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## COMPARISON OF THE ECONOMIC EFFICIENCY, GROWING HYBRID AND OP WINTER OILSEED RAPE VARIETIES

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### ABSTRACT

Oil crops and especially oilseed rape (OSR) are currently perspective crops in the EU. This work aims to determine the economic efficiency of OSR hybrid and line varieties growing at three agricultural holdings in the Czech Republic in 2009/10 and 2010/11. In total 107 fields of winter oilseed rape were included in experiment, with total area of 1,982.05 ha. There were sown 25 different varieties of oilseed rape at these fields, 12 lines and 13 hybrids.

On basis of the agronomical and primary economical evidence obtained from agricultural holdings was calculated evaluation for each of the crop management intervention, from which were obtained direct costs incurred on each field. After determining the production and multiplying by the average price were obtained the sales from each field. Monitoring costs were deducted from sales, and thus was obtained a contribution to the refunding at individual fields.

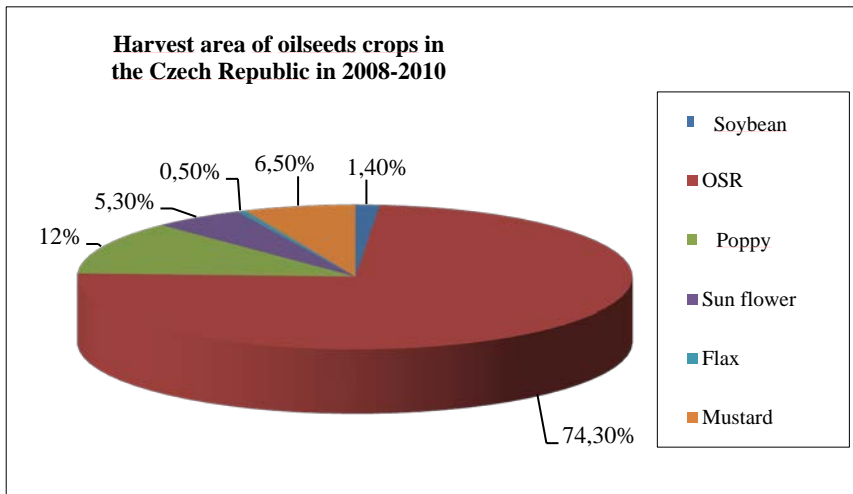
After comparing these data it was found, that hybrid varieties gave by 25.49 EUR more value per hectare compared to line varieties, what is a difference of about 5.4 %. The benefits were achieved despite the higher costs. The costs by hybrids were about 17.6 % higher, or 98.82 EUR per hectare, mainly due to more expensive seed.

This result complies with the hypothesis that hybrid varieties should bring economical effect of about 5 % and speaks in favor of hybrids, which are constantly gaining more and more importance in the Czech Republic.

**Key words:** rape seed, varieties, hybrids, lines, economy

## INTRODUCTION

The proportion of hybrid rapeseed varieties in the Czech Republic is still growing, mainly due to higher yields, improved viability and other advantages that contribute to higher profitability of the crop. Harvest area of the most important oilseed crops in the Czech Republic is presented in the following graph.



*Graf 1 Harvest area of oilseeds crops in the Czech Republic in 2008-2010*

## MATERIAL AND METHODS

Oilseed canopies were observed in the years 2009/10 and 2010/11 at agricultural farms Agra Řisuty s.r.o., Agro Podlesi Červené Janovice a.s. and Lupofyt Chrášťany s.r.o. Based on the agronomic evidence and the applicable invoices supplied by the company We created a valuation for each of the agro-technical intervention, so We got the cost of each plot. After finding products and by multiplying the average price of rape seed (312 EUR for 2009/2010; 438 EUR/t for 2010/2011). We got a financial return on individual plot. Revenues were deducted from the total cost and so we got the financial results for the various fields.

Variety 2009/2010	Type	Řisuty (ha)	Janovice (ha)	Chrástany (ha)	Σ (ha)	Yield total (t)	Yield (t/ha)
Californium	L	34,43			34,43	114,47	3,32
Ontario	L	58,03		64,86	122,89	297,10	2,42
Ladoga	L	73,67	75,40	19,92	168,99	572,80	3,39
Atlantic	L	25,60			25,60	79,41	3,10
Asgard	L	48,51	70,46		118,97	371,13	3,12
NK Morse	L		54,51		54,51	195,69	3,59
Mirage	L		52,65		52,65	146,98	2,79
Sitro	H	24,21			24,21	86,88	3,59
Rohan	H	63,92		38,30	102,22	327,32	3,20
ES Alpha	H	20,92	31,92		52,84	147,72	2,80
DK Exquisite	H		40,42		40,42	117,62	2,91
Tassilo	H		20,00		20,00	69,00	3,45
Hornet	H		30,72	39,83	70,55	202,64	2,87
NK Petrol	H		52,80		52,80	163,50	3,10
Exagone	H			52,01	52,01	110,60	2,13
PR45D03	H	48,30		58,32	106,62	335,75	3,15
Baldur	H			61,00	61,00	208,15	3,41
Σ		397,59	428,88	334,24	1 160,71	3 546,76	3,06

