

4rd European Conference on Copper in Plant Protection

14th-15th November 2019 in Berlin, Germany



Background

Since 2004: BÖL-project 03OE178/06OE100 „Working net“ = Network for the improvement of the production system in organic fruit growing

Fruitgrowers – Consultants – Researchers – Associations - Experts

Improvement of the production system

- Find sustainable solutions for the existing challenges
- Improve the fruit growing systems towards the Principles of Organic Agriculture

→ Make the organic fruit farms fit for future!



Challenge

We need data from real practice as basis for the discussions about the improvement of the production system

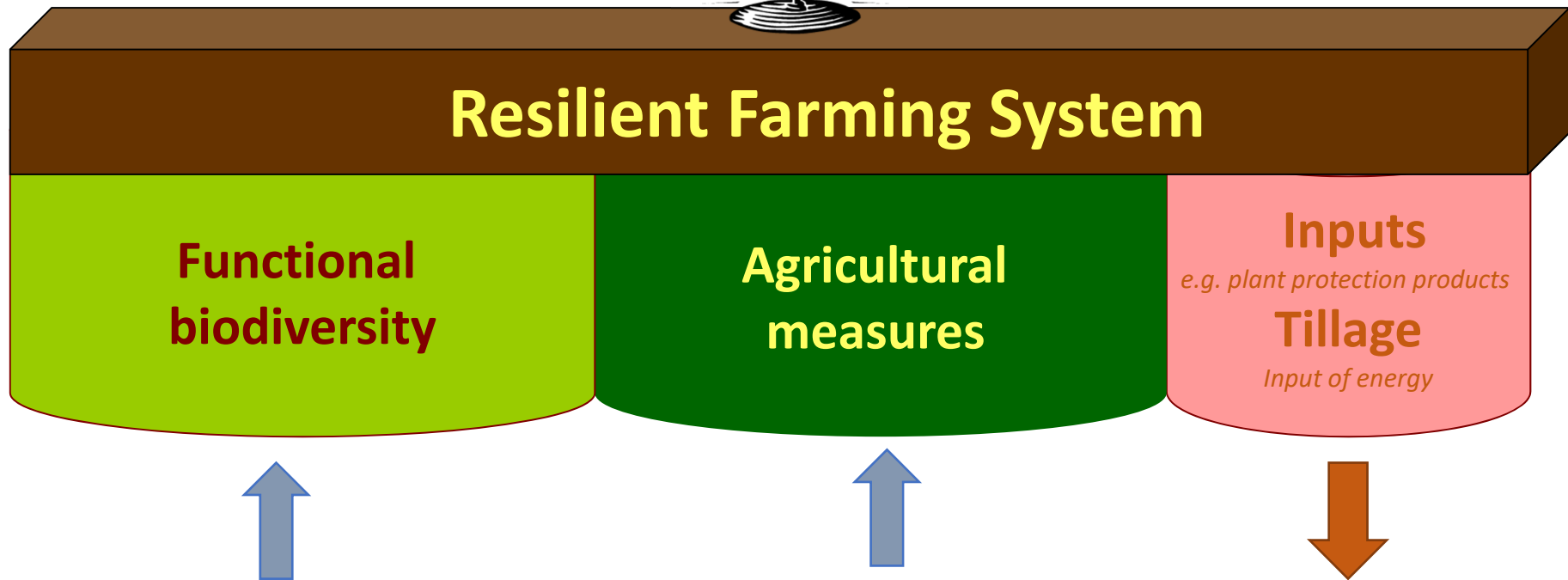


Open questions

- **Which data do we need?**
- **Which data is realistic to collect**
- **How can we work with these data?**
- **What is the real benefit?**

The Strategy for Plant Health Care in Organic Farming

- Which data do we need?



- Farming systems aim always to **reduce their dependency** of off farm inputs
- The intelligent **combination** of measures is **responsible for the efficacy of the strategy**

- **Which data is realistic to collect**

Data collection

Field record system (www.proflura.de) suitable also for audits and requirements of agricultural administration and all analysis desired
„Record the data only one time!“

Record of the infestation level of main pests and diseases of the single plots sorting the infestation into classes

The less you go into detail the worse is the validity of the conclusions you can draw

Find a realistic balance!

How can we work with these data: What fruitgrowers demanded

- No summarizing of parameters in indicators
Presentation of the single parameters. The effects of the strategies must be shown on „parameter level“
- No rating or weighting
The model should present the data but not decide what is „good practice“
This is what the group will discuss about considering also all the „non key factors“!
- It is important to have a „biodiversity of strategies“ and to observe the success over a longer period (risk of losses, long term effects!)

