The concept of the Danish working group on coexistence

Birte Boelt

Danish Institute of Agricultural Sciences

K. Tolstrup, S.B. Andersen, M. Buus, M. Gylling, P.B. Holm, G. Kjellsson, S. Pedersen, H, Østergård & S.A. Mikkelsen

Definition

- Simultaneous production in a region of GM, conventional non-GM and organic crops
  - possibilities and precautions of a commercial exploitation of biotechnology in agriculture while
  - maintaining **consumers free choice**
  - maintaining future development of existing agricultural production systems

Danish working group

Formed in July 2002 to work with the co-existence strategy including

- possible sources of adventitious presence
- extent of adventitious presence
- need for control measures to ensure co-existence

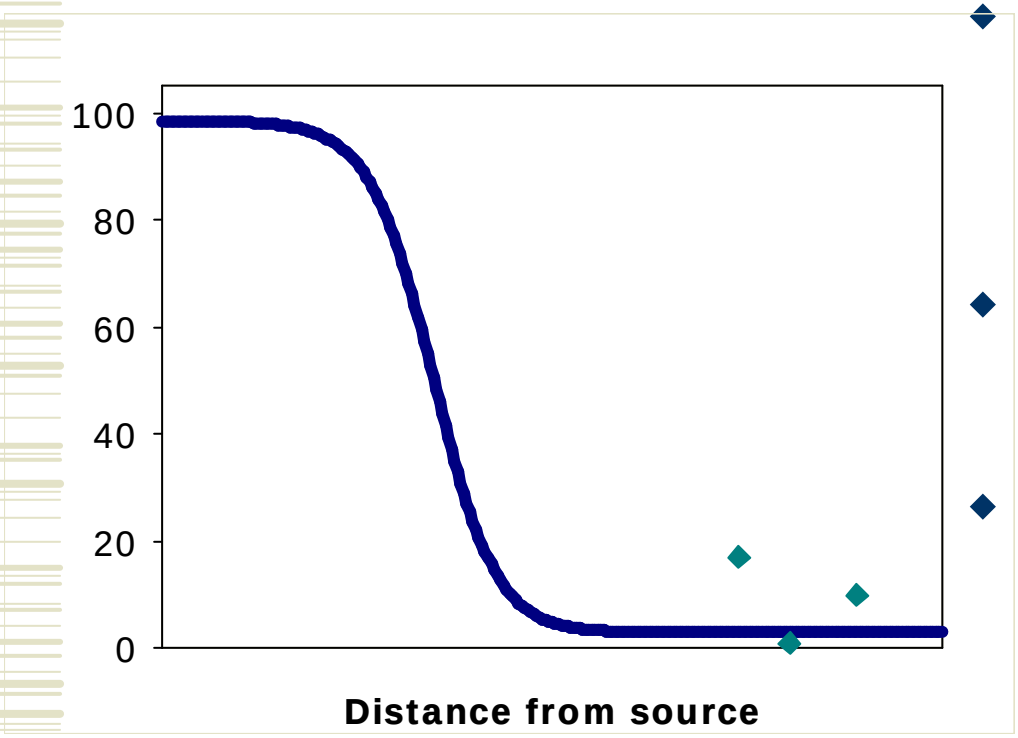
The analysis group consists of scientists within environmental research, agricultural sciences incl. biotechnology and organic farming systems, food economics and regulation

Birte Boelt

How to distinguish?

