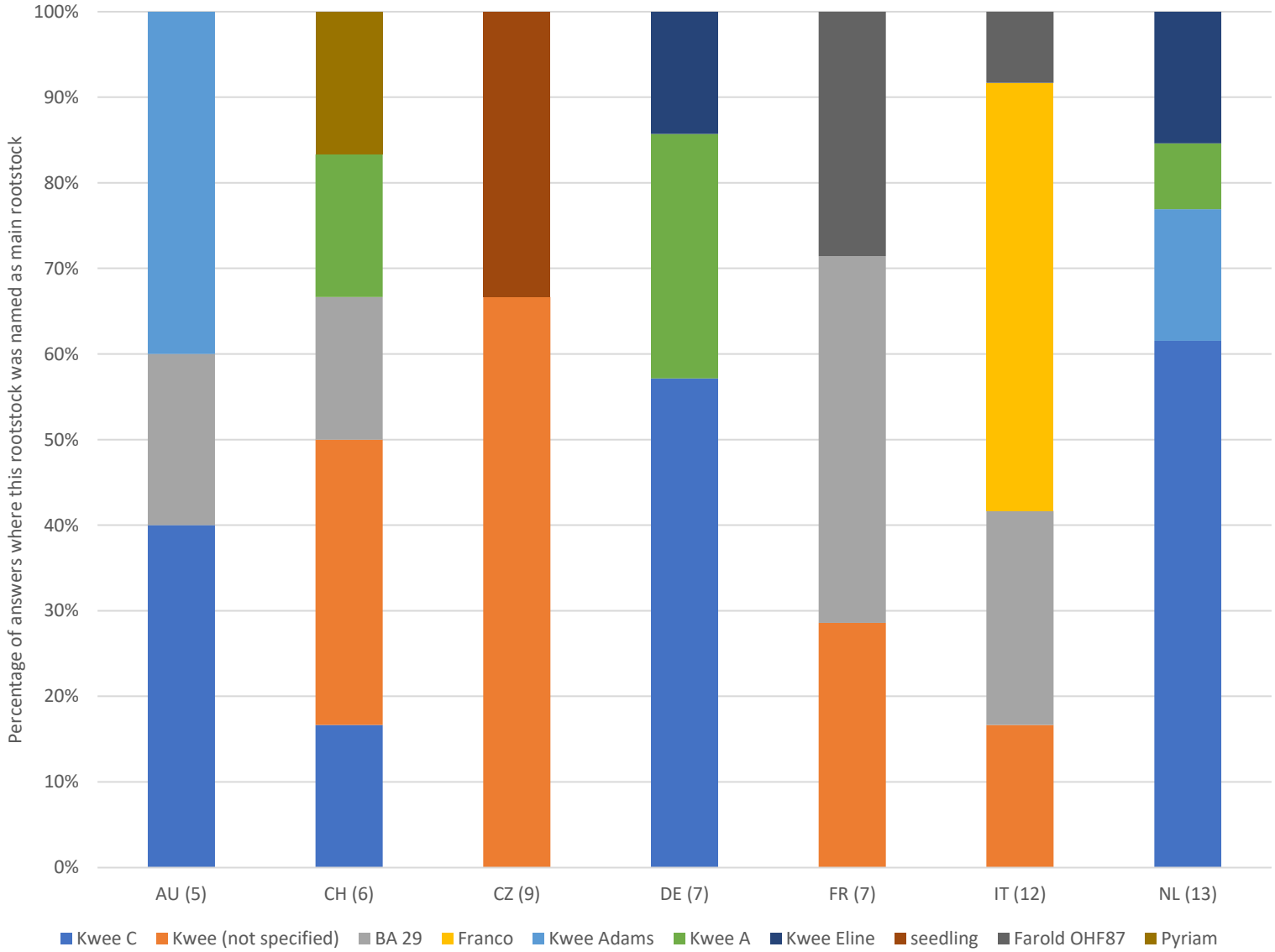
Main rootstocks pear per country



Is there need for more/other rootstocks?

Which criteria are important?

Difference because of kind of soil, water availability and region.

