CURRENT CONDITIONS FOR SEED USE IN THE CZECH ORGANIC FARMING

Petr KONVALINA[1], Ivana CAPOUCHOVÁ[2], Zdeněk STEHNO[3], Pavel HŮDA[1], Ladislav BLÁHA[3], Jan MOUDRÝ jr.[1], Jan MOUDRÝ[1]
E-mail: konvalina@zf.jcu.cz

Abstract

Council Regulation (EC) No. 834/2007, and Commission Regulation (EC) No. 889/2008, are the most important European legislative instructions on organic farming (OF). They lay down a permit to use just organic seeds (OS) for establishment of organic crop stands. Such seeds have to originate from the plants being grown in compliance with OF rules for at least one generation. Organic farmers are obliged, in compliance with the above-mentioned legislation, to use seeds originating from organic production when establishing crop stands. Otherwise, they are allowed to use their own seeds or they may apply for an exception to a relevant public authority in order to use conventional untreated seeds. There are 3,517 organic farmers in the Czech Republic (CZ) and they manage their farms on the total surface of 448,202 ha, which represent 10.55% of the agriculture land surface in CZ. Arable land represents 12.26% (54,937 ha) of the total organic land surface. Cereals were considered as the main market crops and grown on the surface of 22,762 ha in 2009. Deficiency of certified good-quality OS in CZ is one of the factors limiting the organic cereals growing there. Crop stands are currently established from certified OS (6%), conventional untreated seeds (37%) and farm seeds (57%) in CZ. They are usually established from "uncontrolled" farm seeds originating from repeated reseeding. As restrictions on conventional untreated seeds are being imposed, seed growers have to be motivated to provide a sufficient supply of certified OS. Current deficiency of approved seeds is also caused by a complexity of the reproduction process and small amount of approved seeds originating from the approved reproduction processes. Identical requirements for conventional and OS have been imposed but organic farming is not so highly intensive as conventional farming. It is one of the reasons of the current OS deficiency.

Key words: organic farming, seeds, availability

There have been 3,517 registered organic farmers working with 448,202 hectares of land in the Czech Republic (CZ) by 31 December 2010. It represents 10.55% of the total surface of agriculture land. Surface of arable land represents 12.26% (54,937 ha) in the organic farming system (OF). Council Regulation (EC) No. 834/2007 (EC, 2007), and Commission Regulation (EC) No. 889/2008 (EC, 2008), are the most important European legislative instructions on OF. These legislative measures stipulate that organic seeds are the only ones allowed to the establishment of crop stands in OF. Such organic seeds must come from the plants that had been grown in accordance with OF rules for at least one generation. The multiplication of seeds is extremely difficult in OF as the multiplication crop stand and seeds must meet the requirements of the authorization procedure as the conventional plants and seeds do, but OF does not allow any supportive instruments as pesticides, mineral nitrogenous fertilizers, etc.) (Houba and Hosnedl, 2002). Organic farmers may use certified organic seeds or farm seeds in order to establish the crop stand. They may also apply for en exception and use conventional untreated seeds.

There is a long-lasting deficiency of organic seeds in CZ. Exact data are not however available (exact amounts available, for each category of seeds used in order to establish the crop stands). Our study aim to analyse the availability of certified organic seeds in CZ and summarize the use of each category of seeds in practice (certified organic seeds, farm seeds, conventional untreated seeds).

MATERIAL AND METHOD

Data necessary for the elaboration of results, concerning the structure of reproduction crop stands, allowed seeds and range of seeds at the market, have been received from the Department of seeds and planting materials of the Central Institute for Supervising and Testing in Agriculture and the Ministry of Agriculture.

[1] University of South Bohemia in České Budějovice, Faculty of Agriculture, Czech Republic
[2] Czech University of Live Sciences, Faculty of Agrobiology, Food and Natural Resources, Czech Republic
[3] Crop Research Institute, Prague, Czech Republic

RESULTS AND DISCUSSIONS

There were 22,762.41 ha of organic cereals in the Czech Republic in 2009 (soft wheat, spelt wheat, barley, triticale, rye, naked oat and oat) (figures were published in the yearbook of the Organic Farming of the Ministry of Agriculture in 2009). Table 1 shows a gradual increase of the multiplication areas surface. In spite of such increase, the surface of allowed multiplication areas represented 1.5% (349 ha) of the total share of cereals in 2009. Regarding the average model seeding rate of 220 kg.ha^{-1}, we would need 5,008 t of seeds to load all the surface of cereals in a particular year. In 2009, the average grain yield represented 2.94 t.ha^{-1} (Ministry of Agriculture, 2009). It means that we would need the multiplication areas of 1,703 ha of 100% of the seeds were allowed to be used. In 2009, seeds were reproduced on 20.5% of the required land surface. It is unreal to anticipate the authorization of 100% seeds.

