PLUMS

Cropload control under South-German conditions

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PLUMS

Cropload control under South-German conditions

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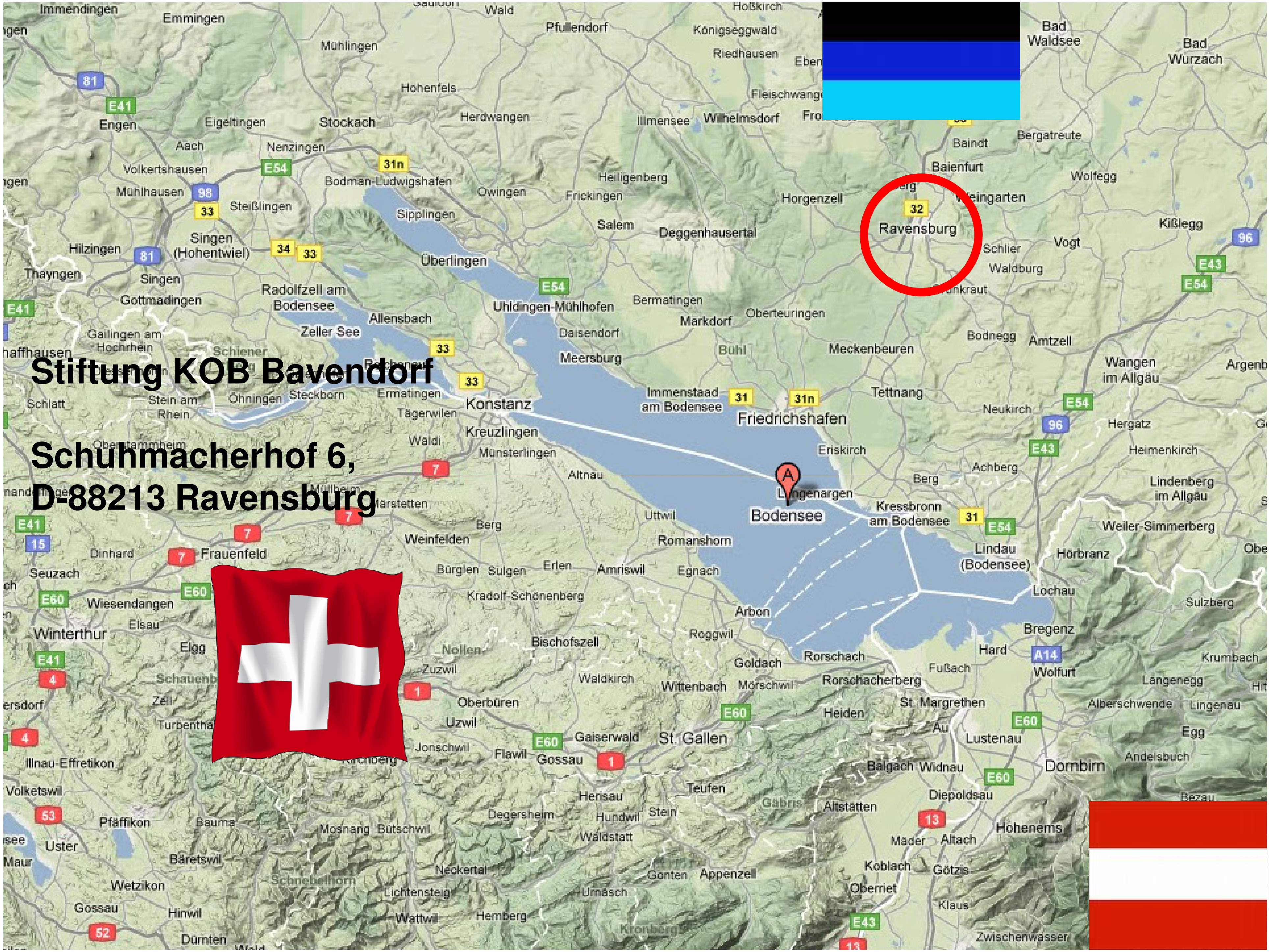
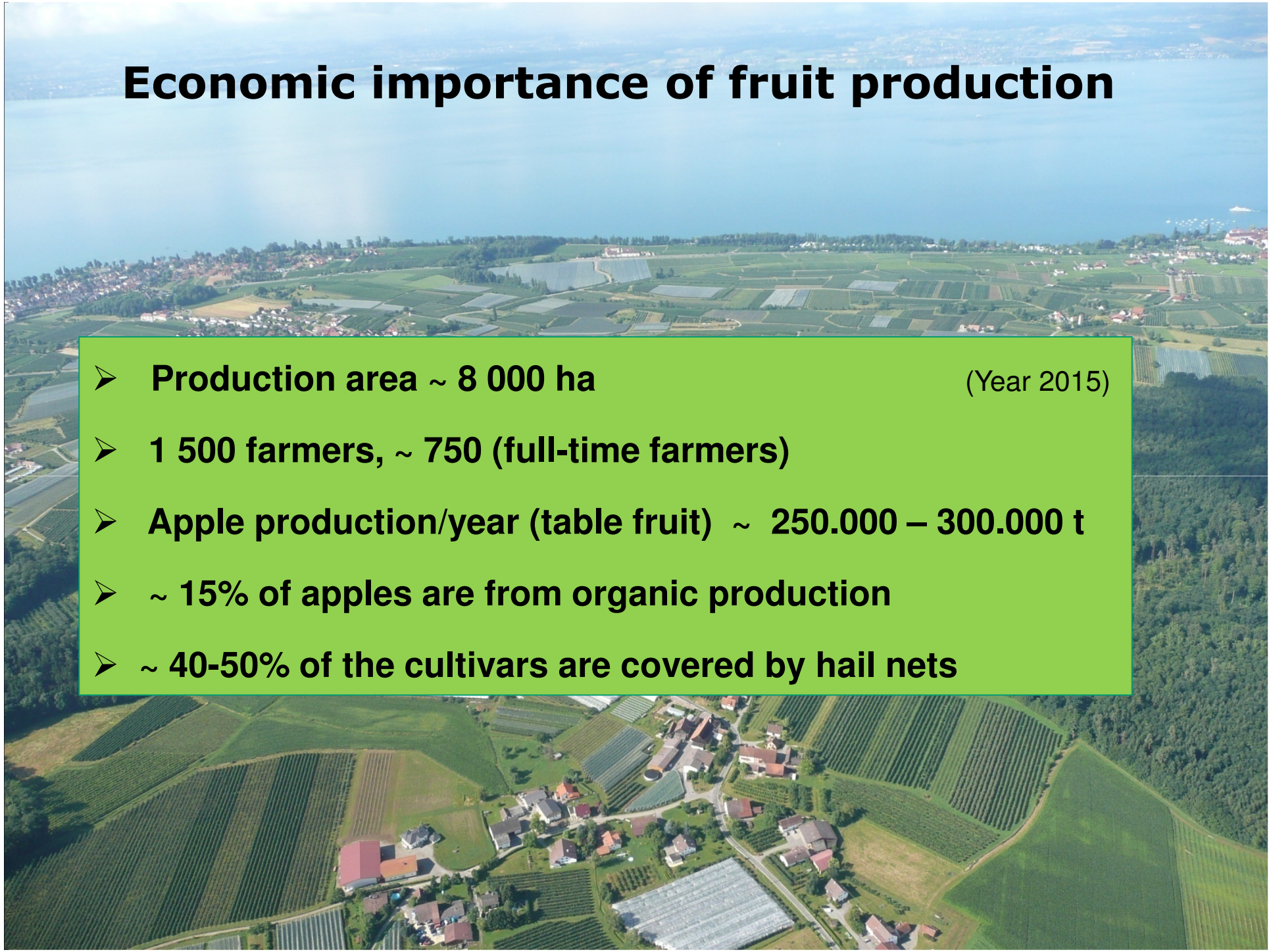