How can we work with these data: A Benchmarking Tool

Home Logout Benutzereinstellungen Auswertung Admin

Auswertung

Satzauswahl Vorlagen

Beschriftung	Before Blossom	After blossom
Sorte	Apfel	Apfel
Erntejahr	2017	2017
Jahreseinschränkung: Jahreseinschränkung	EC < 6	EC > 6
Satz: Pflanzjahr	≤ 2013	≤ 2013

Hinzufügen

Ergebnisse Vorlagen Sortieren

Spritzmittel: Reinkupfer pro ha	0.66	0.66
Spritzmittel: Anzahl Reinkupfer Spritzungen	3.46	7.27
Spritzmittel: Reinkupfer durchschnittliche Menge pro Spritzung pro ha	0.18	0.09

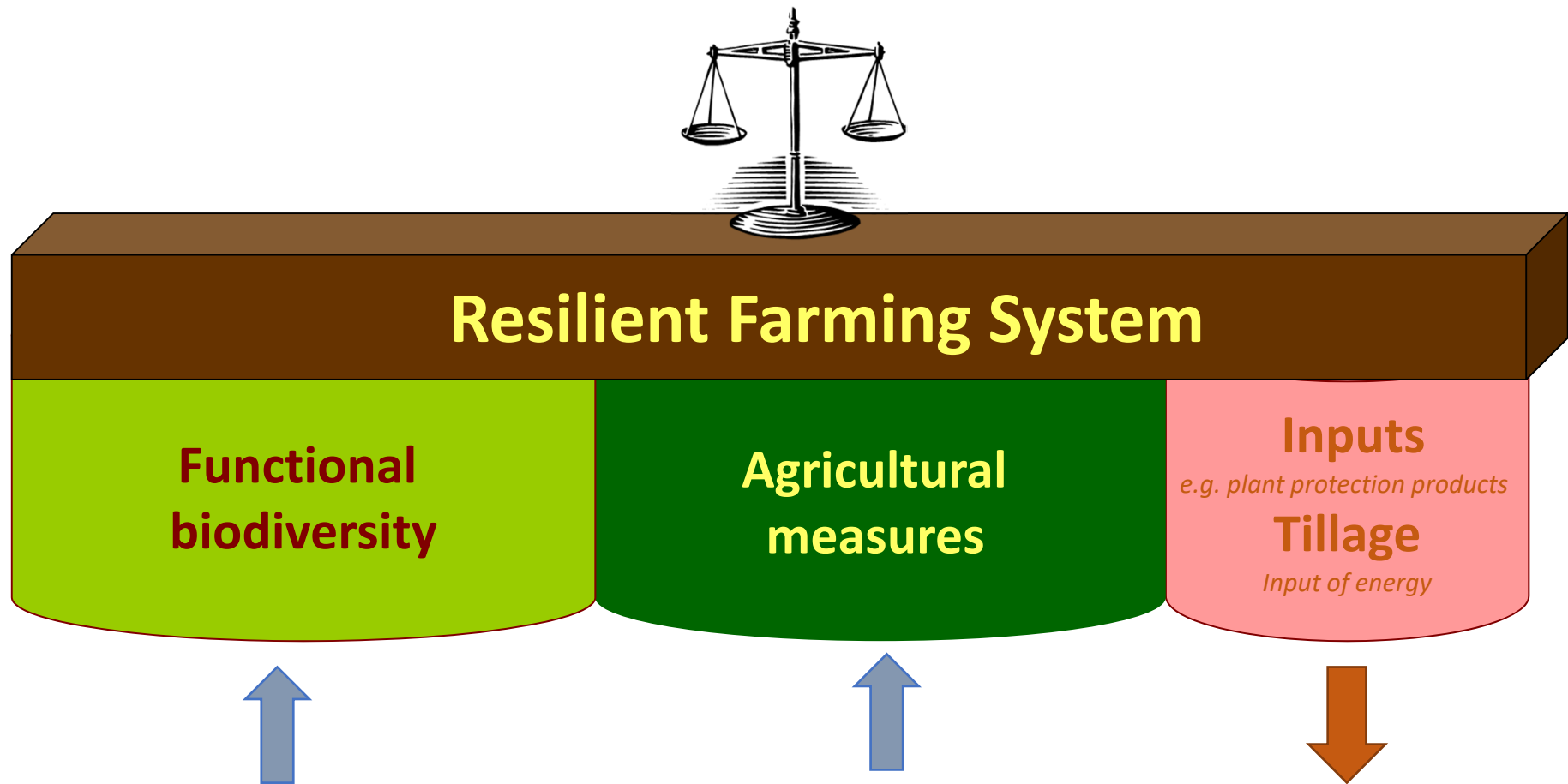
Define the
data pool



Define the
parameters
for results



The Strategy for Plant Health Care in Organic Farming