In table 2, there are amounts of allowed organic seeds coming from allowed reproduction crop stands presented in Table 1. Comparison between the allowed reproduction surface and amounts of allowed winter wheat seeds shows that the major part of harvested seeds has not been certified as organic in 2009. In the same year, 90.95 t of the winter wheat seeds were certified as organic. However, this winter wheat was grown on 125 ha of land. It means that the major part of the harvested material did not meet the requirements of the authorization procedure assured by the Central Institute for Supervising and Testing in Agriculture and Ministry of Agriculture. The average yield rate amounted to 3.14 t.ha^{-1} in 2009 (Ministry of Agriculture, 2009). Another studied cereal species also faced similar situation.

The range of reproduced organic cereal species is very narrow. The spelt wheat and oat, for example, are suitable for reproduction process. On the other hand, the range of registered winter and spring wheat species in very wide in the conventional farming system. However, only any of them are suitable for the organic farming system. Between 2008 and 2009, there were five soft wheat varieties certified as organic seeds (table 2). The range of species was not stable. A lot of seeds which have been recommended in Austria and registered in the Czech Republic have not been reproduced yet.

The general exception for application of conventional seeds in the organic farming system has been abolished in the end of 2008. Since 2009, organic farmers used a lot of conventional unstained seeds they had asked for. In 2009, 398 exceptions for 1,664 t of seeds were granted. Table 3 shows the evident difference between the amount of allowed conventional seeds of spelt wheat and triticale. A sufficient amount of the organic spelt wheat seeds was reproduced in 2009, organic farmers could, therefore, use only organic seeds. On the other hand, triticale was in high demand, but there were not almost any reproduced organic seeds.

Except for certified organic seeds (table 2) and conventional unstained seeds (table 3), organic farmers also use their own (so called farm) seeds in order to establish the crop stands. There is not enough information on the applied amount of farm seeds. Therefore, the following model amount of seeds was determined in 2009: amount of certified organic seeds = 281 t/seeding rate of 0.22 t.ha^{-1} = 1,277 ha of the seeded surface; amount of conventional unstained seeds = 1,664 t/seeding rate of 0.22 t.ha^{-1} = 7,564 ha of the seeded surface. The surface of grown cereals represented 22,762 ha - 1,227 ha - 7,564 ha = 13,971 ha where the farm seeds were applied. The proportion of each seed type is presented in Figure 1. The proportion of farm seeds may be lower as some farmers buy low amounts of seeds in neighbouring countries. Certified seeds should not be ideally reseeded more than once. The total amount of used farm seeds, nevertheless, shows the farm seeds are reseeded several times at some farms (two or three repetitions are not exceptional at all) (Konvalina *et al.*, 2010). The high proportion of farm seeds coming from repeated seeding contributes to a reduction of the yield rate of the crop stands (Bláha *et al.*, 2010).

Table 1

List of registered organic seed multiplication areas in the Czech Republic

Species	2008		2009		2010	
	Varieties	ha	Varieties	ha	Varieties	ha
Winter wheat	5	72	7	125	4	102
Spring wheat	1	13	-	-	1	15
Spelt wheat	2	66	2	89	3	143
Spring barley	2	21	2	26	3	20
Spring triticale	-	-	1	18	2	45
Winter rye	-	-	1	8	2	37
Naked oat	2	28	2	34	1	15
Oat	2	27	2	50	2	44
Total	**14**	**227**	**17**	**349**	**18**	**421.8**

