

Single-grain sowing – What can you expect ?

Results Thyrow 2010 - 2012

- 1. Introduction**
- 2. Experimental site**
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- 6. Vision / outlook**

An aerial photograph of an experimental site. The site is a large, rectangular area divided into several smaller plots. The plots are arranged in a grid-like pattern. Some plots are green, indicating active crops, while others are brown, indicating harvested or fallow land. The site is surrounded by a dense forest to the north and east, and a residential area with several buildings and a tennis court to the south and west. A road runs along the bottom edge of the site.

2 experimental site



Berlin



Dahlem

Thyrow



Profil Thyrow



Yearly mean temperature 2 m (1981 - 2010) (°C)	9,2
Average annual precipitation (1981 - 2010) (mm)	510
Index of land quality	25
Soil type	silty sand
FC (Vol.-%)	11,3
C _{org} (mg 100g Boden ⁻¹)	580
pH (0-30 cm)	5,4 - 5,8
P _{DL} (mg 100g Boden ⁻¹)	5,6 - 8,0
K _{DL} (mg 100g Boden ⁻¹)	6,0 - 9,0
Mg _{CaCl2} (mg 100g Boden ⁻¹)	3,6 - 5,0

equal distribution at single-seed drilling



drilling 160 grains m^{-2}

single-grain 160 grains m^{-2}



source: Garbers, Henrike; KWS-Lochow 2012

3 experimental design

Experimental design – Factors and steps

Factor seeding		Factor seed density			replication
1	Single-grain sowing (10,0 cm)	1	50	grains m ⁻²	1
		2	100	grains m ⁻²	2
2	drill seeding (13,3 cm)	3	150	grains m ⁻²	3
		4	200	grains m ⁻²	
		5	250	grains m ⁻²	

Experimental design – single-grain sowing

Seed density		rd (cm)	S.i.R. (cm)	Growing space (cm ²)	
11	50	grains m ⁻²	10,0	20,0	200
12	100	grains m ⁻²	10,0	10,0	100
13	150	grains m ⁻²	10,0	6,7	67
14	200	grains m ⁻²	10,0	5,0	50
15	250	grains m ⁻²	10,0	4,0	40

rd row distance
S.i.R. Spacing in row

Experimental designs – single-grain sowing experiment Thyrow

RR					2011	RR
	213	113	223	123		
	243	143	253	153	233	133
RR					RR	RR
	232	132	242	142		
	222	122	252	152	212	112
RR					RR	RR
	241	141	251	151		
	211	111	221	121	231	131

ES 151	DS 212	ES 143
DS 251	ES 112	DS 243
ES 141	DS 222	ES 153
DS 241	ES 122	DS 253
2012		
ES 131	DS 242	ES 123
DS 231	ES 142	DS 223
ES 121	DS 232	ES 113
DS 221	ES 132	DS 213
ES 111	DS 252	ES 133
DS 211	ES 152	DS 233

Average rainfall 1981 – 2010 and monthly 2010 to 2012

	March	April	May	June	sum
mean (1981-2010)	35,7	30,0	53,2	54,5	173,4
2010	36,3	12,0	82,2	4,9	135,4
2011	15,9	26,2	40,4	54,9	137,4
2012	8,6	18,0	40,8	126,9	194,3



4. results

4.1 grain yield

Results – grain yield (g m⁻²)

grains m ⁻²	Single-grain sowing			Drill seeding		
	2010	2011	2012	2010	2011	2012
50	920	660	913	503	420	698
100	987	910	1102*	707	580	879
150	1091	990*	1233*	580	560	916
200	1042	1030*	1173*	620	590	932
250	1064	1030*	1272*	630	630	967
LSD 5%	140	270	37	193	125	37

