

## II

(Acts whose publication is not obligatory)

## COMMISSION

## COMMISSION RECOMMENDATION

of 23 July 2003

**on guidelines for the development of national strategies and best practices to ensure the coexistence of genetically modified crops with conventional and organic farming**

(notified under document number C(2003) 2624)

(2003/556/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community, and in particular Article 211 thereof,

Having regard to the Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions on 'Life sciences and biotechnology — A strategy for Europe' <sup>(1)</sup>, and in particular Action 17 thereof,

Whereas:

(1) No form of agriculture, be it conventional, organic or agriculture using genetically modified organisms (GMOs), should be excluded in the European Union.

(2) The ability to maintain different agricultural production systems is a prerequisite for providing a high degree of consumer choice.

(3) Coexistence refers to the ability of farmers to make a practical choice between conventional, organic and GM-crop production, in compliance with the legal obligations for labelling and/or purity standards.

(4) Specific coexistence measures to protect the environment and the human health, if needed, are included in the final consent of the authorisation procedure in accordance with Directive 2001/18/EC of the European Parliament and of the Council <sup>(2)</sup>, with a legal obligation for their implementation.

(5) The issue of coexistence addressed in this Recommendation concerns the potential economic loss and impact of the admixture of GM and non-GM crops, and the most appropriate management measures that can be taken to minimise admixture.

(6) Farm structures and farming systems, and the economic and natural conditions under which farmers in the European Union operate, are extremely diverse, and efficient and cost-effective measures for coexistence vary greatly between the different parts of the European Union.

(7) The European Commission considers that measures for coexistence should be developed and implemented by the Member States.

(8) The European Commission should support and advise Member States in this process by issuing guidelines for addressing coexistence.

(9) Such guidelines should provide a list of general principles and elements for the development of national strategies and best practices for coexistence.

(10) Two years after the publication of the present Recommendation in the *Official Journal of the European Union*, and based on information from Member States, the Commission will report to the Council and the European Parliament on the experience gained in the Member States concerning the implementation of measures to address coexistence, including, if appropriate, an evaluation and assessment of all possible and necessary steps to take,

<sup>(1)</sup> COM(2002) 27 final (OJ C 55, 2.3.2002, p. 3).

<sup>(2)</sup> OJ L 106, 17.4.2001, p. 1.

HEREBY RECOMMENDS:

1. In developing national strategies and best practices for coexistence Member States should follow the guidelines provided in the Annex to this Recommendation.
2. This Recommendation is addressed to the Member States.

Done at Brussels, 23 July 2003.

*For the Commission*  
Franz FISCHLER  
*Member of the Commission*

\_\_\_\_\_

## ANNEX

## TABLE OF CONTENTS

	Page
1. Introduction .....	39
1.1. The concept of coexistence .....	39
1.2. Economic aspects of coexistence versus environmental and health aspects .....	39
1.3. The Round Table on coexistence .....	40
1.4. Subsidiarity .....	40
1.5. Purpose and scope of the guidelines .....	40
2. General principles .....	40
2.1. Principles for the development of coexistence strategies .....	40
2.1.1. Transparency and stakeholder involvement .....	40
2.1.2. Science-based decisions .....	41
2.1.3. Building on existing segregation methods/practices .....	41
2.1.4. Proportionality .....	41
2.1.5. Appropriate scale .....	41
2.1.6. Specificity of the measures .....	41
2.1.7. Implementation of measures .....	41
2.1.8. Policy instruments .....	42
2.1.9. Liability rules .....	42
2.1.10. Monitoring and evaluation .....	42
2.1.11. Provision and exchange of information at European level .....	42
2.1.12. Research and sharing of research results .....	42
2.2. Factors to consider .....	42
2.2.1. Level of coexistence to be achieved .....	43
2.2.2. Sources of adventitious mixture .....	43
2.2.3. Labelling threshold values .....	43
2.2.4. Specificity to crop species and crop varieties .....	43
2.2.5. Crop versus seed production .....	44
2.2.6. Regional aspects .....	44
2.2.7. Genetic outcrossing barriers .....	44
3. Indicative catalogue of measures for coexistence .....	44
3.1. Additivity of measures .....	45
3.2. On-farm measures .....	45
3.2.1. Preparation for sowing, planting and soil cultivation .....	45
3.2.2. Harvest and post-harvest field treatment .....	45
3.2.3. Transport and storage .....	46
3.2.4. Field monitoring .....	46
3.3. Cooperation between farms in the neighbourhood .....	46
3.3.1. Information about sowing plans .....	46
3.3.2. Coordinated management measures .....	46
3.3.3. Voluntary agreements among farmers on zones of a single production type .....	46
3.4. Monitoring schemes .....	46
3.5. Land register .....	46
3.6. Record keeping .....	46
3.7. Training courses and extension programmes .....	47
3.8. Information provision and exchange, and advisory services .....	47
3.9. Reconciliation procedures in the case of disputes .....	47