Table 2

Certified organic seeds in the Czech Republic

Species	Variety	Amounts (t)		
		2008	2009	2010*
Winter wheat	Alka	25.00	10.30	-
	Bohemia	-	21.40	-
	Eurofit	-	10.25	1.50
	Sakura	-	19.50	-
	Simila	17.00	29.50	-
	Capo	20.05	-	-
	Ebi	10.65	-	-
Spring wheat	Leguan	22.85	-	-
Spelt wheat	Ceralio	121.36	61.76	13.90
	Rubiota	37.76	17.64	-
	Zollernspelz	-	-	3.20
Spring barley	Calgary	21.00	-	-
Spring triticale	Legalo	-	7.50	-
Winter rye	Dańkowskie N.	-	8.25	17.70
	Aventino	-	-	1.60
Naked oat	Izak	12.00	19.83	-
	Saul	10.60	7.95	-
Oat	Neklan	-	9.86	-
	Vok	-	29.56	-
Total		**320.87**	**281.06**	**37,9***
*Remark:*No certified seed available, offer of old or imported organic seed*				

Table 3

Exceptions for untreated conventional cereal seeds use in organic farming in the Czech Republic

Species	2009		2010	
	Number of exceptions	Amounts (t)	Number of exceptions	Amounts (t)
Soft wheat	66	271	112	515
Spelt wheat	5	78	9	8
Barley	47	129	77	319
Triticale	86	651	76	455
Rye	23	12	20	42
Oat	161	523	174	444
Total	**398**	**1664**	**468**	**1783**
Remark: Exceptions have been registered since 2009.				

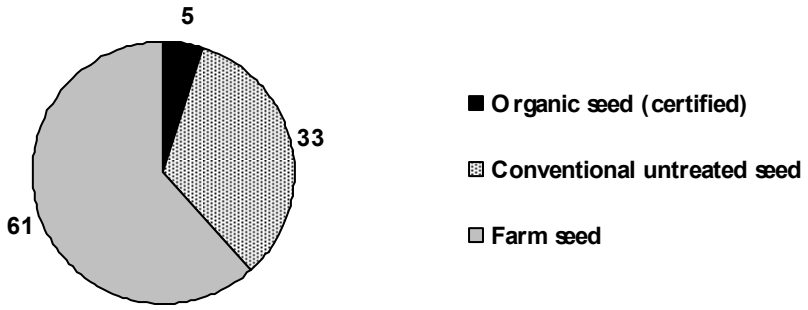

Figure 1 **Proportion of categories of seeds on the crop stands established in the Czech Republic in 2009 (%)**

CONCLUSIONS

Deficiency of good-quality certified organic seeds in the Czech Republic is one of the main factors limiting the growing of cereals in the organic farming system. The crop stands are usually established from "uncontrolled" farm seeds coming from repeated reseedings. As there is a high pressure put on the limitation of conventional unstained seeds, reproducers of seeds have to be motivated to supply a sufficient amount of certified organic seeds. The deficiency of allowed seeds is also caused by the complexity of reproduction procedure and low proportion of allowed seeds coming from allowed reproduction crop stands. Organic seeds must meet the same requirements as conventional ones, but the organic farming system does not use any supportive instruments as the conventional does. Acknowledgement: This work was supported by

the Ministry of Agriculture of the Czech Republic – NAZV, Grant No. QH82272 and project of The Ministry of Education, Youth and Sports - OPVK: CZ.1.07/2.3.00/09.0076.

BIBLIOGRAPHY

Bláha, L., Laskafeld, D., Stehno, Z., Capouchová, I., Konvalina, P. 2010 - Hodnocení vlastností a vhodnosti praktického použití certifikovaných a farmářských osiv u obilnin (Evaluation of suitability of certified and farm cereal seed). In.: Sborník referátů ze semináře Osivo a sadba, 10. 2. 2011, ČZU v Praze, p. 50-55.

Houba, M., Hosnedl, V. 2002 - Osivo a sadba (Seed and seedlings). Profi Press, Praha, 186 p.

Konvalina, P., Friebel, L., Stehno, Z., Káš, M., Bláha, L., Blaško, T., Capouchová, I. 2010 - Aktuální situace ve využití osiva v ekologickém zemědělství v České republice (Seed us in czech organic farming). In.: Sborník referátů ze semináře Osivo a sadba, 10. 2. 2011, ČZU v Praze, p. 110-114.

MZe, 2009 - Ročenka ekologické zemědělství 2009 (Yearbook of organic farming). MZe ČR, Praha, 44 p.

*****, 2007 – EC -** Commission Regulation (EC) No. 889/2008 of 5 September 2008, laying down detailed rules for the implementation of Council Regulation (EC) No. 834/2007 of 28 June 2007, on organic production and labelling of organic products, as for the organic production, labelling and control.

*****, 2008 – EC -** Council Regulation (EC) No. 834/2007 of 28 June 2007, on organic production and labelling of organic products.