

# Seed Legislation in Europe and Crop Genetic Diversity

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**Abstract** Crop genetic diversity has always been important for food production. With changing climatic conditions, the importance of crop genetic diversity is increasing as diversity is central to agriculture's ability to adapt to higher temperatures, precipitation changes and new pests and diseases. Maintenance of and access to this genetic diversity has become crucial. Legislation on the marketing of seed and plant propagating material, often referred to as 'seed legislation', specifies the requirements that seed and other propagating material must fulfil to be marketed legally, and how this marketing may be conducted. Such legislation can have a great impact on the composition of the seed market, as well as on cultivation and breeding, not least as it has the potential to restrict access to and maintenance of crop genetic diversity. In the European Union (EU) seed legislation is based on the principles of variety registration and certification of seed lots. Seed may be marketed only if it belongs to a variety that has been registered and the seed lot has been certified. A variety must satisfy distinctness, uniformity and stability requirements. For heterogeneous varieties this can be problematic, which in turn has potential consequences for the maintenance and further development of crop genetic diversity.

The introduction of derogations for the marketing of certain types of varieties and seed mixtures for conservation purposes provided greater legal space for the maintenance of crop genetic diversity in the EU. However, these derogations cover only some of the crop genetic diversity excluded from marketing by the main legislation. In addition, restrictions limit where and to what extent such varieties and seed mixtures can be marketed. In a preliminary ruling on the validity of current restrictions on the marketing of unregistered varieties, the Court of Justice of the EU in 2012 held that the legislation was valid. Many central stakeholders had expected the judgment to follow the opinion of Advocate General Kokott, who had reached the opposite conclusion. While the opinion had found that the disadvantages of the restrictions in question outweighed the benefits, the judgment concluded that the legislation was not manifestly inappropriate, given the objective of improved

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productivity. However, current legislation has been under review, and some changes are expected. During the review process various stakeholders voiced a wide range of differing views. Also in the literature, various suggestions for changing the EU seed legislation have been offered. As the details of seed legislation have received little attention outside a small circle of stakeholders and decision-makers, it is hoped that this article can help bring greater awareness of its importance and potential impact on the maintenance of crop genetic diversity.

**Keywords** Crop genetic diversity • Agriculture • Legislation • Seed • Propagating material • Marketing • Variety • Landrace • European Union • Directives • Derogations • Conservation variety • Review • Evaluation • Conservation • Maintenance • Kokopelli • Opinion • Judgment • Reform

## Acronyms and Abbreviations

DG SANCO	Directorate General for Health and Consumers
DUS	Distinct, Uniform and Stable (of plant varieties)
EC	European Community
ESA	European Seed Association
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCEC	Food Chain Evaluation Consortium

## 1 Introduction

Crop genetic diversity is central to solving the challenges facing agriculture, among them changing environmental conditions and growing populations. It is essential to both current and future food security. Utilisation of this diversity, through cultivation and breeding, is important to its maintenance and development, and such utilisation depends on users having access to a wide range of seed and other plant reproductive material. One determining factor here is international and national law.

The legislation on the marketing of seed and plant propagating material in the European Union (EU) specifies the requirements that seed and propagating material must fulfil to be marketed legally in the EU, and how this marketing may be conducted. This legislation, often referred to as seed legislation, has considerable impact on the composition of the European seed market, as well as on cultivation and breeding. It also affects the maintenance of crop genetic diversity and national implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture of 3 November 2001 (the Plant Treaty). The impacts have not been altogether positive; and recent studies show that many stakeholders in Europe worry about the effects of this seed legislation on farmers' possibilities for maintaining

crop genetic diversity, and want a new legal framework (Andersen and Winge 2011; Thommen et al. 2010).

Seed legislation was originally introduced in Europe against a backdrop of confusion surrounding variety names and varietal identity. It has been argued that the intention was to create clarity and transparency in the market (Louwaars 2002b), partly to ensure that the seed marketed had sufficient germination capacity, was disease-free and came from the claimed variety. Variety registration and certification became central; and in the 1940s many European countries passed seed laws (Louwaars 2002b).

The first European Economic Community directives regulating the marketing of seed and propagating material came in 1966. Between 1966 and 1970 altogether nine directives were introduced, and three further directives were issued in 1991 and 1992. When this legislation was first introduced, the aim was to increase competitiveness, create more open markets and harmonize national seed laws (DG SANCO 2011).

Increased productivity is now also regarded as a general objective; the specific stated objectives are to harmonize marketing standards, to ensure that *new* varieties cannot be marketed unless they are genuinely new and represent an improvement on already marketed varieties, and that the seed and propagating material is of high quality (FCEC 2008). However, the complexity, implementation costs and non-harmonized national implementation of current legislation, together with calls for adjusted and new objectives, like greater focus on sustainability, prompted a review of EU seed legislation (DG SANCO 2011).



**Fig. 1** Norwegian apple varieties (Source: The Norwegian Genetic Resource Centre, Norwegian Forest and Landscape Institute. Photographer: Åsmund Asdal)

The various developments in the EU with regard to seed legislation did not take place in a vacuum. An important part of the context comes from international processes concerning the conservation and sustainable use of plant genetic resources for food and agriculture.

The Commission on Genetic Resources for Food and Agriculture was established in 1983,<sup>1</sup> and in the same year the International Undertaking on Plant Genetic Resources for Food and Agriculture was adopted.<sup>2</sup> Then followed the *Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture* in 1996,<sup>3</sup> and the final publication of the first *State of the World's Plant Genetic Resources for Food and Agriculture* in 1998.<sup>4</sup> The adoption of the legally binding Plant Treaty in November 2001 constituted a new milestone.<sup>5</sup> In 2010, a second *State of the World's Plant Genetic Resources for Food and Agriculture* was issued,<sup>6</sup> and an updated version of the *Global Plan of Action* was adopted in 2011.<sup>7</sup> In addition, the Convention on Biological Diversity of 5 June 1992 pertains to all biological diversity, including agricultural biodiversity. These treaties, international bodies and documents have contributed to placing crop genetic diversity, and how seed legislation can affect maintenance and sustainable use, on the agenda in Europe and elsewhere.

As the European Commission in 2013 adopted a proposal for a new regulation 'on the production and making available on the market of plant reproductive material'<sup>8</sup> it is timely to take a closer look at current EU seed legislation. This article aims to provide an accessible overview of this legislation, its key principles and its potential implications for the conservation and sustainable use of crop genetic diversity.<sup>9</sup>

The 12 basic directives and the three directives introduced to facilitate conservation efforts are reviewed. With the basic directives the focus is on key requirements, categories of seed/material used and how marketing is defined. For the three directives aimed at conservation of genetic resources, the derogations as well as the restrictions they contain are presented.

In 2012, the validity of the prohibition on the marketing of seed from non-registered varieties in the current legislation was considered by the Court of

<sup>1</sup>For more information about the Commission on Genetic Resources for Food and Agriculture see <http://www.fao.org/nr/cgrfa/en/>

<sup>2</sup>For more information about the International Undertaking on Plant Genetic Resources for Food and Agriculture see <http://www.fao.org/ag/CGRFA/iu.htm>

<sup>3</sup>For more information about the Global Plan of Action see <http://www.globalplanofaction.org/>

<sup>4</sup>See <http://www.fao.org/agriculture/crops/core-themes/theme/seeds-pgr/sow/en/>

<sup>5</sup>For more information about the Plant Treaty see <http://www.planttreaty.org/> or the website of the Farmers' Rights Project ([www.farmersrights.org](http://www.farmersrights.org)).

<sup>6</sup>See <http://www.fao.org/agriculture/crops/core-themes/theme/seeds-pgr/sow/sow2/en/>

<sup>7</sup>For more information, see <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/seeds-pgr/gpa/en/>

<sup>8</sup>Proposal for a Regulation of the European Parliament and of the Council on the production and making available on the market of plant reproductive material (plant reproductive material law) of 6 May 2013.

<sup>9</sup>The article is a revised and updated version of a study published in 2012 as an FNI Report.

Justice of the European Union, following a reference for a preliminary ruling in connection with the French court case *Association Kokopelli vs. Graines Baumaux SAS*. The key aspects of this central process are presented here.

This article also offers a review of main academic contributions on the development of seed regulation in Europe and regulatory reform, the effects of seed legislation on agricultural biodiversity and sustainable agriculture, and the oldest of the three directives aimed at conservation efforts, Commission Directive 2008/62/EC of 20 June 2008.<sup>10</sup> In addition, a section is devoted to the review of EU seed legislation that led to the proposal adopted by the Commission, and the problems and options identified in this process. Central here are an external evaluation conducted by the Food Chain Evaluation Consortium (FCEC) and a paper outlining various scenarios for reform, together with the response the paper received as part of an on-line consultation organized by the Directorate General for Health and Consumers (DG SANCO). The article concludes with some thoughts on the way forward.

## 2 European Legislation on the Marketing of Seed and Plant Propagating Material

EU legislation on the marketing of seed and propagating material<sup>11</sup> is based on the two key principles of registration and certification, and currently consists of 12 basic Council Directives. One of these is a horizontal directive,<sup>12</sup> Council Directive 2002/53/EC of 13 June 2002 on the common catalogue of varieties of agricultural plant species, which specifies that for agricultural plant species (beet, fodder plant, cereal, potato and oil and fibre plants) a common catalogue of varieties should be compiled on the basis of national catalogues that have been drawn up in accordance with uniform rules.

The remaining 11 directives are vertical directives that regulate the marketing of seed and propagating material from specific types of crops: fodder-plant seed; cereal seed; beet seed; seed of oil and fibre plants; vegetable seed; vine propagating material; seed potatoes; vegetable reproductive material other than seed; fruit-plant propagating material; ornamental plants and forest reproductive material (DG

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<sup>10</sup>Commission Directive 2008/62/EC of 20 June 2008 providing for certain derogations for acceptance of agricultural landraces and varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion and for marketing of seed and seed potatoes of those landraces and varieties

<sup>11</sup>This term, 'EU legislation on marketing of seed and propagating material', is what is used about the current legislation, among other cases in connection with the review process, and it has also been taken as the point of departure here. However, the proposal for a new regulation recently adopted by the European Commission introduces the term 'plant reproductive material law'.

<sup>12</sup>A directive is a legislative act that specifies results the EU countries must achieve, but which leaves the forms of methods of how this is to be done to the national authorities. A regulation, by contrast, is binding in its entirety in all member countries. See <http://europa.eu/about-eu/basic-information/decision-making/legal-acts/>.

SANCO 2011). Although they share similarities, each of these 11 directives comes with its own systems for production and marketing, and its own marketing categories.

Current EU legislation on marketing of seed and propagating material is fragmented and complex, with some 90 other legal acts (DG SANCO 2011) in addition to the 12 basic directives. Recent additions include three directives introduced to create greater legal space for the on-farm conservation and sustainable use of plant genetic resources for food and agriculture. The first of these encompasses agricultural landraces and varieties, the second vegetable landraces and varieties, and the third deals with fodder-plant seed mixtures.

In this section, the main principles of the 12 basic directives and the three later directives aimed at the conservation of genetic resources will be reviewed. In addition, the validity of the prohibition on the marketing of seed from non-registered varieties, which was considered by the Court of Justice of the European Union in connection with the French court case *Association Kokopelli vs. Graines Baumaux SAS*, will be discussed. Association Kokopelli<sup>13</sup> is a French non-governmental organization which produces and distributes seeds of old varieties, and Graines Baumaux<sup>14</sup> is a French seed company that specializes in vegetable seed. Many of the varieties distributed by Association Kokopelli have not been officially accepted and certified, and Graines Baumaux charged the organization with unfair competition. However, the details of the court case itself will be given less attention here than the process in the Court of Justice of the EU.

## 2.1 The 12 Basic Directives

### 2.1.1 Key Requirements

As noted, the two central requirements in the EU legislation on the marketing of seed and propagating material concern the registration of varieties<sup>15</sup> and the certification<sup>16</sup> of seed lots.

The registration requirement means that, in order to be marketed in the EU, a plant variety must be listed in a national catalogue<sup>17</sup> and, depending on the species,

<sup>13</sup> See <http://www.kokopelli-seeds.com/> and [http://kokopelli-semences.fr/who\\_are\\_we](http://kokopelli-semences.fr/who_are_we)

<sup>14</sup> See <http://www.graines-baumaux.fr/presentation>

<sup>15</sup> For some plant species the term ‘material’ is used, but for the sake of simplicity, only ‘variety’ is used here (as in the ‘Options and analysis’ paper published by the Directorate General for Health and Consumers).

<sup>16</sup> The term ‘certification’ as it is used here covers the inspection work conducted by the supplier, in addition to the intervention of official services in the form of visual inspections on the growing field and lots, including sampling and testing.

<sup>17</sup> The directive on ornamental plants is the only one of the eleven vertical directives that does not require some type of national list or catalogue to be established: Council Directive 98/56/EC of 20 July 1998.

in one of the EU Common Catalogues.<sup>18</sup> To qualify for registration, a variety must be demonstrated to be distinct, uniform and stable (DUS), and the rules for naming of varieties must be followed (DG SANCO 2011).

A variety is regarded as distinct if it is ‘clearly distinguishable on one or more important characteristics from any other variety known in the Community’ (see Council Directive 2002/53/EC, Article 5) and as stable if it ‘remains true to the descriptions of its essential characteristics’ after successive propagation or multiplications or at the end of each cycle (see Council Directive 2002/55/EC, Article 5). If, ‘apart from a very few aberrations, the plants of which it is composed are (account being taken of the distinctive features of the reproductive systems of the plants) similar or genetically identical as regards the characteristics, taken as a whole, which are considered for this purpose’, a variety is also regarded as sufficiently uniform (e.g. Council Directive 2002/55/EC, Article 5).

In addition, testing for value for cultivation and use is done for varieties of agricultural plant species<sup>19</sup> (DG SANCO 2011). According to the Directorate General for Health and Consumers, the values for cultivation and use are based on yield, resistance to harmful organisms, response to the environment and quality characteristics.<sup>20</sup> Council Directive 2002/53/EC specifies that a variety’s value for cultivation and use should be regarded as satisfactory if its qualities, ‘taken as a whole, offer, at least as far as production in any given region is concerned, a clear improvement either for cultivation or as regards the uses which can be made of the crops or the products derived therefrom’ (Article 5) compared to other registered varieties in the member state in question.

The principle of common catalogues was introduced in the European Community (EC) in 1966 (Chable et al. 2009). The horizontal directive on the common catalogue, Council Directive 2002/53/EC, applies only to varieties of agricultural plant species. Thus, the types of crops regulated by the other six vertical directives – ornamental plants, forest plants, fruit plants, vegetables (both seed and other types of propagating material) and grape vines – are not covered by this directive and its requirements on common catalogues based on national catalogues. Council Directive 2002/55/EC of 13 June 2002 on the marketing of vegetable seed

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<sup>18</sup>The common catalogue of varieties of agricultural plant species and the common catalogue of varieties of vegetable species are published in the *Official Journal* on the basis of information received from the member states; for an up-to-date account, see the EU database of registered plant varieties: <http://ec.europa.eu/food/plant/propagation/catalogues/database/public/index.cfm?event=homepage>) (see also [http://ec.europa.eu/food/plant/propagation/catalogues/index\\_en.htm](http://ec.europa.eu/food/plant/propagation/catalogues/index_en.htm) for further information).