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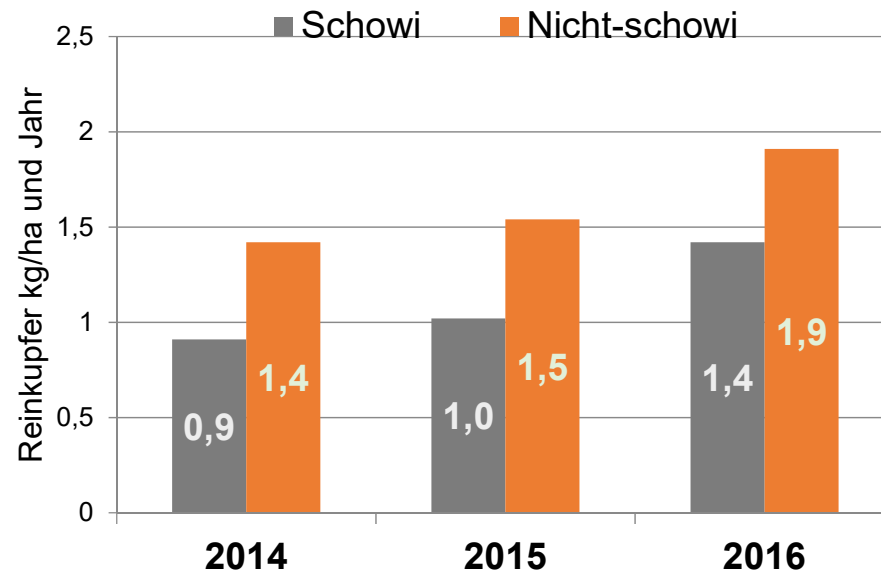
What is the real benefit - Conclusions after 8 years

Data basis of practice data for the internal discussion about the improvement of the system

! Really useful

- Discussions on realistic values
- „Wishful thinking“ is abandoned
- Parameters for indirect measures give more value to these measures

Reduction of copper of „schowi“-varieties in comparison to not schowi varieties



You save

Per Year

ca. 500 g Cu

In 10 Years

ca. 5 kg Cu

Amount of copper for
„schowis“

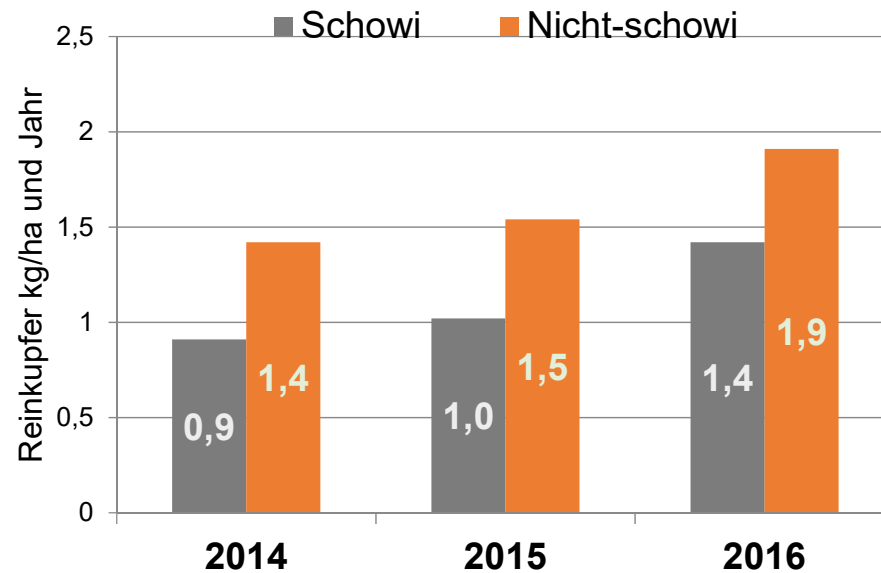
64 %

66 %

74,3 %

in relation to „Nicht-schowis“

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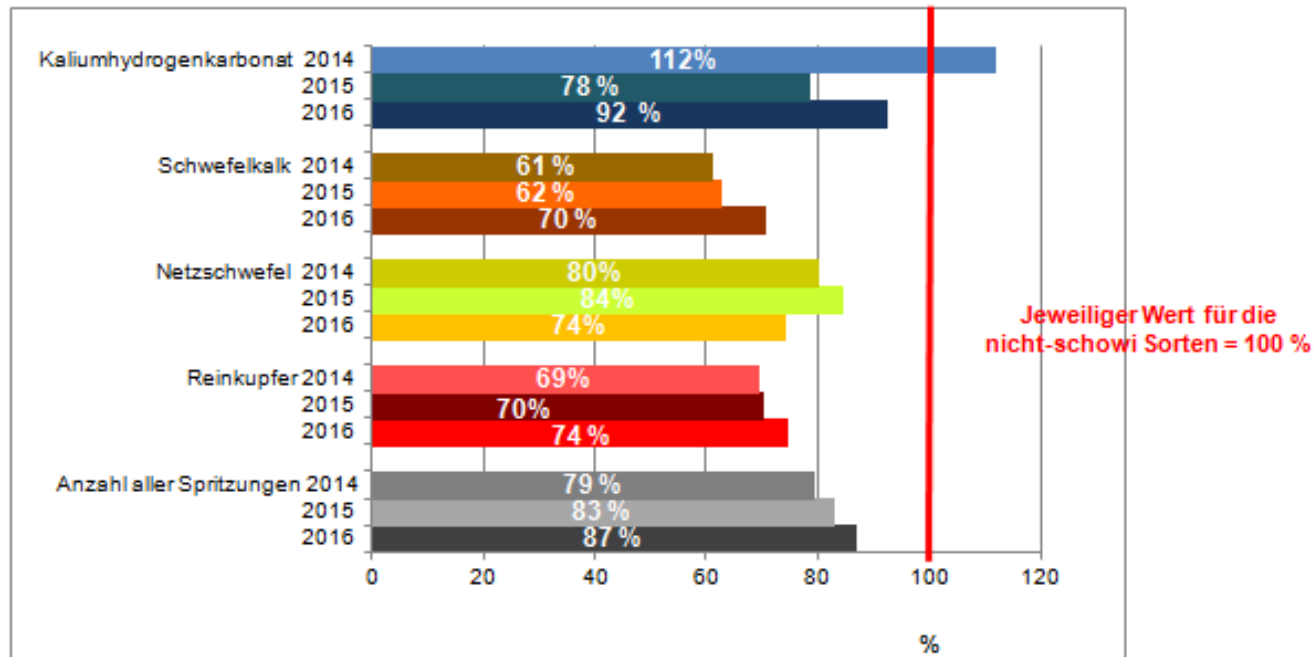
74,3 %