1025

671

4.2 ears m⁻²

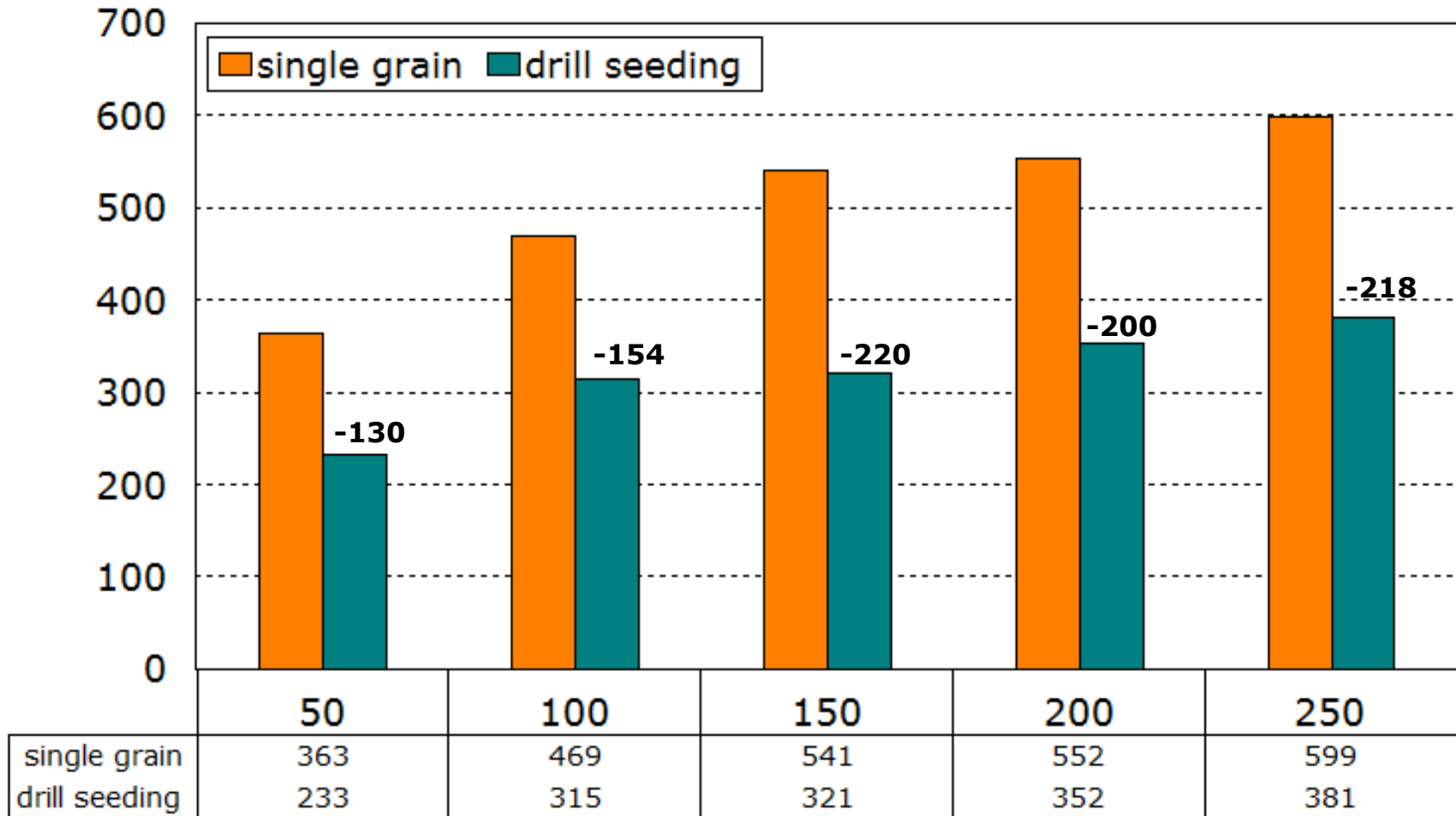
Results – ears m⁻²)

grains m ⁻²	Single-grain sowing			Drill seeding		
	2010	2011	2012	2010	2011	2012
50	427	294	368	230	210	260
100	501	445	460	261	297	386
150	547	501	576	282	264	417
200	564	532	559	309	325	422
250	629	557	612	344	358	441
mean	534	466	515	285	291	385