<sup>19</sup>In EU legislation, the crops encompassed by this term are beet, fodder plants, cereal, potatoes and oil and fibre plants; value for cultivation and use requirements for these are specified in Council Directive 2002/53/EC on the common catalogue of varieties of agricultural plant species. However, Council Directive 2002/55/EC of 13 June 2002 on the marketing of vegetable seed specifies that varieties of industrial chicory also require a satisfactory value for cultivation and use.

<sup>20</sup>See [http://ec.europa.eu/food/plant/plant\\_propagation\\_material/plant\\_variety\\_catalogues\\_databases/index\\_en.htm](http://ec.europa.eu/food/plant/plant_propagation_material/plant_variety_catalogues_databases/index_en.htm)

establishes the other common catalogue: the common catalogue of varieties of vegetable species.<sup>21</sup>

The preambles of the basic directives of EU legislation on the marketing of seed and plant propagating material, represented by most of the vertical directives, emphasize improved productivity, the underlying assumption being that strict and uniform rules regulating seed marketing will promote productivity. The legislation therefore declares that it is desirable to establish a uniform certification scheme within the EC, based on member-state experiences.

Under this certification scheme, certification of seed lots and lots producing plant propagating material is carried out either by official bodies or under official supervision, and is mandatory for all seed-producers wishing to put their seed on the market.

In addition, accreditation<sup>22</sup> or registration<sup>23</sup> of suppliers is required for vegetable propagating and planting material other than seed, fruit-plant propagating material and fruit plants intended for fruit production, forest reproductive material and propagating material of ornamental plants.

### 2.1.2 Categories of Seed/Material

Most of the vertical directives operate with various categories of seed/material.<sup>24</sup> Eight of the 11 vertical directives distinguish between ‘basic’ material/seed and ‘certified’ material/seed. According to the oldest of these directives, Council Directive 66/401/EEC of 14 June 1966 on the marketing of fodder plant seed, ‘the

<sup>21</sup>As specified in article 9 of Council Directive 92/33/EEC of 28 April 1992 on the marketing of vegetable propagating and planting material, other than seed, the varieties officially accepted under this directive are also to be listed in this catalogue.

<sup>22</sup>Council Directive 92/33/EEC on the marketing of vegetable propagating and planting material, other than seed introduces accreditation of suppliers and laboratories: an official body must verify that the suppliers meet the requirements; accreditation must be renewed if their activities change.

<sup>23</sup>Under Council Directive 1999/105/EC of 22 December 1999 on the marketing of forest reproductive material and Council Directive 98/56/EC on the marketing of propagating material of ornamental plants, as well as Council Directive 2008/90/EC of 29 September 2008 on the marketing of fruit plant propagating material and fruit plants intended for fruit production (the recast version of Council Directive 92/34/EEC of 28 April 1998), suppliers must be officially registered (no exceptions are mentioned for forest reproductive material; for propagating material of ornamental plants suppliers only marketing to non-professionals is excepted, and for fruit-plant propagating material and fruit plants intended for fruit production member states may exempt suppliers marketing only to non-professional final consumers).

<sup>24</sup>Although the legislation defines the term ‘propagating material’ (and ‘forest reproductive material’), no definition is provided for the term ‘seed’. In Council Directive 92/33/EEC for example, propagating material is defined as ‘parts of plants and all plant material, including rootstocks intended for the propagation and production of vegetables’ (Article 3), and all five directives dealing with such material provide a definition of the term. The FCEC evaluation therefore recommends that an overall definition of ‘seed’ should be consistently introduced in all the relevant directives (FCEC 2008). The proposal for a regulation adopted by the Commission 6 May 2013, presumably as a solution to this problem, introduces the term ‘plant reproductive material’ and defines it as ‘plant(s) capable of, and intended for, producing entire plants’ (Article 3).



choice of the technical terms “basic seed” and “certified seed” is based on already existing international terminology’ (Council Directive 66/401/EEC: preamble). Briefly put, the difference is that basic seed is intended for the production of certified seed, whereas certified seed in general is produced from basic seed and is intended for production of actual produce.

The only vertical directives where these categories are not used are Council Directive 1999/105/EC of 22 December 1999 on the marketing of forest reproductive material, which operates with four categories all derived from basic material, and Council Directive 92/33/EEC of 28 April 1992 on the marketing of vegetable propagating and planting material, other than seed and Council Directive 98/56/EC on the marketing of propagating material of ornamental plants, neither of which operate with such categories.

Of the eight directives that use the categories ‘basic’ material/seed and ‘certified’ material/seed, two also use the category ‘commercial’ seed. Both these – Council Directive 66/401/EEC and Council Directive 2002/57/EC of 13 June 2002 on the marketing of seed of oil and fibre plants – stipulate that seed of certain listed genera and species must be officially certified as ‘basic’ or ‘certified’ seed to be marketed, while seed of other than the listed genera and species can also be placed on the market if it ‘is commercial seed’ (Council Directive 66/401/EEC: Article 3 and Council Directive 2002/57/EC: Article 3).

‘Commercial seed’ is somewhat loosely defined as seed which is identifiable as belonging to a species and which has been found by official examination to satisfy the conditions laid down in Annex 2 of the respective directives regarding germination, analytical purity and content of seeds of other plant species. This means that the same requirements regarding varietal identity and varietal purity do not apply to ‘commercial seed’ as to ‘basic’ and ‘certified’ seed. In the preamble to Council Directive 66/401/EEC the explanation offered is that, with respect to certain genera and species, it is necessary to approve fodder plant seed that is not from a named variety, as not all genera and species of fodder plants important for cropping have produced the desired varieties or enough seed of the existing varieties to meet the needs of the European Community.

Another two of the eight directives using the categories ‘basic’ material/seed and ‘certified’ material/seed also employ the category ‘standard’ material/seed. These two – Council Directive 68/193/EEC of 9 April 1968 on the marketing of material for the vegetative propagation of the vine, and Council Directive 2002/55/EC on the marketing of vegetable seed – define ‘standard’ material/seed as material/seed of varietal identity and purity intended for the production of produce (vegetables in the case of Council Directive 2002/55/EC; grapes in the case of Council Directive 68/193/EEC) that satisfy the specific requirements laid down in the annexes of the respective directives. In addition, official examination is required, to check the varietal identity and purity (with vegetable seed) or that the requirements in general are met (with material for the vegetative propagation of the vine).

When Council Directive 68/193/EEC on the marketing of material for the vegetative propagation of the vine was amended by Council Directive 2002/11/EC of 14

February 2002,<sup>25</sup> the category ‘initial’ propagating material was added to the categories of vine propagating material. What distinguishes such material from the other categories of material in the directive is that it is to be used for the production of either basic or certified propagating material. After the amendments, basic propagating material must be obtained directly from initial material. To be put on the market, vine propagation material must be officially certified as ‘initial’, ‘basic’ or ‘certified’ material/seed or be officially checked standard material/seed.

Vegetable seed may be certified, verified as standard seed and marketed only if it is from a variety that has been officially accepted in at least one member state. The national catalogues of officially accepted varieties shall distinguish between varieties whose seed might be certified as either ‘basic’ or ‘certified’ seed or verified as ‘standard seed’, and varieties whose seed may be verified only as ‘standard seed’. Council Directive 2002/55/EC further specifies that the seed of industrial chicory can be certified only as ‘basic’ or ‘certified’ seed.

Council Directive 2008/90/EC of 29 September 2008 on the marketing of fruit-plant propagating material and fruit plants intended for fruit production<sup>26</sup> deviates slightly, in that it also uses the category ‘pre-basic’ material: this is material intended for the production of ‘basic’ material or ‘certified’ material other than fruit plants (and thus quite similar to the category of ‘initial’ propagating material mentioned above). In addition comes a further category ‘CAC (*Conformitas Agraria Communitatis*) material’ – referring to propagating material and fruit plants which have varietal identity and adequate varietal purity and are intended for the production of propagating material, the production of fruit plants and/or the production of fruits, and which satisfy the specific requirements to be established for genus and species for such material. Propagating material may be marketed only if it has been officially certified as ‘pre-basic’, ‘basic’ or ‘certified’ material or if it qualifies as ‘CAC material’; further, fruit plants may be marketed only if they are officially certified as ‘certified’ material or qualify as ‘CAC material’.

### 2.1.3 Definitions of Marketing

One of the most central terms in the current EU legislation of the marketing of seed and plant propagating material, is, naturally, ‘marketing’. Altogether, four slightly different definitions of this term are offered in the eleven vertical directives<sup>27</sup> that regulate the marketing of various categories of seed and plant propagating material.

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<sup>25</sup> Council Directive 2002/11/EC of 14 February 2002 amending Directive 68/193/EEC on the marketing of material for the vegetative propagation of the vine and repealing Directive 74/649/EEC

<sup>26</sup> This is the recast version of Council Directive 92/34/EEC.

<sup>27</sup> Council Directive 2002/53/EC on the common catalogue of varieties of agricultural species does not contain any definition of this term. According to the evaluation conducted by the Food Chain Evaluation Consortium, this is because it is seen as a support directive and it was deemed unnecessary to include such a definition. However, the evaluation concludes that for the sake of thoroughness, clarity and consistency a definition should be added (FCEC 2008).

The four vertical directives from June 2002 and the two from 1966 as amended by Council Directive 98/95/EC of 14 December 1998,<sup>28</sup> as well as the one from 1968 as amended by Council Directive 2002/11/EC and the recast version of Council Directive 92/34/EEC of 28 April 1992 on the marketing of fruit-plant propagating material and fruit plants intended for fruit production (Council Directive 2008/90/EC) all use the same wording; the remaining one from 1992 provides another and those from 1998 and 1999 contain yet another two definitions.

The oldest of these definitions, the one used in Council Directive 92/33/EEC, defines marketing as ‘the holding available or in stock, displaying or offering for sale, selling and/or delivering to another person, in whatever form, of propagating or planting material/propagating material or fruit plants’ (Council Directive 92/33/EEC: Article 3).

Council Directive 98/56/EC on the marketing of propagating material of ornamental plants deviates slightly here, defining marketing as ‘sale or delivery by a supplier<sup>29</sup> to another person’ (Council Directive 98/56/EC: Article 2), with ‘sale’ defined as ‘holding available or in stock, display with a view to sale, offering for sale’ (Council Directive 98/56/EC: Article 2). Thus, the elements covered are the same although the organization of the definition is different, but the 1998 definition contains the limitation ‘by a supplier’. This is the only directive where such limitation has been included in the definition of ‘marketing’. As a result, the rules for marketing of propagating material of ornamental plants do not apply to the sale of such material by those not professionally engaged in the sale or import of such material.

The last directive from the 1990s, Council Directive 1999/105/EC on the marketing of forest reproductive material, defines marketing as ‘display with a view to sale, offering for sale, sale or delivery to another person including delivery under a service contract’ (Article 2). Here the element ‘holding available or in stock’ is not included, while the element ‘delivery under a service contract’ has been added.

The most recent definition of the term is offered in the four vertical directives from June 2002,<sup>30</sup> but it was also included in Council Directive 66/401/EEC and Council Directive 66/402/EEC of 14 June 1966 on the marketing of cereal seed following the amendments of Council Directive 98/95/EC,<sup>31</sup> Council Directive

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<sup>28</sup> Council Directive 98/95/EC of 14 December 1998 amending, in respect of the consolidation of the internal market, genetically modified plant varieties and plant genetic resources, Directives 66/400/EEC, 66/401/EEC, 66/402/EEC, 66/403/EEC, 69/208/EEC, 70/457/EEC and 70/458/EEC on the marketing of beet seed, fodder plant seed, cereal seed, seed potatoes, seed of oil and fibre plants and vegetable seed and on the common catalogue of varieties of agricultural plant species

<sup>29</sup> This directive defines a supplier as ‘any natural or legal person engaged professionally in marketing or importing of propagating material’ (Council Directive 98/56/EC: Article 2).

<sup>30</sup> Council Directive 2002/54/EC of 13 June 2002 on the marketing of beet seed, Council Directive 2002/55/EC of 13 June 2002 on the marketing of vegetable seed, Council Directive 2002/56/EC of 13 June 2002 on the marketing of seed potatoes and Council Directive 2002/57/EC of 13 June 2002 on the marketing of seed of oil and fibre plants.

<sup>31</sup> With the addition of this definition to these two directives, it applies to all the vertical directives regulating the marketing of seed (as opposed to propagating material).

68/193/EEC following the amendments of Council Directive 2002/11/EC, and features in the recast version of Council Directive 92/34/EEC from 2008.<sup>32</sup> These eight directives define marketing as ‘the sale, holding with a view to sale, offer for sale and any disposal, supply or transfer aimed at commercial exploitation of seed<sup>33</sup> to third parties, whether or not for consideration’<sup>34</sup> (see e.g. Council Directive 2002/54/EC: Article 2).

In addition, it is specified that trade in seed/propagating material ‘not aimed at commercial exploitation of the variety’ (e.g. in Council Directive 2002/54/EC: Article 2) should not be regarded as marketing. Supply of seed/propagating material to official testing and inspection bodies and to providers of services for processing or packaging are mentioned as examples of operations that are covered by this exemption. The supply of seed to service providers for industrial purposes is also mentioned as an activity that does not fall in the category ‘marketing’.

This definition is more detailed as it also contains information about the types of activities that do not fall into the category ‘marketing’. When it comes to the elements included in the definition of ‘marketing’ itself, this newest definition does not contain a reference to ‘display’, and where the other definitions refer to ‘delivery’, this definition uses the phrase ‘any disposal, supply or transfer’. This definition has also substituted ‘to another person’ with ‘to third parties’. Moreover, it is the only definition where the limitation ‘aimed at commercial exploitation’ has been included. However, as the term ‘aimed at commercial exploitation (of the variety)’ is not actually defined in the directives and the examples offered cannot be assumed to be exhaustive, it is not clear what limitations this places on the definition of ‘marketing’ as regards beet seed, vegetable seed, seed potatoes, fodder-plant seed, cereal seed, and seed of oil and fibre plants.

Moreover, none of these definitions refers specifically to import, although there is a general understanding that ‘marketing’ encompasses ‘importing’. According to the Food Chain Evaluation Consortium evaluation, the explanation for this omission lies in the long history and evolution of EU seed legislation, as direct import of seed from other continents was unheard of when the first directives were drafted (FCEC 2008).

As all the directives in question are still in force, the various definitions offered are all equally valid. Although the different definitions apply to different crops, this situation does make it more difficult to navigate the complexities of current EU legislation in this area. By providing a single definition applicable to all types of

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<sup>32</sup>Council Directive 2008/90/EC on the marketing of fruit plant propagating material and fruit plants intended for fruit production (recast version).

<sup>33</sup>Or, in the case of material for the vegetative propagation of the vine, ‘propagating material’, and fruit-plant propagating material and fruit plants intended for fruit production ‘propagating material or fruit plants’.