Economic importance of fruit production



- **Production area ~ 8 000 ha** (Year 2015)
- **1 500 farmers, ~ 750 (full-time farmers)**
- **Apple production/year (table fruit) ~ 250.000 – 300.000 t**
- **~ 15% of apples are from organic production**
- **~ 40-50% of the cultivars are covered by hail nets**

Cropload control with plums

Trial 2014

Trial 2014:	**Cropload control to improve fruit quality with plums (cultivar ‚KATINKA')**		
Orchard	**Field Q 19**	**planned time:**	**1 year**
Variety:	**Katinka (R 22-26)**	Rootstock:	Wangenheim/WaVit
Planting distance:	4,00 x 2,10m	Planting year:	2010
Situation:	up-growing trees, 30-40% filled growing space, vital, healthy		
Treatments in a non GEP/testing trial:			
Design:	15 treatments x 8 repeatments (= 4 trees / 2 branches per tree) =60 trees		

Cropload control with plums

Nr	Treatment	Token	Row	Tree	Remark
1	UTC = untreated control	**UTC**			--
2	**Mech. Thinning Tree-DARWIN-250** Soft: 6 km/h + 200 rpm with 50% strings	**Maschine soft**	R25 R26	B3+4+ B10+11	3.4.2014
3	**Mech. Thinning Tree-DARWIN-250** Soft: 6 km/h + 200 rpm 50% strings **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 20,0 l/ha in 1000 l H2O (1,0%ig) Full bloom	**MAsoft + ATS 1% VB**	R26	B3+4 B7+8	A: 3.4.2014 B: 4.4.2014
4	**Mech. Thinning Tree-DARWIN-250** Soft: 6 km/h + 200 rpm 50% strings **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 40,0 l/ha in 1000 l H2O (2,0%ig) Full bloom	**MAsoft + ATS 2% VB**	R25 R26	B5+6 B11+12	A: 3.4.2014 B: 4.4.2014
5	**Mech. Thinning Tree-DARWIN-250** Soft: 6 km/h + 200 rpm 50% strings **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 30,0 l/ha in 1000 l H2O (1,5%ig) at **Early Fruit stage** (~ 1,0 cm length)	**MAsoft + ATS early Fruit 1,5%**	R25 R26	B1+2 B9+10	A: 3.4.2014 B: 5.5.2014
6	**Mech. Thinning Tree-DARWIN-250** Soft: 6 km/h + 200 rpm 50% strings **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 30,0 l/ha in 1000 l H2O (1,5%ig) at **Middle Fruit stage** (~ 1,5-2,0 cm length)	**MAsoft + ATS middle Fruit 1,5%**	R22 R24	B7+8 B5+6	A: 3.4.2014 B:14.5.2014

Cropload control with plums

7	**1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 20,0 l/ha in 1000 l H2O (1,0%ig) Full bloom	**ATS VB 1,0%**	R22 R24	B5+6 B11+12	3.4.2014
8	**1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 40,0 l/ha in 1000 l H2O (1,0%ig) Full bloom	**ATS VB 2,0%**	R22 R23	B1+2 B9+10	3.4.2014
10	**1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 30,0 l/ha in 1000 l H2O (1,5%ig) at **Early Fruit stage** (~ 1,0 cm length)	**ATS early Fruit 1,5%**	R23 R24	B3+4 B7+8	5.5.2014
11	**1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 30,0 l/ha in 1000 l H2O (1,5%ig) at **Middle Fruit stage** (~ 1,5-2,0 cm length)	**ATS middle Fruit 1,5%**	R25 R26	B7+8 B1+2	14.5.2014

Cropload control with plums

DARWIN Mechanical Thinning - 4. April 2014

Cropload control with plums

ATS sprayings at full bloom - 4. April 2014

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Late ATS sprayings - 5. Mai 2014

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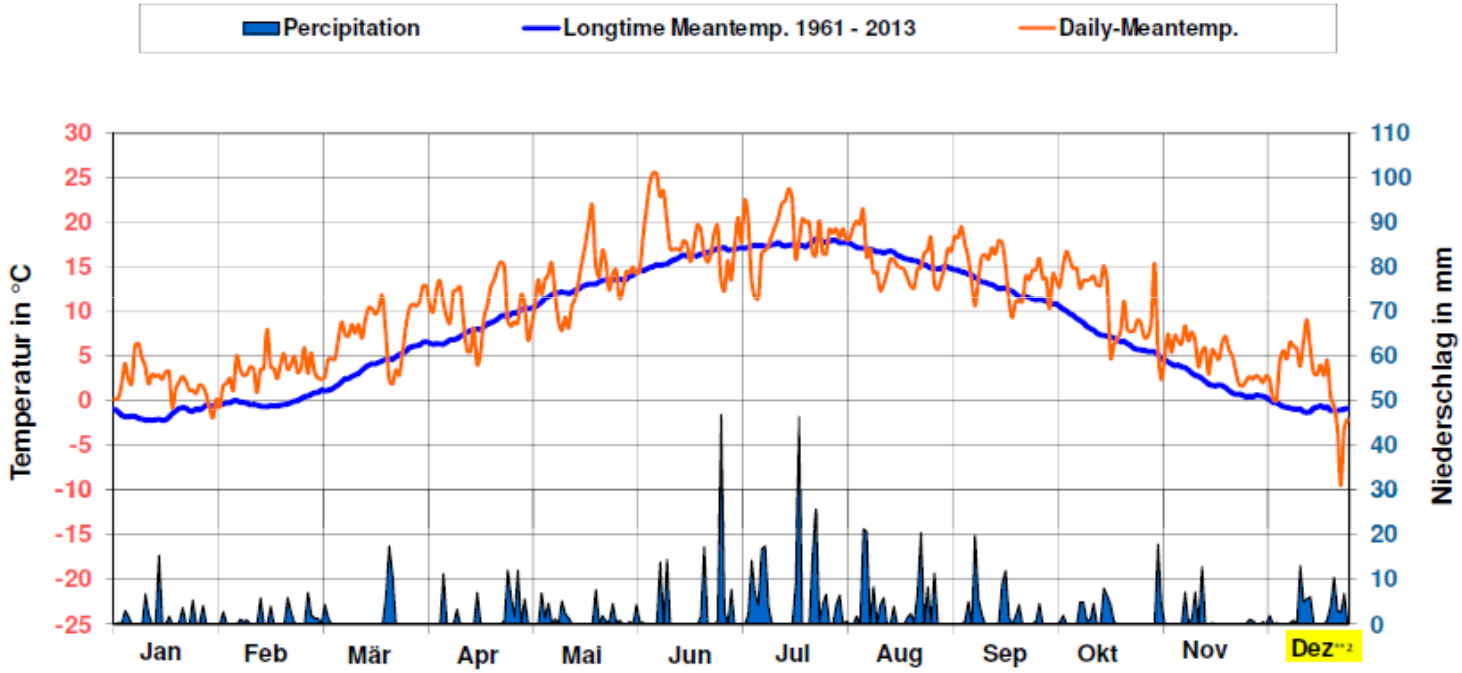
Weathersituation 2014 - Stiftung KOB Bavendorf