## 1. INTRODUCTION

### 1.1. The concept of coexistence

The cultivation of genetically modified organisms (GMOs) in the EU is likely to have implications for the organisation of agricultural production. On the one hand, the possibility of the adventitious (unintended) presence of genetically modified (GM) crops in non-GM crops, and vice versa, raises the question as to how producer choice for the different production types can be ensured. In principle, farmers should be able to cultivate the types of agricultural crops they choose, be it GM crops, conventional or organic crops. None of these forms of agriculture should be excluded in the EU.

On the other hand, the issue is also linked to consumer choice. To provide European consumers with a real choice between GM food and non-GM food, there should not only be a traceability and labelling system that functions properly, but also an agricultural sector that can provide the different types of goods. The ability of the food industry to deliver a high degree of consumer choice goes hand in hand with the ability of the agricultural sector to maintain different production systems.

Coexistence refers to the ability of farmers to make a practical choice between conventional, organic and GM-crop production, in compliance with the legal obligations for labelling and/or purity standards.

The adventitious presence of GMOs above the tolerance threshold set out in Community legislation triggers the need for a crop that was intended to be a non-GMO crop, to be labelled as containing GMOs. This could cause a loss of income, due to a lower market price of the crop or difficulties in selling it. Moreover, additional costs might incur to farmers if they have to adopt monitoring systems and measures to minimise the admixture of GM and non-GM crops. Coexistence is, therefore, concerned with the potential *economic impact* of the admixture of GM and non-GM crops, the identification of workable management measures to minimise admixture and the cost of these measures.

The coexistence of different production types is not a new issue in agriculture. Seed producers, for example, have a great deal of experience of implementing farm management practices to ensure seed purity standards. Other examples of segregated agricultural production lines include yellow dent field maize for animal feed, which successfully coexists in European agriculture with several types of 'speciality maize' grown for human consumption, and waxy maize grown for the starch industry.

### 1.2. Economic aspects of coexistence versus environmental and health aspects

It is important to make a clear distinction between the economic aspects of coexistence and the environmental and health aspects dealt with under Directive 2001/18/EC on the deliberate release of GMOs into the environment.

According to the procedure laid down in Directive 2001/18/EC, the authorisation to release GMOs into the environment is subject to a comprehensive health and environmental risk assessment. The outcome of the risk assessment can be one of the following:

- a risk of an adverse effect to the environment or health that cannot be managed is identified, in which case authorisation is refused,
- no risk of adverse effects on the environment or health is identified, in which case authorisation is granted without requiring any additional management measures other than those specifically prescribed in the legislation,
- risks are identified, but they can be managed with appropriate measures (e.g. physical separation and/or monitoring); in this case the authorisation will carry the obligation to implement environmental risk management measures.

If a risk to the environment or health is identified *after* the authorisation has been granted, a procedure for the withdrawal of the authorisation or for modifying the conditions of consent can be initiated under the safeguard clause set out in Article 23 of the Directive.

Since only authorised GMOs can be cultivated in the EU <sup>(1)</sup>, and the environmental and health aspects are already covered by Directive 2001/18/EC, the pending issues still to be addressed in the context of coexistence concern the *economic* aspects associated with the admixture of GM and non-GM crops.

<sup>(1)</sup> In order to be cultivated in the EU, the GMO must have been authorised *for cultivation* in accordance with Directive 2001/18/EC.

