

OSR establishment trial

Centre Morley **Trial Code** WOR13-601 **Variety** Quartz or Cabernet

Objective

To observe the effects of precision drilling on the growth and yield of oilseed rape.

Summary

This study was one of a series of Agrovista trials across the country and this study was delivered in conjunction with NIAB TAG National Agronomy Centre (NAC) initiative and Morley Farms. The study compared a range of seed rates and drilling approaches. Seed rate generally had little effect on yield with any of the rates although the highest yield was obtained from 60 seeds/m². Despite a greater cost associated with crop establishment the Amazone precision drill performed as well or better than the standard approach (Sumo Trio fb Vaderstad Rapid) both for crop yield and / or margin at the same seed rate.

Table 1. Treatments

	Technique	Variety + description	Row width	Seed rate	
			mm	Seeds/m ²	Seeds/m row
1	Vaderstad Rapid drill	Cabernet	125	80	40
2	Amazone precision drill	Quartz	500	20	10
3	Amazone precision drill	Quartz	500	40	20
4	Amazone precision drill	Quartz	500	60	30
5	Amazone precision drill	Quartz	500	80	40
6	Amazone precision drill	Quartz	500	100	50

- This study was one of a series of Agrovista trials across the country and this study was delivered in conjunction with NIAB TAG National Agronomy Centre (NAC) initiative and Morley Farms.
- The oilseed rape (OSR) variety (Quartz) was drilled on 15th August 2012 at various seed rates on 500 mm row spacing using an Amazone EDX precision drill. For comparison, a standard approach, using the OSR variety (Cabernet) was drilled on 8th September 2012 using a Vaderstad Rapid drill at 125 mm row spacing as detailed in Table 1.
- Treatments were set up as large un-replicated strips approximately 12m x 32m; consequently small differences should be treated with caution.
- All treatments received turkey manure (~7.7 t/ha) prior to drilling and this was incorporated using shallow discs. All crop inputs were as the Morley Farm crop, as detailed in the Input Appendix.
- Seedbed conditions were good at the time of drilling and all cultivation techniques established well.
- The Amazone EDX precision drill resulted in little yield response to seed rate as shown in Figure 1. The average yield was 5.49 t/ha across all seed rates. A seed rate of 60 seeds/m² resulted in the highest yield of 5.72 t/ha and 40 seeds/m² resulted in the lowest yield of 5.16 t/ha although it should be noted that a mechanical failure was encountered during the drilling operation with this

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seed rate. This experiment suggests that precision drilling OSR can result in high crop yields even at reduced seed rates.

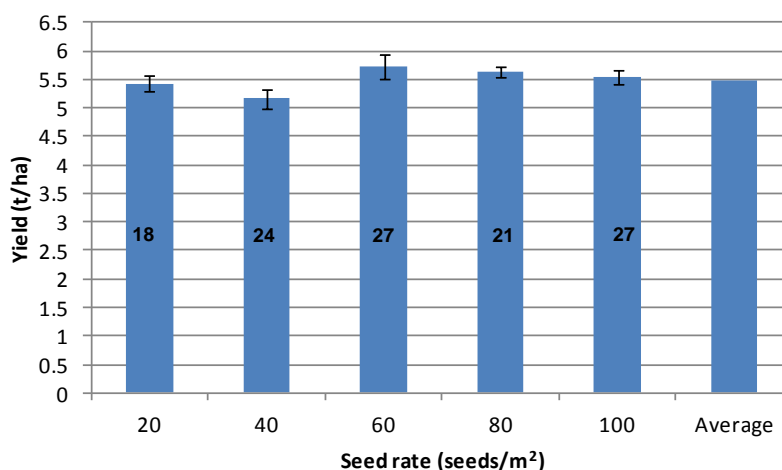
- The Sumo Trio fb Vaderstad drill yielded 4.75 t/ha at 80 seeds/m². It should be noted that the standard approach was drilled around 3 weeks later and this may have contributed to the lower yield.
- The calculations of margin over crop establishment are shown in Table 2 and indicate that the Amazone EDX precision drill cultivation technique resulted in an average margin of £1782/ha; this was despite the additional cultivation using the Sumo Trio ahead of the Amazone precision drill. When considering the financial implications of the yield responses it should be remembered that the context of the specific costs used and the speed of operation (land area covered), as well as return per unit area, should also be considered.
- Using precision drills for oilseed rape establishment has, for two seasons, 2012 and 2013 shown the potential to offer comparable or higher crop yields and margins compared to other conventional approaches. Table 3 summarises the yield performance of precision drilled OSR in trials at Morley in 2012 and 2013.
- There is a tendency for higher yields at seed rates of between 40 and 60 seeds/m² although the highest yields have not shown a consistent benefit to low or high seed rates and this is likely to be influenced by such factors as moisture, temperature and sunlight affecting crop structure. In these situations it is often necessary to consider adequate seed rates accounting for seedbed conditions at the time of drilling and the requirement to ensure sufficient plant populations to avoid crop loss due to pest attack.

