

Lower and higher input crop management in oilseed rape – influence on yield and some another important properties

Petr Baranyk¹, Petr Zehnálek², Jan Kazda¹

¹Czech University of Agriculture, 165 21 Prague 6 – Suchbátka, Czech Republic,

Email: baranyk@af.czu.cz, kazda@af.czu.cz

²Central Institute for Supervising and Testing in Agriculture, 569 01 Hradec nad Svitavou, Czech Republic, petr.zehnalek@ukzuz.cz

Abstract

Two different levels of crop management (seed rate, nitrogen fertilization, growth regulators spraying in autumn and spring, sulphur fertilization and fungicide use at time of flowering) were used to test specific response of 25 winter oilseed rape varieties (18 lines, 7 hybrids). Trials were carried out at 8 locations in 2003/04 and 9 locations in 2004/05 as a small plot trial with 3 replications. Influence of additional inputs in higher management level delayed maturation by 1-2 days, reduced lodging (very different depending on variety) and damage especially in case of *Sclerotinia sclerotiorum* and *Phoma lingam*. Thousand grain weight was higher for most varieties in higher management level (+ 0,16 g = + 3,3 % on average), yield increased by 11 % on average (-1 to +29 % depending on location). Oil content of major part of varieties decreased in higher management level (on average by -0,4 %). Yield increase of varieties varied greatly due to trial location. As expected, higher yields were achieved at higher level of crop management, but response to higher inputs was not the same. Efficiency of input used by some varieties was better compared to others. This phenomenon can be exploited by farmers when choosing the most appropriate variety for the actual both environmental and fiscal position of their farm.

Key words: Winter oilseed rape – crop management levels – yield – efficiency of inputs

Introduction

Czech agriculture compared to the most of EU-countries has a lack of money for a real competition in crop and food production. Very important part of Czech farming represents an oilseed rape production. Better use of the rapeseed's genetic potential could help in this situation.

Materials and methods

Two different levels of crop management (seed rate, nitrogen fertilization, growth regulators spraying in autumn and spring, sulphur fertilization and fungicide use at time of flowering, Tab. 1) were used to test specific response of 25 winter oilseed rape varieties (18 lines, 7 hybrids). Trials were established at 11 locations in the Czech Republic in 2003/04 and 11 locations in 2004/05 as a small plot trial with 3 replications.

Table 1. Two levels of crop management

	Levels of crop management	
	Basic level (BL)	Higher level (HL)
Seed rate	85 seeds/m ² Olpop 60 seeds/m ²	lines 70 seeds/m ² hybrids 50 seeds/m ²
N fertilization	140 kg/ha after cereal forecrop 90 kg/ha after cereal and legume mixture	190 kg/ha after cereal forecrop 140 kg/ha after cereal and legume mixture
S fertilization	None	40 kg S/ha
Growth regulators	None	Horizon 1 l/ha autumn Caramba 1 l/ha spring
Fungicide spraying	None	Sportak Alpha, 1,5 l/ha BBCH 65

Results

Trials were successfully harvested in 2003/04 at 8 sites and in 2004/05 at 9 sites, 3 locations were damaged and no exploitable from the final point of view in 2003/04 and 2 locations were damaged in 2004/05. Influence of additional inputs in higher management level delayed maturation by 1-2 days, reduced lodging (very different depending on variety) and reduced damage especially in case of *Sclerotinia sclerotiorum* and *Phoma lingam*. Thousand grain weight was higher for most varieties in higher management level (1-6 %), yield increased by 11 % on average (-1 to +29 % depending on location). Yield increase of varieties varied greatly due to trial location.

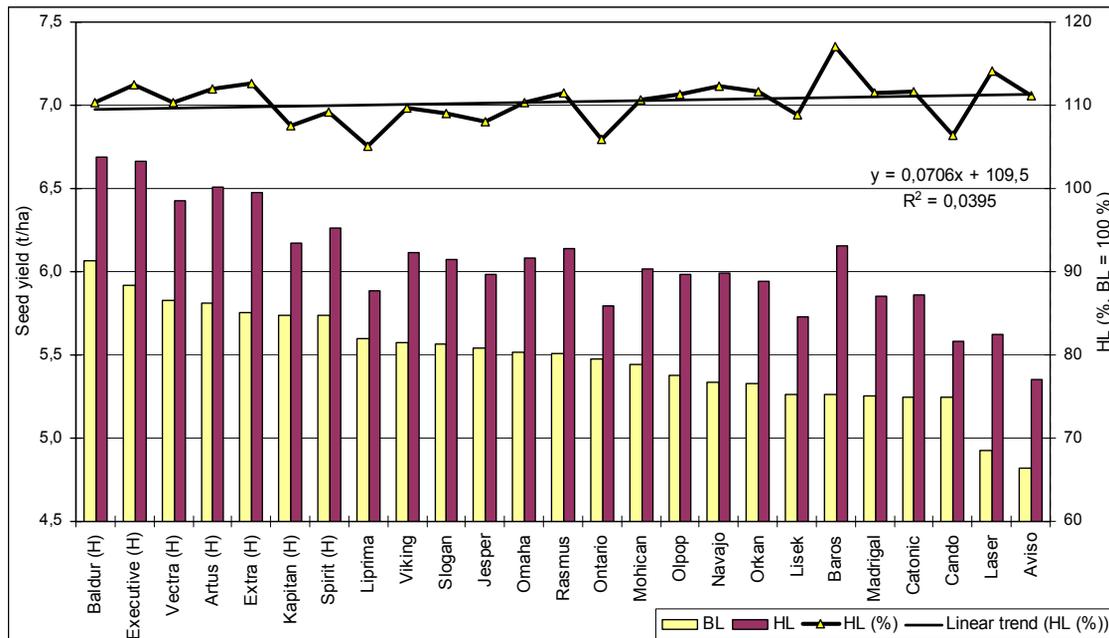


Fig. 1. Winter oilseed rape 2003/04 and 2004/05, basic/higher level crop management. Seed yield, average of 17 trial sites

Discussion

As expected, higher yields were achieved at higher levels of crop management, but response to higher inputs was not the same (Fig. 1). Efficiency of input used by some varieties was better compared to others. This phenomenon can be exploited by farmers when choosing the most appropriate variety for the actual both environmental and fiscal position of their farm.

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