### 1.3. **The Round Table on coexistence**

A Round Table to examine the latest research results on the coexistence of GM and non-GM crops was hosted by the European Commission in Brussels on 24 April 2003. It focused on coexistence issues raised by the introduction of GM maize and GM oilseed rape into EU agriculture. Expert panels presented the scientific findings, which were then discussed with a range of stakeholders representing the farming sector, industry, NGOs, consumers and other players. The Round Table sought to provide a scientific and technical basis, drawing on practical farming experience, for whatever agronomic and other measures may become necessary to facilitate the sustainable coexistence of these different agricultural production types.

The present guidelines draw on the results of the Round Table, a summary of which, prepared by a group of participating scientists, is available on the following Internet site: <http://europa.eu.int/comm/research/biosociety/index>.

### 1.4. **Subsidiarity**

The conditions under which European farmers work are extremely diverse. Farm and field sizes, production systems, crop rotations and cropping patterns, as well as natural conditions, vary enormously across Europe. This variability needs to be taken into account when devising, implementing, monitoring and coordinating coexistence measures. The measures that are applied must be specific to the farm structures, farming systems, cropping patterns and natural conditions in a region.

For this reason, the Commission, at its meeting of 5 March 2003, expressed itself in favour of an approach that would leave it up to Member States to develop and implement management measures for coexistence. The role of the Commission would include gathering and coordinating relevant information based on ongoing studies at Community and national level, offering advice and issuing guidelines which should assist Member States in establishing best practices for coexistence.

Strategies and best practices for coexistence need to be developed and implemented at national or regional level, with the participation of farmers and other stakeholders and taking account of national and regional factors.

### 1.5. **Purpose and scope of the guidelines**

The present guidelines, which take the form of non-binding recommendations addressed to the Member States, should be seen in this context. Their scope extends from agricultural crop production on the farm up to the first point of sale, i.e. 'from the seed to the silo' <sup>(1)</sup>.

The document is intended to help Member States develop national strategies and approaches to address coexistence. Focusing mainly on technical and procedural aspects, the guidelines provide a list of general principles and elements to aid Member States in establishing best practices for coexistence.

The document does not intend to provide a detailed set of measures that could be directly applied at Member State level. Many of the factors that are important in developing best practices for coexistence which are both efficient and cost-effective are specific to national and regional conditions.

Moreover, developing stewardship schemes and best practices for coexistence is a dynamic process that should leave room for improvement over time and take into account new developments based on scientific and technological progress.

## 2. **GENERAL PRINCIPLES**

This section provides a list of general principles and factors that Member States are advised to take into account in developing national strategies and best practices for coexistence.

### 2.1. **Principles for the development of coexistence strategies**

#### 2.1.1. *Transparency and stakeholder involvement*

National strategies and best practices for coexistence should be developed in cooperation with all relevant stakeholders and in a transparent manner. Member States should ensure adequate dissemination of information about the measures on coexistence that they decide to put in place.

<sup>(1)</sup> The guidelines address commercial seed and crop production. Experimental releases of GM-crops are not considered.

#### 2.1.2. *Science-based decisions*

Management measures for coexistence should reflect the best available scientific evidence on the probability and sources of admixture between GM and non-GM crops. They should permit the cultivation of GM and non-GM crops, whilst ensuring that non-GM crops remain below the legal thresholds for labelling and purity standards with respect to genetically modified food and feed and seeds, as defined by Community legislation.

The available scientific evidence should be continuously evaluated and updated to take account of results from monitoring studies on the experimental and commercial cultivation of GM crops, as well as the findings of new studies and models validated by field experience.

#### 2.1.3. *Building on existing segregation methods/practices*

Management measures for coexistence should build on and take into account already existing segregation practices/methods and available agricultural experience about handling of identity preserved crops and seed production practices.

#### 2.1.4. *Proportionality*

Measures for coexistence should be efficient, cost-effective and proportionate. They shall not go beyond what is necessary in order to ensure that adventitious traces of GMOs stay below the tolerance thresholds set out in Community legislation. They should avoid any unnecessary burden for farmers, seed producers, cooperatives and other actors associated with any production type.

The choice of measures should take into account the regional and local constraints and situations, as well as the specific nature of the crop concerned.

#### 2.1.5. *Appropriate scale*

While considering all the options available, priority should be given to farm-specific management measures and to measures aimed at coordination between neighbouring farms.