505

320

Results average 2010 -2012 ears m⁻²



sowing density grains m⁻²



4.3 grain density

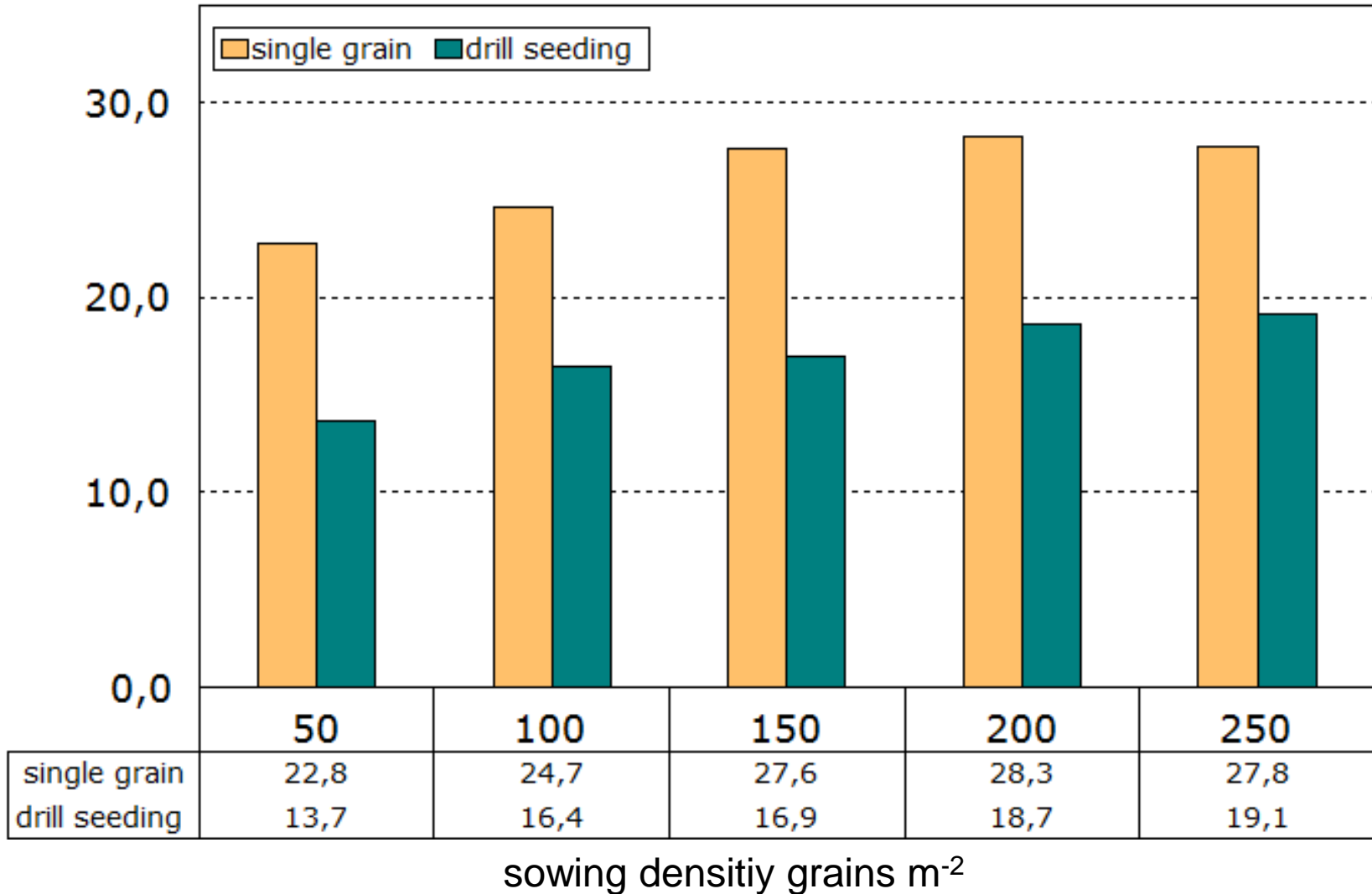
Results – grains m⁻²)

grains m ⁻²	Single-grain sowing			Drill seeding		
	2010	2011	2012	2010	2011	2012
50	24.123	24.412	19.766	15.079	11.101	14.823
100	25.709	23.662	24.651	14.352	15.154	19.746
150	29.134	25.508	28.183	15.290	14.681	20.869
200	29.322	28.064	27.516	16.566	15.713	23.694
250	29.939	26.658	26.784	17.164	17.243	22.997
mean	27.645	25.661	25.830	15.690	14.778	20.426