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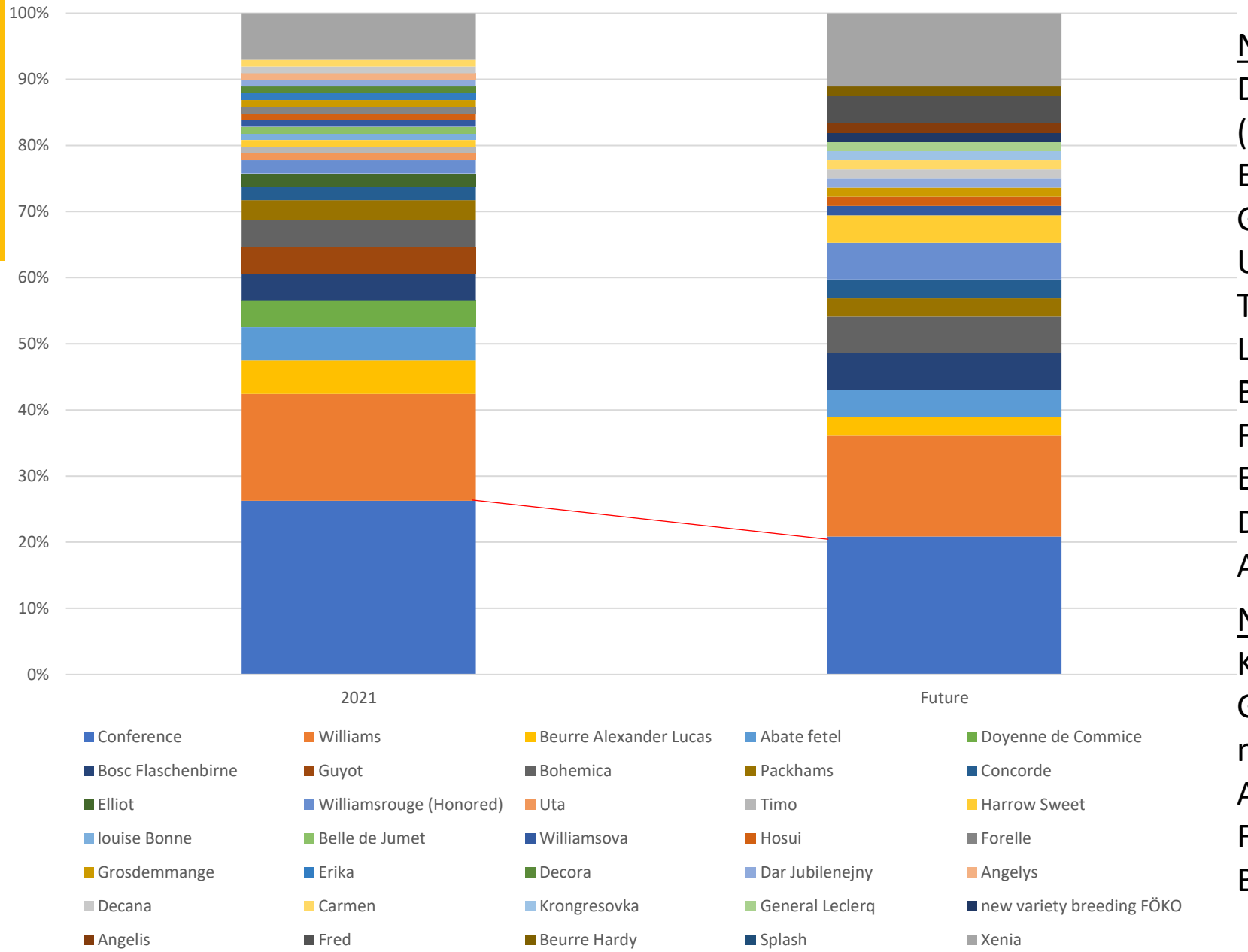
Change in varieties to be planted



<u>No more</u>

Doyenne de Commice (Vereinsdechant)
Elliot
Guyot
Uta
Timo
Louise Bonne
Belle de Jumet
Forelle
Erika
Decora
Angelys

<u>New</u>

Krongresovka
General Leclerq
new variety breeding FÖKO
Angelis
Fred
Beurre Hardy

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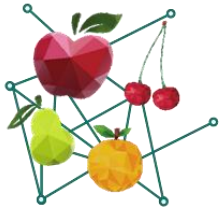
Discussion future pear plantings



Fred could be a possible alternative since it proved to be far less susceptible to Stemphylium vesicarium infection on the basis of artifical inoculation Conference in E-romagna region has always been considered among the susceptible variety. Abète Fetel among the tolerant ones. William has been considered the most susceptible to scab. Maybe different population selected in term of aggressiveness ?
(IT) R. Bugiani

- Main varieties are and will be Conference and Williams.
- Scab situation of Conference is very tricky.
- Fred is coming.
- Other varieties coming??
- Much less changes as in apple! Because of longer lifetime of pear orchards.
- What are our criteria for new pear varieties?