Tab. 1 Rape varieties included in the experiment in year 2009/2010

Variety 2010/2011	Type	Řisuty (ha)	Janovice (ha)	Chrástany (ha)	Σ (ha)	Yield total (t)	Yield (t/ha)
Ontario	L	53,53			53,53	94,53	1,77
Asgard	L	37,41			37,41	49,56	1,32
Remy	L		6,32		6,32	11,12	1,76
Digger	L		24,13		24,13	93,33	3,87
Sherlock	L		81,38		81,38	312,42	3,84
Chagall	L			21,47	21,47	56,76	2,64
Mix. line	L			21,70	21,70	64,11	2,95
DK Secure	H	3,47			3,47	8,05	2,32
DK Exquisite	H	76,15		13,59	89,74	311,54	3,47
Rohan	H	120,39	66,68	117,36	304,43	1 038,97	3,41
Pulsar	H	28,82			28,82	71,92	2,50
Hornet	H		60,60		60,60	198,27	3,27
Visby	H		34,64		34,64	122,66	3,54
PR45D03	H			53,74	53,74	145,77	2,71
Σ		319,77	273,75	227,86	821,38	2 579,01	3,14

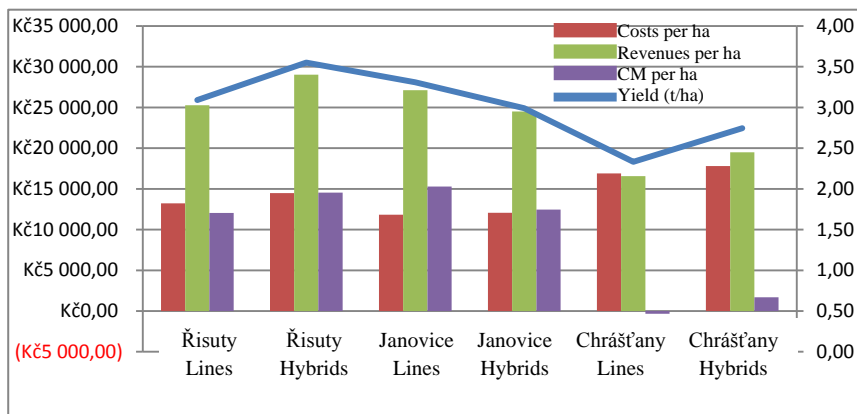
Tab. 2 Rape varieties included in the experiment in year 2010/2011

**RESULT AND DISCUSSION**

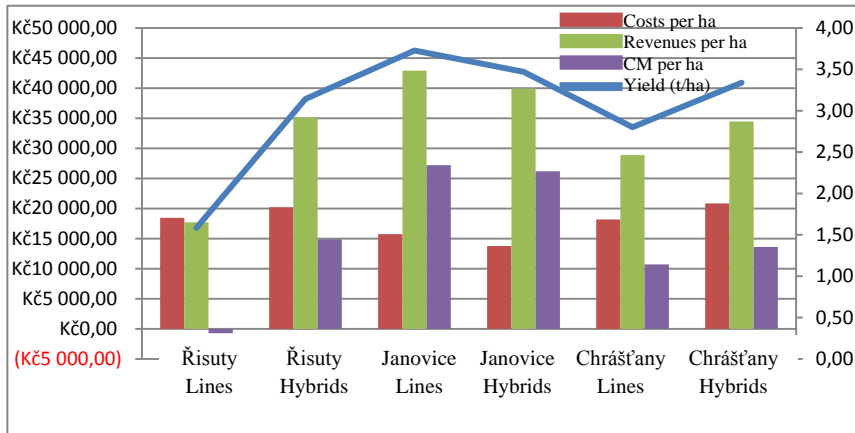
Index	Locality	Average of line varieties	Average of hybrid varieties
Yield (t.ha <sup>-1</sup> )	Janovice	3,44	3,22
	Řisuty	2,68	3,31
	Chrášťany	2,49	3
Yield (%)	Janovice	100%	94
	Řisuty	100%	124
	Chrášťany	100%	120

Tab. 3 Comparison of the average yield

Hybrid varieties on more intense locality Řisuty and Chrášťany showed increase of yield about 20 % compared with line varieties, which is better result than was expected in comparison with 10 % increase presented in the literature. Conversely, yield levels decreased at variants with lower intensity, similarly cultivation in accordance with results of Becka et al. (2007) presented. By Baranyk et al. (2007) opinion, hybrids due to heterosis have about 5 -10 % higher yields, but their production is much more complicated. In addition, Becka et al. (2007) determined that hybrid varieties are generally more resistant to drought and overwintering and have generally better vigour and also early regeneration in the spring time.



Graf 2 Results of varieties in 2009 / 2010



Graf 3 Results of varieties in 2010 / 2011

## CONCLUSIONS

Total production of oilseed rape seeds was 6 125.77 t. Average yield was 3.06 t/ha for the year 2009/2010, 3.14 t/ha for 2010/2011. Hybrids showed in average higher yield by 6.06 %. After economic evaluation was calculate economic result, when hybrid varieties give in average by 664,- CZK more than line varieties. This result complies with the hypothesis that hybrid varieties should bring economical effect of about 5 % and speaks in favor of hybrids, which are constantly gaining more and more importance in the Czech Republic.

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