26.378

16.964

Results 2010 - 2012 – grain density m^{-2} (thousand grains)

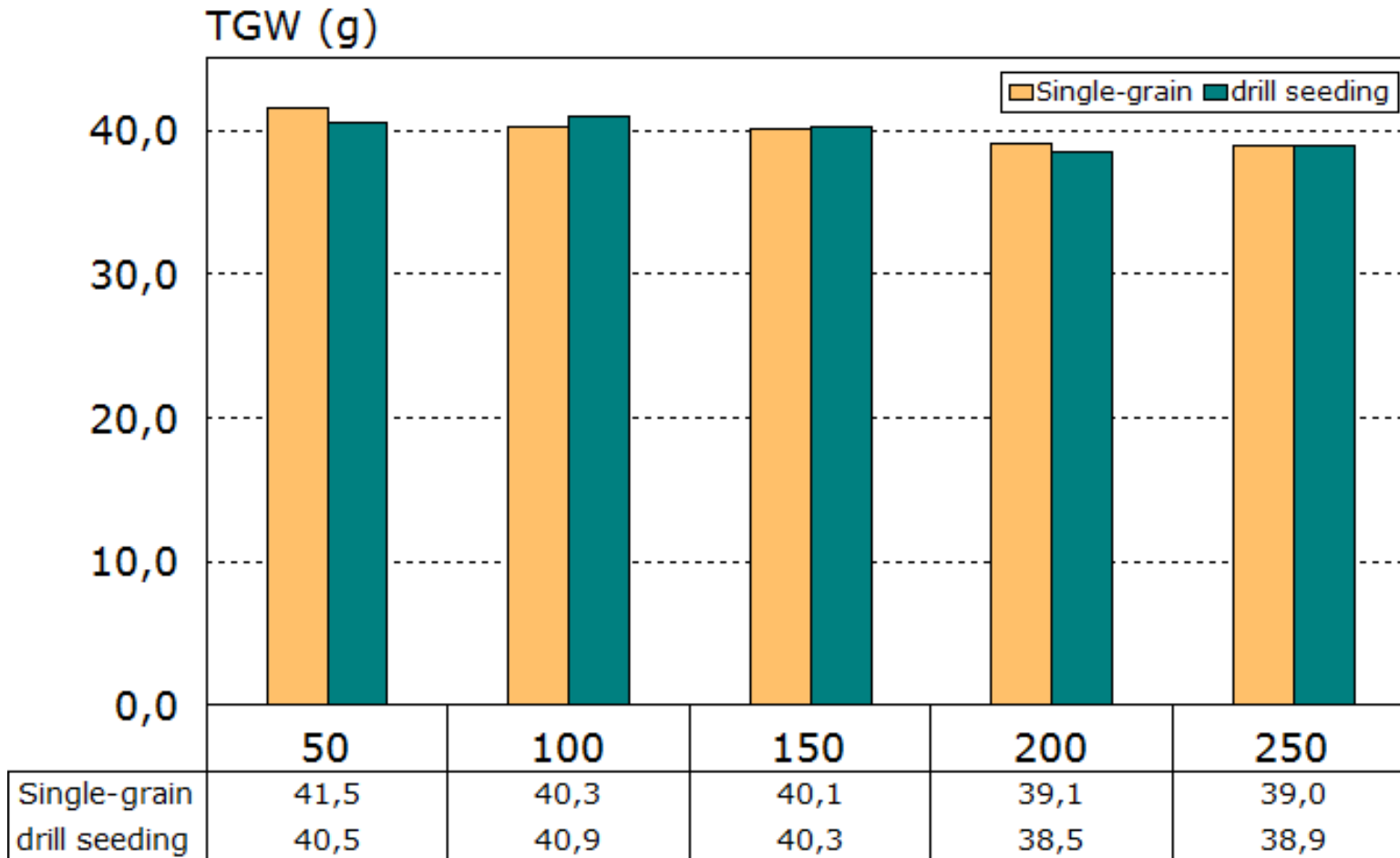


4.4 TGW

Results – tgw

grains m ⁻²	Single-grain sowing			drilling		
	2010	2011	2012	2010	2011	2012
50	38,0	40,5	45,9	34,0	40,1	47,3
100	38,4	37,6	44,8	39,0	39,5	44,2
150	37,5	39,6	43,2	38,0	39,7	43,3
200	35,5	39,1	42,8	37,0	35,5	43,1
250	35,5	38,8	42,8	37,0	37,9	41,7
mean	37,0	39,1	43,9	37,0	38,5	43,9