<sup>34</sup>According to the Food Chain Evaluation Consortium evaluation, the rather confusing phrase ‘whether or not for consideration’ came about when the original French/German text was translated into English. In other EU legislation the phrase used is ‘whether in return of payment or free of charge’ (FCEC 2008).

plants, a new ‘plant reproductive material law’ might make EU seed legislation more easily understandable to stakeholders.<sup>35</sup>

#### **2.1.4 Preliminary Conclusions: The 12 Basic Directives and Crop Genetic Diversity**

As shown above, marketing of seed and propagating material in the EU may be conducted legally only if the seed/propagating material comes from a variety that has been registered and the seed lot has been certified. To qualify for registration, a variety must satisfy the distinctness, uniformity and stability requirements.

This section has demonstrated some of the complexity of today’s fragmented EU seed legislation. The legislation contains various different terms and definitions that apply to different crops – and a central term, ‘marketing’, is defined in four slightly different ways. Moreover, the legislation operates with different categories of seed/propagating material regarding different crops.

What is the impact on the maintenance of crop genetic diversity? As the cultivation of landraces and other heterogeneous populations and varieties is central to maintaining and further developing crop genetic diversity, the requirements for uniformity and stability may act as barriers. Fragmentation and complex details can make the legislation difficult to understand, also for stakeholders involved in the cultivation of heterogeneous populations and varieties. In addition, small-scale distributors of seed and propagating material are put at a certain disadvantage, because of the time and resources demanded in connection with registration and certification.

Another question is whether such obligatory registration and certification are necessary in order to achieve transparency in the market, high productivity and marketing of seed and propagating material of high quality. Perhaps a system based on optional registration and certification and clear labelling of uncertified seed lots and unregistered varieties would be sufficient.

The actual and potential impact of the EU seed legislation on the management of crop genetic diversity is also dealt with in the literature presented in Sect. 3.

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<sup>35</sup>The Commission proposal from 2013 uses the term ‘production and making available on the market’ instead of ‘marketing’, and defines ‘making available on the market’ as ‘holding for the purpose of sale within the Union, including offering for sale or for any other form of transfer, and the sale, distribution, import into, and export out of, the Union and other forms of transfer, whether free of charge or not’. This might be changed if the regulation is adopted by the European Parliament and the Council.



**Fig. 2** Wheat, *Triticum aestivum*, is one of the most commonly cultivated crops in Europe, and some traditional varieties are still being grown (Source: The Norwegian Genetic Resource Centre, Norwegian Forest and Landscape Institute. Photographer: Dan Aamlid)

## **2.2 Directives Aimed at the Conservation of Crop Genetic Resources**

In addition to the twelve basic directives, the EU has introduced legislation aimed at the *in situ* conservation and sustainable use of plant genetic resources for food and agriculture. This dates back to 1998, when Council Directive 98/95/EC<sup>36</sup> established that ‘it is essential to ensure that plant genetic resources are conserved’ and that ‘a legal basis to that end should be introduced to permit, within the framework of legislation on the seed trade, the conservation, by use *in situ*, of varieties threatened with genetic erosion’ (Council Directive 98/95/EC: preambular paragraph 17).

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<sup>36</sup>The full title is ‘Council Directive 98/95/EC of 14 December 1998 amending, in respect of the consolidation of the internal market, genetically modified plant varieties and plant genetic resources, Directives 66/400/EEC, 66/401/EEC, 66/402/EEC, 66/403/EEC, 69/208/EEC, 70/457/EEC and 70/458/EEC on the marketing of beet seed, fodder plant seed, cereal seed, seed potatoes, seed of oil and fibre plants and vegetable seed and on the common catalogue of varieties of agricultural plant species’.

This directive amended the directives on the marketing of beet seed, fodder-plant seed, cereal seed, seed potatoes, seed of oil and fibre plants and vegetable seed, as well as the directive on the common catalogue of varieties.<sup>37</sup> For all the crop types mentioned it introduced the possibility of establishing specific conditions for the marketing of seed in relation to *in situ* conservation and the sustainable use of plant genetic resources. It was specified that included in the conditions for such marketing must be the requirement that ‘the seed of these species shall be of a known provenance approved by the appropriate Authority in each Member State for the marketing the seed in defined areas’, as well as ‘appropriate quantitative restrictions’ (both Council Directive 98/95/EC: Article 1, paragraph 24).<sup>38</sup>

Interestingly, the amendments of the directives on seed of agricultural species state that specific conditions *may* be established, whereas in the corresponding paragraph in the article amending the directive on vegetable seed the wording is that specific conditions *shall* be established. This wording is also used in the article amending the directive on the common catalogue.<sup>39</sup>

### 2.2.1 Derogations for Agricultural Species

After Council Directive 98/95/EC it would take another 10 years, and 12 drafts (Lorenzetti and Negri 2009), before the member countries further developed these principles and it was possible to promulgate Commission Directive 2008/62/EC of 20 June 2008 providing for certain derogations for acceptance of agricultural landraces and varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion and for marketing of seed and seed potatoes of those landraces and varieties.

This directive covers the agricultural species regulated by Directives 66/401/EEC, 66/402/EEC, 2002/54/EC, 2002/56/EC and 2002/57/EC: fodder plants, cereals, beets, potatoes, and oil and fibre plants, and ‘lays down certain derogations in relation to the conservation *in situ* and the sustainable use of plant genetic resources through growing and marketing’ (Commission Directive 2008/62/EC: Article 1). In this context the following derogations are mentioned: to accept for inclusion in the national catalogues of varieties of agricultural plants species, landraces and varieties which are naturally adapted to the local and regional conditions and are threatened by genetic erosion, and the marketing of seed and seed potatoes of such

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<sup>37</sup>The amendments were made with regard to the consolidation of the internal market, genetically modified plant varieties and plant genetic resources.

<sup>38</sup>This is the article amending Directive 66/400/EEC (on beet seed), but the same phrasing is also used in the paragraphs amending Directive 66/401/EEC (on fodder plant seed), Directive 66/402/EEC (on cereal seed), Directive 66/403/EEC (on seed potatoes), Directive 69/208/EEC (on seed of oil and fibre plants) and Directive 70/458/EEC (on vegetable seed).

<sup>39</sup>Five of the directives amended by Council Directive 98/95/EC (the directives on beet seed, seed potatoes, seed of oil and fibre plants, vegetable seed and the one on the common catalogue) were updated in 2002.

landraces and varieties.<sup>40</sup> Such landraces and varieties are to be referred to as ‘conservation varieties’ in the common catalogue of varieties of agricultural plant species.

To be accepted as a conservation variety the landrace or variety in question must fulfil certain requirements. The first of these is that it must ‘present an interest for the conservation of plant genetic resources’ (Commission Directive 2008/62/EC: Article 4). And although the member states are free to adopt their own provisions regarding distinctness, uniformity and stability for conservation varieties, certain minimum standards apply. Member states are also obligated to carry out official post control of seed by random inspections for the purpose of verifying varietal identity and varietal purity.

In addition, procedural requirements must be met. If the information provided by the applicant is sufficient for determining whether the landrace or variety can be accepted as a conservation variety, no official examination is required. The necessary information consists of a description of the conservation variety and its denomination, results of unofficial tests, knowledge gained from practical experience and other relevant information (e.g. provided by the relevant authorities or organizations recognized for this purpose by the member state).

When a conservation variety is accepted, the member state must identify the region or regions where the variety has historically been grown and to which it is naturally adapted: this area shall be called the ‘region of origin’.<sup>41</sup> This concept is central to implementation of the directive, as seed of a conservation variety, with some exceptions,<sup>42</sup> can be produced and marketed only in the region of origin. In addition, the directive specifies that ‘Member States shall ensure that a conservation variety must be maintained in its region of origin’ (Commission Directive 2008/62/EC: Article 9).

With regard to certification, Commission Directive 2008/62/EC refers to the vertical directives covering the various agricultural species<sup>43</sup> and their requirements

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<sup>40</sup>Commission Directive 2008/62/EC defines ‘conservation in situ’ as ‘the conservation of genetic material in its natural surroundings and, in the case of cultivated plant species, in the farmed environment where they have developed their distinctive properties’, ‘genetic erosion’ as ‘loss of genetic diversity between and within populations or varieties of the same species over time, or reduction of the genetic basis of a species due to human intervention or environmental change’ and ‘landrace’ as ‘a set of populations or clones of a plant species which are naturally adapted to the environmental conditions of their region’ (Article 2).

<sup>41</sup>When the region of origin is located in more than one member state, the area shall be identified by all concerned member states by common accord. In both cases the Commission must be informed about the identified region.

<sup>42</sup>If the conditions for certification cannot be fulfilled in the region of origin due to a specific environmental problem, additional regions may be approved for seed production by the member state (seed produced in those regions must then be exclusively used in the region of origin); additional regions in a member state’s own territory may be approved for marketing of seed if those regions are comparable to the region of origin as regards the natural and semi-natural habitats of the variety in question. However, a member state that makes use of the first exception (for seed production), cannot make use of the second exception (for seed marketing).

<sup>43</sup>Directives 66/401/EEC, 66/402/EEC, 2002/54/EC, 2002/56/EC and 2002/57/EC.



for certification of certified seed. The seed of a conservation variety<sup>44</sup> shall in general comply with these requirements, except those concerning varietal purity and official examination or examination under official supervision. Despite these exceptions, it is specified that the seed must have sufficient varietal purity, although what qualifies as 'sufficient' is not defined. The seed must also descend from seed produced in line with 'well defined practices for maintenance of the variety' (Article 10). For seed potatoes, it is further specified that member states may disregard the size requirements of Council Directive 2002/56/EC.

Although official examination or examination under official supervision is not required, member states must make sure that tests are carried out to ascertain compliance with the requirements. In this connection, samples must be drawn from homogeneous lots.

Commission Directive 2008/62/EC also imposes quantitative restrictions on the marketing of seed of conservation varieties. For each conservation variety, the amount of seed marketed may not exceed 0.5 %<sup>45</sup> of the seed of the same species used in the member state in question in one growing season, or the amount necessary to sow 100 ha, whichever is the greater amount. The marketing of seed of conservation varieties is further restricted by the specification that the total amount of seed of conservation varieties marketed in each member state may not exceed 10 % of the seed of the species in question used each year in the member state. If that should lead to an amount lower than what is required to sow 100 ha, the maximum amount of seed may be increased to reach the amount needed to sow 100 ha.

These quantitative restrictions also place administrative burdens on the stakeholders involved. Seed producers must notify the authorities in advance of each production season about the size and location of their area for seed production; and suppliers must report the amount of seed marketed of each conservation variety for each production season.

Further, although the term 'supplier' is used in the directive, for example in connection with the provisions concerning sealing and labelling of seed packages and the reporting of produced seed, no definition of this term is provided.<sup>46</sup> Due to the requirements that suppliers of seed must fulfil, some professionalism and resources are needed, but there is nothing in Commission Directive 2008/62/EC that otherwise restricts individuals, institutions or organizations from participating in the seed sector as suppliers.

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<sup>44</sup>The only exception is seed of *Oryza sativa* (rice), which shall comply with the requirements of Directive 66/402/EEC for certification of 'certified seed, second generation' (with the exception of the requirements for minimum varietal purity and examination).

<sup>45</sup>The percentage is 0.3 % for some species (*Pisum sativum*, *Triticum* spp., *Hordeum vulgare*, *Zea mays*, *Solanum tuberosum*, *Brassica napus* and *Helianthus annuus*).

<sup>46</sup>This is also the case for Directives 66/401/EEC, 66/402/EEC, 2002/54/EC, 2002/56/EC and 2002/57/EC.

### 2.2.2 Derogations for Vegetable Species

Commission Directive 2008/62/EC was followed by Commission Directive 2009/145/EC of 26 November 2009 ‘providing for certain derogations, for acceptance of vegetable landraces and varieties which have been traditionally grown in particular localities and regions and are threatened by genetic erosion and of vegetable varieties with no intrinsic value for commercial crop production but developed for growing under particular conditions and for marketing of seed of those landraces and varieties’. Unlike Commission Directive 2008/62/EC, this directive provides derogations for two different categories of varieties.

With regard to the first category, the requirements put in place for vegetables with the promulgation of Directive 2009/145/EC are very similar to those of Directive 2008/62/EC. This is true with regard to definitions and substantive requirements, as well as procedural requirements, region of origin, and seed production and marketing. To be classified as ‘conservation varieties’, vegetable landraces or varieties must have a connection to a specific territory<sup>47</sup> and be threatened by genetic erosion, and must also ‘present an interest for the conservation of plant genetic resources’ (Commission Directive 2009/145/EC: Article 4).

Also for vegetables, member states are allowed to adopt their own rules regarding distinctness, uniformity and stability for conservation varieties, but certain minimum standards must be followed here as well. The term ‘region of origin’ is central also here: member states are required to identify one or more region (s) of origin for each accepted conservation variety, defined as a place where the variety has ‘historically been grown and to which is it naturally adapted’ (Directive 2009/145/EC: Article 8).

Conservation varieties of vegetables are also expected to be maintained in their respective region of origin and seed of these conservation varieties can be produced only in the respective region or regions of origin. In addition, marketing must take place in the region(s) of origin. However, member states may approve additional regions for marketing if such regions have habitats comparable to those of the region(s) of origin.

The quantitative requirements for vegetable conservation varieties of Commission Directive 2009/145/EC are slightly different from and somewhat simpler than those of Commission Directive 2008/62/EC. For each vegetable conservation variety, the amount of seed marketed per year in a member country is not to exceed the amount necessary to produce vegetables on 10, 20 or 40 ha, depending on the species.<sup>48</sup>

The second category of varieties for which Commission Directive 2009/145/EC provides derogations is ‘varieties with no intrinsic value for commercial crop production but developed for growing under particular conditions’ (Directive 2009/145/

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<sup>47</sup>In Directive 2008/62/EC the phrase used is ‘landraces and varieties which are naturally adapted to the local and regional conditions’ (Article 1), while in Directive 2009/145/EC it is ‘landraces and varieties which have been traditionally grown in particular localities and regions’ (Article 1).

<sup>48</sup>See Annex 1 of Commission Directive 2009/145/EC for specification of which species belong in which group.

EC: Article 1). These varieties are referred to as ‘varieties developed for growing under particular conditions’. The directive provides derogations for how such varieties can be accepted for inclusion in the national catalogues of varieties of vegetable species and marketed: the particular conditions in question are specified as being agro-technical, climatic or soil conditions.

For such varieties, production and marketing in a ‘region of origin’ is not mentioned, and the quantitative restrictions are based on maximum net weight and the requirement to market such seed in small packages – but otherwise the rules are quite similar to those regulating vegetable varieties classified as ‘conservation varieties’.

### 2.2.3 Derogations for Fodder-Plant Seed Mixtures

The third of the directives aimed at the conservation of genetic resources is Commission Directive 2010/60/EU of 30 August 2010 providing for certain derogations for marketing of fodder plant seed mixtures intended for use in the preservation of the natural environment. This directive opens up for marketing of certain seed mixtures, in the directive called ‘preservation mixtures’, for the purpose of recreating the habitat type of authorized sites in connection with the conservation of genetic resources. In this sense it differs from Directive 2008/62/EC and Directive 2009/145/EC where, although the purpose is to ensure *in situ* conservation and sustainable use of plant genetic resources, the seed sold will often be used for the production of produce.

Certain requirements must be fulfilled by these preservation mixtures as well. In connection with the authorization of a preservation mixture, a region of origin must be identified, here defined as the region the mixture is naturally associated with, and it is in this region marketing may be authorized.