												2014 ***3 Jahresmittel	Langjähriges Jahresmittel
Temp. °C	2,0 -1.1*	3,5 0.1*	6,8 4.0*	10,5 8.0*	12,9 12.7*	18,1 16.0*	18,2 17.8*	16,3 17.2*	14,9 13.5*	12,0 8.7*	6,0 3.3*	2,5 -0.2*	10,3 °C	8,3 °C
NS in mm	66 87%*	34 65%*	43 71%*	55 76%*	47 48%*	104 92%*	183 166%*	130 119%*	64 80%*	43 63%*	52 73%*	65 93%*	865 mm	956 mm
Sonne h	69 130%*	120 141%*	207 149%*	175 102%*	191 90%*	293 133%*	192 79%*	169 75%*	151 87%*	137 123%*	52 88%*	40 88%*	1795 h	1738 h

*Vergleichswerte zu den langjährigen Monatsmittelwerten am KOB Bavendorf

**2 Monat Dezember 2014: extrem zu warm, wenig Sonnenschein ***3 gesamtes Jahr 2014: deutlich zu warm, weniger Niederschlag, mehr Sonne

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Cropload control with plums

Very high fruitset 2014

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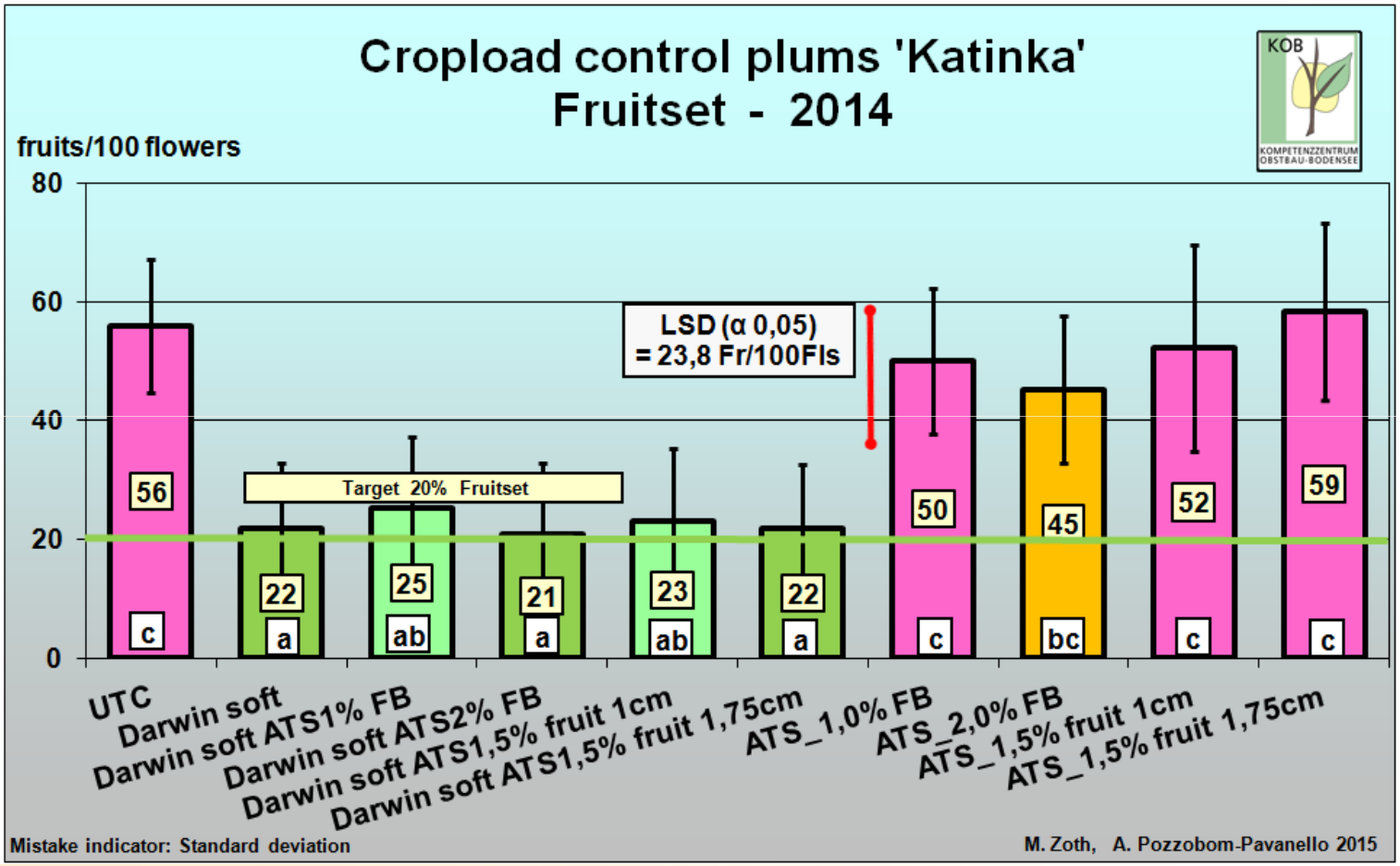
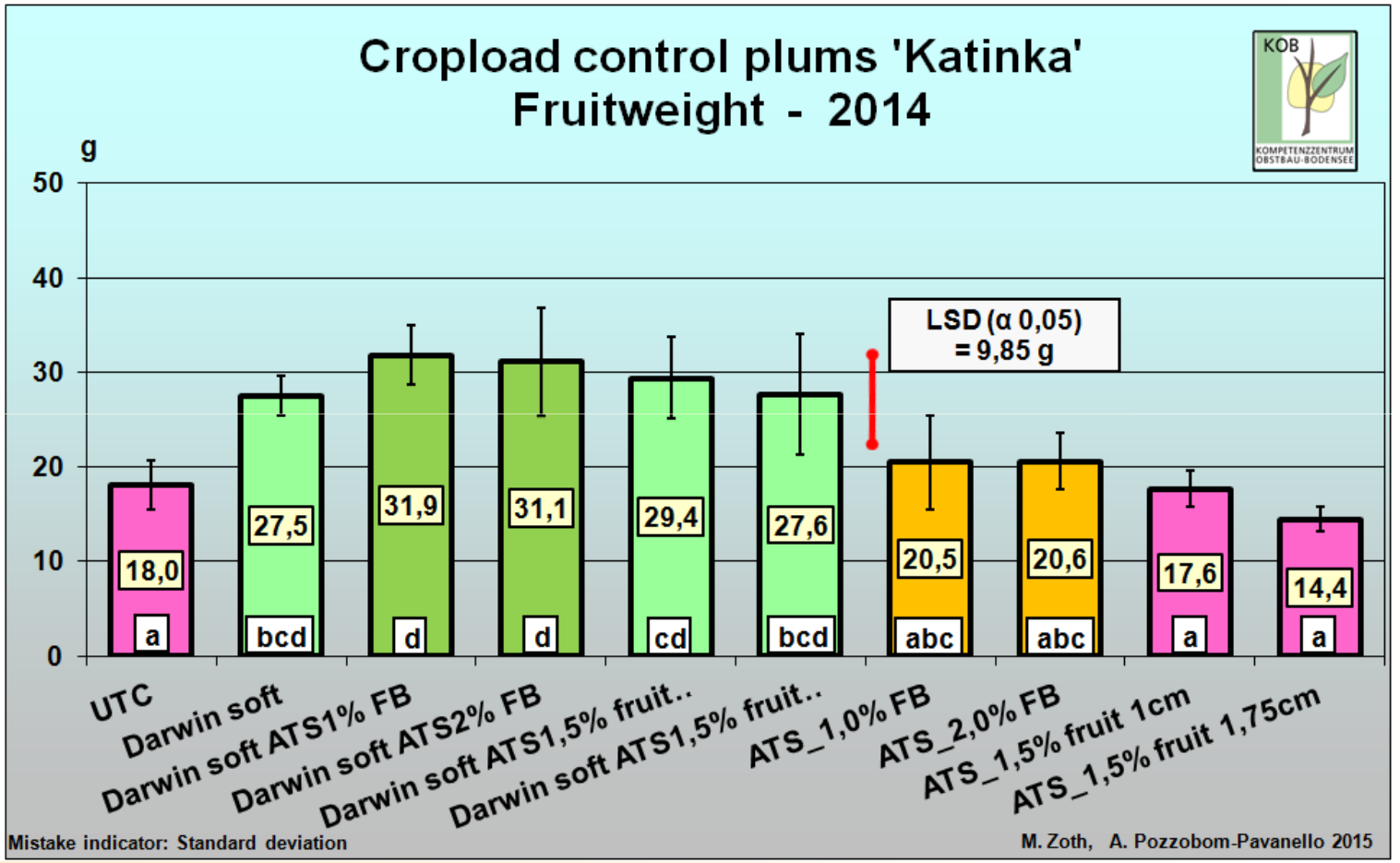
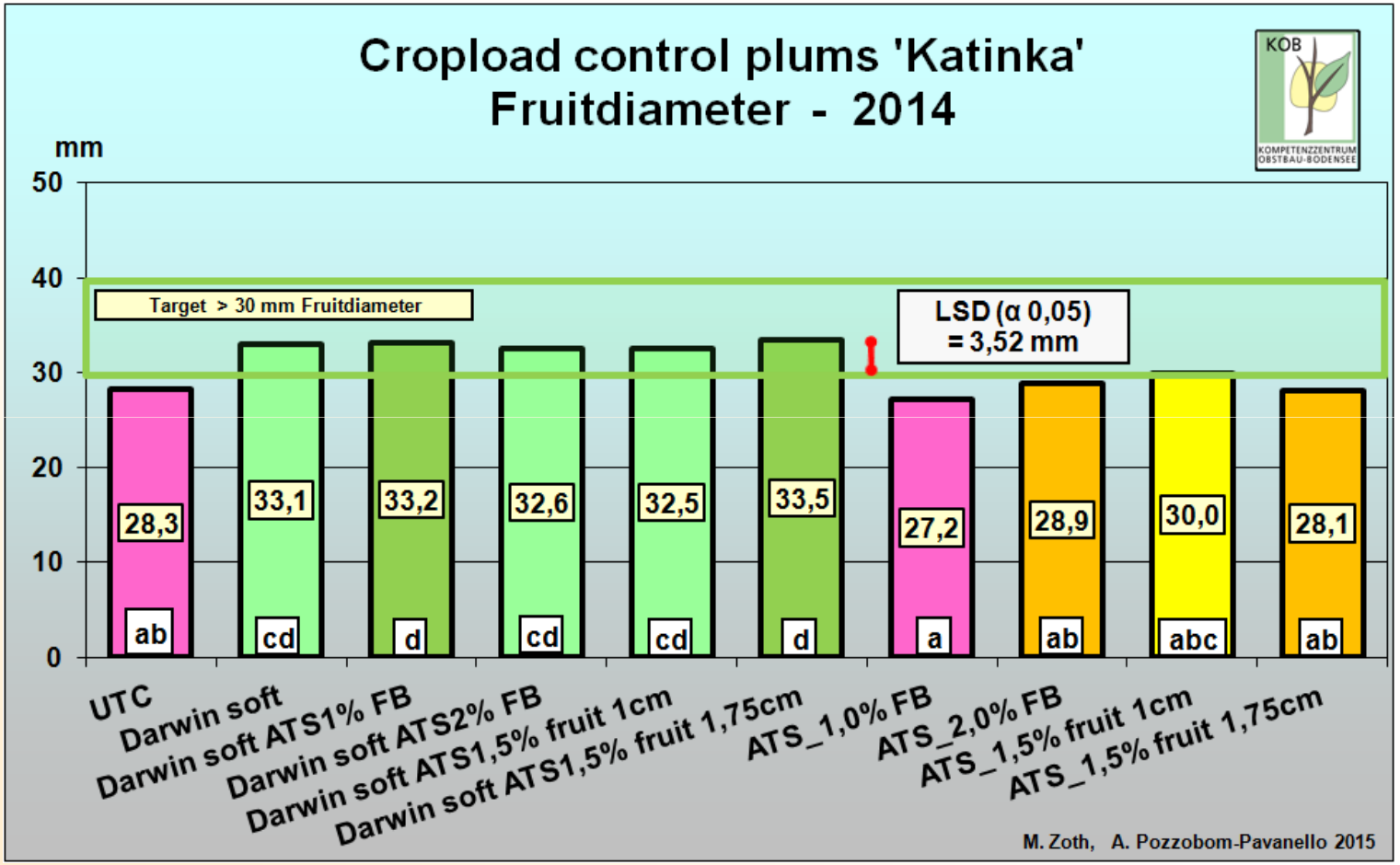