Results 2012 – tgw



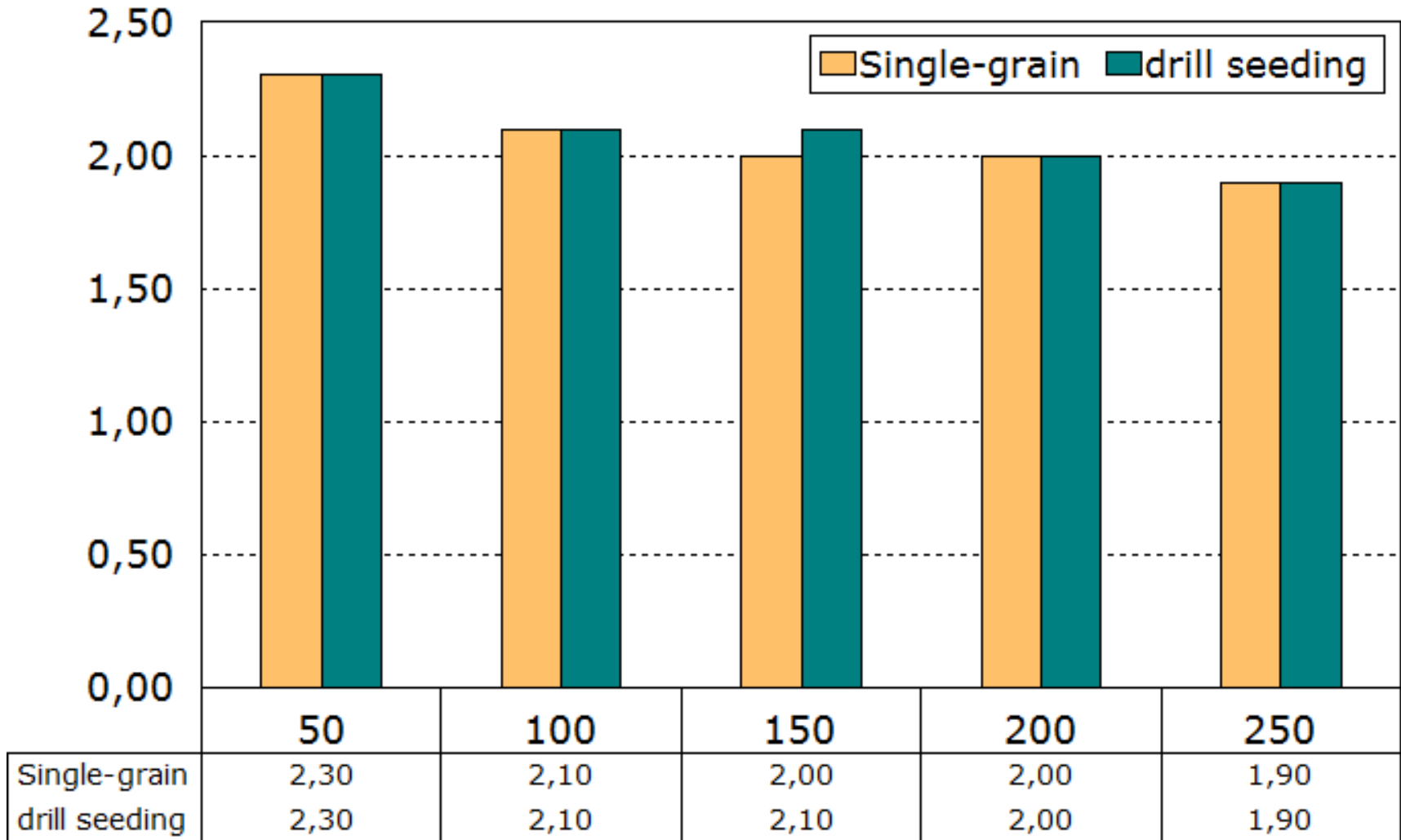
sowing density grains m⁻²

4.5 single ear yield

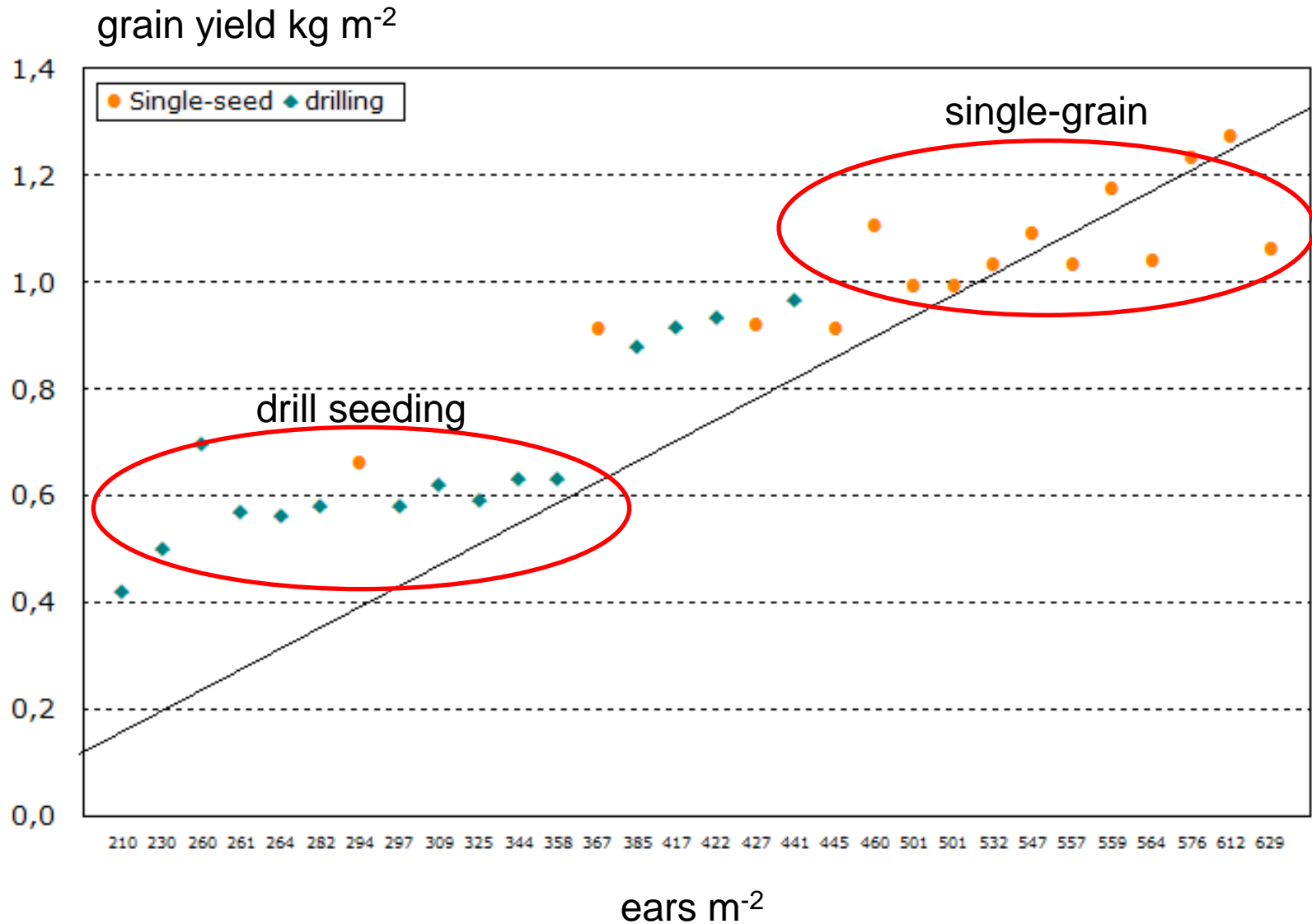
Results 2012 – single ears yield (g ear⁻¹)

grains m ⁻²	Single-grain sowing			seeding		
	2010	2011	2012	2010	2011	2012
50	2,1	2,3	2,5	2,2	2,0	2,7
100	2,0	2,0	2,4	2,1	2,0	2,3
150	2,0	2,0	2,1	2,0	2,1	2,2
200	1,9	2,0	2,1	2,0	1,8	2,2
250	1,7	1,8	2,1	1,8	1,8	2,2
	1,9	2,0	2,2	2,0	1,9	2,3