in relation to „Nicht-schowis“

Is this all that we get????

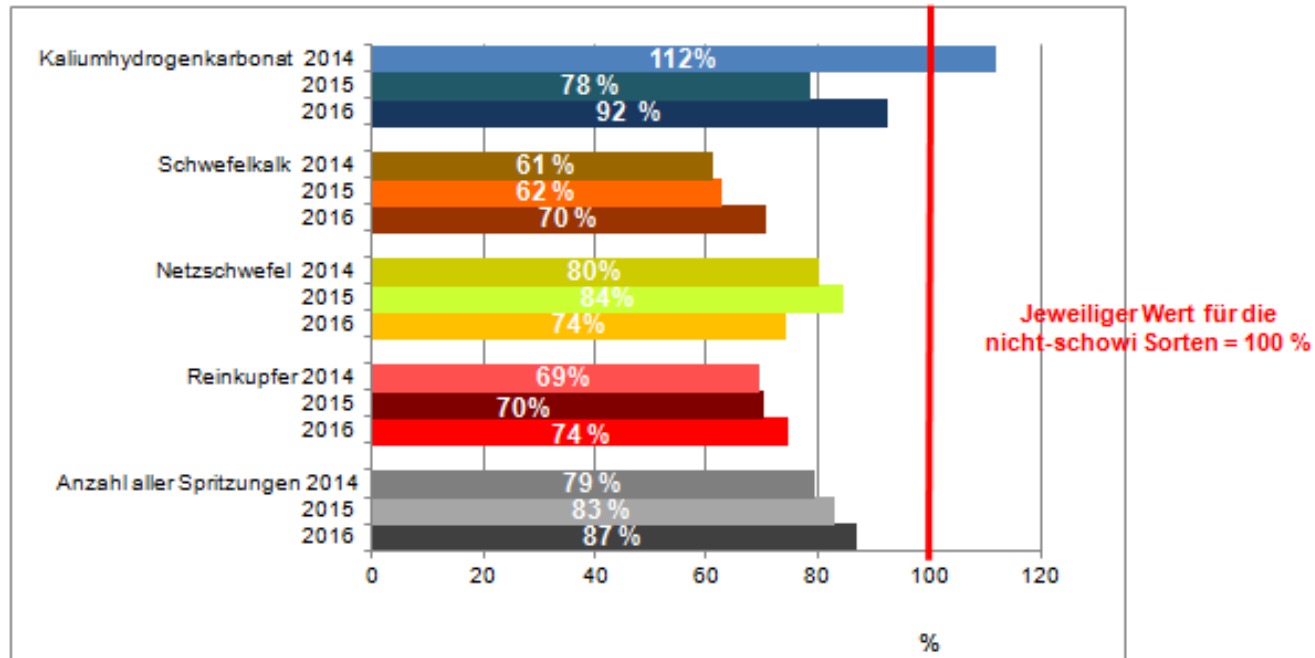
Input-Output-Relation of schowi-Varieties in Relation to not Varieties

Input = Gesamt-Aufwandmengen für schowi-Sorten in Relation zu denen für nicht schorfwiderstandsfähige Sorten