Measures of a regional dimension could be considered. Such measures should apply only to specific crops whose cultivation would be incompatible with ensuring coexistence, and their geographical scale should be as limited as possible. Region-wide measures should only be considered if sufficient levels of purity cannot be achieved by other means. They will need to be justified for each crop and product type (e.g. seed versus crop production) separately.

#### 2.1.6. *Specificity of the measures*

Best practices for coexistence should take into account the differences between crop species, crop varieties and product type (e.g. crop or seed production). Differences in regional aspects (e.g. climatic conditions, topography, cropping patterns and crop rotation systems, farm structures, crop-specific GMO share in a region) that may influence the degree of admixture between GM and non-GM crops, should also be taken into account to ensure the suitability of the measures.

Member States should focus first on crops for which GM varieties are already approved, or close to authorisation and which are likely to be cultivated on a significant scale in their national territory.

#### 2.1.7. *Implementation of measures*

National strategies for coexistence should ensure an equitable balance between the interests of farmers of all production types. Cooperation between farmers should be encouraged.

Member States are advised to set up mechanisms to favour coordination and voluntary arrangements between neighbouring farmers, and to specify procedures and rules in cases of disagreement between farmers on the implementation of the measures in question.

As a general principle, during the phase of introduction of a new production type in a region, operators (farmers) who introduce the new production type should bear the responsibility of implementing the farm management measures necessary to limit gene flow.

Farmers should be able to choose the production type they prefer, without imposing the necessity to change already established production patterns in the neighbourhood.

Farmers who plan to introduce GM crops for cultivation on their farms should inform the neighbouring farmers about their intention.

Member States should ensure cross-border cooperation with neighbouring countries to guarantee the effective functioning of coexistence measures in border areas.

#### 2.1.8. *Policy instruments*

*A priori* there is no particular policy instrument that can be recommended for coexistence. Member States may prefer to explore the use of different policy instruments, e.g. voluntary agreements, soft-law approaches and legislation, and choose the combination of instruments and depth of regulation that will most likely achieve effective implementation, monitoring, evaluation and control of the measures.

#### 2.1.9. *Liability rules*

The type of instruments adopted may have an impact on the application of national liability rules in the event of economic damage resulting from admixture. Member States are advised to examine their civil liability laws to find out whether the existing national laws offer sufficient and equal possibilities in this regard. Farmers, seed suppliers and other operators should be fully informed about the liability criteria that apply in their country in the case of damage caused by admixture.

In this context, Member States may want to explore the feasibility and usefulness of adapting existing insurance schemes, or setting up new schemes.

#### 2.1.10. *Monitoring and evaluation*

The management measures and instruments adopted should be subject to ongoing monitoring and evaluation to verify their effectiveness and to obtain the information necessary for improving the measures over time.

Member States should establish adequate control and inspection systems to guarantee the proper functioning of coexistence measures.

Best practices for coexistence should be revised periodically to take account of new developments brought about by scientific and technical progress and which could facilitate coexistence.

#### 2.1.11. *Provision and exchange of information at European level*

Without prejudice to the already existing Community notification legislation and procedures, Member States should inform the Commission about their national strategies for coexistence and the individual measures adopted, as well as about the results of monitoring and evaluation exercises. The Commission will coordinate the exchange of information on measures, experiences and best practices supplied by the Member States. A timely exchange of information can create synergies and help avoid unnecessary duplication of efforts in the different Member States.

#### 2.1.12. *Research and sharing of research results*

Member States should encourage and support, in partnership with stakeholders, research activities to improve their knowledge on how best to ensure coexistence. Member States should inform the Commission about ongoing and planned research activities in this area. Sharing research results between Member States should be strongly encouraged.

Research studies on coexistence can also be supported under the Sixth Community Research Framework Programme. Additional studies on coexistence will be carried out by the Joint Research Centre.

The Commission will facilitate the exchange of information about ongoing and planned research projects at national and Community level. The information exchange could improve the coordination of national research activities among the Member States, as well as with those carried out under the Sixth Community Research Framework Programme.

### 2.2. **Factors to consider**

This section provides a non-exhaustive list of factors that should be taken into account in developing national strategies and best practices for coexistence.