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Figure 1: Amazone EDX precision drill – The effect of seed rate on yield response, Morley 2013



Error bars are the standard error of the mean (SEM)
Figures relate to spring plant population (m²)

Table 2: Margin*¹ over crop establishment (£/ha).

Cultivation technique	Seed rate* ²					
	Very low	Low	Medium	High	Very high	Average
Sumo Trio fb Vaderstad Rapid drill	-	-	-	1591	-	1591
Sumo Trio fb Amazone EDX precision drill	1774	1679	1875	1840	1812	1782

*¹ Margin over crop establishment (£/ha) is calculated as output minus establishment cost. Oilseed Rape £350/t; Diesel £0.68/litre. Establishment costs were based on: Sumo Trio £43/ha; Vaderstad Rapid drill £29/ha; Amazone EDX precision drill £40/ha.

*² Seed rate (seeds/m²): Very low <15; Low c 25, Medium c 50; High c 80; Vey high c 100.

Table 3: Contrast in yield (t/ha) performance using precision drilling between 2012 and 2013 seasons.

Cultivation technique	Seed rate* ¹					
	Very low	Low	Medium	High	Very high	Average
Sumo Trio fb Kuhn Maxima 2 TI		6.34	5.85	5.88		6.02
Sumo Trio fb Amazone EDXI	5.43	5.16	5.72	5.62	5.54	5.49

*¹ Seed rate (seeds/m²): Very low <15; Low c 25, Medium c 50; High c 80; Vey high c 100.

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Input Appendix: Field details & overall applications to crop

Trial name: OSR establishment trial

Crop: Winter Oilseed Rape

Location: Deopham Green

Trial code: WOR13-601

Soil type: Ashley Series (Sandy clay loam)

Soil analysis: N/A

Previous crop: Winter Barley

Drill date: 15/08/2012

Seed rate: Various

Harvest date: 19/08/2013

Variety: Quartz or Cabernet

Drilled plot size: 12m x 32m

Replicates: None

Input type	Product	Product rate	Date
Herbicide:	Shogun	0.4 l/ha	07/09/12
	Rapsan 500 SC	1.0 l/ha	08/09/12
	Leopard 5 EC	1.0 l/ha	08/10/12
	Galera	0.35 l/ha	08/03/13
	Laser	1.0 l/ha	02/05/13
Fertiliser:	Turkey Muck	7.7 t/ha	13/08/12
	Liquid N 22 + S	100 kg/ha	05/03/13
	Liquid N 27 + S	90 kg/ha	23/04/13
PGR:			
Insecticide:	Revolt	0.150 l/ha	27/05/13
Fungicide:	Proline	0.4	02/11/12
	Galileo	0.8	03/05/13
	Recital	1.0	27/05/13

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