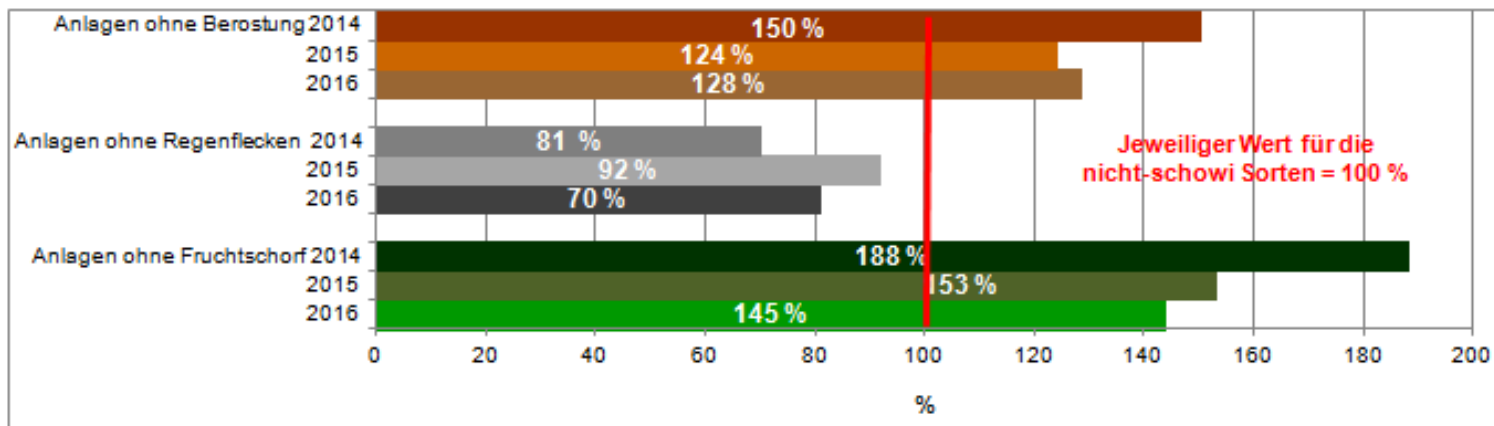


Input-Output-Relation of schowi-Varieties in Relation to not Varieties

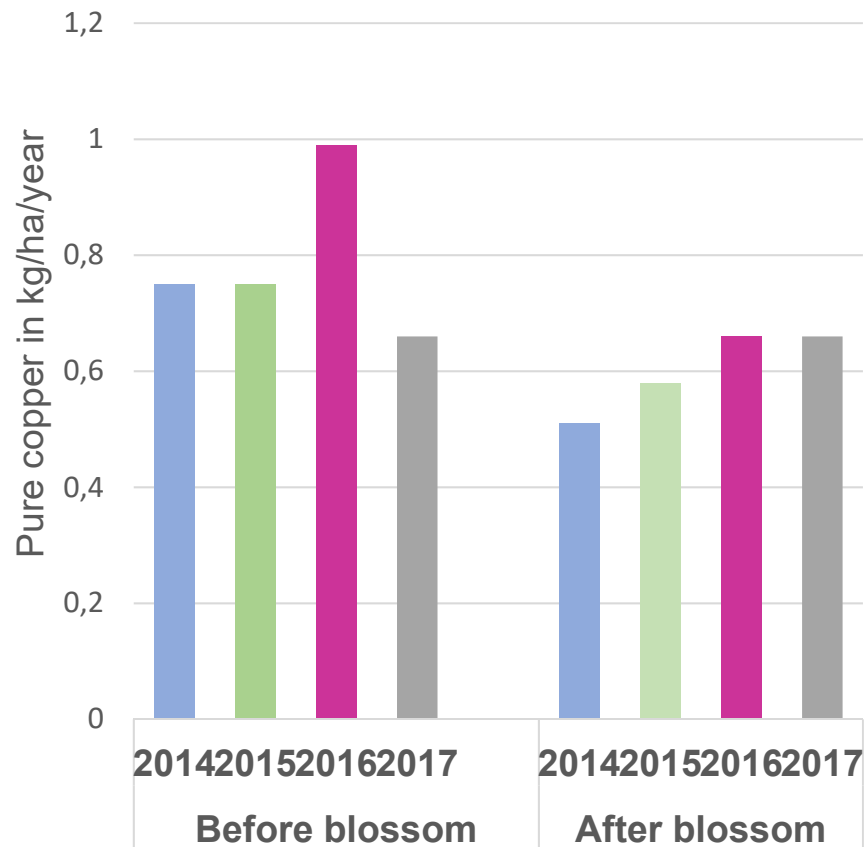
Input = Gesamt-Aufwandmengen für schowi-Sorten in Relation zu denen für nicht schorfwiderstandsfähige Sorten



Output = Prozentsatz der befallsfreien Anlagen bei den schowi-Sorten in Relation zu den nicht schowi-Sorten



