

3rd European Conference on Copper in Plant Protection

15th-16th November in Berlin, Germany



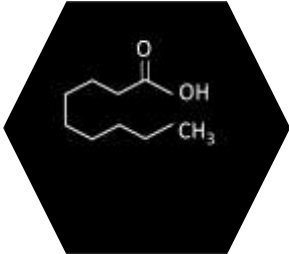
New results of BÖLN Projects on copper minimization in apple scab management

current experimental evidence
greenhouse and field
(trial years 2017 & 2018)



Structure

I. Introduction



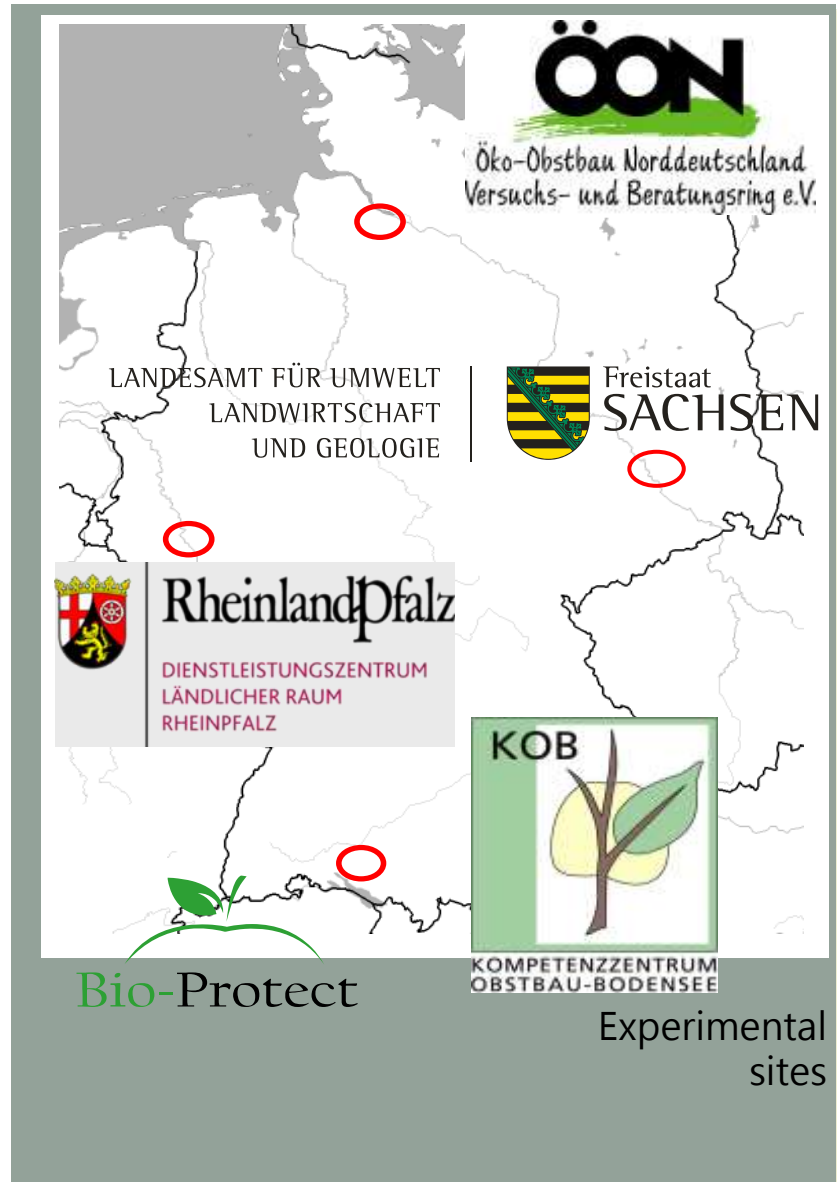
II. Field results



III. Greenhouse



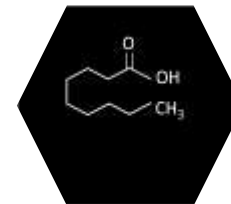
IV. Summary



Map of Germany showing experimental sites marked with red circles. Logos and text include:

