

## Effect of slurry and mineral N fertilization on the yield components of oilseed rape

### Introduction

The yield components of oilseed rape (OSR) are number of plants per m<sup>2</sup>, number pods per plant, number of seeds per pod and thousand seed weight. In general, the most variable yield components proved to be the number of pods per plant or the number of pods per m<sup>2</sup>.

The objective of this project was to determine the effects of different nitrogen fertilizer treatments on yield and yield components of OSR.

### Materials and Methods

In the rotation OSR, wheat and barley, the effects of pig slurry (none, 80 kg total N ha<sup>-1</sup> as slurry applied in autumn, in spring or in autumn plus in spring) and mineral N fertilization (0, 120 or 240 kg N ha<sup>-1</sup>) on seed yield and yield components of OSR were tested in 1998 and 1999. Mineral N was applied in spring at the beginning of spring growth, at the start of stem elongation, and at bud formation. Pig slurry was applied in autumn on the barley stubble and immediately incorporated into the soil. Spring application was made in March.

**Table 1: Effect of slurry and mineral N fertilization on yield and yield components of oilseed rape (1998 + 1999)**

		Slurry application				Mineral N fertilization (kg N ha <sup>-1</sup> )			Mean
		None	Autumn	Spring	A.+S.	0	120	240	
Seed yield (g m <sup>-2</sup> )	Total	245	357	335	420	244	344	429	339
	MS <sup>‡</sup>	131	145	134	163	140	141	150	143
	B1-3	75	108	107	134	76	105	137	106
	B4ff	39	103	93	123	28	99	141	90
Fertile branches m <sup>-2</sup>	Total	153	169	183	206	153	183	197	177
	MS	43	42	43	41	47	43	37	42
	B1-3	77	76	89	94	77	90	85	84
	B4ff	33	51	51	71	30	49	75	51
Pods m <sup>-2</sup>	Total	2399	3095	2987	3627	2382	3061	3637	3027
	MS	1182	1151	1141	1340	1316	1122	1173	1204
	B1-3	759	1048	940	1171	787	1004	1148	980
	B4ff	458	896	906	1115	280	935	1315	844
Seeds per pod	Total	22,2	26,4	27,6	26,9	23,5	26,5	27,3	25,8
	MS	24,7	29,2	27,38	28,9	24,7	29,1	29,1	27,6
	B1-3	23,3	23,8	26,5	26,7	23,5	24,2	27,5	25,1
	B4ff	18,6	26,3	28,6	25,2	22,2	26,4	25,4	24,7
Thousand seed weight (g)	Mean	4,30	4,29	4,15	4,38	4,30	4,17	4,37	4,28
	MS	4,52	4,47	4,37	4,55	4,89	4,45	4,49	4,48
	B1-3	4,38	4,37	4,11	4,33	4,33	4,11	4,45	4,30
	B4ff	4,00	4,01	3,97	4,26	4,07	3,94	4,17	4,06

<sup>‡</sup> MS – main stem, B1-3 – branches 1-3, B4ff – branches 4ff

### Results and Conclusion

The results revealed the large variation in yield and yield components of OSR. The number of plants, corresponding with the number of fertile main stems, and the seed yield of the main stems were only slightly affected by the N treatments. The branches 4ff were able to transform a favourable N nutrition into seed yield, mainly due to a increased number of pods and, to a smaller extent, number of seeds per pod.

Similar seed yields in the 'autumn slurry' and in the 'spring slurry' treatment also indicate similar N-use efficiencies (NUE).