



Single seed drilling – first results with winter rye

Micheal Baumecker

Humboldt University Berlin

From the very beginnings of farming every crop seeding has aimed at achieving the even distribution of plants through the seeding operation. Drill seeding of cereals has been standard practice for over 100 years now. The current state of technical development indicates that the benefits of uniformly allocating growing space can also benefit the cultivation of cereals.

These developments were discussed in December 2008 at the RYE BELT Designer Team meeting. The trial plan developed on this basis led to the commencement in the autumn of 2009 of a small plot trial to compare single seed drilling and drill seeding at the Thyrow site of the teaching and research station of the Faculty of Agriculture and Horticulture at the Humboldt University in Berlin. The results of the first two years of the trial are described below.

Single seed drilling clearly better when trialled

The great effort required to spread the rye grains by hand meant that the size of plots was restricted to 1.0 m x 1.5 m. Due to the width of the machine drill the size of the plots seeded with the seed-sowing machine was set at 1.5 m x 1.5 m. Table 1 provides an overview of the different trialled methods.

The seeding in the autumn of 2009 was carried out using the Visello (precision placement) and Rasant (drill seeding) varieties. In autumn 2010 the Visello variety was used in both seeding methods.

In both years of the trial it was evident that seeding using precisely placed grains resulted in significantly higher crop weights, something which was backed up by statistics. The difference in both years was around + 40% (see Table 2). So in 2010 it was demonstrated that the differences in crop yield between precision placement and drill seeding could not be attributed to the variety effect.

Contact:
Claus Hinrich Heuer
Tel.: +49 (0) 5051 477-325
E-Mail: claus.heuer@kws-lochow.de
www.ryebelt.com

KWS LOCHOW GMBH
Post box 11 97
29296 Bergen

Ferdinand-von-Lochow-Str. 5
29303 Bergen
Deutschland

Do not make minimum seeding spread too thin

It can also be seen that even with precision placement 50 grains m⁻² is not sufficient to exhaust the possible yield potential of the soil.

Table 3 sets out the examined parameters of the population and the crop. It can be seen that in the comparison of the drill seeding and precision placement it is the number of ears per m² that differs the most. Because the TSW and the number of grains per ear only exhibit slight differences across the placement methods, there are again significant differences in the grain densities (number of grains per m²).

It is possible with precision placement and uniform spacing between the individual plants that the individual plants can supply one or two more ears with the requisite nutrients and water. The closely compacted plants frequently experienced with drill seeding do not possess the compensating capacity to exploit the gaps created in the row.

Increasingly adapt trials to practice

These results have led to further study the single grain placement of winter rye. Plans for seeding in the autumn of 2012 have begun. Decisive steps forward are expected with the use of single grain seeding machines from the field salad cultivation, which enable placement on larger sub-areas at various locations in Germany and to examine if the results of the small plot can also be repeated and confirmed on the larger test sites.

Table 1: Test factors and phases of Thyrow single seed drilling trial

Seeding factor		Seeding rate factor		Repetition	
1	Single seed drilling (Row spacing 10 cm)	1	50	Grains m ⁻²	1
		2	100	Grains m ⁻²	2
2	Drill seed (Row spacing 13.3 cm)	3	150	Grains m ⁻²	3
		4	200	Grains m ⁻²	
		5	250	Grains m ⁻²	

Contact:
Claus Hinrich Heuer
Tel.: +49 (0) 5051 477-325
E-Mail: claus.heuer@kws-lochow.de
www.ryebelt.com

KWS LOCHOW GMBH
Post box 11 97
29296 Bergen

Ferdinand-von-Lochow-Str. 5
29303 Bergen
Deutschland

Table 2: Average plot yields single seed drillingl in g m⁻²

Grains m ⁻²	Single seed drilling		Drill seed	
	2010	2011	2010	2011
50	920	660	503	420
100	987	910	707*	580*
150	1091*	990*	580	560*
200	1042	1030*	620	590*
250	1064*	1030*	630	630*
LSD5%	140	270	193	125

* significant differences

Contact:
Claus Hinrich Heuer
Tel.: +49 (0) 5051 477-325
E-Mail: claus.heuer@kws-lochow.de
www.ryebelt.com

KWS LOCHOW GMBH
Post box 11 97
29296 Bergen

Ferdinand-von-Lochow-Str. 5
29303 Bergen
Deutschland

Table 3: Yield structure analysis single seed drilling experiment in Thyrow

SD		Ears m ⁻²		Grain density m ⁻²		TGW		Grain number ears ⁻¹	
		2010	2011	2010	2011	2010	2011	2010	2011
50	P	427	294	24123	24412	38.0	40.5	56	83
100	P	501	445	25709	23662	38.4	37.6	51	53
150	P	547	501	29134	25508	37.5	39.6	53	51
200	P	564	532	29322	28604	35.5	39.1	52	53
250	P	629	557	29939	26585	35.5	38.8	48	48
50	D	230	210	15079	11101	34.0	40.1	66	53
100	D	261	297	14352	15154	39.0	39.5	55	51
150	D	282	264	15290	14681	38.0	39.7	54	56
200	D	309	325	16566	15713	37.0	35.5	54	50
250	D	344	358	17164	17243	37.0	37.9	50	48

SD = seed rate, P = single seed drilling, D = Drill seed

Contact:
Claus Hinrich Heuer
Tel.: +49 (0) 5051 477-325
E-Mail: claus.heuer@kws-lochow.de
www.ryebelt.com

KWS LOCHOW GMBH
Post box 11 97
29296 Bergen

Ferdinand-von-Lochow-Str. 5
29303 Bergen
Deutschland