- ÖÖN** Öko-Obstbau Norddeutschland Versuchs- und Beratungsring e.V.
- LANDESAMT FÜR UMWELT | LANDWIRTSCHAFT UND GEOLOGIE
- Freistaat **SACHSEN**
- Rheinland-Pfalz | DIENSTLEISTUNGSZENTRUM LÄNDLICHER RAUM RHEINPFALZ
- KOB** KOMPETENZZENTRUM OBSTBAU-BODENSEE
- Bio-Protect
- Experimental sites

I. Introduction NEU 1143 F



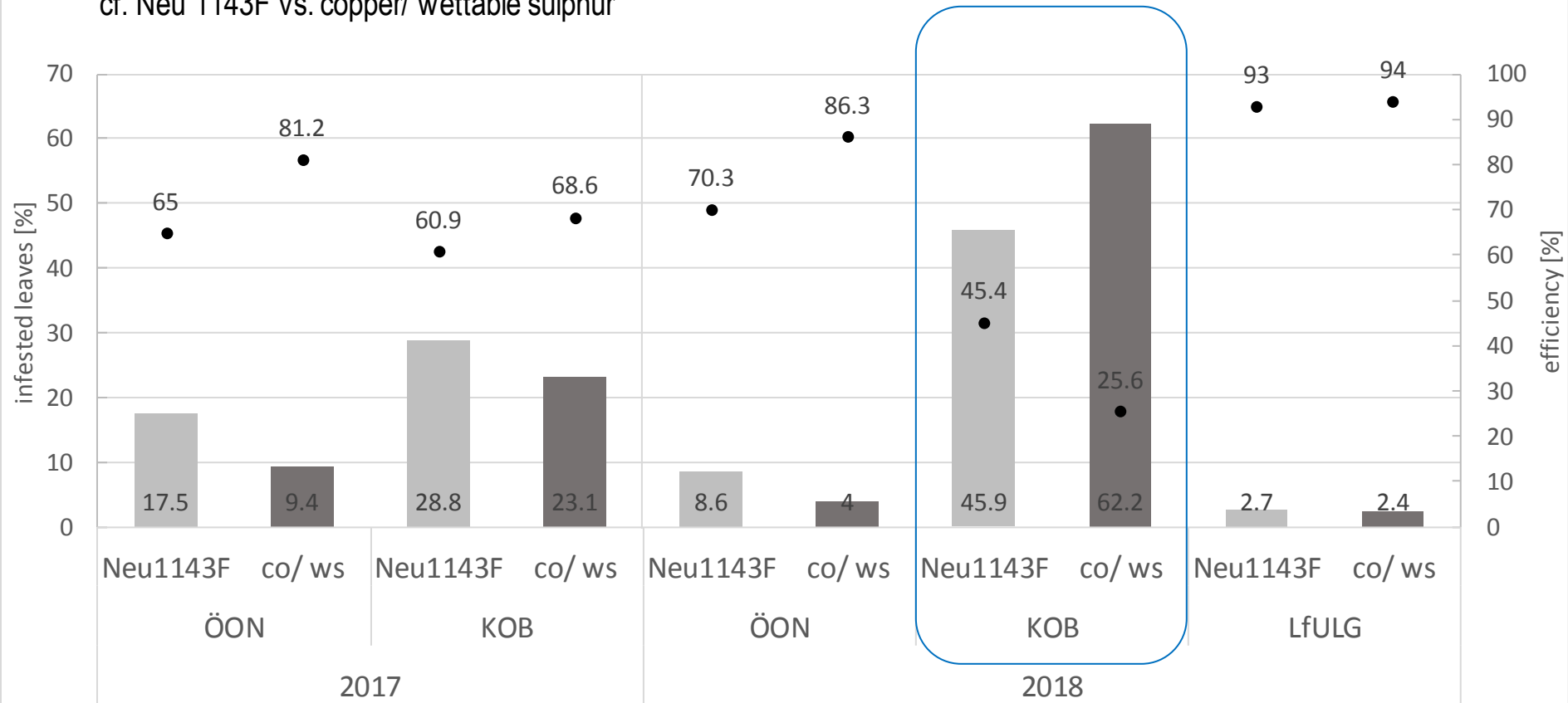
- Active substance: Iron salt of fatty acids
- a fatty acid fungicide with broad spectrum efficacy against a variety of fungal pathogens (apple scab, rust, powdery mildew, leaf spot diseases, peach leaf curl)
- unspecific mode of action → low risk of resistance development
- product suitable for organic production → copper reduction
- no fungicide authorisation so far