- Organic farming: without the use of GMO (0.1% limit of reliable detection)
- Conventional non-GMO: GM-content <0.9% (Regulation (EC) 1830/2003)
- Conventional GM: GM content >0.9% but often requirements of a very high genetic purity (very close to 100%)

Pollen flow

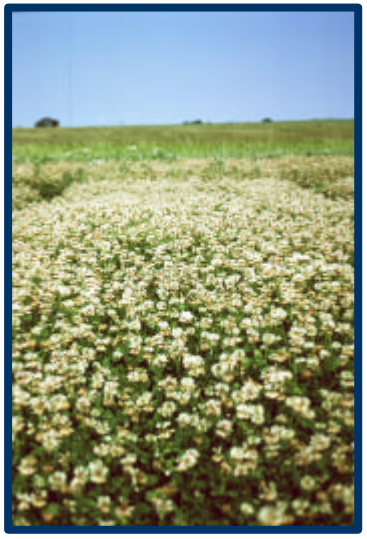


- Biological factors
  - Breeding systems
  - Production, size and shape
- Climatic factors
  - Wind direction and force
- Regional aspects
  - Topography, land use and urban areas

Control measures
pollen flow

- Dispersal over distance
  - Pollen will disperse between fields, farms and **regions**
- Control measures
  - Isolation distance, border row management
  - Control of volunteers, hybrids
  - Modelling and monitoring

Seed dispersal



Biological factors – shedding, survival time

Equipment, handling, cultivation practice

Birte Boelt

Control measures
seed dispersal

- Dispersal over time
  - Seed will disperse between **fields**, farms and regions
- Control measures
  - GM-free / non-GM propagated seed
  - Cropping intervals – control of volunteers, hybrids
  - Cleaning of farm equipment, handling and storage facilities

Report from the working group

Crop	Sce-nario	Prod. sys.	Pro-duct	Crop. intval	Used seed	Sep. Dist.	Buffer zone	Other mea.	Est. GM
Potato	0	Conv.	Seed	3 yr	Cert.	15 m	-	-	0-0.5%
		Conv.	Food Feed	∇	∇	-	-	-	0-0.5%
		Org.	Seed	3 yr	GM-free	15 m	-	*	~0.1%
		Org.	Food Feed	∇	GM-free	-	-	*	~0.1%

∇ Good farming practice

* Seed from areas with no GM production

Birte Boelt

Report from the working group (cont.)

Crop	Scen ario	Prod. sys.	Pro-duct	Crop. intval	Used seed	Sep. Dist.	Buffer zone	Other mea.	Est. GM
Potato	50	Conv.	Seed	4 yr	Cert.	20 m	-	**	0-0.5%
		Conv.	Food Feed	3 yr	∇	20 m	-	**	0-0.7%
		Org.	Seed	5 yr	GM-free	20 m	-	***	~0.1%
		Org.	Food Feed	4 yr	GM-free	20 m	-	***	~0.1%

** Control of volunteers, cleaning of machinery, etc.

*** GM-free seed, control of volunteers, cleaning of jointly used machinery, etc.

Birte Boelt

Co-existence possible?

- After a crop by crop evaluation, meetings with stakeholders etc. the working group concluded that
- With limited GM-production and specified control measures
  - Yes – for barley, wheat, oats, peas, broad bean, lupins, potatoes, beets and maize (in Denmark)

Co-existence possible?

- The working group is presently unable to recommend control measures to ensure co-existence for
  - Seed production of hybrid oilseed rape
  - Organic grass seed
  - Organic clover seed
  - Conventional and organic clover / grass pastures

Conclusions

- A zero threshold is not achievable
- Control measures should be crop, site and farm specific
- There is a need of ‘real-life’ data and large-scale studies to improve the regulation of Co-existence
- Data should include the effect of field size, farming structure, landscape
- Communication essential between farming neighbours

Danish report

Co-existence of genetically modified crops with conventional and organic crops

www.agrsci.dk/GMCC-03

K. Tolstrup, S.B. Andersen, B. Boelt, M. Buus, M. Gylling, P.B. Holm, G. Kjellsson, S. Pedersen, H, Østergård & S.A. Mikkelsen

The 1st European Conference on the Co-existence of Genetically Modified Crops with Conventional and Organic Crops

Birte Boelt

"Act on the Growing etc. of Genetically Modified Crops"

Danish Act No. 436 of 9 June 2004

http://www.fvm.dk/fvm_uk

Ministerial order 31 March, 2005

- applies to commercial growing, handling, sale and transport of genetically modified crops as far as the first buyer