Apple discussion. Do we agree for pear

- We need new concepts for market introduction for new varieties. Farmers have to agree together for introduction strategy.
- Include the whole Production chain in the topic.
- Sell the whole concept diversity as part of organic so diversity of varieties is a quality.
- We have to work on a great diversity of variety and convert also the production chain to this. Challenge for the future!
- Proper balance between market pressure and ecological working

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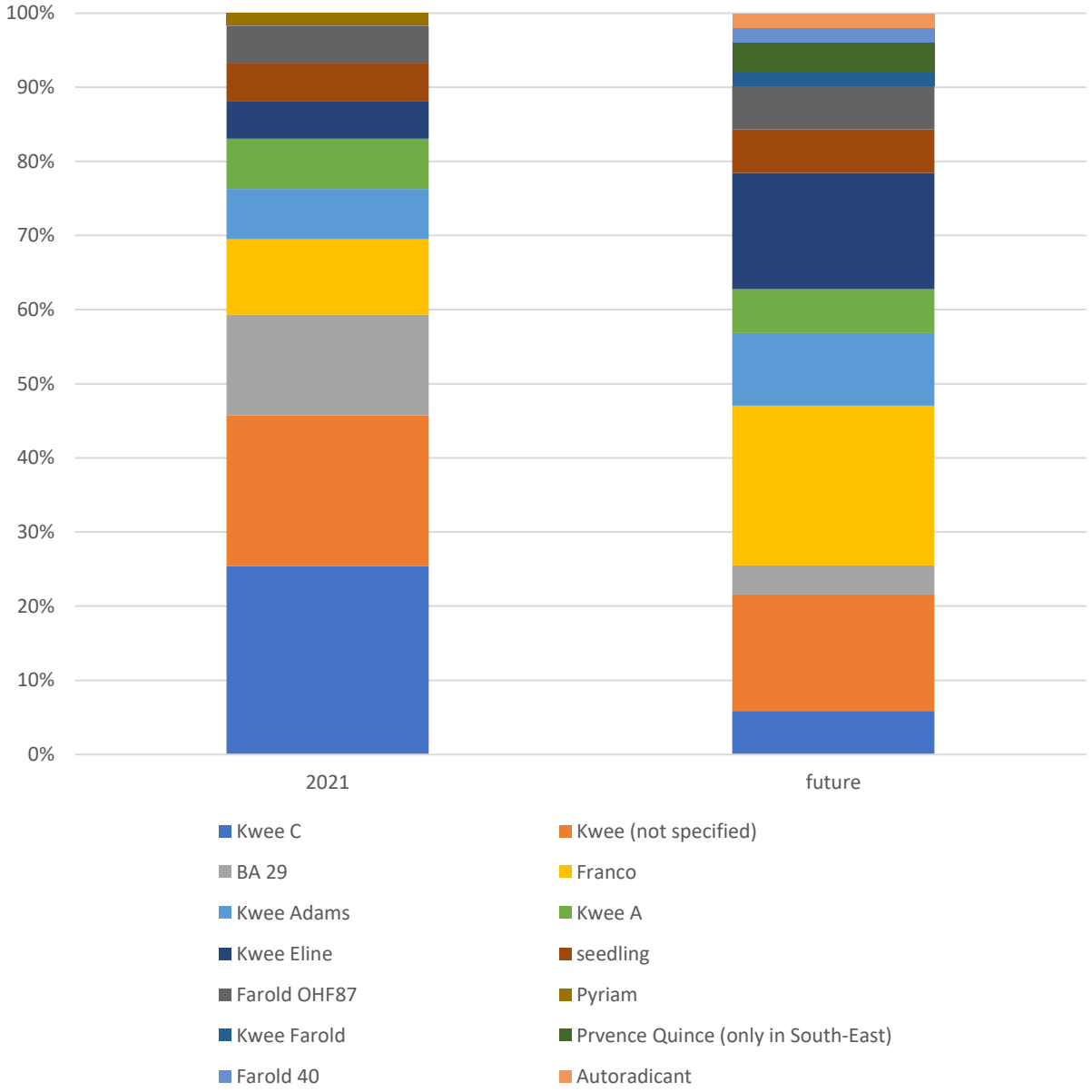
Change in rootstocks to be used



<u>No more</u>
Pyriam

<u>New</u>
Kwee Farold
Provence Quince (only in South-East FR)
Farold 40
Autoradicant

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