II. field results – long shoots

Efficacy of Neu 1143F and copper/ wetttable sulphur applied protectively



cf. Neu 1143F vs. copper/ wetttable sulphur

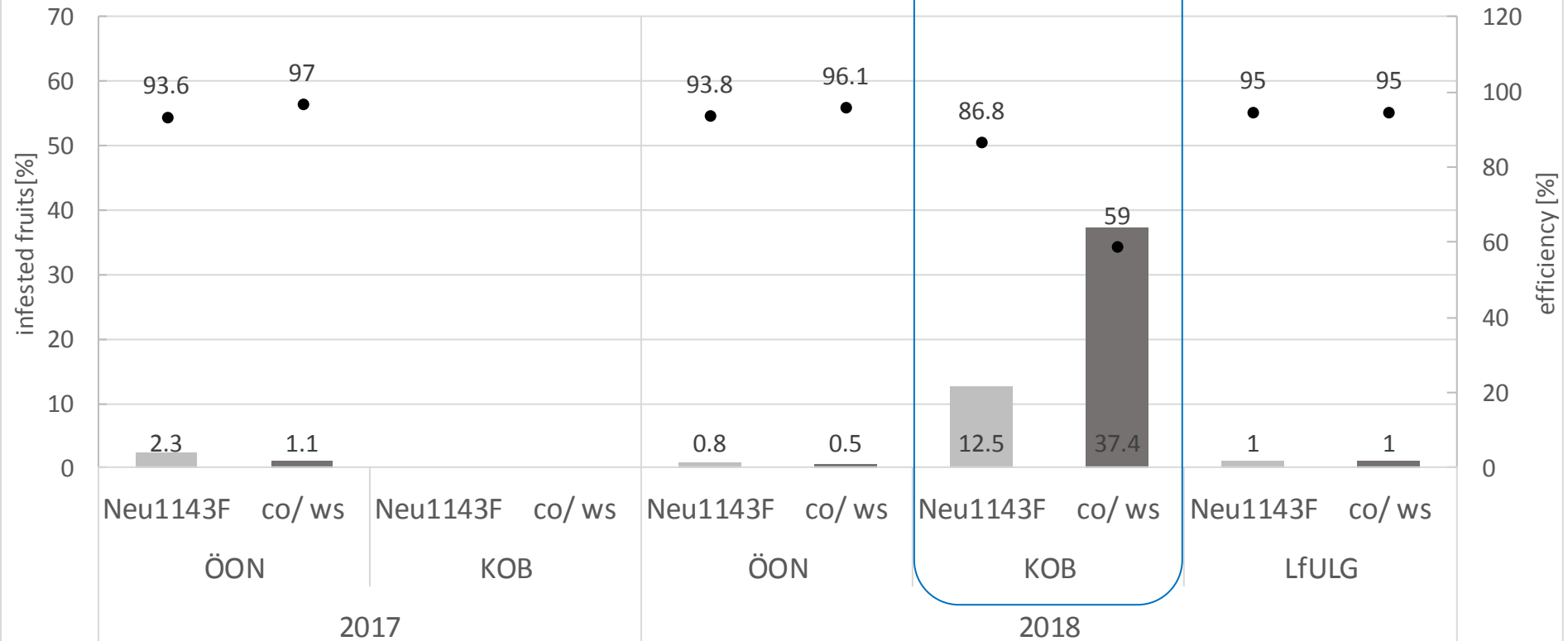


II. field results – fruits

Efficacy of Neu 1143F and copper/ wetttable sulphur applied protectively