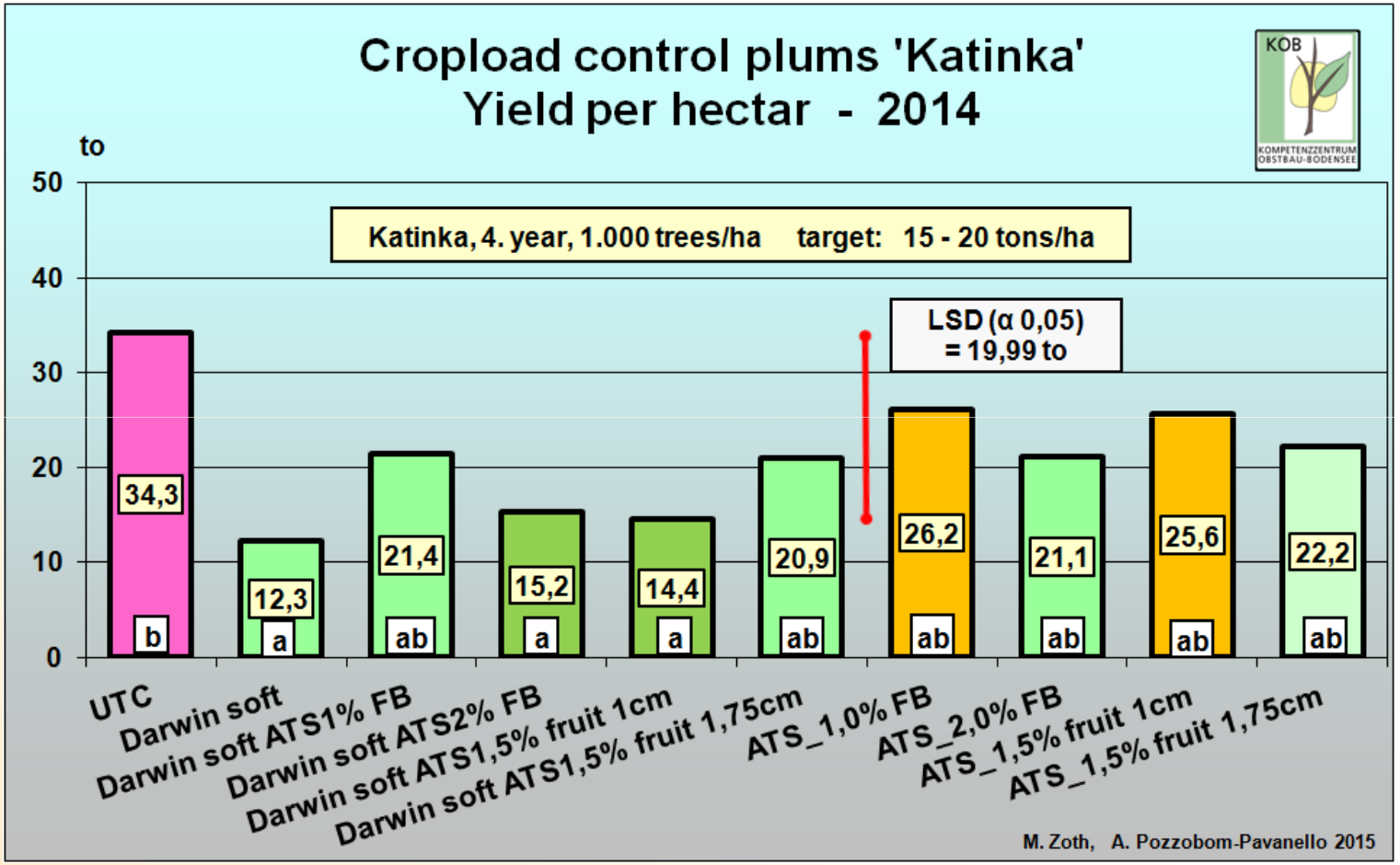
➢ **Soft settings DARWIN [85%E_{kin}] reduced fruitset in a proper way.**