Various authorization measures are listed for the two types of preservation mixtures: directly harvested preservation mixtures, and crop-grown ones. Directly harvested preservation mixtures must be collected in their source area, defined as an area designated by the member state as a special area of conservation or an area that contributes to the conservation of plant genetic resources, in its region of origin; here the proportion of components and the germination rate should be as needed for recreating the habitat type in question.

For crop-grown mixtures the requirements are similar. The seed that the mixture seed is grown from must have been collected in the sources area in the region of origin, and the seed mixture should be of importance for the preservation of the natural environment. In addition, it is here specified that multiplication might take place for five generations.

For both types of preservation mixtures a time limit is set, in that the collection site cannot have been sown for 40 years at the time of application. Quantitative restrictions are imposed by this directive as well, along with requirements concerning sealing and labelling.

### 2.2.4 Preliminary Conclusions: The Derogations and Crop Genetic Diversity

The directives providing derogations for the marketing of certain types of varieties of agricultural and vegetable species for conservation purposes, as well as for the marketing of some fodder-plant seed mixtures, allowed increased legal space for the maintenance of crop genetic diversity in the EU. However, these derogations cover only some of the crop genetic diversity excluded from marketing by the basic directives.

For agricultural species and one category of vegetables, the favoured diversity is that which can be defined as being naturally adapted to local and regional conditions and threatened by genetic erosion. Varieties that qualify are to be called ‘conservation varieties’ and must be of interest for the conservation of genetic resources. However, as minimum standards regarding distinctness, uniformity and stability are required also for conservation varieties, varieties and populations that are too heterogeneous to be registered may still not be marketed.

In addition, the restrictions limit where and to what extent the marketing of conservation varieties can be conducted: a region of origin must be identified for all conservation varieties, and, with some exceptions, the production and marketing of seed/material from such a variety may take place only there. Quantitative limitations are also set. Similar restrictions apply to the fodder-plant seed mixtures termed ‘preservation mixtures’ and vegetable varieties developed for growing under particular conditions.

## 2.3 *The Kokopelli Court Case and the Validity of Key Directives*

In 2005 Association Kokopelli was brought to court by Graines Baumaux, on grounds of unfair competition, after Graines Baumaux had discovered that Association Kokopelli was distributing seeds from 461 varieties that had not been registered in the French national catalogue. The company claimed lump-sum damages of a total of EUR 50,000, and also sought to stop Association Kokopelli from advertising its varieties. In its decision the Nancy Regional Court awarded Graines Baumaux EUR 10,000 in damages, but dismissed the other claims (Advocate General Kokott 2012).

This decision was appealed by Association Kokopelli to the Nancy Court of Appeals, and during the appeal proceedings reference was made to the Court of Justice of the EU<sup>49</sup> for a preliminary ruling.<sup>50</sup> The question concerned Council

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<sup>49</sup>The Court of Justice of the EU is made up of one judge per member country. Each judge is appointed for a term of six years, which can be renewed. The Court interprets EU law to ensure it is applied in the same way in all member countries. See [http://europa.eu/about-eu/institutions-bodies/court-justice/index\\_en.htm](http://europa.eu/about-eu/institutions-bodies/court-justice/index_en.htm)

<sup>50</sup>This case falls in the category of a reference for a preliminary ruling, as a national court has requested the Court of Justice of the EU to check the validity of acts of EU law. When a national

Directives 98/95/EC, 2002/53/EC and 2002/55/EC and Commission Directive 2009/145/EC, and their validity ‘in the light of the following fundamental rights and principles of the European Union, namely, freedom to pursue an economic activity, proportionality, equal treatment or non-discrimination and the free movement of goods, and also in the light of the commitments arising from the International Treaty on Plant Genetic Resources for Food and Agriculture, particularly in so far as they impose restrictions on the production and marketing of old seed and plants’ (Advocate General Kokott 2012: paragraph 34).

Preliminary rulings are binding on all national courts of the member states of the EU.<sup>51</sup> As a result of the reference for a preliminary ruling, the national proceedings were stayed until the Court of Justice of the EU gave its ruling (Court of Justice of the European Union 2011: paragraph 26), which it did on 12 July 2012.

### 2.3.1 Opinion of Advocate General Kokott

In January 2012, before the Court of Justice of the EU announced its ruling, one of the eight advocates-general published an opinion.<sup>52</sup> Advocate General Kokott concluded that the prohibition on the marketing of seed of varieties that do not fulfil the distinctness, uniformity and stability criteria, and, where relevant, the value for cultivation and use criteria, as established in Council Directive 2002/55/EC on the marketing of vegetable seed,<sup>53</sup> is invalid because it infringes on the principle of proportionality, the freedom to conduct a business, the free movement of goods and the principle of equal treatment. The Advocate General argued that the disadvantages of this rule were disproportionate to its benefits, and held that this was the case also after the introduction of Directive 2009/145/EC (Advocate General Kokott 2012).

Proportionality is a general principle of EU law: any acts adopted by EU institutions are not to exceed what is necessary and appropriate to achieve the legitimate objectives of the legislation in question. In addition, of two or more possible measures,

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court is in doubt about the validity or interpretation of an EU law it can, and is sometimes obliged to, refer the matter to the Court of Justice. In such cases the Court of Justice decision is called a ‘preliminary ruling’. See [http://europa.eu/about-eu/institutions-bodies/court-justice/index\\_en.htm#case1](http://europa.eu/about-eu/institutions-bodies/court-justice/index_en.htm#case1) and [http://europa.eu/legislation\\_summaries/institutional\\_affairs/decisionmaking\\_process/114552\\_en.htm](http://europa.eu/legislation_summaries/institutional_affairs/decisionmaking_process/114552_en.htm). See also Article 267 (ex Article 234 TEC) of the Consolidated Version of the Treaty on the Functioning of the European Union (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0047:0199:EN:PDF>)

<sup>51</sup> See [http://europa.eu/legislation\\_summaries/institutional\\_affairs/decisionmaking\\_process/114552\\_en.htm](http://europa.eu/legislation_summaries/institutional_affairs/decisionmaking_process/114552_en.htm)

<sup>52</sup> The eight advocates general assist the Court of Justice of the EU by presenting opinions on the cases brought before it and are bound to do so impartially and publicly. Also the advocates general are appointed for six-year terms which can be renewed. See [http://europa.eu/about-eu/institutions-bodies/court-justice/index\\_en.htm](http://europa.eu/about-eu/institutions-bodies/court-justice/index_en.htm)

<sup>53</sup> The Opinion states that ‘the varieties at issue in the main proceedings are governed primarily or possibly exhaustively by’ (Advocate General Kokott 2012: paragraph 10) this directive.

the least onerous is to be preferred, and the disadvantages are not to be disproportionate to the aims pursued. Advocate General Kokott underlined that the legality of a measure in this context would be affected only if it is ‘manifestly inappropriate in terms of the objective which the competent institution is seeking to pursue’ (Advocate General Kokott 2012: paragraph 60).

The rule in question is intended to provide protection against seed of varieties that do not satisfy the EU criteria and to ensure high levels of productivity, believed to be in the interest of many farmers. However, as underlined by Advocate General Kokott, in practice it serves to restrict seed producers, seed merchants and farmers whose focus is not primarily productivity, as well as consumer choice; moreover, genetic diversity in Europe is reduced. With regard to the latter, commercial use of varieties is a more robust and effective means of protecting agricultural biodiversity than for example seed banks, and the EU, as a party to the Convention on Biological Diversity and the Plant Treaty, has committed itself to maintain its biodiversity (Advocate General Kokott 2012).

Further, according to Advocate General Kokott, the main advantage of the prohibition is limited to ‘preventing the mistaken use of seed that has not been accepted’ (2012: paragraph 89), a risk that should be minimized by labelling requirements regarding clear warnings. The fear that European farmers will lose access to high-quality seed and any need for the seed industry to be protected from the competition from non-accepted varieties are dismissed with the argument that the listed varieties will still be available, as well as the existence of plant variety rights based on similar criteria to those for acceptance. The disadvantages of the prohibition are therefore seen as outweighing the advantages (Advocate General Kokott 2012).

Examining Council Directive 2009/145/EC with a view to establishing whether the introduction of this directive ‘allows sufficient scope for the use of old varieties’ (Advocate General Kokott 2012: paragraph 98), the Advocate General concluded that because of the directive’s restrictions, ‘disadvantages remain for operators and consumers whose access to old varieties that are not accepted is impeded’ (Advocate General Kokott 2012: paragraph 103). The disadvantages of the prohibition are therefore disproportionate to its aims: as a result, the prohibition is invalid (Advocate General Kokott 2012).

In addition, the prohibition was also deemed to infringe on ‘the freedom to conduct a business within the meaning of Article 16 of the Charter of Fundamental Rights of the European Union, the free movement of goods established in Article 34 TFEU<sup>54</sup> and the principle of equal treatment within the meaning of Article 20 of the Charter’ (Advocate General Kokott 2012: paragraph 118).

It is on this background Advocate General Kokott proposed that the Court should rule that the prohibition on the marketing of seed from varieties that are not demonstrably distinct, stable and sufficiently uniform, and, in some cases, show satisfactory value for cultivation and use, is invalid.

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<sup>54</sup>The Treaty on the Functioning of the European Union.

### 2.3.2 Reactions to the Opinion

The publication of Advocate General Kokott's opinion gave rise to cautious optimism among those hoping for less restrictive rules on the marketing of diverse varieties in the EU,<sup>55</sup> and a certain degree of consternation and dissatisfaction among European Seed Association (ESA) members.<sup>56</sup> Both sides seemed to expect the Court to reach the same conclusion as the Advocate General.

In January 2012, the European Seed Association warned its members that the Court tended to follow the argumentation of the Advocates-General in its final rulings<sup>57</sup> and that the ruling in this case would have an impact on the review of the EU seed legislation.<sup>58</sup> Then, in February 2012, the European Seed Association announced that together with Graines Baumaux it had sent a 'Friends of the Court' letter to the Court explaining what they saw as the rationale for the current legislation, to help the Court 'better grasp the wider picture and potential consequences' of following the opinion of Advocate General Kokott.<sup>59</sup>

In a cover letter to what is presumably the same statement mentioned in the February 2012 newsletter, the European Seed Association stated that it 'considered it its duty to express its legal and socioeconomic concerns'<sup>60</sup> about the opinion of Advocate General Kokott. In this statement the European Seed Association addressed what it called the 'alleged incompatibility with the principles of proportionality, freedom to conduct business, free movement of goods and non-discrimination' of the provisions in question, and argued that the Advocate General had not reached the right conclusion.

One element in the opinion stated by Advocate General Kokott that the European Seed Association took issue with were the statements about erosion of biodiversity and loss of traditional varieties. According to the European Seed Association, these statements about such 'alleged disappearance' were incorrect: thanks to EU seed legislation, European farmers now have access to a larger number of varieties than

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<sup>55</sup> See for example a posting on the matter by Arche Noah, an Austrian organisation devoted to the maintenance of heirloom varieties: <http://www.arche-noah.at/discussion/viewtopic.php?f=2&t=1250>

<sup>56</sup> See for example *ESA Newsletter*, January 2012, February 2012 and March 2012.

<sup>57</sup> The European Seed Association (ESA) does not provide any reference for this statement regarding the Court's rulings, but the presumption seems to be quite common among those following the Advocates-General's opinions and the preliminary rulings of the Court, and a figure of 'agreement' in 80 % of the cases has been used. However, although sources close to the Court say that in 'a majority' of the cases where an opinion has been written the Court agrees with the opinion, this 'majority' cannot be further specified. For more information see <http://www.out-law.com/page-11458>

<sup>58</sup> *ESA Newsletter*, January 2012. In June 2012 the organization reiterated that 'it must be expected that the Court will push for some form of 'liberalisation' of market access' (*ESA Newsletter*, June 2012, page 1).

<sup>59</sup> *ESA Newsletter*, February 2012, page 1.

<sup>60</sup> Letter from the European Seed Association to the Court of Justice of the European Union dated 27 February 2012, see <http://www.kokopelli-semences.fr/medias/Letter-ESA.pdf>

ever before, while the derogations of Directives 2008/62/EC and 2009/145/EC complement the choice made possible by the EU Common Catalogues. The European Seed Association also argued that conservation in gene banks is preferable to conservation *in situ* as regards the maintenance of identity and the genetic base of varieties.

However, most genetic resources experts would probably distance themselves somewhat from this dismissive attitude to the issue of genetic erosion in Europe: genetic erosion has been acknowledged as a substantial problem not only in Europe but globally (FAO 1998), and organizations like the Food and Agriculture Organization of the United Nations have underlined that European legislation ‘discouraging the cultivation of farm landraces has had a strong negative impact on conservation’ (FAO 1998: 38). The importance of *in situ* conservation and management of plant genetic resources for food and agriculture have also been recognized internationally (FAO 1998). *In situ* and *ex situ* conservation can indeed be seen as important complements.

The European Seed Association further argued that the Advocate General, in assessing the provisions in question, did not properly balance the interests and objectives at stake; and that the commercial interests of Kokopelli had been confused with the common-good concerns related to biodiversity. Interestingly, the European Seed Association also contested the extent to which the current system limits the choice of consumers, stating ‘there are also various networks outside the commercial channels whose purpose is precisely to ensure that such varieties remain accessible and can still be freely cultivated’.<sup>61</sup>

Additionally, the European Seed Association rejected the view that what it called ‘the limitations of the current system’ were manifestly disproportionate and that a labelling system would be a viable alternative. In its opinion, particularly the small and medium-sized enterprises within the European seed sector would suffer if the Court came to the same conclusion as Advocate General Kokott.

Arche Noah, also known as ‘the Austrian Seed Savers Association’, also noted the importance of the ruling for the work of the Directorate General for Health and Consumers. Unlike the European Seed Association, it hoped the Court would follow the opinion of Advocate General Kokott.<sup>62</sup>

When the opinion was first published in January 2012, the preliminary ruling was mentioned as possibly being weeks away.<sup>63</sup> By early April, it was expected that the ruling would be announced towards the end of that month,<sup>64</sup> but the judgment was not handed down until 12 July 2012 (Court of Justice of the European Union 2012).

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<sup>61</sup> ESA letter, page 5, see <http://www.kokopelli-semences.fr/medias/Letter-ESA.pdf>

<sup>62</sup> See post by Arche Noah: <http://www.arche-noah.at/discussion/viewtopic.php?f=2&t=1250>

<sup>63</sup> In the *ESA Newsletter* from January 2012, the European Seed Association writes that it will provide more information ‘once the final ruling of the ECJ is published which may still take several weeks’ (page 8).

<sup>64</sup> See post by Arche Noah on 2 April 2012: <http://www.arche-noah.at/discussion/viewtopic.php?f=2&t=1250>



### 2.3.3 The Judgment of the Court of Justice of the EU

In its judgment from 12 July 2012, the Court ruled that Council Directive 2002/55/EC and Commission Directive 2009/145/EC were valid. The ruling stated that ‘consideration of the question raised has disclosed no factor of such a kind as to affect the validity’ (Court of Justice of the European Union 2012: paragraph 93) of these two directives. With regard to the two other directives mentioned in the question referred to the Court – Council Directive 98/95/EC and Council Directive 2002/53/EC – the Court did not deem it necessary to examine their validity, as the former is an amending act which *inter alia* amended an older directive on the marketing of vegetable seed now codified by Council Directive 2002/55/EC, and the latter concerns the common catalogue of varieties of agricultural plant species whereas the *Kokopelli vs Graines Baumaux* case concerns the marketing of vegetable seed (Court of Justice of the European Union 2012).