cf. Neu 1143F vs. copper/ wetttable sulphur

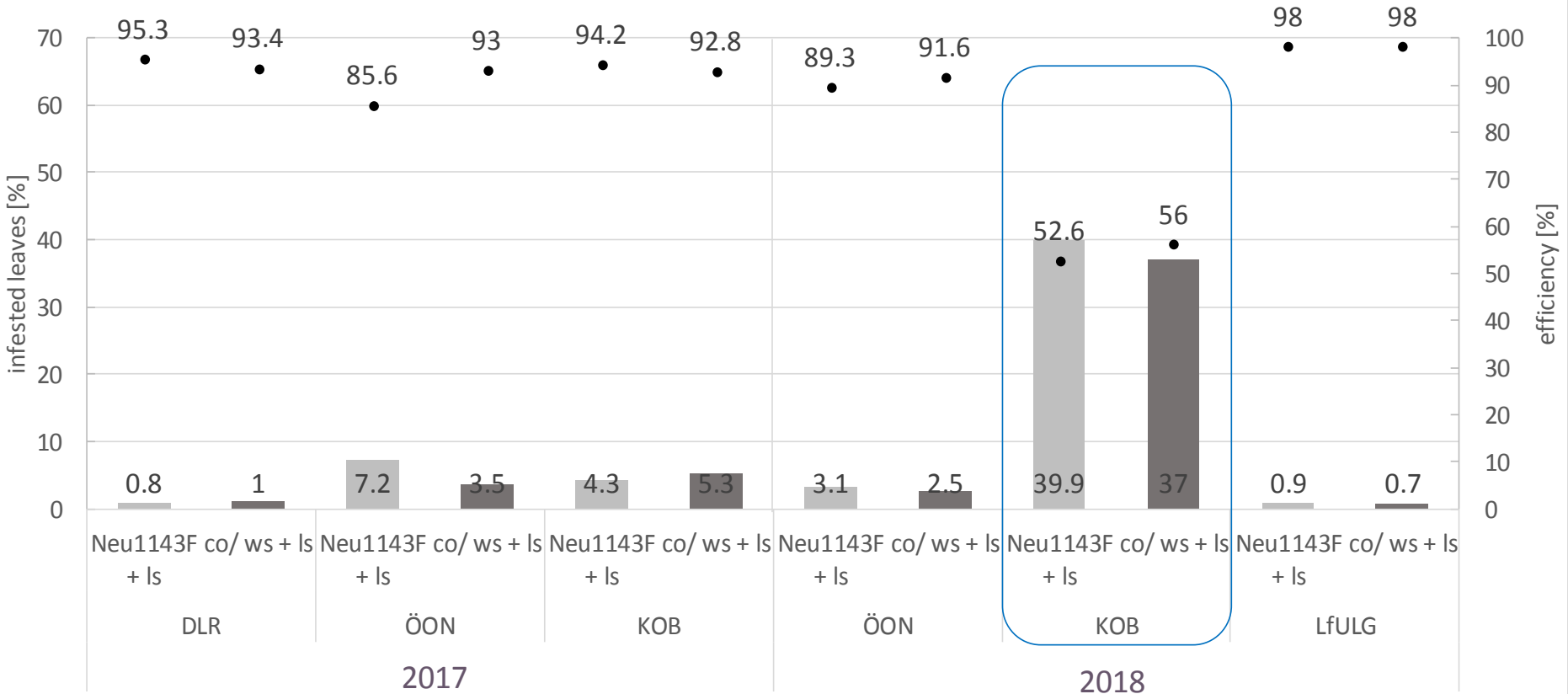


III. field results – long shoots

Efficacy of Neu 1143F and copper/wettable sulphur applied protectively + lime sulphur (germination period)