#### 2.2.1. *Level of coexistence to be achieved*

The problem of coexistence of GM and non-GM crops may arise at different levels. For instance:

- GM and non-GM crops produced simultaneously or in successive years on a single farm,
- GM and non-GM crops produced on neighbouring farms in the same year,
- GM and non-GM production types used in the same region, but on farms that are separated by some distance.

Measures for coexistence should be specific to the level of coexistence to be achieved.

#### 2.2.2. *Sources of adventitious mixture*

There are different sources of admixture between GM and non-GM crops including:

- pollen transfer between neighbouring fields, whether over shorter or greater distances (depending on the species and other factors that may affect gene transfer),
- mixing of crops during harvest and post-harvest operations,
- transfer of seeds or other viable plant material during harvest, transport and storage, and to some extent by animals,
- volunteers (seeds remaining in the soil after harvest and producing new plants in successive years). This source of admixture may be more important in some crops (e.g. in oilseed rape) than in others, depending *inter alia* on climatic conditions (e.g. in maize, seeds may not survive frost),
- seed impurities.

It is important to recognise the cumulative effect of the various sources of admixture, including cumulative effects over time that may affect the seed bank or the use of farm-saved seed.

#### 2.2.3. *Labelling threshold values*

National strategies and best practices for coexistence should refer to the legal labelling thresholds and to applicable purity standards for GM food, feed and seed.

Presently, Council Regulation (EC) No 1139/98 <sup>(1)</sup>, as last amended by Commission Regulation (EC) No 49/2000 <sup>(2)</sup>, defines a labelling threshold for food of 1 %. Future labelling thresholds covering both food and feed are established in the Regulation on GM Food and Feed. These labelling thresholds would apply to conventional and organic farming alike. No legal thresholds exist for the adventitious presence of non-GMOs in GMOs. For seed of GM varieties, the general crop-specific requirements for purity standards in seed production apply.

The organic farming regulation <sup>(3)</sup> establishes that no GMOs shall be used in production. Thus, materials, including seeds, which are labelled as containing GMOs cannot be used. However, seed lots containing GM seeds below the seed thresholds (which would not need to be labelled for this GMO presence) could be used. The organic farming regulation does allow for the setting of a specific threshold for the unavoidable presence of GMOs, but no threshold has been set. In the absence of such a specific threshold, the general thresholds apply.

#### 2.2.4. *Specificity to crop species and crop varieties*

- The crop-specific degree of outcrossing: for instance, wheat, barley and soybeans are mainly self-pollinating crops, whereas maize, sugar beet and rye are cross-pollinating crops,
- the crop-specific forms of cross-pollination (i.e. wind, insects),
- the crop-specific potential to form volunteers, and the time seeds remain viable in the soil,

<sup>(1)</sup> OJ L 159, 3.6.1998, p. 4.

<sup>(2)</sup> OJ L 6, 11.1.2000, p. 13.

<sup>(3)</sup> Council Regulation (EC) No 1804/1999 (OJ L 222, 24.8.1999, p. 1).

- the species- and variety-specific cross-pollination potential with close relatives, be they farmed or wild ones. (this is affected, *inter alia*, by the degree of self- and cross-pollination, the receptivity of flowers at the time of pollen release, and the compatibility between the pollen and the style of the receiving plant),
- the flowering time of the pollen source and of the receiving population: — degree of overlap of the respective flowering periods,
- the duration of pollen viability, which depends on the plant species, the variety, and on environmental conditions, such as the humidity of the air,
- the competition among pollen, which is influenced by the production of pollen in the receiving population and the pollen pressure generated by the pollen source. (it may depend on the crop variety. In hybrid plant production a large number of male sterile plants may be produced that do not produce pollen on their own, and this makes them more vulnerable to pollen pressure from outside),
- fodder versus grain production (e.g. silage and grain maize): difference in the farming system and in the length of the cultivation process,
- the degree to which genetic exchange through pollen flow influences the admixture rate in the harvested crop: for instance, there is no influence in the case of harvested potatoes or beets (in silage maize production, the harvested material is, to varying degrees, composed of cobs, which can be affected by genetic exchange, and plant material, which is not affected).

#### 2.2.5. Crop versus seed production

- Labelling thresholds will differ between crop and seed production;
- for seed production, specific legislation currently being prepared by the Commission will be adopted.