- **DARWIN-soft efficacy increased fruitweight in a good way**



➢ **DARWIN soft [85%E_{kin}] settings increased fruit diameter.**



➢ **DARWIN-thinning optimised the yield per hectar.**

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Good fruit qualities

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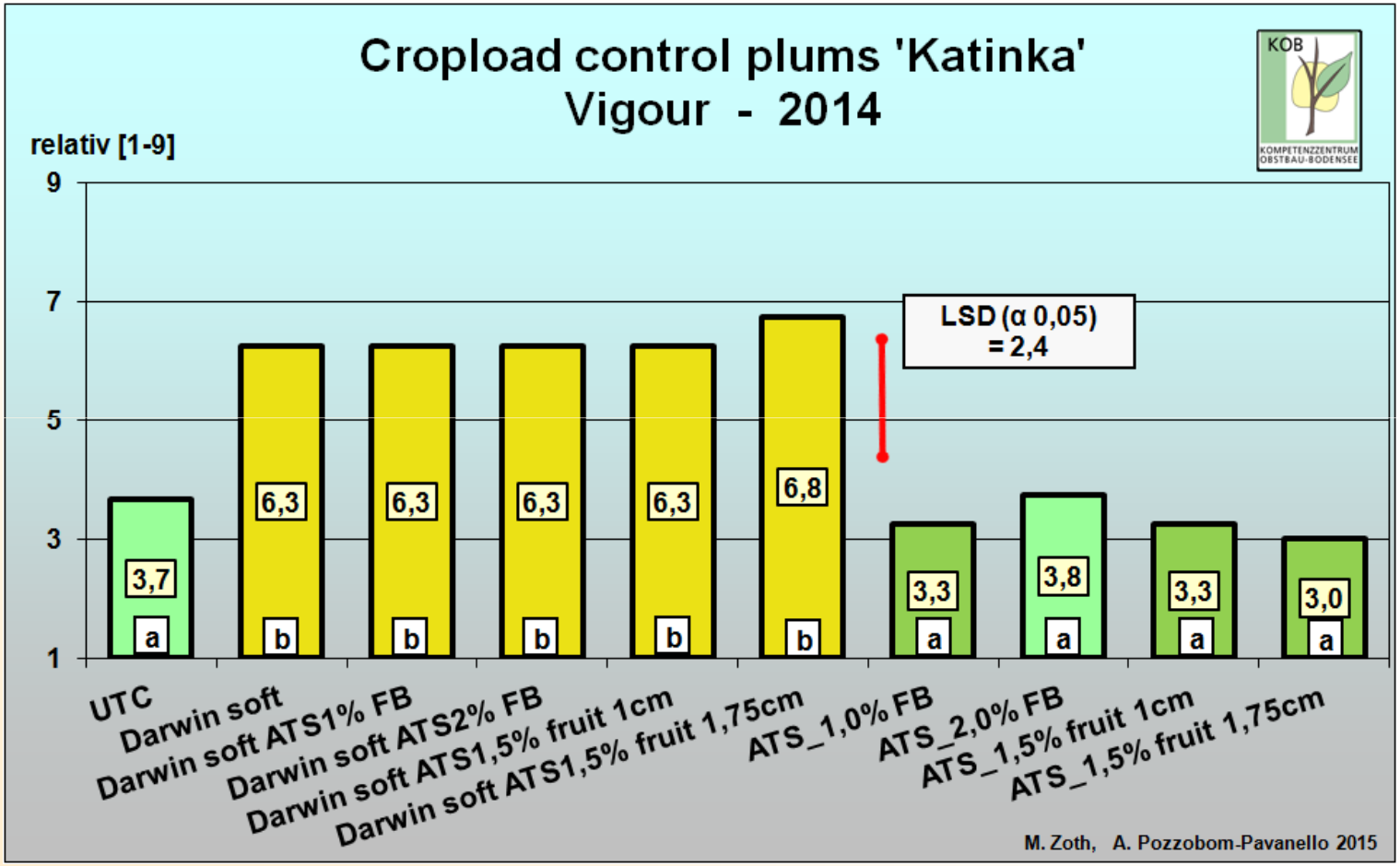

- **DARWIN device relieved the trees and increased vitality**

Cropload control with plums

Vigour and growth

Treated with DARWIN-machine **Without DARWIN**

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Cropload Control with plums

Conclusion 2014

1. Thinning with ATS solo at times is impossible.
2. The DARWIN-device extend the possibilities and can be used controlled by the settings.
3. ATS sprayings (1,5-2,5%ig) at full bloom are basically useable for plums cropload control.
4. Late ATS-sprayings seemed to be insecure, because the lack of efficacy. Sometimes phytotoxicity and some stress may be provoked.

A. Pozzobom Pavanello, UEPG, Paraná Brazil; M. Zoth, KOB, Germany

Cropload control with plums

Trial 2015

Trial 2015:	**Crop load control to improve fruit quality with plums (variety ‚Elena‘)**		
Orchard	**Field Q 19**	**planned time:**	**1 year**
Variety:	**Elena (R 17-20)**	Rootstock:	GF 655/2
Planting distance:	4,00 x 2,10m	Planting year:	2005
Situation:	fully producing trees, 100% filled space, vital,		

Treatments in a non GEP/testing trial:

Design: 15 treatments x 8 repeatments (= 4 trees / 2 branches per tree) =60 trees

Cropload control with plums

Nr	Treatment	Token	Row	Tree	Remark
1	UTC = untreated control	UTC	R17 R17 R19	B4+5+9 B12+13 B1	--
2	**Mech. Thinning Tree-DARWIN-250** Medium: 6 km/h + 230 rpm [= 100% E_{kin}]	Maschine medium =100% E_{kin}	R18	B7+8+11	17.4.2015
3	**Mech. Thinning Tree-DARWIN-250** Strong: 6 km/h + 250 rpm [= 125% E_{kin}]	Maschine strong = 125% E_{kin}	R20	B7+12+13	17.4.2015
4	**1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 40,0 l/ha in 1000 l H2O (2,0%ig) Full bloom	ATS VB 2,0%	R19	B4+5 B10+11	21.04.2015
5	**Mech. Thinning Tree-DARWIN-250** Medium: 6 km/h + 230 rpm [= 100% E_{kin}] **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 40,0 l/ha in 1000 l H2O (2,0%ig) Full bloom	MAmedium =100% E_{kin} + ATS 2% VB	R18	B5+6 B12+13	A: 17.4.2015 B:21.4.2015
6	**Mech. Thinning Tree-DARWIN-250** Strong: 6 km/h + 250 rpm [= 125% E_{kin}] **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 40,0 l/ha in 1000 l H2O (2,0%ig) Full bloom	MAstrong =125% E_{kin} + ATS 2% VB	R20	B1+2 B8+9	A: 17.4.2015 B:21.4.2015