In its judgment the Court noted that ‘in matters concerning the common agricultural policy the EU legislature has a broad discretion which corresponds to the political responsibilities given to it’ and that the ‘lawfulness of a measure adopted in that sphere can be affected only if the measure is manifestly inappropriate’ (Court of Justice of the European Union 2012: paragraph 39). In its examination of whether the current system of acceptance of vegetable seed breaches the principle of proportionality by being manifestly inappropriate, the Court underlined that the primary objective of the rules on acceptance of vegetable seed is to improve the productivity of EU vegetable cultivation.

It further argued that the current acceptance regime, which is based on the distinctness, uniformity and stability criteria, allows for the increase of agricultural productivity ‘on the basis of the reliability of the characteristics of the seed’ (Court of Justice of the European Union 2012: paragraph 45), and that the ‘derogating acceptance regime implemented by Directive 2009/145 (...) is capable of guaranteeing the conservation of plant genetic resources’ (Court of Justice of the European Union 2012: paragraph 49). However, no further argumentation was offered as to how this regime is to ensure that plant genetic resources are satisfactory maintained.

The Court also found that the EU legislature was entitled to conclude that the current acceptance regime was necessary to achieve reliable and high productivity and to prefer this solution to less restrictive measures (like labelling). Therefore, the Court found that the legislation in question was not manifestly inappropriate in light of the objective of increased agricultural productivity, and that the principle of proportionality had not been breached.

As to the geographical, quantitative and packaging restrictions imposed on the seed of conservation varieties and of varieties developed for growing under particular conditions, the judgment states that these restrictions ‘fall within the scope of the conservation of plant genetic resources’ (Court of Justice of the European Union 2012: paragraph 64), but does not specify in what way and why. The judgement also seems to accept the view that ‘preventing the emergence of a parallel market’ (Court of Justice of the European Union 2012: paragraph 65) for

seed of conservation varieties and varieties developed for growing under particular conditions was necessary, as such a market would have constituted ‘an impediment to the internal market for seed of vegetable varieties’ (ibid.). As the judgment notes, this was the argument used against liberalizing the marketing of seed, and for why it was desirable to ease only the rules of acceptance for the types of varieties in question.

Although this argument is accepted, the judgment does not explain why a ‘parallel market’ would be an impediment to the internal vegetable seed market. The judgment also notes that it is specified in Commission Directive 2009/145/EC that implementation is to be evaluated by the Commission by 31 December 2013 and that in particular the provisions on quantitative restrictions are to be assessed. Neither Council Directive 2002/55/EC nor Commission Directive 2009/145/EC is therefore seen as breaching the principle of proportionality.

The judgment also argues that these directives do not breach the principle of equal treatment because, by specifying particular conditions with regard to seed of conservation varieties, different situations are treated differently. Here it is noted that the specific cultivation and marketing conditions for seed of conservation varieties ‘fall within the scope of conservation in situ and the sustainable use of plant genetic resources’ (Court of Justice of the European Union 2012: paragraph 74).

With regard to the freedom to pursue an economic activity, the judgment states that the rules and measures of the directives in question cannot be said to be inappropriate to the attainment of the objectives of improved productivity of the EU vegetable cultivation, the establishment of an internal market and the conservation of plant genetic resources. Therefore, the obstacles represented by such rules and measures do not disproportionately impair the right to exercise the freedom to pursue an economic activity. In addition, the judgment argues that the current regime governing the marketing of vegetable seed promotes more than it restricts the free movement of goods.

Although the judgment of the Court differs on many points from the opinion of Advocate General Kokott, there is agreement on the issue of any non-compliance with the Plant Treaty: the judgment also concludes that none of the provisions of this treaty are unconditional or precise enough to challenge the validity of the directives in question. The judgment therefore argues that ‘no factor of such a kind as to affect the validity of Directives 2002/55 and 2009/145’ (Court of Justice of the European Union 2012: paragraph 93) had been disclosed.

### 2.3.4 Reception and Impact

Not surprisingly, the judgment was welcomed by the European Seed Association, whose Secretary General declared that ‘the European seed sector is very satisfied with the ruling’ (ESA 2012: 1). The EU Regional Group of the International Federation of Organic Agriculture Movements, on the other hand, declared that ‘for all those who want a wide diversity of colourful and tasty tomatoes and peppers on their plates’ the judgement was bad news, and that the Court had ‘failed to respond

to the concerns of seed savers across the EU' (IFOAM 2012: 1). In its response, the International Federation of Organic Agriculture Movements also underlined that the EU, as part of the revision of EU seed legislation, must 'facilitate market access for traditional varieties and farm bred varieties' and create a framework that enables 'the marketing of open-pollinating varieties with a broader intra-varietal genetic diversity that are professionally bred' (ibid.). The organization emphasized that such varieties are crucial to meet challenges related to shifting environmental conditions.

If the preliminary ruling had declared invalid the prohibition on the marketing of seed from varieties that are not demonstrably distinct, stable and sufficiently uniform, or, in some cases, demonstrate satisfactory value for cultivation and use, it would have had far-reaching consequences for EU seed legislation. As noted, the preliminary rulings of the Court are, despite their name, binding on all national courts of EU member states. As they have the force of *res judicata* they are in fact final.

A ruling that followed the opinion of Advocate General Kokott would therefore have obliged the EU institutions to change the provisions in question. However, that the legislation was not deemed invalid does not mean that the contested provisions cannot be changed. The objective of improved productivity was a central factor in the Court's judgment. As the need to emphasize also other objectives has been brought up during the review process, as will be shown in Sect. 4, it could be argued that the new seed law should reflect that, by containing less restrictive provisions.

### **2.3.5 Preliminary Conclusions: The Validity Question, the Judgment and Crop Genetic Diversity**

After the Court of Justice of the EU was asked to give a preliminary ruling on the validity of Council Directives 98/95/EC, 2002/53/EC and 2002/55/EC and Commission Directive 2009/145/EC, with a particular view to the restrictions these impose on the marketing of old varieties, the process was followed closely by many stakeholders. When the opinion of Advocate General Kokott was published, reactions and views followed the existing lines of conflict on the issue of seed regulation.

Advocate General Kokott had concluded that the prohibition on the marketing of seed from varieties that do not fulfil the distinctness, uniformity and stability criteria, and where relevant the requirements regarding value for cultivation and use, was invalid. The opinion had found that the disadvantages of the restrictions in question outweighed the benefits, and that these disadvantages remained also after the introduction of derogations.

However, although many expected the judgment to follow the conclusions of the opinion, the Court of Justice of the EU ruled that the directives in question were valid. In its judgment the Court gave weight to the objective of improved productivity and concluded that the legislation in question was not manifestly inappropriate in light of this objective. With this judgment the *status quo* was upheld and the legal

space for the maintenance of crop genetic diversity could remain unchanged. It is now up to the European Parliament and the Council to determine how much space a potential new plant reproductive material law should provide for such maintenance.

### **3 European Seed Legislation and Crop Genetic Diversity in the Literature**

#### ***3.1 Agriculture, Seed Use and Landraces in Europe***

According to Negri et al. (2009) less than 4 % of the European population<sup>65</sup> is now involved in agriculture. Agriculture has to a large extent become industrialized and most of the input, including seed, comes from outside the farm. Agricultural production is heavily dominated by genetically uniform, commercially bred varieties, which have ousted the more genetically variable traditional varieties, often known as ‘landraces’, or ‘local varieties’ or ‘farmer varieties’ (Negri et al. 2009).

Europe (if Russia and other non-EU countries are included) is, according to Ceddia and Cerezo (2008), the world’s largest market for commercial seed, accounting for an estimated 32 % of the total market in 2005. In Europe as a whole, Russia constitutes the biggest single market for commercial seed; within in the EU, France and Germany dominate. In 2005 the EU was a net exporter of seeds, but still had a seed trade deficit with the USA (Ceddia and Cerezo 2008).

Informal seed systems still exist: according to Bocci et al. (2010), in some countries in the south of Europe, such as Italy and Greece, as little as 10 % of the seed is purchased, whereas the figure is as high as approximately 90 % elsewhere (e.g. in Denmark and the Netherlands). However, they also note that there is little concrete information available, and it is difficult to determine the exact percentage of purchased seed, whether commercial varieties or landraces, in used various areas. It is also likely that the figures vary from crop to crop.

##### **3.1.1 Landraces in Europe**

Notwithstanding the dominance of commercial and uniform varieties, landraces are, as Negri et al. (2009) point out, still maintained in Europe. One factor that distinguishes landraces from modern varieties is the continuous development of diversity between and within the former that takes place when these are cultivated, due to natural and human selection pressures. Genetic diversity, rather than genetic uniformity is the result of such selection pressures; and while this diversity is central to the resilience of such crops, it is also part of the reason for difficulties

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<sup>65</sup>Although not specifically defined, it can be assumed that in this publication ‘Europe’ refers to the continent, and not just the EU, as the edited volume it belongs to contains chapters on Russia and Switzerland.

with the maintenance and continued development of such varieties, when it comes to registration and seed certification (Negri et al. 2009).

As Negri et al. (2009) see it, apart from crop wild relatives, it is ecotypes and extant landraces that are most in need of active conservation in Europe. Both *in situ* and *ex situ* strategies play a part in this conservation work, but the authors stress that *in situ* conservation should be an important part of conservation efforts, as such an approach allows the evolutionary process to continue, as well as the preservation of different populations. Despite the difficulties in defining exactly what a ‘landrace’ is, Negri et al. (2009) maintain that such a definition is necessary for practical purposes, and highlight the definition proposed at the second meeting of the On-Farm Conservation and Management Taskforce of the European Cooperative Programme on Plant Genetic Resources:

A landrace of a seed-propagated crop is a variable population, which is identifiable and usually has a local name. It lacks ‘formal’ crop improvement, is characterized by a specific adaptation to the environmental conditions of the area of cultivation (tolerant to the biotic and abiotic stresses of that area) and is closely associated with the uses, knowledge, habits, dialects, and celebrations of the people who developed and continue to grow it. (quoted in Negri et al. 2009: 9)

However, Negri et al. (2009) also acknowledge that this definition might prove problematic – for example, it excludes landraces that originated in one region but then were introduced to another and became adapted to the local environment there over time.

### 3.1.2 Genetic Erosion and Efforts to Stop It

The first modern varieties were developed in the early 1900s. Since then, similar breeding efforts have expanded to include all major crops, and advances in genetics have given plant breeders new tools. Important characteristics of modern varieties, according to Negri et al. (2009), include genetic uniformity and high yields. The latter factor is central in explaining why these varieties have replaced, and are still replacing, locally adapted but lower-yielding varieties. It is believed that this development has led to a considerable and still ongoing loss of genetic diversity (Negri et al. 2009)

Citing studies of loss of landraces in Southern Italy and Tuscany showing a genetic erosion of up to 70 %, Negri et al. (2009) argue that European landraces are very much threatened. While the previously mentioned diffusion of modern high-yielding uniform varieties is believed to have played a role, they also claim that landrace diversity in Europe is threatened by variety registration and seed certification systems.

However, many farmers still exchange farm-saved seed from unregistered varieties, and several European seed networks have found ways to circumvent the legislation for the purpose of conserving landraces and other unregistered varieties (Negri et al. 2009). A survey of European initiatives related to landraces conducted by the EU-funded research project Farm Seed Opportunities categorized 68 initiatives from 17 European

countries. Among these were seed savers, initiatives promoting *in situ* conservation of landraces, producers of regional varieties, seed producers, farmer breeders, biodynamic breeders and/or supporting institutions (Osman and Chable 2009). According to Osman and Chable (2009) the current EU legislation on marketing of seed was seen by the initiatives as one of the barriers to scaling up the activities.

Another survey, conducted among stakeholders in the conservation varieties marketing chain on their expectations of bringing such varieties to the market, provided similar results. Among the various factors assessed by the stakeholders, seed laws received the worst rating. Respondents felt that the current seed legislation was overly restrictive and not adapted to the needs of their crops. This legislation was therefore seen as one of the main barriers to the development of markets for conservation varieties and other niche varieties (Thommen et al. 2010).

**Table 1** Agriculture, seed use and landraces in Europe: main relevant points in the literature

Literature reference	Main relevant points
Bocci R, Chable V, Kastler G, Louwaars N (2010) Policy Recommendations. Farm Seed Opportunities and the French National Institute for Agricultural Research (INRA), Paris.	Informal seed market still important in Europe
Ceddia MG, Cerezo ER (2008) A Descriptive Analysis of Conventional, Organic and GM Crop and Certified Seed Production in the EU. Office for Official Publications of the European Communities, Luxembourg	Europe was world's largest market for commercial seed in 2005 France and Germany dominate in EU Net exporter of seed in 2005
Negri V, Maxted N, Veteläinen M (2009) European landrace conservation: an introduction. In: European Landraces: On-farm Conservation, Management and Use. Bioversity Technical Bulletin No. 15. Bioversity International, Rome, Italy	Industrialization of European agriculture Genetically uniform commercially bred varieties dominate Landraces still maintained, but threatened Variety registration and seed certification also a threat Genetic diversity central to landraces Various definitions of 'landrace' used
Osman A, Chable V (2009) Inventory of initiatives on seeds of landraces in Europe. Journal of Agriculture and Environment for International Development 103: 95–130	Inventory of 68 initiatives from 17 European countries Different types: seed savers, initiatives promoting <i>in situ</i> conservation of landraces, producers of regional varieties, seed producers, farmer breeders, biodynamic breeders and supporting institutions Current EU seed legislation seen as barrier to expansion
Thommen A, Lammerts van Bueren ET, Serpolay E, Levillain T, Valero Infante T, Bocci R (2010) Characterisation of Stakeholder Expectations – An Expert Survey. Research Institute of Organic Agriculture (FiBL), Frick, Switzerland.	Stakeholder survey Seed legislation seen as obstacle

## ***3.2 Development of Seed Regulation in Europe and Regulatory Reform***

### **3.2.1 The History of Seed Regulation in Europe**

Almekinders and Louwaars (2002) argue that seed laws came about in industrialised countries as a result of pressure from seed producers and farmers alike. Both groups wished to be protected against dishonest or speculative seed suppliers, as these were negative for farmers and for the integrity of serious seed producers (Almekinders and Louwaars 2002).

Louwaars (2002b) further details this argument, and states that the reason compulsory variety registration developed in Europe during the first half of the twentieth century was the lack of clarity with regard to names and varietal identity that had come about as a result of certain practices in the industry. Seed suppliers named varieties in an effort to create brands for their companies, and sometimes made unsubstantiated claims with regard to adaptation to distinguish their own product from that of a competitor. Varieties were also renamed after popular varieties, to increase sales (Louwaars 2002b).

According to Louwaars (2002b) both the industry and farmers called for transparency. The resultant solution was a registration system that linked one name to one variety, based on morphological descriptions and central agricultural characteristics. Such a variety register was first created in 1905 by the German Agricultural Society, and similar registers became mandatory in many European countries when national seed laws were enacted in the 1940s (Louwaars 2002b).