#### 2.2.6. Regional aspects

- The crop-specific GMO share in the region,
- the number and type of crop varieties (GM and non-GM) that have to coexist in a particular region,
- the shape and size of the fields in a region (smaller fields are subject to a higher relative degree of pollen import than larger fields),
- the fragmentation and geographical dispersion of fields belonging to individual farms,
- regional farm management practices,
- crop rotation systems and cropping patterns in a region, taking into account crop-specific seed longevity,
- the activity, behaviour and population size of pollinators (insects, etc.),
- the climatic conditions (e.g. rainfall distribution, humidity, direction and strength of the wind, air and soil temperature), which influence the activity of pollinators as well as the transport of airborne pollen, and may affect the type of crops cultivated, the starting date and length of the cultivation process, the annual number of production cycles, etc.,
- the topography (e.g. valleys or water surfaces influence air currents and the strength of winds),
- surrounding structures, such as hedges, forests, uncultivated areas, and the spatial arrangements of fields.

#### 2.2.7. Genetic outcrossing barriers

Biological methods to reduce gene flow may diminish the risk of cross-pollination (e.g. *apomixis* (asexual seed production), cytoplasmic male sterility, chloroplast transformation).

### 3. INDICATIVE CATALOGUE OF MEASURES FOR COEXISTENCE

This section provides an open-ended catalogue of farm management and other measures for coexistence that may, to varying degrees and in various combinations, become part of national coexistence strategies and best practices.

### 3.1. Additivity of measures

Measures to prevent pollen flow to neighbouring fields are to some extent additive and may also have synergistic effects. For instance, the minimum isolation distances between fields with the same crop can be reduced if, at the same time, other suitable measures are taken (scheduling different flowering times, use of crop varieties with reduced pollen production, pollen traps, hedgerows, etc.).

The most efficient and cost-effective set of measures will be influenced by the factors listed in Section 2.2, and may differ significantly from one crop to another and from one region to another.

### 3.2. On-farm measures

#### 3.2.1. *Preparation for sowing, planting and soil cultivation*

- Isolation distances between GM and non-GM fields of the same species and, if appropriate, of the same genera <sup>(1)</sup>:
  - isolation distances should be specified as a function of the outcrossing potential of the crop. For open pollinating crops, such as oilseed rape, larger distances are required. For self-pollinating crops and plants where the harvested product is not a seed, such as beets and potatoes, shorter distances are possible. Isolation distances should minimise but not necessarily eliminate gene flow by pollen transfer. The objective is to ensure a level of adventitious presence below the tolerance threshold;
  - if different thresholds exist, e.g. for crop production and for seed production, isolation distances should be adapted accordingly,
- buffer zones, as an alternative or complement to isolation distances (including the possibility of farmland retirement and set-aside),
- pollen traps or barriers (e.g. hedgerows),
- suitable crop rotation systems (e.g. lengthening the rotation by introducing a spring crop in which volunteers cannot flower, or minimum time intervals between the cultivation of GM and non-GM varieties of the same species and also between certain different species of the same genera),
- planning the crop production cycle (e.g. planting arrangements for different flowering and harvesting periods),
- reducing the size of the seed bank through adequate soil tillage (e.g. avoidance of mould-board ploughing after the harvest of oilseed rape),
- managing populations in field borders through appropriate cultivation methods, use of selective herbicides or integrated weed control techniques,
- choosing optimal sowing dates and appropriate cultivation techniques, in order to minimise bolters,
- careful handling of seeds to avoid mixing, including distinctive packaging and labelling of the seeds and separate storage of seeds,
- using varieties with reduced pollen production, or male sterile varieties,
- cleaning of seed drills before and after use to prevent the carry-over of seed from previous operations and the unplanned dispersion of seed on the farm,
- sharing seed drills only with farmers using the same production type,
- preventing seed spillage when travelling to and from the field and on field boundaries,
- control/destruction of volunteers, in combination with suitable sowing times for the following season to avoid the development of volunteers.

#### 3.2.2. *Harvest and post-harvest field treatment*

- Saving seeds only from suitable fields and field areas (e.g. field centres),
- minimising seed loss during the harvest (e.g. through optimisation of the harvest time to minimise seed shedding),
- cleaning of harvesting machinery before and after use, to prevent any carry-over of seed from previous operations, and to avoid the unintended dispersal of seed,
- sharing harvest machinery only with farmers using the same production type,
- in case other measures are deemed insufficient to maintain the adventitious presence below the labelling threshold, the field margins could be harvested separately from the rest of the field. The main crop should then be segregated from that harvested on the field margins.