Cropload control with plums

7	**1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 80,0 l/ha in 1000 l H2O (4,0%ig) Full bloom	**ATS VB 4,0%**	R19	B6+7 B12+13	21.04.2015
8	**Mech. Thinning Tree-DARWIN-250** Medium: 6 km/h + 230 rpm [= 100% E_{kin}] **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 80,0 l/ha in 1000 l H2O (4,0%ig) Full bloom	**MAmedium =100% E_{kin} + ATS 4% VB**	R18	B3+4 B9+10	A: 17.4.2015 B:21.4.2015
9	**Mech. Thinning Tree-DARWIN-250** Strong: 6 km/h + 250 rpm [= 125% E_{kin}] **1 x AGRO-N-Fluid** (Ammoniumthiosulfat=ATS) with 80,0 l/ha in 1000 l H2O (4,0%ig) Full bloom	**MAstrong =125% E_{kin} + ATS 4% VB**	R20	B5+6 B10+11	A: 17.4.2015 B:21.4.2015
13	**9,7l VBC-30160/ha** (200ppm ACC) with 1000 l H_2O ~ 43 days after FB	**ACC 200 ppm**	R17	B1+2+3	2.6.2015
15	**19,4l VBC-30160/ha** (400ppm ACC) with 1000 l H_2O ~ 43 days after FB	**ACC 400 ppm**	R17	B6+7+8	2.6.2015

Cropload control with plums

DARWIN Mechanical Thinning - 17. April 2015

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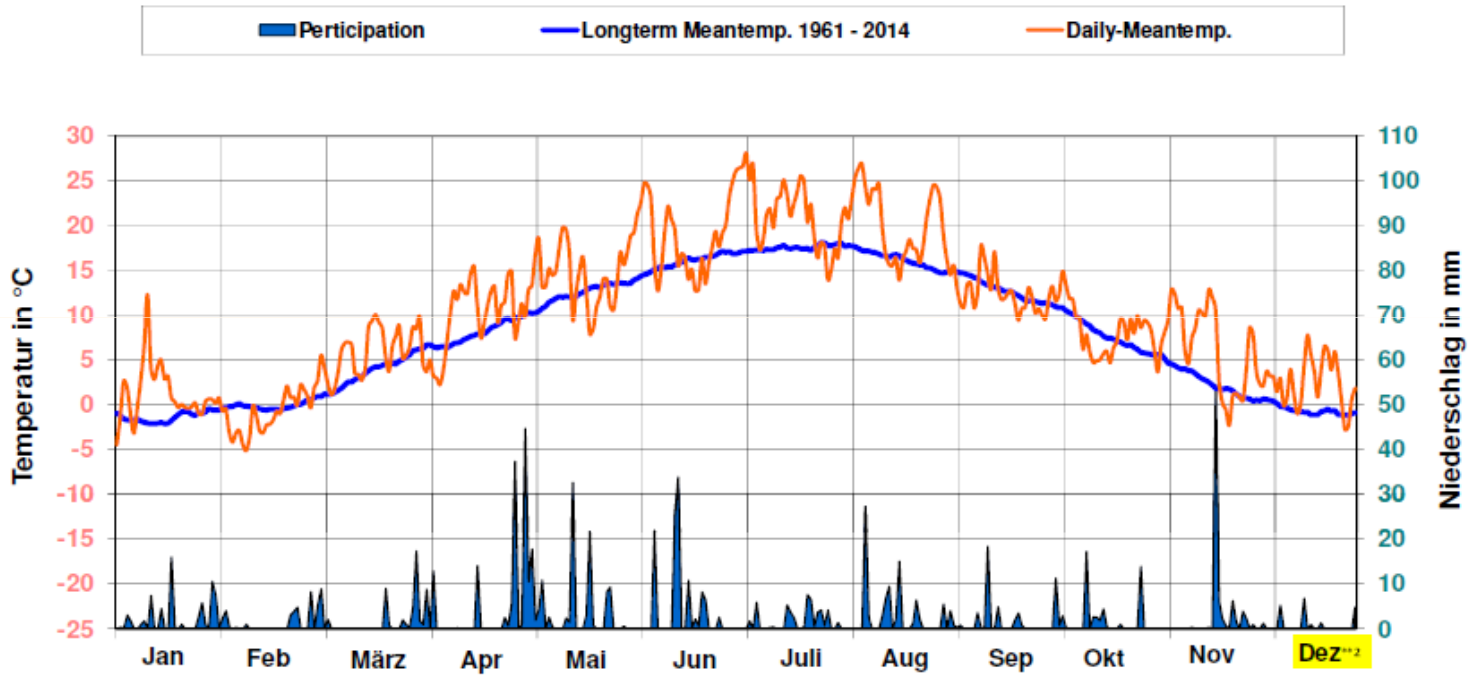
Weather situation 2015 - Stiftung KOB Bavendorf



													2015 ***3 Jahresmittel	Langjähriges Jahresmittel
Temp. °C	1,3 -1.0*	-1,1 0.2*	6,0 4.1*	9,7 8.1*	14,0 12.7*	18,2 16.0*	21,8 17.8*	20,5 17.1*	13,0 13.5*	9,0 8.7*	6,6 3.3*	2,8 -0.2*	10,2 °C	8,4 °C
NS in mm	84 159%*	28 55%*	53 88%*	85 118%*	174 182%*	112 99%*	48 43%*	78 71%*	46 58%*	60 88%*	79 113%*	21 30%*	868 mm	954 mm
Sonne h	54 101%*	83 96%*	190 135%*	257 150%*	179 85%*	241 109%*	314 129%*	276 123%*	181 104%*	99 89%*	99 167%*	99 221%*	2071 h	1740 h