This argument is supported by Tripp (2002), who underlines that confusion over variety names as commercial seed markets developed in North America and Europe was part of the rationale for variety registration. Tripp argues that regulation can be seen as a response to information deficiencies, and that the main goal with respect to seed regulation is to provide information to farmers and to control negative externalities in farming. In addition, he notes, variety regulation is intended to prevent diseased seed from being sold (Tripp 2002).

As Louwaars (2002b) sees it, the purpose of current variety registration is still to identify varieties, and national registers are meant to ensure transparency in the market. In complex markets with many available varieties, such as the European, the requirements for registration tend to be stricter and more complicated than in markets with few available varieties. In the EU, procedures have been developed to establish distinctness, uniformity and stability for the purpose of variety registration (and the same requirements are used to determine whether a variety can be protected by plant breeders' rights). True identification of a variety is also seen as necessary for the certification of seed lots, as certification is about confirming the identity and varietal purity of the seed in question (Louwaars 2002b) and was introduced to ensure that the seed for sale actually is from the variety it is claimed to be (Tripp 2002).

As explained in Sect. 2, the EU seed legislation requires testing of the value for cultivation and use for agricultural plant species. Louwaars (2002b) claims that such

testing has its origin in the testing systems created by farmers' associations to validate the claims made by seed suppliers, and that in its present form it usually focuses on a variety's adaptation to local conditions and product values.

However, according to Louwaars (2002b) the current variety control systems that emerged as a result of the mentioned developments also have some disadvantages. Here he mentions the widely recognized problem related to varietal change; a variety cannot change during its commercial life, because the registration system fixes it to a certain description. Problems noted with regard to performance testing include inappropriate site selection and poor trial management, and over-emphasis on yields during data collection and analysis (Louwaars 2002b). According to Tripp (2002), problems associated with seed regulation include regulatory capture, costs, relevance of regulations and standards and lack of transparency.

### 3.2.2 Approaches to Regulation

Tripp defines seed regulation as 'government control of the production and distribution of plant varieties and seeds through rules enacted to protect public welfare' (Tripp 1997: 43) and concludes that regulatory systems are formed by technical and economic conditions and political debate.

The political debate often centres on the role of government, and Louwaars (2002a) outlines three approaches to seed regulation based on differing philosophies as to the role government should play: control, competition and cooperation. The system adopted by most European<sup>66</sup> countries he describes as control-based, as new varieties must be registered and their value for cultivation and use tested before they can be formally released; control of seed production is conducted through certification systems, with the government playing an important role in these processes. The second approach is based on competition, where market forces – in this case, competition in the seed market – are seen as the only regulatory factor needed.

The third approach, on the other hand, is based on cooperation. According to Louwaars (2002a) this term can be attributed to the system in the United States. Under this approach, government shares tasks and responsibilities with the seed industry. In the USA this is practised in the sense that the suppliers of seed are responsible for the quality of the products they sell with regard to suitability and seed quality, while the government is involved in deciding the type of information seed dealers should include on labels and in checking the truth of labelling. Louwaars (2002a) also notes that US farmers' and seed growers' associations have given rise to many certification and quality control agencies that serve the same functions as their counterparts in Europe, although the legal basis is different.

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<sup>66</sup>In Eastern Europe, as well as Central and Western Europe.



### 3.2.3 Comparisons with the USA

According to Tripp and Louwaars (1997) opportunism and lack of experience characterized the early development of the seed industry in both Europe and the United States, causing farmers to demand seed regulations. Such regulations developed in different directions on either side of the Atlantic: Tripp and Louwaars emphasize the differences between the seed regulatory system in the EU and in the United States.

While variety registration, performance testing and seed certification is voluntary in the United States (certification is conducted by independent agencies belonging to Association of Official Seed Certifying Agencies) and there is no national variety release authority (although there are National Variety Review Boards for many crops, the system is voluntary), all of the above are, as shown in Sect. 2, mandatory in the EU. All crop varieties must be registered (which means fulfilling the distinctness, uniformity and stability criteria) and performance tested (all agricultural varieties must have their value for cultivation and use tested) and all seed for sale must be certified. As the seed industries in both the EU and the USA seem to thrive under their respective regulatory regimes, Tripp and Louwaars (1997) conclude that effective regulation can be achieved by various tools.

One consequence of these differences is that uniformity is emphasized to a greater extent in the EU than in the USA, as illustrated by how some of the line mixtures produced by US public breeding programmes would not meet the distinctness, uniformity and stability criteria used for variety registration in the EU. Over-emphasis on uniformity will, according to Tripp and Louwaars (1997), interfere with plant breeding efforts that focus on utilizing diversity to cope with plant diseases or marginal growing conditions.

However, even though the EU system is mandatory and the US system is of a voluntary nature, they are quite similar in practice – many varieties in the USA are submitted voluntarily to National Variety Review Boards for evaluation, and the decision-making bodies in both systems receive input from seed companies and must answer to the farming communities through the democratic process (Tripp 2002).

### 3.2.4 Regulatory Reform

Although regulation sometimes is presented as a neutral tool, Tripp (2002) stresses that it is normally the result of compromise among various political interests and that seed regulatory reform will necessarily mean balancing competing interests.

This is supported by the arguments made by Tripp and Louwaars (1997) on the issue of seed regulatory reform in developing countries and the importance of such reform reflecting the development and change of national seed systems. This argumentation can be seen as relevant for developed countries as well, and two areas are discussed: variety regulation (registration, performance testing, and release) and seed quality control (certification and seed testing). As they see it, the process of seed regulatory reform will not necessarily be easy, and conflicts of interest are not unlikely.

The rather lengthy review process in the EU and the outspoken disagreement among the stakeholders regarding key principles of the current legislation supports this line of arguments.

According to Tripp (2002), the most useful way to approach regulatory reform is to separate between the standards, monitoring and enforcement. The various parts of the system may be mandatory or voluntary, and regulatory responsibility can be divided between public and private bodies. The EU and the United States have, as mentioned earlier, chosen different strategies in this respect.

Further, Tripp underlines that farmer education and empowerment and farmers' political power and organization are all central factors in ensuring that seed regulations are effective, and the two latter factors and farmer participation are especially important for systems based on voluntary testing. Regardless of the specific nature of the seed regulatory system, farmers and the seed industry must understand its operation and purpose if it is to be effective (Tripp 2002).

Possible approaches for dealing with the disadvantages of conventional variety controls and factors to consider in this context are discussed by Louwaars (2002b). One approach is to relax the regulations and let the market to a larger extent decide the level of voluntary control. He argues that such a voluntary system works in the United States because the country has competition in the seed industry, literate farmers and a network of universities and experimental stations that conduct variety trials. Another approach is to reform the existing systems by increasing participation and changing the performance standards.

Louwaars proposes changing the rule in many systems, saying that a new variety needs to perform better than the standard, to read that new varieties should not perform worse than the standard. He also underlines that governments should regulate only to the extent they are able to implement and that the objective should be to ensure farmers access to the best seed. One consequence is that governments should seek to control only the varieties that enter commercial seed trade, not those in farmers' seed systems. Neither should the system prevent genetically heterogeneous varieties, such as landraces, from becoming registered and entering the commercial market (Louwaars 2002b).

### ***3.3 Effects of Seed Legislation on Crop Genetic Diversity***

The potential effects of seed legislation on crop genetic diversity are increasingly being analysed and written about. For example, Visser (2002) has argued that seed regulations often have a negative impact on local seed systems and genetic diversity. He underlines that gene banks, although they conserve a substantial amount of crop genetic diversity, cannot single-handedly maintain the needed diversity and that on-farm conservation should be an important complementary strategy. As seed legislation has an impact on a wide range of breeding programmes, as well as on the number of varieties that are released and become available to farmers, he argues that seed policies and policies on agricultural biodiversity should be seen in connection (Visser 2002).

**Table 2** Development of seed regulation in Europe and regulatory reform: main relevant points in the literature

Literature reference	Main relevant points
Almekinders CJM, Louwaars NP (2002) The importance of the farmers' seed systems in a functional national seed sector. In: Louwaars NP (ed.) <i>Seed Policy, Legislation and Law: Widening a Narrow Focus</i> . Food Products Press/The Haworth Press, Haworth.	Seed laws came about in Europe as result of pressure from both farmers and seed producers ... who wanted protection from dishonest and speculative producers
Louwaars N (2002a) Seed policy, legislation and law. <i>Journal of New Seeds</i> 4(1): 1–14	Three approaches to regulation based on role of government: control, competition and cooperation Control systems common in Europe In competition systems, competition in seed market seen as only regulation needed Cooperation system in the USA: government shares tasks and responsibility with private sector
Louwaars N (2002b) Variety controls. <i>Journal of New Seeds</i> 4(1): 131–142	Compulsory variety registration developed in Europe during the first half of the 20 <sup>th</sup> century Caused by lack of clarity with regard to names and varietal identity The resulting registration system linked one name to one variety based on morphological descriptions and central agricultural characteristics Distinctness, uniformity and stability (DUS) criteria for variety registration Testing of value for cultivation and use compulsory in the EU Value for cultivation and use testing originated from farmer-created testing systems for validation of supplier claims Now usually focuses on adaptation to local conditions and product values Varietal change not possible during commercial life of variety Rather than requiring a new variety to perform better than the standard it should be required not to perform worse Government should regulate commercial seed trade only, not farmers' seed systems Heterogeneous varieties should be allowed to be registered and enter commercial market
Tripp R, Louwaars NP (1997) Seed regulation: choices on the road to reform. <i>Food Policy</i> 22 (5): 433–446	Farmers in Europe and the USA demanded seed regulation as result of opportunism and inexperience during early stage of seed industry The two systems developed differently

(continued)

**Table 2** (continued)

Literature reference	Main relevant points
	No national variety release authority in USA; variety registration, performance testing and seed certification is voluntary
	All the above are mandatory in the EU
	Uniformity is emphasized more in the EU than in the USA
Tripp R (1997) Regulation and regulatory reform. In: Tripp R (ed.) <i>New Seed and Old Laws: Regulatory Reform and the Diversification of National Seed Systems</i> . Intermediate Technology Publications and ODI, London, UK	Nature and rationale of regulation Regulation as political process
Tripp R (2002) Seed regulatory reform: an overview. <i>Journal of New Seeds</i> 4 (1/2): 103–115	Regulation as response to information deficiencies: seed regulation should provide information and control negative externalities Confusion over variety names as part of rationale for variety registration Also intended to prevent diseased seed from being sold Seed certification introduced to ensure seed for sale is from claimed variety Problems: regulatory capture, costs, relevance of regulations/standards and lack of transparency Regulation as result of compromise among various political interests Essential to separate between standards, monitoring and enforcement Systems in EU and USA quite similar in practice Farmer education and empowerment and farmers' political power and organization central to effective regulation, especially voluntary

The distinctness, uniformity and stability requirements are often highlighted in connection with seed legislation's effect on crop genetic diversity, and Pimbert (2011) argues that the current EU legislation regulating the sale of seeds acts as a barrier to on-farm conservation and participatory research, by restricting access to seeds from varieties that do not fulfil the requirements. These requirements have also been pointed to as potential barriers by Visser (2002), who underlines that legislation on variety registration and seed quality control can create problems for the maintenance and development of varieties that are not deemed sufficiently distinct, uniform and stable.

'Farmers' varieties' for example, defined as varieties developed through deliberate selection by one or more farmers, usually display a high degree of

genetic heterogeneity and are adapted to the local environment under which they were developed. In addition, such varieties tend to be unstable and are not necessarily very distinct from each other. The legislation also constitutes a barrier, because those involved in such initiatives usually have only limited resources at their disposal for seed inspection and meeting the regulation requirements (Visser 2002).

Claiming that the demand for uniformity has reduced genetic diversity in the EU and the number of varieties available to farmers, Pimbert (2011) cites the threats from climate change as a reason for why it is necessary to change today's seed regulations so that they can allow for continued maintenance of heterogeneous crop varieties and in that way contribute to resilient food systems in the future. A similar argument is presented by Osman and Chable (2007), who claim that the scaling up of existing breeding initiatives on landraces and other heterogeneous varieties is limited by the EU seed legislation, because the farmers involved are not allowed to exchange or sell the seeds they produce. Osman and Chable therefore argue that adapted legislation is urgently needed to address this problem, so that such initiatives can flourish and expand. Also Bocci et al. (2009) see seed legislation as problematic: it interacts negatively with efforts related to protected geographical indications because EU seed legislation is not adapted to the type of seed relevant in such contexts, and restricts seed exchange.

Although the attention to seed legislation and crop genetic diversity might be growing, similar warnings have also been voiced before. In 1992, Vellvé argued that the laws regulating the marketing of seeds within the European Community<sup>67</sup> needed to be relaxed because of their adverse effects on agricultural biodiversity. The requirements that a variety had to fulfil to be registered and commercialized were seen as especially problematic: these were all 'geared towards uniformity' (Vellvé 1992: 130) and did not allow for legal marketing of diverse varieties like landraces. In addition, fee levels were viewed as a barrier to registration as it was believed that many interested organizations lacked the necessary resources to enter and maintain varieties on the lists (Vellvé 1992).

Seed legislation can also be seen as of importance for issues such as Farmers' Rights, as the concept is defined in the Plant Treaty, and the right to food, conceptualized as a human right. Seed laws are noted as a barrier to the realization of Farmers' Rights by Andersen (2009), who emphasizes this as a problem especially in the industrialized countries, as traditional varieties usually do not meet the requirements for registration and certification. These findings are highlighted in the report published in 2009 by the UN Special Rapporteur on the right to food, which recommends that all states ensure that their seed legislation does not cause the exclusion of farmers' varieties, and that these varieties should be included on national lists (United Nations 2009).

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<sup>67</sup>The European Economic Community was often referred to as the European Community also before it was officially renamed as such by the entry into force of the Maastricht Treaty in 1993.