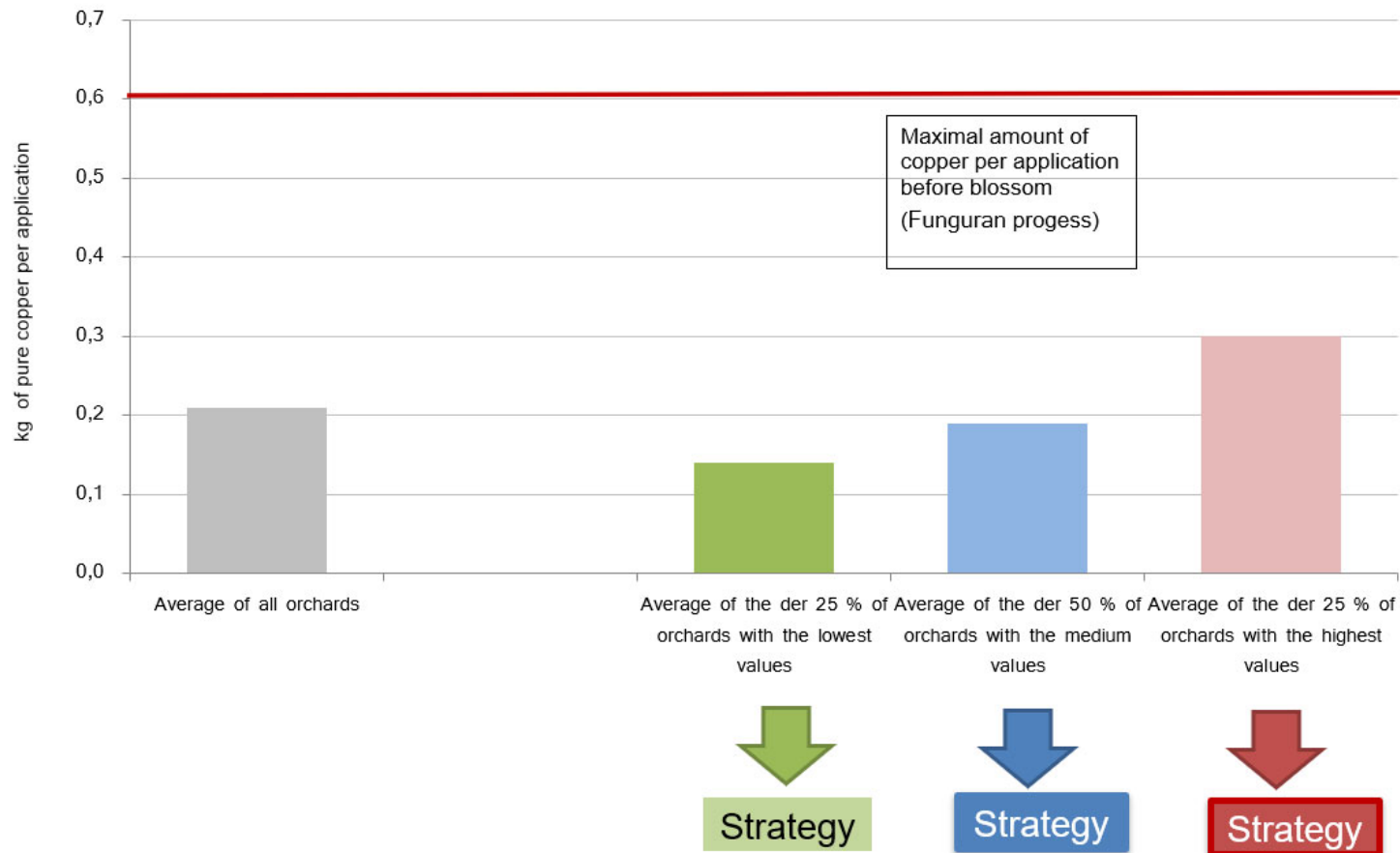
Amount of Copper used before and after Blossom in Organic Apples: Where is action needed?



Vegetation period	Year	Number of applications	Amount of copper per application in kg/ha
Before blossom	2014	4,4	0.17
	2015	4	0.18
	2016	5,2	0.2
	2017	3,4	0.18
After blossom	2014	6,7	0.07
	2015	7	0.08
	2016	7,3	0.09
	2017	7,3	0.09