cf. Neu 1143F + lime sulphur vs. copper/ wettable sulphur + lime sulphur

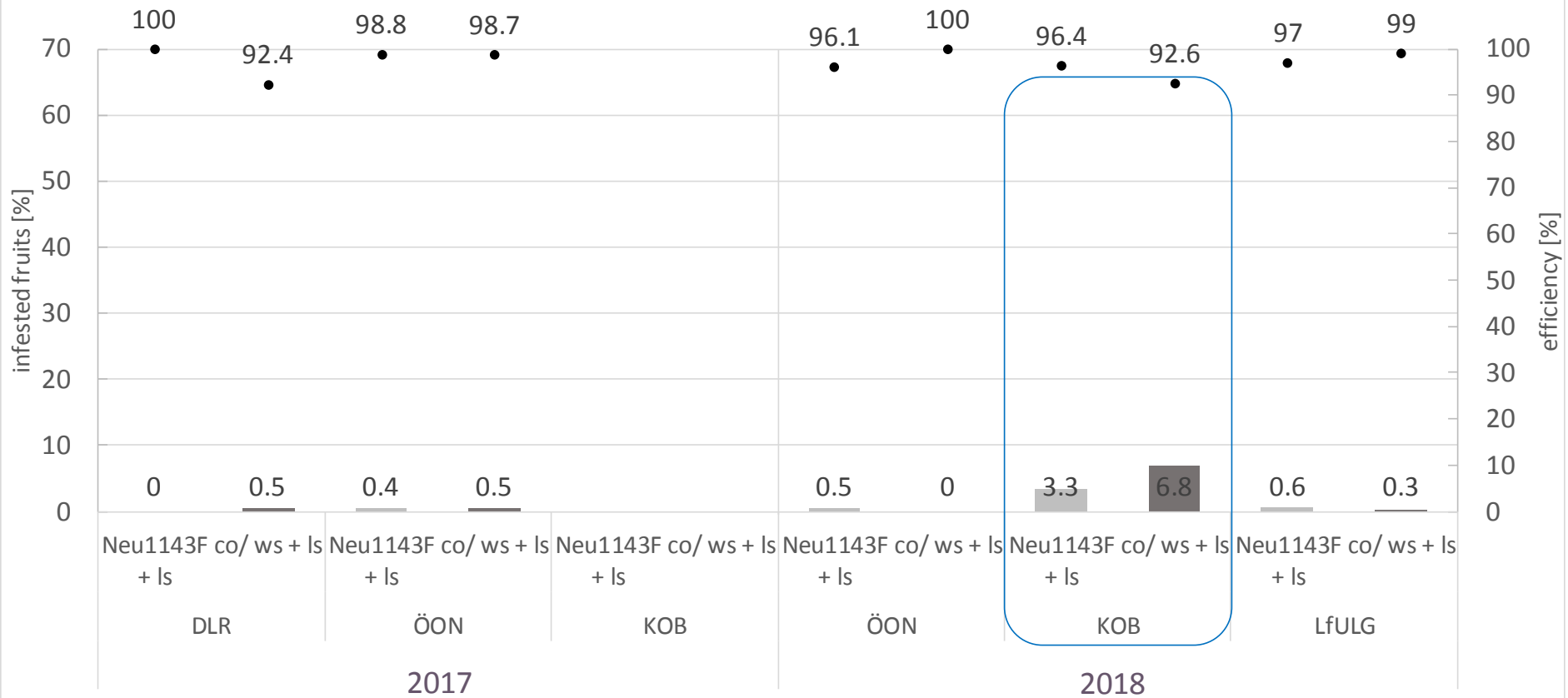


III. field results – fruits



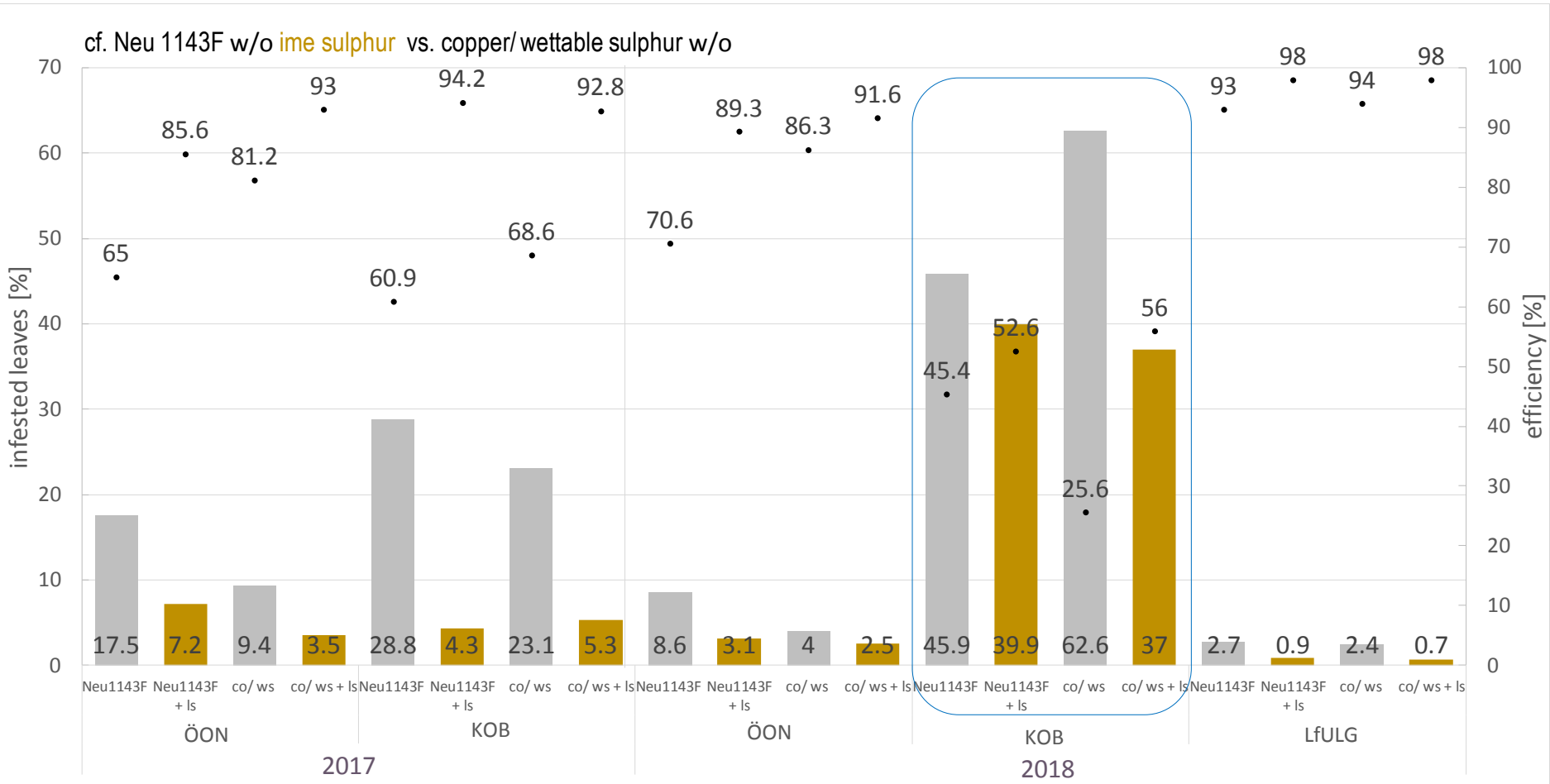
Efficacy of Neu 1143F and copper/wettable sulphur applied protectively + lime sulphur (germination period)

cf. Neu 1143F + lime sulphur vs. copper/ wettable sulphur + lime sulphur



III. field results – long shoots

Efficacy of lime sulphur (germination period)