**Table 3** Effects of seed legislation on agricultural biodiversity: main relevant points in the literature

Literature reference	Main relevant points
Andersen R (2009) Information paper on Farmers' Rights submitted by the Fridtjof Nansen Institute, Norway, based on the Farmers' Rights Project. Input paper submitted to the Secretariat of the Plant Treaty, 19 May 2009 (IT/GB-3/09/Inf. 6 Add. 3). Lysaker, Norway.	<p>Seed laws as barrier to the realization of Farmers' Rights and the further development of crop genetic diversity</p> <p>Many varieties are excluded from the market as they do not fulfil criteria for variety release</p> <p>Farmers are not allowed to exchange and sell farm-saved seed</p>
Bocci R, Levillain T, Kastler G, Serpolay E, Pino S, Nonne MF, Almekinders C, González JM, Valero T, Casado S (2009) National Survey on the Role of Innovative Market Mechanisms. Farm Seed Opportunities and the French National Institute for Agricultural Research (INRA), Paris.	Seed legislation problematic for protected geographical indications initiatives
Osman A, Chable V (2007) Breeding Initiatives of Seeds of Landraces, Amateur Varieties and Conservation Varieties. Farm Seed Opportunities and the French National Institute for Agricultural Research (INRA), Paris.	EU seed legislation hinders scaling up of initiatives for maintaining and developing diversity
Pimbert M (2011) Participatory Research and On-Farm Management of Agricultural Biodiversity in Europe. International Institute for Environment and Development, London, UK	<p>EU seed legislation as barrier to conservation</p> <p>DUS (distinctness, uniformity and stability) requirement reduces diversity</p> <p>Changing the system necessary</p>
United Nations (2009) Seed Policies and the Right to Food: Enhancing Agrobiodiversity and Encouraging Innovation. Report of the Special Rapporteur on the right to food. Sixty-fourth session of the General Assembly. A/64/170. United Nations, New York, USA	Recommends that states ensure that farmers'/traditional varieties are included in national lists/catalogues
Vellvé R (1992) Saving the Seed: Genetic Diversity and European Agriculture. Earthscan and GRAIN, London, UK	<p>Genetic erosion widespread in Europe</p> <p>Increasing uniformity as contributing factor</p> <p>Seed registration requirements problematic for diverse varieties</p>
Visser B (2002) An agrobiodiversity perspective on seed policies. <i>Journal of New Seeds</i> 4 (1): 231–245	<p>Globalization main cause of genetic erosion</p> <p>Negative impact of seed regulations</p> <p>Agricultural biodiversity important for coping with e.g. climate change</p> <p>On-farm conservation and farmers' varieties central</p> <p>Seed legislation problematic for maintaining diversity: varieties not fulfilling requirements</p> <p>One solution: exclude traditional varieties from variety registration; or: voluntary registration</p> <p>Seed legislation should contribute to maintenance of diversity and food security</p>

### **3.4 *The Directive on Conservation Varieties of Agricultural Species***

One way to approach the directive on conservation varieties of agricultural species, Commission Directive 2008/62/EC, is to note, as Louwaars (2007) does, that it represents an approach to farmers' seed systems that includes these systems in the regulatory framework. As opposed to leaving farmers' seed systems untouched by relaxing the regulatory system, this directive allows varieties defined as 'conservation varieties' to be marketed under somewhat different rules than other varieties. It can be argued that this system assumes that the farmers are well educated; further, that only interested farmers will be looking for seed from such varieties and that they will be familiar with the characteristics (Louwaars 2007).

#### **3.4.1 Key Concepts**

Lorenzetti and Negri (2009) consider three concepts used in the directive on conservation varieties of agricultural species to be of particular importance for its implementation: agricultural landraces and varieties, region of origin, and genetic erosion risk. As they see it, there is likely to be substantial variation in interpretation and implementation because not all the terms are defined in the directive, because of the lack of acceptance of some of the given definitions among some stakeholders, the use of different terms in different languages and the different meaning given to some terms in the English version compared to that generally accepted in scientific literature.

With regard to the definition of 'agricultural landraces' Lorenzetti and Negri (2009) recommend using the definition proposed and accepted at the Second Meeting of the On-farm Conservation and Management Task Force of the European Cooperative Programme on Plant Genetic Resources in 2006 (see Sect. 3.1.1), or the definition provided by the Working Group of the Italian Interregional Seed Project. These definitions see landraces as populations which have adapted to the local environment; considerable attention is paid to cultural heritage; and these landraces pave the way for recognition of farmers' rights. Further, they support the development of local economies based on cultivation of landraces, are somewhat restrictive, and better satisfy the requirement to indicate in which region the variety in question has been cultivated historically.

Regarding the use of the term 'region of origin' Lorenzetti and Negri (2009) point out that the context in which it is used in Directive 2008/62/EC, ('When a member state accepts a conservation variety, it shall identify the region or regions in which the variety has historically been grown and to which it is naturally adapted, hereinafter "region of origin"') seems to imply that the directive covers only populations currently under cultivation and that registration and commercialization of material from gene banks has not been foreseen. The registration of landraces and varieties from gene banks is also predicted to be problematic under the new directive because

of difficulties in proving adaptation to the environment and their existence in historical records.

In addition, to be included in the national catalogues of conservation varieties, a conservation variety must be ‘under threat of genetic erosion’ as the term is defined in the directive. This makes an evaluation and assessment of the threat of genetic erosion becomes a necessary part of the national implementation of Directive 2008/62/EC. Lorenzetti and Negri (2009) argue that the first step when it comes to estimating the risk of losing a landrace should be to compile national inventories of landraces to be used as baselines. When it comes to the risk of losing diversity within the various landraces, an evaluation of this would require assessment of genetic diversity and population structure, as well as the socio-economic aspects involving in farmers’ decision-making regarding cultivation.

Lorenzetti and Negri (2009) therefore conclude that active promotion and implementation of conservation activities related to crop genetic diversity will continue to be important after the implementation of Directive 2008/62/EC, and that implementation appears to be difficult due to the lack of data regarding the above-mentioned issues. In their opinion, the best way forward would be to use a bottom-up process involving regional authorities and agencies, *inter alia* for compiling and publishing data on the number of conservation varieties, their region of origin and the level of threat. In addition, these regional entities should ‘listen to the requests of people interested in their commercialization’ and ‘prepare a list of conservation varieties that Member States will be called upon to register’ (Lorenzetti and Negri 2009: 294).

Louwaars et al. (2010) note that, concerning the requirements for acceptance as a conservation variety given in Article 4 of Directive 2008/62/EC, the demand that a variety should present ‘an interest for the conservation of plant genetic resources’ can be interpreted in different ways – one being that any variety is of such interest, and another that only varieties falling outside the diversity expressed by modern varieties listed in the common and national catalogues qualify. It is the first solution, they hold, that best promotes conservation and sustainable use of crop diversity. They also argue that the focus with regard to implementation should be on the identifiability/distinctness of the landraces, not uniformity and stability, and that the most practical way to go about assessing distinctness would be to use descriptions of the distinguishing characters of the variety. Louwaars et al. also acknowledge the importance of Article 7 allowing member states to ‘accept more than one name for a variety if the names concerned are historically known’ (Directive 2008/62/EC: Art. 7, 1) because this might be important for maintaining the connection between variety and history.

As to the directive’s 2-year exclusion of varieties that have been removed from the common catalogue, Louwaars et al. (2010) underline that there is no scientific reason why it should be necessary to wait two years before such varieties can be sold as conservation varieties, and that this limitation seems to be the result of a compromise between seed-industry interests and biodiversity concerns.

Louwaars et al. (2010) also discuss Articles 8 and 9 and the concept ‘region of origin’ as used in the directive, and argue that although concepts like regional



identity, culture and history are important in relation to landraces, the decision to restrict the cultivation of a conservation variety to what is determined to be its region of origin according to the criteria of the directive seems to stem from fears that these varieties could be misappropriated, or could compete with regular varieties. They maintain that no evidence exists that indicates reason to fear either.

The directive leaves the interpretation of the term 'region' up to the member states, and in the opinion of Louwaars et al. (2010) it is important that it is interpreted widely. This is also of importance in relation to Article 11 on seed production, which limits seed production to the region of origin, except in cases where 'a specific environmental problem' (Directive 2008/62/EC: Article 11, 1) poses a barrier to certification in the region of origin. Part of the reason for why a narrowly defined region of origin may be harmful to the conservation and sustainable use of crop genetic resources, they note, is that the potential market for seed then might become too small for it to be possible to recover the costs associated with quality control, variety maintenance, seed production and marketing. Article 13 does open up for marketing of seed from conservation varieties in regions outside the region of origin, but only within the same country (Louwaars et al. 2010).

Another possibly problematic feature concerns the quantitative restrictions set for marketing of seed from each conservation variety. Louwaars et al. (2010) point out that, apart from avoiding too large areas being set aside for the cultivation of one conservation variety out of concerns for the biodiversity objective stated in the directive, there are no good reasons for such limitations: they might actually pose a barrier to the conservation and sustainable use of such varieties as the quantities allowed might not be large enough to justify investing in the production of such varieties. It is also worth noting that Louwaars et al. consider Article 21 on notification of recognized organizations to be important because of what they see as its potential to enable the participation of farmers and seed networks.

On the whole, Louwaars et al. (2010) conclude that while Directive 2008/62/EC can be seen as providing a framework for the cultivation of conservation varieties in areas where they were not formerly grown and opening up for activities that were previously illegal on paper but tolerated in practice, it also might serve to create barriers to the conservation and sustainable use of plant genetic resources in the EU. In their view, the implementing rules drafted at the national level will be of high importance.

Discussing various concepts and standards used in variety testing and seed controls Louwaars et al. (2010) argue that although varietal uniformity is important in relation to some characteristics for agronomic reasons, such as maturity and plant architecture, varietal uniformity in relation to morphological characteristics is useful only for administrative reasons. As a key characteristic of conservation varieties is their genetic heterogeneity, agronomic and other characteristics where most such varieties display uniformity are the most central tools for distinguishing and describing them. If, in addition, morphological uniformity is demanded, this will in most cases be problematic for such varieties and might therefore work against the objective of the directive.

Although the directive does open up for legal distribution of seeds (within certain limits) of what are defined as conservation varieties, some varieties that Louwaars

et al. (2010) regard as central to increased genetic diversity in the field are excluded. This is because the concept of ‘conservation varieties’ demands a historic connection with a region of origin – as a result, what the authors call New Population Varieties and New Farmers’ Varieties are not covered.

Based on interviews and correspondence with anonymous country representatives and other officials, Louwaars et al. (2010) conducted an investigation of country positions during the discussions leading to Directive 2008/62/EC. Their conclusion is that these discussions were dominated by countries with a significant commercial seed sector, and that the main difference between countries concerned whether they emphasized biodiversity issues or coherence with existing EU legislation.

Chable et al. (2010) argue that Directive 2008/62/EC connects two terms with somewhat different meanings when it links ‘local adaptation’ to ‘region of origin’. In their view, the term ‘region of origin’ emphasizes historical and cultural aspects and assumes that all relevant varieties belong to a specific area, whereas ‘local adaptation’ has more agronomic and ecological connotations. Further, they hold, this connection ignores the travels all cultivated species have done and the resulting adaptation to various new environments. Landraces may be introduced to new regions and adapt to the local conditions: as these authors see it, discounting this possibility by linking a variety to a specific area is equivalent to classifying such a variety as a thing of the past rather than a still-evolving resource.

Chable et al. (2010) have also gone through the translations for the term ‘landraces’ used by various countries in their national translations of Directive 2008/62/EC and note the differences in how EU member countries interpret the term; some focus on the cultural aspect of these varieties, whereas others emphasize the physical aspect. Chable et al. (2010) also argue that a considerable number of landraces and peasant varieties will fall outside the scope of Directive 2008/62/EC if the homogeneity rate for conservation varieties is set at 90 % and less – and thus that marketing of seed from such varieties will still not be allowed. As conservation varieties also have to be stable, the authors underline that nearly-stable varieties, varieties with stability connected to certain traits, and unstable varieties will all be excluded from this status.

Frese et al. (2009) also analyse the terms ‘landrace’, ‘genetic erosion’ and ‘adaptation’. They conclude that the criteria of the directive on conservation varieties of agricultural species are not directly related to hard scientific evidence, and argue that implementation may prove difficult due to lack of clarity as to which actions can be undertaken within its limits.

Particularly the term ‘landrace’ is found by Frese et al. to be difficult in practice; they feel that ‘the dynamic and cyclic nature of plant breeding is seldom taken into consideration’ in efforts to define it (Frese et al. 2009: 86). As a solution they suggest distinguishing between landraces, varieties and accessions depending on biological state, legal state, adaptation and seed supply system. A landrace will then be characterized by an active and evolving biological state; its adaptation will be evidenced by practical proof; the seed system within which it exists is informal; and it is not protected by plant breeders’ rights. However, the mere existence of a geographical

name is not seen as sufficient proof that a historical variety is adapted to a specific area and deserves to be called a 'landrace'.

According to Frese et al. (2009) adaptation is a problematic criterion for conservation varieties because most gene-bank accessions will not be sufficiently adapted to current environmental conditions, compared with other genetic material. Further, if the breeding systems of various crops are taken into consideration when analysing the risk of genetic erosion, then the breeding category most likely to suffer from genetic erosion within populations is population varieties. With regard to genetic erosion between populations or varieties, they argue that for clonal accessions priority should be given to landraces not conserved in gene banks; for line varieties, priority should be given to crops with declining breeding activities; and for outbreeding crops, priority might be accorded to varieties from heterotic groups and varieties with decreasing breeding activities.

Frese et al. (2009) conclude that if all of the four central conditions of the directive must be proven – local adaptation, regional adaptation, risk of genetic erosion, and conservation interest – very few candidate varieties will meet the criteria and be accorded status as conservation varieties.

### 3.4.2 National Implementation Efforts

In Finland, allowing uncertified seed from landraces to be marketed was incorporated in the Seed Trade Act of 2000 (728/2000), with a Statute on Registration of Conservation Varieties (437/2001) and a Statute on Seed Trade of Landraces of Cereal and Fodder Plants (117/00) specifying the rules, on the basis of Council Directive 98/95/EC, which opened up the possibility of establishing such conditions prior to Directive 2008/62/EC (Paavilainen 2009). The Finnish rules might offer lessons for implementation of the latter directive.

Under these requirements, landraces, old commercial varieties and old modified commercial varieties are considered eligible for registration as conservation varieties, if they are not listed on the EU common catalogue of varieties of agricultural plant species or any national lists or protected by plant breeders' rights (Paavilainen 2009).

As of September 2008, 12 varieties had been listed as conservation varieties in Finland; 11 of these were defined as landraces. In Finland, it is also possible to apply for support in the form of subsidies for maintenance of conservation varieties (Paavilainen 2009).

Also legislation in Italy may be of interest for the debate about national implementation of Directive 2008/62/EC and the Plant Treaty. The objective of Italian Law 46/2007 was to implement Articles 5, 6, and 9 of the Plant Treaty; and Decree of 18 April 2008 provided further specifications. In addition, there is a body of regional laws on the conservation of plant genetic resources, most of them passed prior to Law 46/2007 (Lorenzetti et al. 2009). According to Lorenzetti et al. (2009) there is a need to first harmonize Law 46/2007 with Directive 2008/62/EC and then the relevant regional laws.

**Fig. 3** Norwegian sour cherry, *Prunus cerasus*. Norway, as a member of the European Economic Area, must implement EU seed legislation (Source: The Norwegian Genetic Resource Centre, Norwegian Forest and Landscape Institute. Photographer: Åsmund Asdal)



Both Law 46/2007 and Directive 2008/62/EC provide limitations on the quantities of seed of conservation varieties that can be sold, and which areas the seed can be sold – but while the Italian law limits the amount of seed each farmer can sell of each variety, the EU directive limits the total amount of seed that can be sold per conservation variety and per species (Lorenzetti et al. 2009). According to Lorenzetti et al. (2009: 202), Directive 2008/62/EC seems to be a compromise between those who regard the varieties in question as particularly adapted varieties that are important for re-creating agriculture, and those who see such varieties as relics from the past that are being ‘used to break up the seed market’.

As Lorenzetti et al. (2009) see it, the regional laws on conservation of agricultural biodiversity passed in six of Italy’s regions demonstrate the high degree of local interest in the issue and the importance of taking the local level as the point of departure as regards recognition of conservation varieties and their inclusion in catalogues. Italy’s various regional laws on the conservation of agricultural biodiversity have many elements in common, including: the creation of regional inventories, identification of key farmers for each species, enabling non-profit diffusion of a limited amount of seed, and promoting equitable benefit-sharing and traditional knowledge.