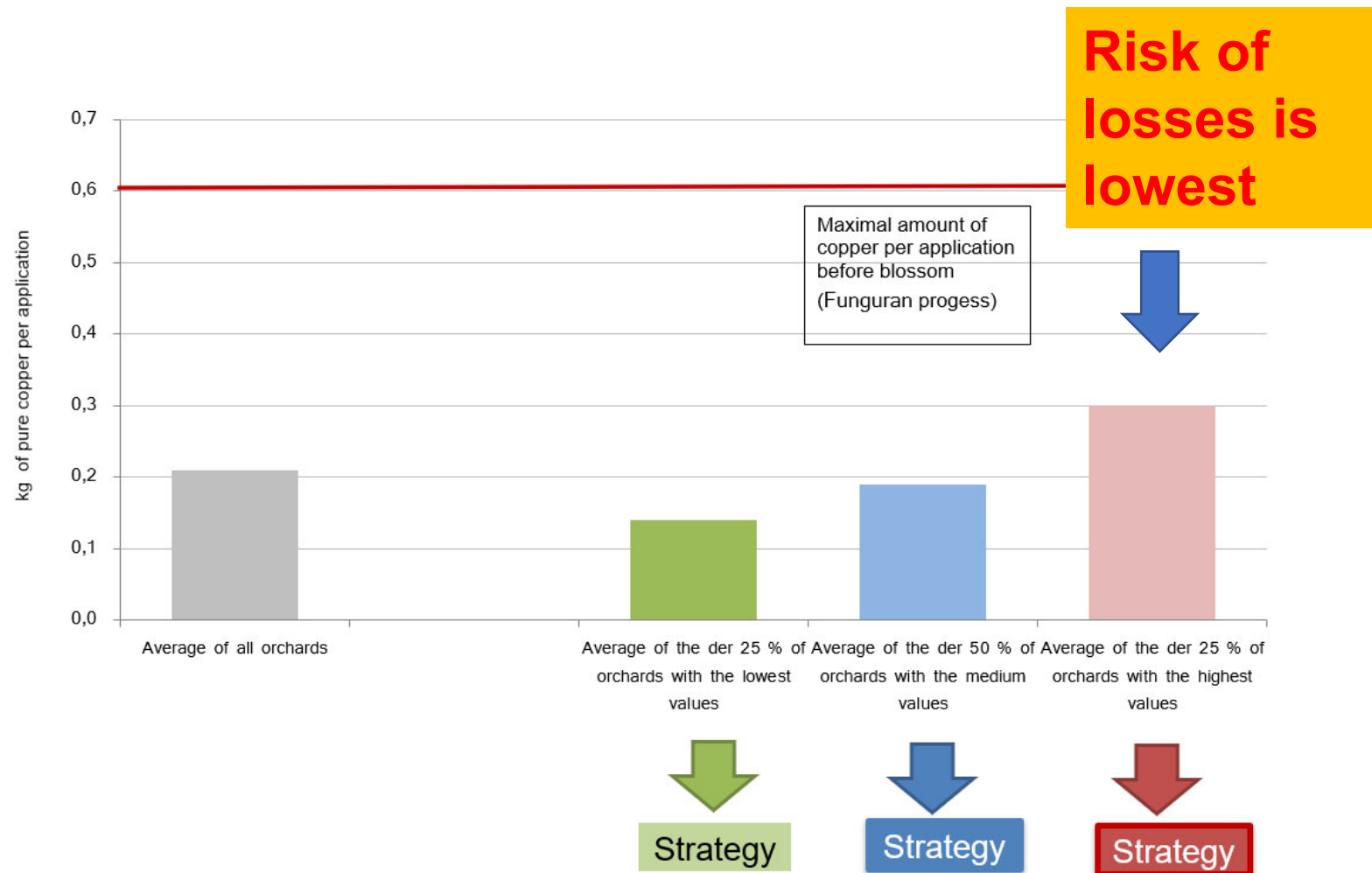
What is the real benefit - Conclusions after 8 years

Use of the benchmarking in working groups and stable schools with fruitgrowers: How much copper per application is needed?



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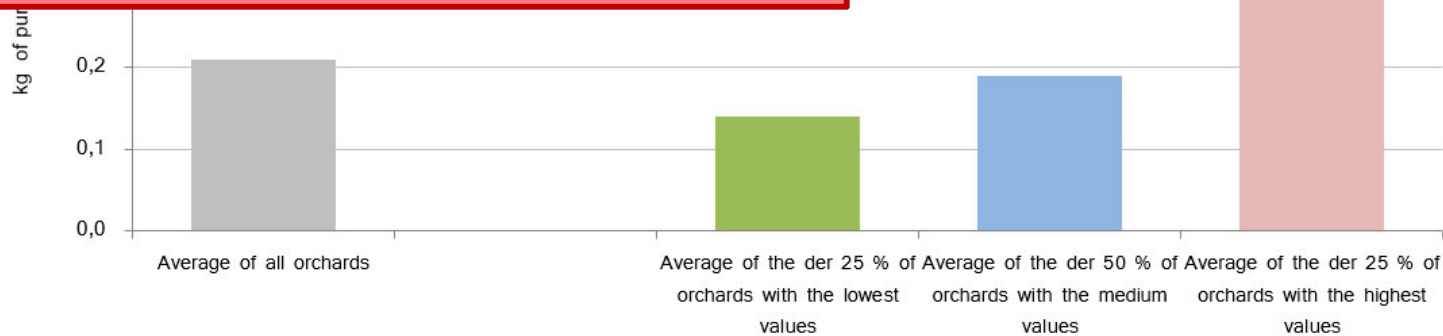
Use of the benchmarking in working groups and stable schools with fruitgrowers: How much copper per application is needed?

The higher risk must be rewarded!!!!

Smoothing!!!