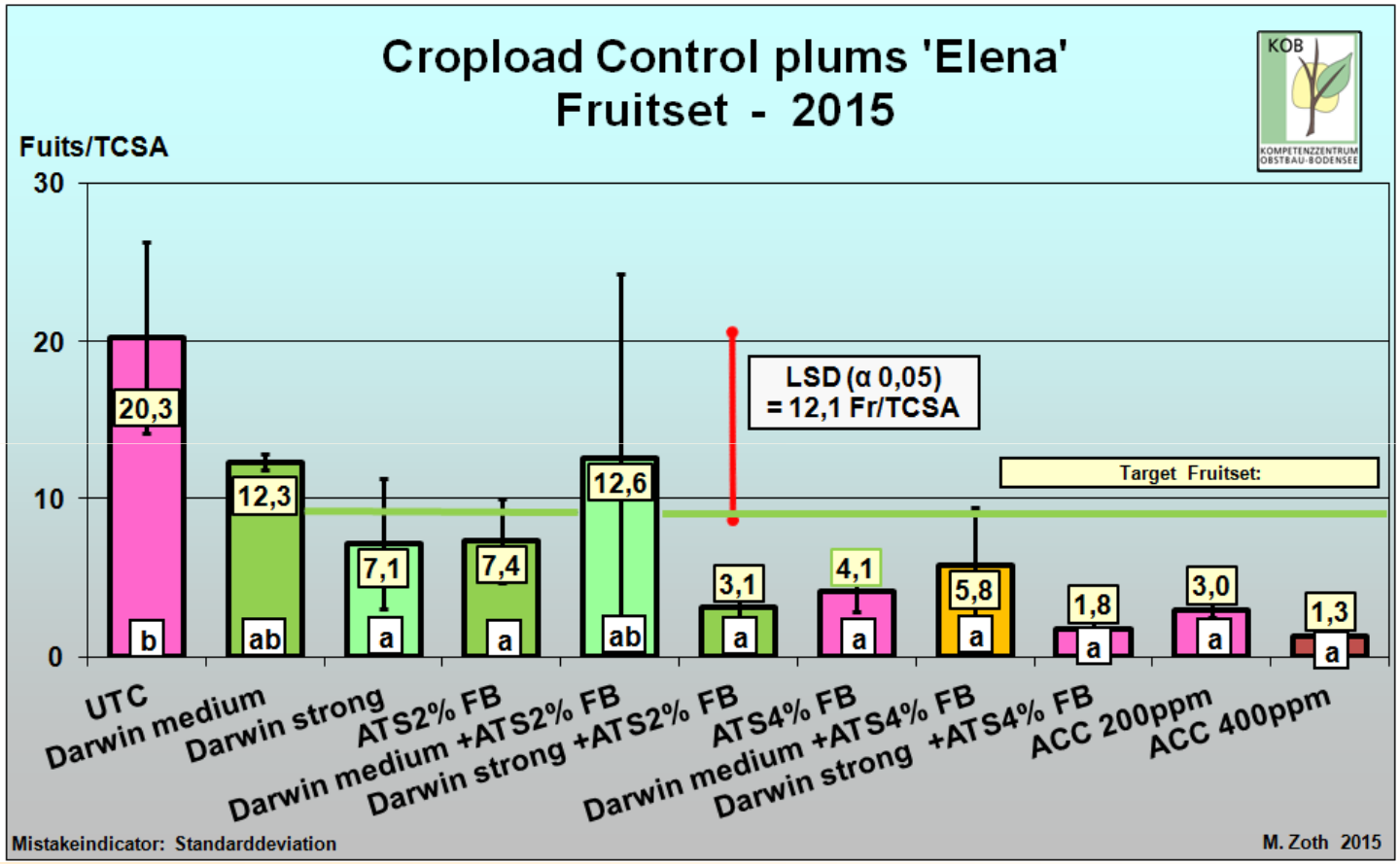
*Vergleichswerte zu den langjährigen Monatsmittelwerten am KOB Bavendorf

langjähriger Rekordwert

2015 Kompetenzzentrum Obstbau - Bodensee / M.Zoth

**2 Monat Dezember 2015: sehr warm, wenig Regen und sehr viel Sonne

***3 Gesamtjahr 2015: zu warm, weniger Niederschlag, sehr viel Sonne



- **Medium settings DARWIN [100%E_{kin}] and ATS 2% reduced fruitset good**
- **Stronger settings [125%E_{kin}], high ATS 4% and ACC reduced too much**

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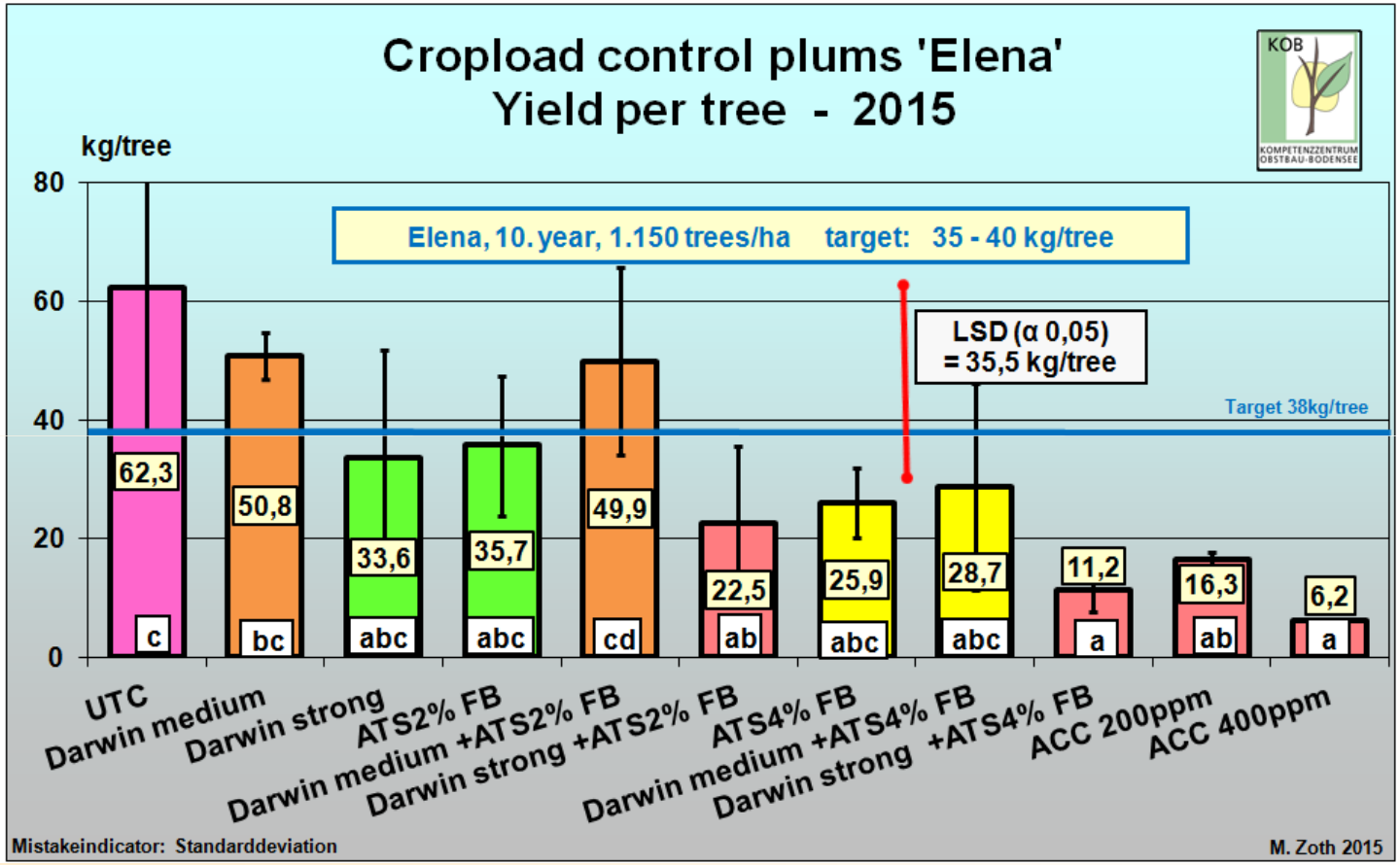
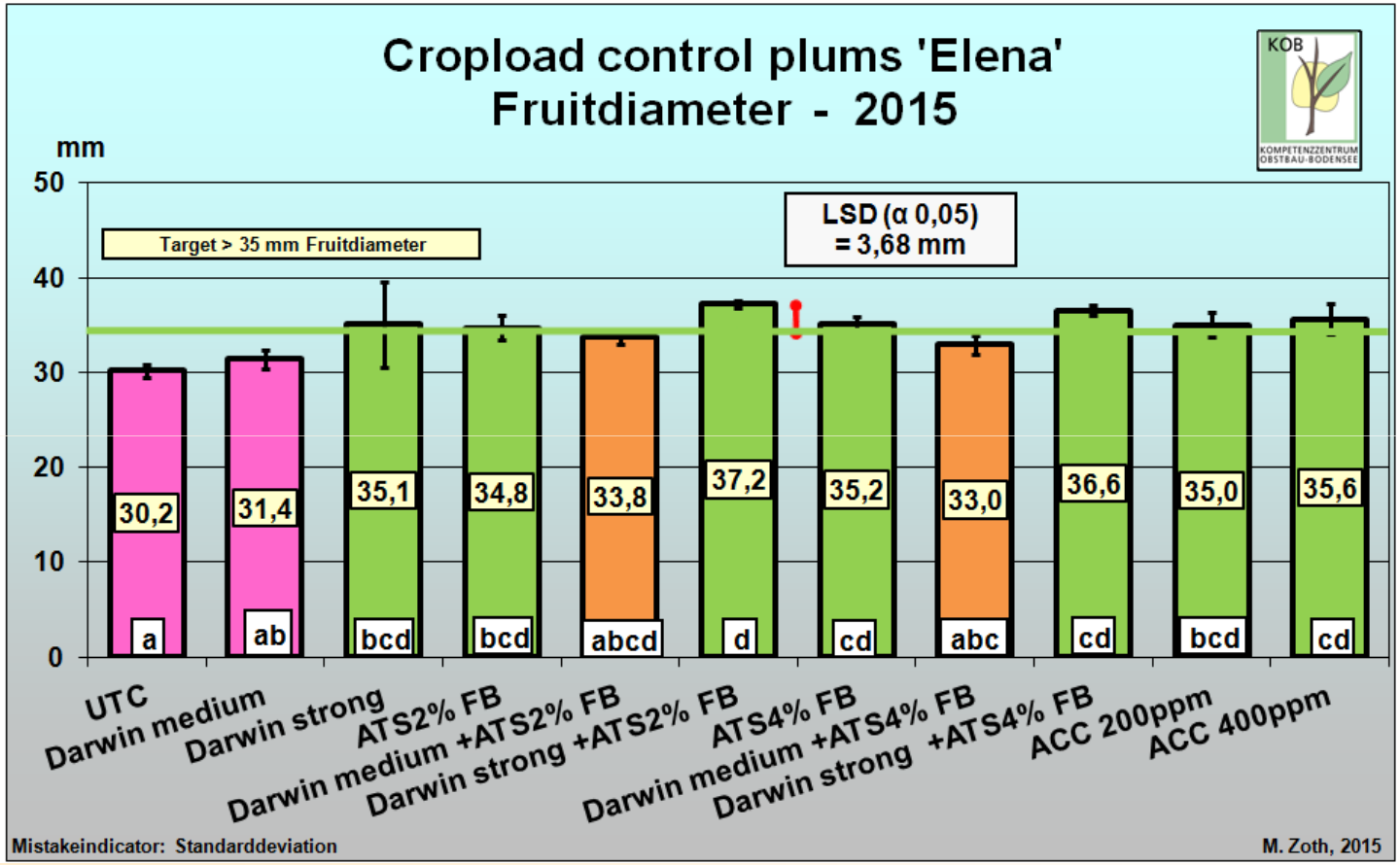