<sup>(1)</sup> Genera is a taxonomic term for a group of related species.

### 3.2.3. *Transport and storage*

- Ensuring the physical segregation of GM and non-GM crops after the harvest up to the first point of sale,
- using adequate seed storage arrangements and practices,
- avoiding spillage during transport of the harvested crop on the farm and from the farm to the first point of sale.

### 3.2.4. *Field monitoring*

Monitoring of seed spillage sites, fields, and field margins for volunteer development.

## 3.3. **Cooperation between farms in the neighbourhood**

### 3.3.1. *Information about sowing plans*

Notification of farms located within the relevant perimeter of the planting plans for the next growing season. Notifications should be made before the seeds for the next growing season are ordered.

### 3.3.2. *Coordinated management measures*

- Voluntary clustering of fields of different farms for the cultivation of similar crop varieties (GM, conventional or organic) in a production area,
- use of crop varieties with different flowering times,
- arranging for differences in sowing dates in order to avoid cross-pollination during flowering,
- coordinating crop rotations.

### 3.3.3. *Voluntary agreements among farmers on zones of a single production type*

Groups of farmers in a neighbourhood may achieve a significant reduction in the costs related to the segregation of GM and non-GM production types if they coordinate their production on the basis of voluntary agreements.

## 3.4. **Monitoring schemes**

- Establishing notification systems that encourage farmers to report problems or unexpected occurrences in the implementation of coexistence measures,
- using the feedback obtained from monitoring as a basis for further adjustment and refinement of national strategies and best practices for coexistence,
- setting up effective control schemes/bodies targeted at critical control points to ensure the proper functioning of coexistence management measures.

## 3.5. **Land register**

- The register established in accordance with Article 31(3)(b) of Directive 2001/18/EC can be a useful instrument to monitor developments of GM crops and to help farmers coordinate local production patterns and monitor developments concerning the different types of crops. It could be accompanied by a global-positioning-system-based map of GM, non-GM and organic fields. The information could be made publicly available via the Internet or other communication supports,
- creating an identification system for fields where GM crops are grown.

## 3.6. **Record keeping**

Developing arrangements for on-farm record keeping concerning relevant information on:

- the cultivation process and the handling, storage, transport and marketing of GM crops; there will be a legal requirement for farmers to have systems in place to identify from whom they have received GMOs and to whom they have supplied GMOs, including GM crops and seeds, once the legislative proposal on traceability and labelling of GMOs has been adopted <sup>(1)</sup>,
- the management practices for coexistence implemented on the farm.

<sup>(1)</sup> Proposal for a Regulation of the European Parliament and of the Council concerning traceability and labelling of genetically modified organisms and traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC (COM(2001) 182 final).

**3.7. Training courses and extension programmes**

Member States should encourage training courses for farmers, on a voluntary or a mandatory basis and extension programmes in order to raise awareness among farmers and other interested parties and provide technical knowledge for the implementation of coexistence measures. This may include training of specialised staff who would then provide advice to farmers on management measures for coexistence.

**3.8. Information provision and exchange, and advisory services**

- Member States should ensure that farmers are fully informed about the implications of adopting a particular production type (GM or non-GM), in particular with regard to their responsibilities for implementing coexistence measures and the liability rules that are applicable in case of economic damage resulting from admixture,
- all operators concerned should be sufficiently informed about the specific coexistence measures to be implemented. One possibility for disseminating such specific information would be to require that the information be attached to the seed lots by the seed supplier,
- Member States should encourage effective and regular exchange of information and networking among farmers and other stakeholders,
- Member States should consider the setting up of Internet-based or telephone information services ('GMO hotlines') that would provide answers to specific requests for information and provide advice to farmers and other operators on technical, commercial and legal questions related to GMOs.

**3.9. Reconciliation procedures in the case of disputes**

Member States are advised to take measures to implement conciliation procedures in order to solve cases of disagreement between neighbouring farmers concerning the implementation of measures for coexistence.

---