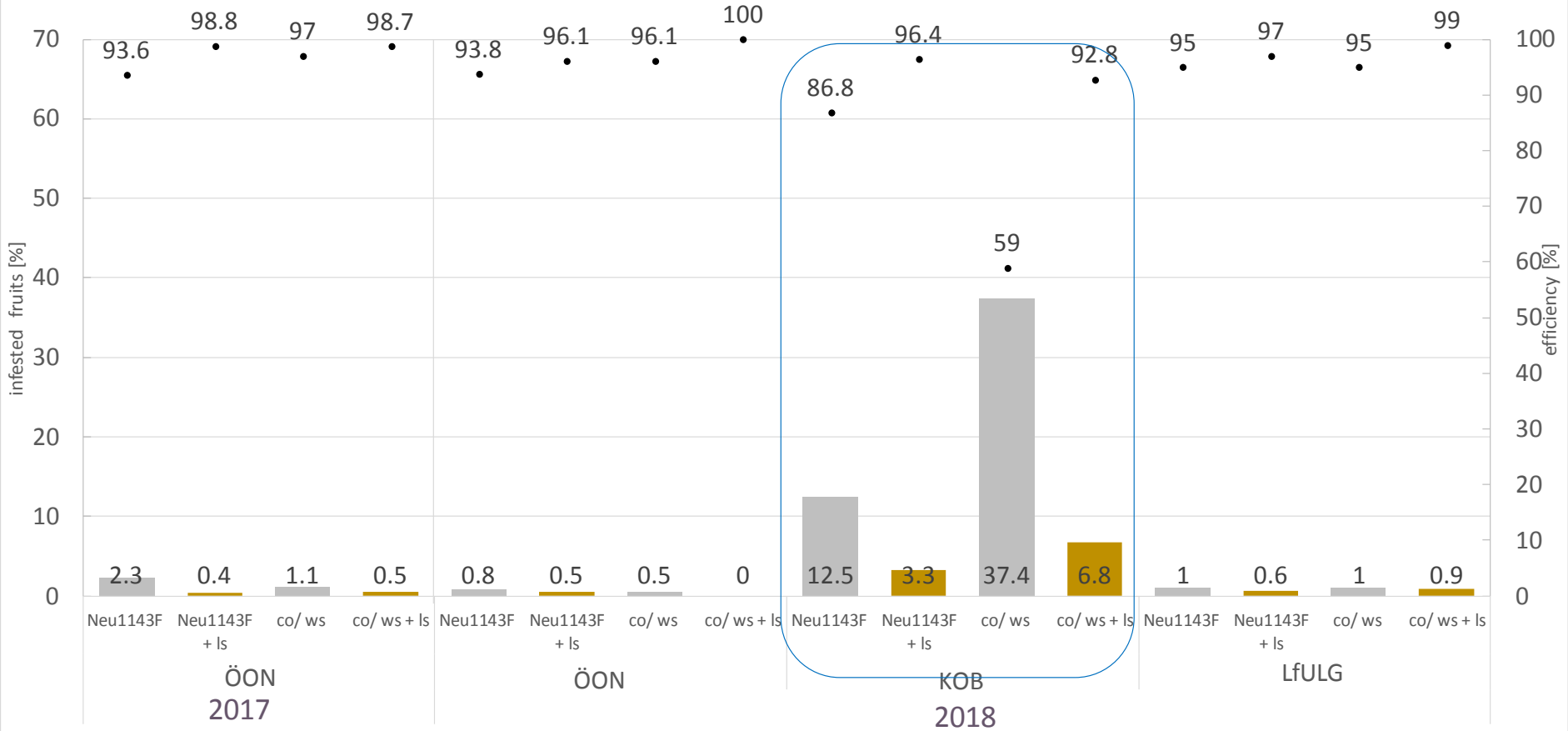


III. field results – fruits

Efficacy of lime sulphur (germination period)








cf. Neu 1143F w/o lime sulphur vs. copper/ wettable sulphur w/o lime



III. Greenhouse results



- treatment: spray dripping wet (ca. 5ml /shoot)

| | | | | | |
|------------------------------------|---|---|---|---|---|
| |  |  |  |  |  |
| treatment | protectively | protectively rain fastness (30 mm) | IN OK | Stopp application (during germination) rain (5-10 mm) | curatively - wet leaf - dry leaf |
| time period (h) | -18 | -18 /-1 | 0 | +5 | +24 |
| cumulative degree hours 18°C | | | | 90 | 432 |

Protectively, 30 mm rain



| treatment | rate | scab incidence (%) | | efficacy |
|-------------------------------------|-----------|--------------------|--------------------|------------|
| | | average | ± stand. deviation | |
| | % | | | (%) |
| untreated | - | 28,4 | 10,2 | |
| Cuprozin progress (300g RK/ha) | 0,12 | 5,3 | 5,1 | 81 |
| 2H13+Cuprozin progress (300g RK/ha) | 0,06+0,12 | 12,0 | 9,8 | 58 |
| Cuprozin progress (100g RK/ha) | 0,04 | 12,3 | 15,0 | 57 |
| 2H13Cuprozin progress (100g RK/ha) | 0,06+0,04 | 10,2 | 10,9 | 64 |
| Vinasse | 10 | 43,2 | 30,1 | -52 |
| Vinasse+2H13 | 10+0,06 | 34,8 | 20,8 | -23 |
| Neu1143 F | 4 | 18,4 | 16,6 | 35 |

IV. Summary



- 2017 & 2018: very different years fighting scab
- 2018: *Neu 1143F* and copper are hardly comparable at some trial stations
- Greenhouse trials: concerning to **rain fastness** further studies are necessary
- **Copper** still is our most powerful fungicide
- Used protectively ***Neu 1143F*** showed many a time promising results against scab
 - could play an important role reducing the use of copper (fighting apple scab) if the results can be confirmed
- **Lime sulphur**, combined with copper or *Neu 1143F* showed continuously good effects
 - still an important pillar of ecological scab strategies