- **Medium settings DARWIN [100%E_{kin}] and ATS 2% showed good yield**
- **Stronger settings [125%E_{kin}], high ATS 4% and ACC reduced yield**



- **Stronger settings [125%E_{kin}], high ATS 4% and ACC increased fruitsize**
- **Medium setting DARWIN [100%E_{kin}] was not good enough needs ATS 2%**

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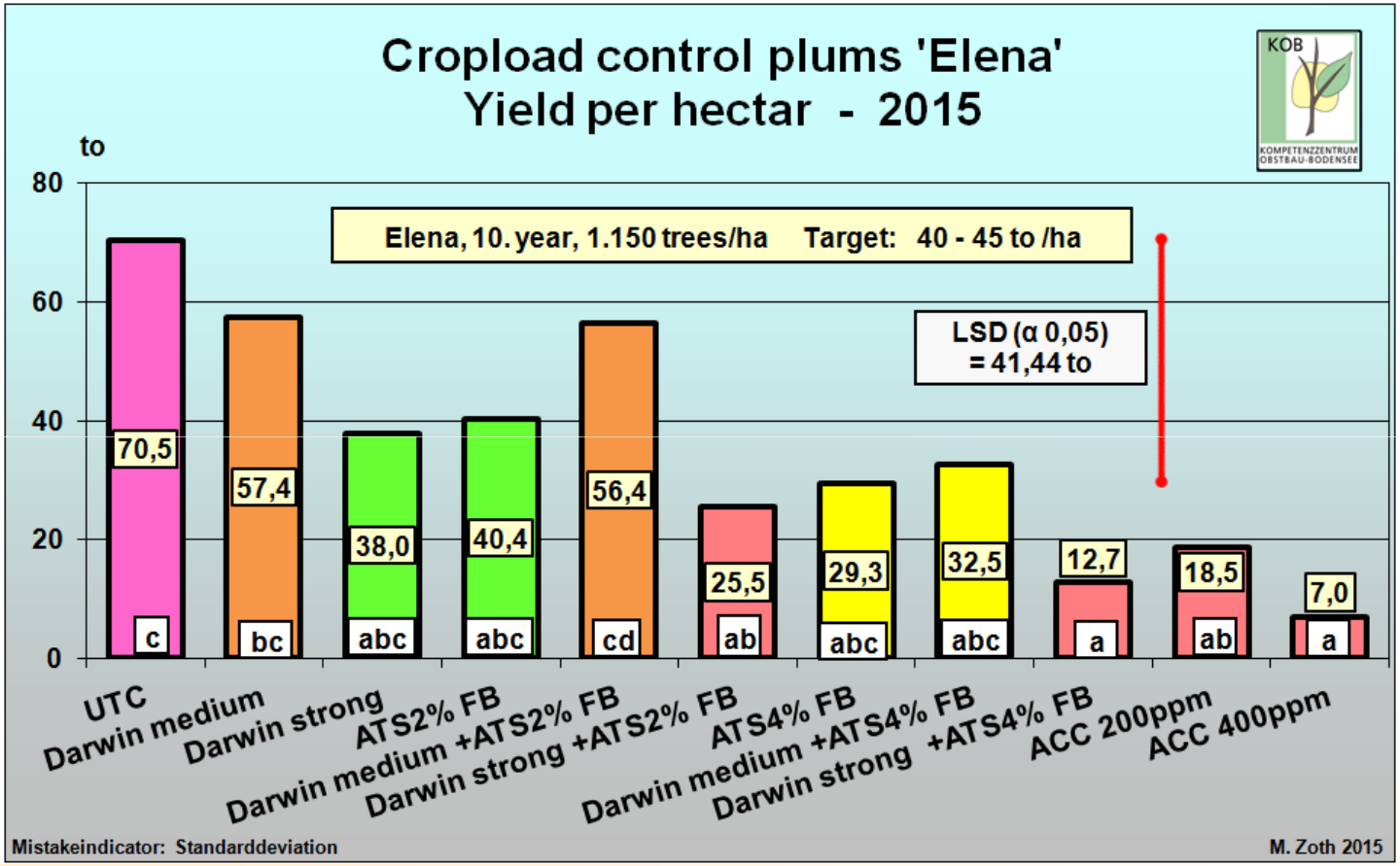

- **Strong settings DARWIN [125%E_{kin}] or ATS 2% for proper yield**
- **Stronger settings [125%E_{kin}], with ATS 2/4% or ACC reduced yield**

Cropload Control with plums

Final Conclusions

1. Thinning with ATS is essential.
2. ATS sprayings (1,5-2,5%ig) at full bloom are basically needed for plums cropload control
3. The DARWIN-device extend the possibilities and can be additionally used (controlled settings).
4. ACC is a compound with very good thinning potential in plums.
   Further studies are necessary.

Thank you,

for your

attention.

☺

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