

**Trial Title:** The potential of companion cropping in oilseed rape.

**Centre** Morley      **Trial Code** WOR13-9503      **Variety** Cabernet

**Objective:** To examine a range of companion cropping approaches in oilseed rape (OSR) and to ascertain any impact on crop performance and yield.

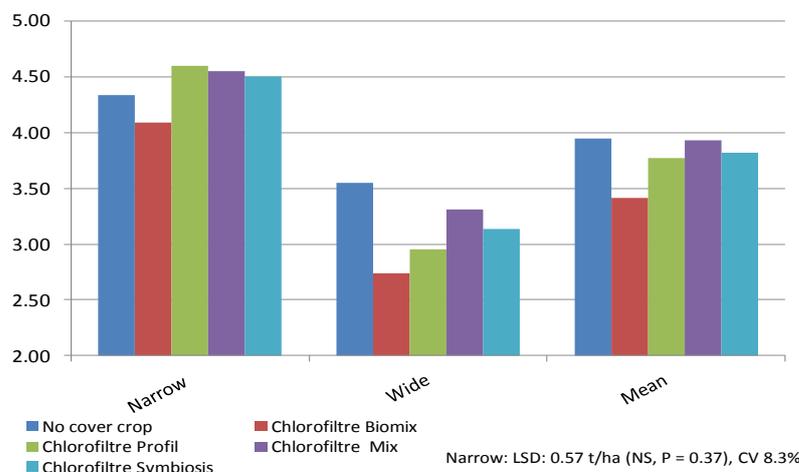
**NAC theme:** Agronomy (best practice & system resilience)

**Summary:** Companion crops are short duration cover crops (that senesce over the winter period) that are sown between the rows of an oilseed rape (OSR) crop. This study examined a limited range of commercially available companion crops and at wide and narrow OSR row spacings. While some differences in yield, with respect to row spacing and companion crop were apparent, there were no statistically significant yield benefits to companion crop use. However, conditions in autumn 2012 did impact on establishment and growth of both OSR and the companion crops.

**Table 1. Treatments table**

Treatments (kg/ha)			
	Companion crop	Seeding rate	Oilseed rape
1.	No cover crop	-	Narrow row
2.	Chlorofiltre Biomix	25 kg/ha	Narrow row
3.	Chlorofiltre Profil	25 kg/ha	Narrow row
4.	Chlorofiltre Mix	25 kg/ha	Narrow row
5.	Chlorofiltre Symbiosis	10 kg/ha	Narrow row
6.	No cover crop	-	Wide row
7.	Chlorofiltre Biomix	25 kg/ha	Wide row
8.	Chlorofiltre Profil	25 kg/ha	Wide row
9.	Chlorofiltre Mix	25 kg/ha	Wide row
10.	Chlorofiltre Symbiosis	10 kg/ha	Wide row

**Figure 1.** The effect of companion crop and row spacing on yield (t/ha)



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**Table 2.** The impact of companion crop and row spacing on green area index (April 2013).

Companion crop	OSR		Companion crop	
	Narrow row	Wide row	Narrow row	Wide row
No cover crop	2.2	1.4	-	
Chlorofiltre Biomix	2.3	1.3	0.2	0.6
Chlorofiltre Profil	2.3	1.4	0.1	0.4
Chlorofiltre Mix	2.3	1.2	0.2	0.4
Chlorofiltre Symbiosis	2.1	1.6	0.1	0.5
LSD	0.45		0.19	

- In this situation companion crops are short duration cover crops that are sown between the rows of a main (OSR) crop in the autumn and would be expected to senesce over the winter period. This technique has been used in France with a view to (among other goals) nutrient provision, soil conditioning and weed suppression. While there is commercial interest in the UK this remains relatively untested in our climate and production systems.
- The companion crop mixtures used are as outlined beneath and in Table 1. These were sown at the same time as the OSR crop which was established on two row spacings narrow (ca. 12.5 cm rows) and wide (ca. 50 cm rows). The types of companion crop were as follows and are all available commercially:
  - Chlorofiltre Biomix: containing oats, rye, vetch, clover, mustard, radish, phacelia and flax
  - Chlorofiltre Profil: containing vetch, clover and phacelia
  - Chlorofiltre Mix: containing oats, phacelia, vetch, clover and radish.
  - Chlorofiltre Symbiosis: containing vetch and clover.
- Prior to the application of spring herbicides the greatest levels of winter kill were in the 'Profil' and 'Symbiosis' mixes with the other approaches showing greater overwinter survival.
- Biggest differences in GAI for both OSR and companion crop (Table 2) were with respect to row spacing. In general the OSR had a lower GAI score on the wider rows while the companion crop had greater GAI scores on wide rows (cf. narrow rows).
- Overall the greatest differences in yield were related to row spacing rather than the companion crop (Figure 1). Within row spacings, while there were some positive yield responses to the use of a companion crop these were non-significant. In the narrow row spacing there was some tendency for companion crops to suppress yield; although again these differences were not always statistically significant.
- In general it should be noted that conditions in autumn 2012 were poor for the establishment of both OSR and companion crops and it would be interesting to look at the impact of better autumn growth on the performance of these mixes.
- This experiment is continuing with the support of the NAC initiative. The ongoing research will look at a slightly modified range of companions in conjunction with a range of overlaid crop management techniques.
- It should be noted these findings are based on a single site in a single season but it seems likely that further information is needed to inform a decision on the value of these companion crops in UK conditions.

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## Field details & overall applications to crop

**Crop:** Winter Oil Seed Rape  
**Location:** Morley, Norfolk  
**Soil type:** Sandy loam  
**Previous crop:** Winter Barley  
**Drilled plot size:** 2.1 x 12m  
**Replicates:** 3

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
	Loepard 5 EC	1.0 l/ha	08/10/12
	Galera	0.33 l/ha	08/03/13
Fertiliser:	Turkey Muck	8 t/ha	13/08/12
	Liquid N 22 + S	77 Kg/Ha	05/03/13
	Liquid N 27 + S	66 Kg/Ha	23/04/13
	Roller	0.1 l/ha	03/05/13
	Multitrace	2.0 l/ha	03/05/13
	Roller	0.1 l/ha	27/05/13
PGR:			
Insecticide:	Revolt	0.150 l/ha	27/05/13
Fungicide:	Proline	0.4 l/ha	02/11/12
	Galileo	0.8 l/ha	03/05/13
	Recital	1.0 l/ha	27/05/13

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