Risk of losses is lowest

Maximal amount of copper per application before blossom (Funguran progress)



Strategy



Strategy



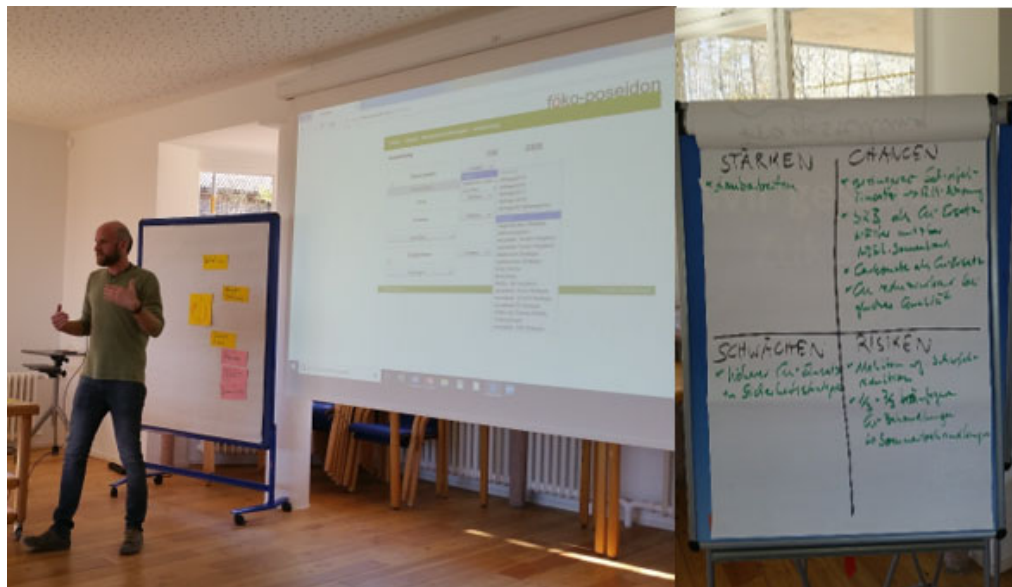
Strategy

What is the real benefit - Conclusions after 8 years

Use for the single farm of benchmarking with others – find potential weaknesses and learn how to improve

- ! Farmers wanted to do this at home alone, this did not work so much
- ! The working groups are good but they cannot go at level of single farms

Currently we work at an extension concept to use the benchmarking first and then go into special extension



Generate a SWOT (Strength, Weakness, Opportunity, Threat) from the benchmarking of the data of the farm with the data of all farms of the region and then enter in technical or structural discussion

What is the real benefit - Conclusions after 8 years

Use to create transparency about our plant health care strategy and how to develop it further.

Basis for a fruitful discussion with partners in society



Gesunderhaltung der Pflanzen im Öko-Apfelanbau

Der ökologische Obstbau ist ein ganzheitliches Anbausystem. Sein Ziel ist es, Stabilität und Biodiversität der Obstplantagen und angrenzenden Ökosysteme sowie die Bodenfruchtbarkeit zu erhöhen. Angestrebt wird eine Kreislaufwirtschaft, die von externen Mitteln möglichst unabhängig ist.

Natürlich mit Köpfchen: Drei starke Säulen für gesunde Früchte

Bio-Obstbauern spritzen – aber anders

Wie sieht das konkret in der Praxis aus?

Auf die Sorte kommt es an!

Bio-Obstbauern sind Pioniere

Faire Partnerschaften

[Diese kompakten Infos als Flyer](#)

Ausführliche Informationen

Für Fachleute oder für die, die es ganz genau wissen wollen

Da der Ökologische Obstbau als Dauerkultur auch innerhalb des Ökologischen Landbaus ein sehr spezifischer Bereich ist, wurden wir immer wieder gebeten, die Strategie zur Gesunderhaltung unserer Kulturpflanzen ausführlich darzustellen. Dieses Projekt sind wir für den Ökologischen Apfelanbau angegangen. Mit den vorliegenden Broschüren soll anhand von Praxisdaten nunmehr im dritten Jahr transparent aufgezeigt werden, welche Maßnahmen und welche Strategien zur Gesunderhaltung der Kulturpflanzen im Ökologischen Obstbau auf den Betrieben praktiziert werden.

Die ganze lebendige Vielfalt der Betriebstypen, der Regionen, der Strategien und Innovationen kann in einer Gesamtübersicht nur ansatzweise dargestellt werden. Diese Broschüren sollen daher vor allem eine erste Basis für eine intensive und fruchtbare Diskussion mit allen darstellen, die sich für die Praxis der Gesunderhaltung der Kulturpflanzen im Ökologischen Obstbau interessieren.



Gesunderhaltung der Pflanzen im Bio-Apfelanbau



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Conclusions after 8 years

- The collection and elaboration of data of practice is helpful in the work of improvement of the production system
- It is important to collect data about all three pillars of the plant health care system and about the success of the strategies
- Benchmarking works not naturally always only as a motivation tool towards the reduction of inputs
- The data are also useful in extension if used in a good concept
- The data can give transparency about the strategies. This is the basis for a fruitful discussion with the partners in society

**Many thanks
to the BÖLN
for financing**

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BÖLN

Bundesprogramm Ökologischer Landbau
und andere Formen nachhaltiger
Landwirtschaft