Results 2010 – 2012 single ears yield (g ear⁻¹)



sowing density grains m⁻²





5 conclusion

conclusion

- 1. The plot yield on single-grain sowing was higher again about 40 % in comparison with drilling**
- 2. The single-grain sowing have a significant higher ears density**
- 3. A higher grain density was achieved in this treatments with single-grain sowing**
- 4. This couldn't compensated by drilling through higher tsw or higher single ears yield**

6 forecast

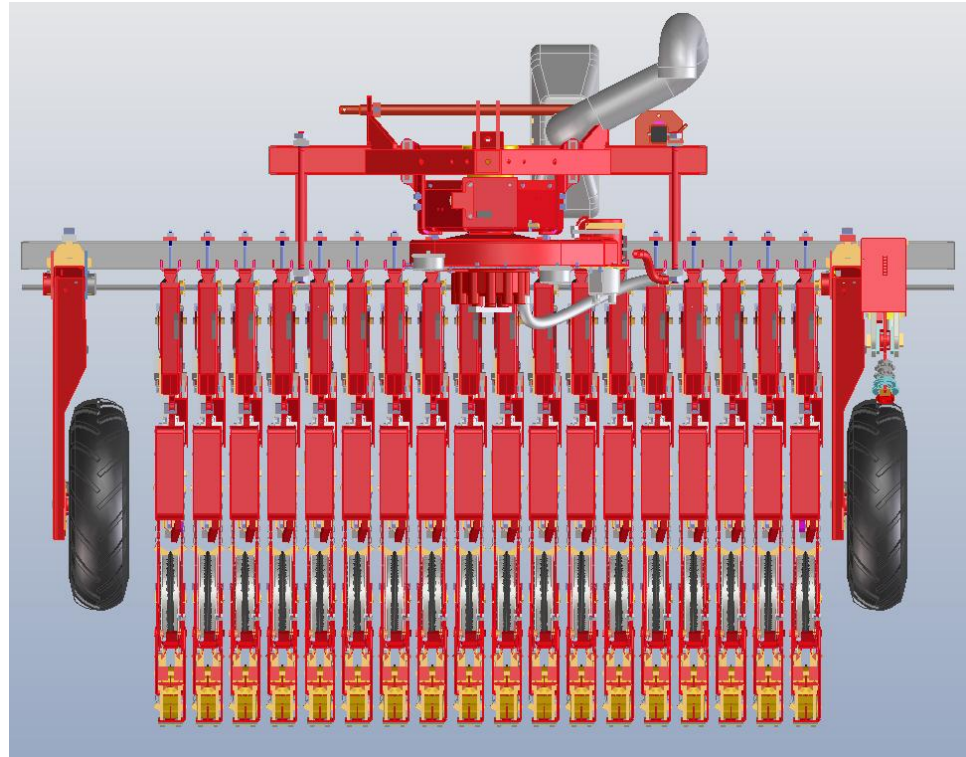
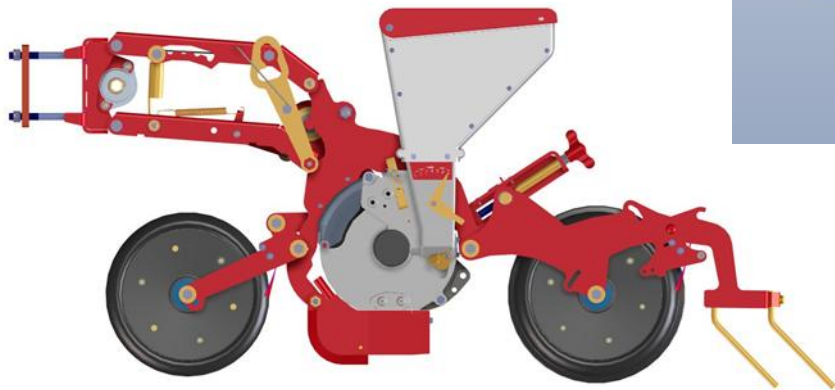
6 forecast

- 1. Is it possible to repeat the results of last three year in normal plots with 12 qm?**
- 2. New tests of 9 experimentals sites in Germany in 2013**
- 3. Five experiment additional with winterweet**

Single-seed-drill

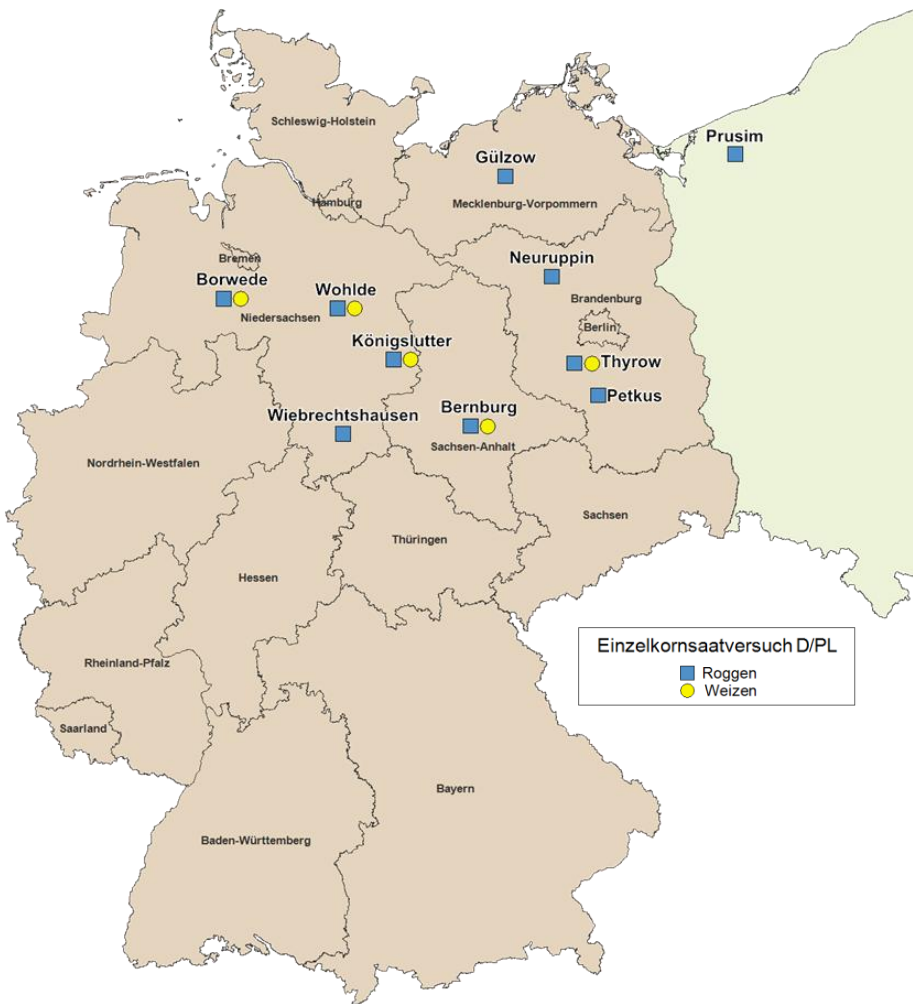
Typ: Miniair Nova (Kverneland)

- Wide: 3,0 m
- Wheel gauge: 2,5 m
- Number of rows: 18
- Row space: 12 cm



source: Garbers, Henrike (KWS-Lochow 2012)





Zukunft säen
seit 1856



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source: Garbers, Henrike (KWS-Lochow 2012)



drill seeding

single-grain





single-grain

drill seeding

1. Results couldn't present at this moment if it is too early in the year.
2. On the basis of count of stems last week it is not sure that the results in this year are the same like the last years.

Thank you
for your attention