According to Lorenzetti et al., the restrictions concerning the quantity of seed allowed to be distributed and the areas where the varieties can be grown and seed produced are so strict that the Italian system ‘does not interfere with large-scale seed trade’ (2009: 204). They also argue that only those conservation varieties that are regarded as of commercial interest should be included in the national catalogue and the common catalogue.

While Lorenzetti et al. (2009) think that the implementation of Directive 2008/62/EC can have positive consequences for the conservation of crop diversity through the commercialization of landraces, they argue that the best way to maintain Italian agricultural biodiversity is through a bottom-up approach that coordinates regional initiatives.

In Germany, an inventory of landraces still being grown and ‘other varieties’ (from gene banks) will constitute the first step towards implementing Directive 2008/62/EC. Frese et al. (2009) outline three possible approaches to creating such an inventory. A crop-based approach would take as its point of departure the origin of accessions listed in databases, while a regional approach would try to determine the range of crops and accessions originating from a certain area. An explorative approach, on the other hand, would aim to map the landraces still being grown in a particular area.

As a member of the European Economic Area, also Norway must implement EU seed legislation. Discussing Norway’s implementation of the directive on conservation varieties of agricultural species Andersen (2012) argues that the country’s implementation of the EU seed legislation is still detrimental to Farmers’ Rights, as the concept is used in the Plant Treaty, even though some improvements were introduced when Norway passed new legislation in 2010.

The revised national legislation enables Norwegian farmers to exchange and sell seeds on a non-commercial basis and to register as professional seed suppliers of conservation varieties. As of 2012, seven conservation varieties had been added to the official Norwegian list of varieties, and a considerable number of applications were being prepared (Andersen 2012).

### 3.4.3 Suggested Changes

Bocci (2009) argues that the directive on conservation varieties of agricultural species can be seen as a first step towards opening up the seed market for varieties that fail to fulfil the standard criteria of EU seed legislation. However, he also stresses that only certain types of varieties – those for which a link to a specific territory can be historically proven – will be included in the new category ‘conservation varieties’. Other types of varieties – such as those produced by participatory plant breeding and not fulfilling the distinctness, uniformity and stability criteria, old varieties that are no longer listed in the national and common catalogues, varieties without a specific area of origin and varieties adapted to different areas than their region of origin – can still not be legally marketed. Bocci (2009) underlines that the certification system for conservation varieties under the new directive is too similar to the

standard EU certification system, and that this is a bigger problem than the limitations with regard to quantity and region.

Concerning the directive on conservation varieties of agricultural species in connection with the Plant Treaty, Bocci (2009) writes that if the directive is implemented in the right way it can contribute to the realization of Article 6 on sustainable use of the Plant Treaty by providing incentives for localized production and by legalizing the marketing of a wider range of varieties. In connection with implementation of the Plant Treaty, he argues that the directive presents new opportunities for civil society to become involved in the identification of conservation varieties.

Goldringer et al. (2010) stress that legislation concerning conservation varieties must become more flexible with regard to descriptive criteria, region of origin and the definition of genetic erosion risk; moreover, an appropriate legislative framework is needed for non-conventional varieties that cannot be classified as conservation varieties. The need to create legal space for this type of varieties, such as populations created within participatory plant breeding or other breeding methods favouring diversity, is underlined by Bocci et al. (2010) as well.

Bocci et al. (2010) emphasize that current EU seed legislation does not offer any solutions for non-conventional varieties that do not fall into the ‘conservation variety’ category, such as population varieties, farmers’ varieties and other non-uniform varieties, and that it is important to create the necessary legal space for their cultivation and commercialization. The need to focus on distinctness (for the purpose of identification) rather than uniformity and stability when it comes to the implementation of the directive on conservation varieties of agricultural species is also underlined, along with the need to make the geographical limitations optional, and to adapt and increase the quantitative limitations.

### ***3.5 In Summary: Seed Legislation in Europe and Crop Diversity in the Literature***

As the literature reviewed here shows, landraces and other genetically diverse varieties are still being maintained in Europe despite the dominance of genetically uniform varieties, and the informal seed market is still quite important. However, genetic erosion is believed to be widespread, and landraces appear to be threatened. According to many, today’s seed legislation constitutes a further threat to the conservation of genetic diversity and poses a barrier to the expansion of conservation initiatives. One main reason is that the registration requirements are problematic for genetically diverse varieties.

Various suggestions have been offered for changing EU seed legislation: that only commercial seed trade should be regulated; that heterogeneous varieties should be allowed to be registered; that such varieties should be exempt from the registration requirement; and that voluntary registration should be introduced. With regard to the directives aimed at the conservation of genetic resources it has been suggested that distinctness, rather than uniformity and stability, should be in focus; that the

**Table 4** The directive on conservation varieties of agricultural species: main relevant points in the literature

Literature reference	Main relevant points
Andersen R (2012) Plant Genetic Diversity in Agriculture and Farmers' Rights in Norway. FNI Report 17/2012. Fridtjof Nansen Institute, Lysaker, Norway	EU seed legislation, and Norway's implementation of it, still detrimental to Farmers' Rights after Directive 2008/62/EC Important improvement in Norway; now possible for farmers to exchange and sell seeds on a non-commercial basis
Bocci R (2009) Seed legislation and agrobiodiversity: conservation varieties. Journal of Agriculture and Environment for International Development, 103: 31–49	Opening up of seed market for increased variety, but only some types of varieties Too similar to standard EU certification Might contribute to implementation of Plant Treaty
Bocci R, Chable V, Kastler G, Louwaars N (2010) Policy Recommendations. Farm Seed Opportunities	Create legal space for other non-uniform varieties Distinctness rather than uniformity and stability Make geographical limitations optional Increase quantitative limitations
Chable V, Thommens A, Goldringer I, Valero Infante T, Levillain T, and Lammerts van Bueren E (2010) Report on the Definitions of Varieties in Europe, of Local Adaptation, and of Varieties Threatened by Genetic Erosion. Farm Seed Opportunities and the French National Institute for Agricultural Research (INRA), Paris	'Landrace' interpreted and translated in different ways across EU Many landraces and peasant varieties fall outside scope of directive on conservation varieties 'Local adaptation' and 'region of origin' not the same Landraces travel, adapt and develop Linking varieties to specific areas takes away their evolving nature
Frese L, Reinhard U, Bannier HJ, Germeier CU (2009) Landrace inventory in Germany – Preparing the national implementation of the EU Directive 2008/62/EC. In: European Landraces: On-farm Conservation, Management and Use. Bioersity Technical Bulletin No. 15. Bioersity International, Rome, Italy	'Landrace', 'genetic erosion' and 'adaptation' seen as problematic Directive's criteria not directly related to hard scientific evidence Directive may be difficult to implement due to lack of clarity Cyclic nature of plant breeding not considered Adaptation as criterion rules out gene bank accessions Crop-based approach, regional approach or explorative approach to create national inventory Few varieties will meet all four criteria

(continued)

**Table 4** (continued)

Literature reference	Main relevant points
Goldringer I, Dawson J, Serpolay E, Schermann N, Giuliano S, Chable V, Lammerts van Bueren E, Osman A, Pino S, Bocci R, Pimbert M, Levlain T (2010) Report on the Analysis of the Bottlenecks and Challenges Identified for On-farm Maintenance and Breeding in European Agricultural Conditions. Farm Seed Opportunities and the French National Institute for Agricultural Research (INRA), Paris	More flexibility needed for descriptive criteria, region of origin and genetic erosion risk
	Framework needed for non-conventional varieties other than conservation varieties
Lorenzetti F, Negri V (2009) The European seed legislation on conservation varieties. In: European Landraces: On-farm Conservation, Management and Use. Bioversity Technical Bulletin No. 15. Bioversity International, Rome, Italy	Central concepts: agricultural landraces and varieties, region of origin and genetic erosion risk
	Likely to cause variation in interpretation and implementation
	Commercialization of gene-bank material not foreseen in directive
	Compilation of national inventories of landraces as starting point for determining genetic erosion
Lorenzetti F, Lorenzetti S, Negri V (2009) The Italian laws on conservation varieties and the national implementation of Commission Directive 2008/62 EC. In: European Landraces: On-farm Conservation, Management and Use. Bioversity Technical Bulletin No. 15. Bioversity International, Rome, Italy	Objective of Italian law and directive different, but both prescribe limitations
	Directive seen as result of compromise
	Regional agrobiodiversity laws in Italy seen as evidence of local interest
	Local level as point of departure seen as important
	Regional inventories, identification of key farmers, non-profit diffusion of limited seed amounts, equitable benefit-sharing and traditional knowledge central in regional laws
	Bottom-up coordination of regional initiatives best way forward
Louwaars N (2007) Seeds of Confusion: The Impact of Policies on Seed Systems. PhD dissertation. Wageningen University, Wageningen, the Netherlands	Directive includes farmers' seed systems in regulatory framework
	Allows 'conservation varieties' to be marketed under different rules
Louwaars N, Kik C, Lammerts van Bueren E (2010) Matches and Mismatches of the 2008/62/EC Directive, Text, Practice, and Positions. Farm Seed Opportunities and the French National Institute for Agricultural Research (INRA), Paris	'An interest for the conservation of plant genetic resources' leaves room for interpretation
	Wide interpretation seen as most beneficial
	Prefers focus on distinctness of landraces, rather than uniformity and stability
	No scientific reason for two-year exclusion
	Necessary with wide interpretation of 'region of origin'

(continued)



**Table 4** (continued)

Literature reference	Main relevant points
	No good reasons for quantitative restrictions
	Morphological uniformity requirements will work against goal
	New Population Varieties and New Farmers' Varieties excluded
	Prior discussions dominated by countries with big commercial seed sectors
Paavilainen K (2009) National policies and support systems for landrace cultivation in Finland. In: European Landraces: On-farm Conservation, Management and Use. Bioversity Technical Bulletin No. 15. Bioversity International, Rome, Italy	Landraces, old commercial varieties and old modified varieties can be registered as conservation varieties if not in common catalogue or protected by plant breeders' rights
	11 of 12 registered conservation varieties classified as landraces



**Fig. 4** Norwegian oat field (*Avena sativa*) (Source: The Norwegian Genetic Resource Centre, Norwegian Forest and Landscape Institute. Photographer: Dan Aamlid)

quantitative limitations should be increased; that the geographical limitations should be made optional; that greater flexibility and/or wide interpretation is needed with regard to the key terms; and that a framework is needed for other non-conventional varieties apart from conservation varieties.

As detailed in the next chapter, some of these issues were also debated during the EU seed legislation review process.

## 4 The Road to Legislative Reform: EU Seed Legislation Review

The review of EU legislation on the marketing of seed and propagating material may result in legislative reform in the form of a regulation covering all plant reproductive material. As part of the review process an external evaluation of the EU legislation on the marketing of seed and propagating material was carried out by a Food Chain Evaluation Consortium (FCEC) team headed by Arcadia International from December 2007 to August 2008, and one of the conclusions of this evaluation was that the legislation ought to be modified (FCEC 2008).

An ‘Action Plan for Review of the Community legislation on marketing of seed and plant propagating material and related issues’ was then approved in July 2009 within the Directorate General for Health and Consumers (DG SANCO) and on 2 October 2009 presented to the EU member states during a Council Working Group meeting (DG SANCO 2011). This action plan outlined a work programme with a time frame of two and a half years; the stated overall objective being to develop a single horizontal legal framework for the marketing of seed and plant propagating material – an EU Seed Law (Commission of the European Communities 2009).

To give various stakeholders and the general public the opportunity to provide inputs, the Directorate General for Health and Consumers then published the document ‘Options and Analysis of Possible Scenarios for the Review of the EU Legislation on the Marketing of Seed and Plant Propagating Material’ on its website,<sup>68</sup> along with a questionnaire with a 30 May 2011 response deadline. The ‘Options’ document outlines and analyses five scenarios for modification of EU legislation on marketing of seed and propagating material, and invites feedback on several issues (DG SANCO 2011). The inputs received through this consultation process were intended to enable the Commission services to develop ‘a well-founded proposal for a comprehensive review of the legislation, in view of discussion and adoption by the European Parliament and Council’ (DG SANCO 2011: 3).

### 4.1 The Evaluation

The aim of the evaluation of the Community *acquis* on the marketing of seed and plant propagating material (hereinafter ‘the evaluation’) was to find out ‘how effectively and efficiently the legislation has met its original objectives and to identify its strengths and areas for improvement and its robustness with regard to potential new challenges affecting this field’ (FCEC 2008: 2). Because it was conducted within the context of the Better Regulation initiative of the Community, it also sought to identify current and future difficulties and needs and to suggest how the Community could respond. Social, environmental and economic consequences were all taken

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<sup>68</sup> See [http://ec.europa.eu/food/plant/propagation/evaluation/index\\_en.htm](http://ec.europa.eu/food/plant/propagation/evaluation/index_en.htm)

into consideration when the various options were evaluated; feasibility, stakeholder support, strengths and weaknesses were also considered (FCEC 2008).

#### 4.1.1 Stakeholder Consultation

Central to the evaluation was a comprehensive stakeholder consultation consisting of a qualitative survey (244 responses were analysed), a cost survey (with 38 return questionnaires) and 55 interviews. This consultation showed that a majority of the stakeholders consulted felt that EU seed legislation has been effective in achieving improved agricultural productivity, increased competitiveness of related sectors and harmonization for the purpose of more open markets. However, stakeholders involved with crops of minor importance, niche and emerging markets underlined that the current costs of registration and certification are disproportionately high when viewed in terms of the market size of landraces, populations or organic varieties.

A majority of the stakeholders interviewed also felt that the system created by the EU seed legislation, where the data to be evaluated are produced by official authorities, is to be preferred because it levels the playing field and promotes equal access to the EU seed market for all players regardless of size. In addition, value for cultivation and use and distinctness, uniformity and stability requirements were generally seen as important and useful tools for conventional agriculture with regard to ensuring agronomic performance and establishing varietal identity. A majority of the stakeholders consulted therefore wanted to maintain these provisions (FCEC 2008).

Nevertheless, quite a few respondents indicated that the distinctness, uniformity and stability requirements had limited the marketing of varieties of interest to users. Among other things it was mentioned that these requirements generally limit the marketing of adaptive populations – like many conservation varieties, amateur varieties and landraces – which build on genetic diversity instead of uniformity and stability. It was also mentioned that the distinctness requirement serves to restrict the marketing of gradual improvements in the agronomical description of the same variety (FCEC 2008).

To address the issue of what were seen as overly strict rules for uniformity, stakeholders active in organic farming recommended that this requirement be made optional and that a system for traceability be developed that could inform the user about the origin of the variety in question, the varieties used to breed it and the specific breeding methods employed. The rationale was that this would allow the greater marketing of conservation varieties, amateur varieties and landraces, thereby widening the users' choice (FCEC 2008).

Also with regard to the value for cultivation and use provision some concerns were raised during the consultation. For organic and other forms of alternative agriculture, the requirement was seen as an obstacle to the release of varieties of interest. The value for cultivation and use trials for example do not allow for the selection of low-input varieties, as the examination conditions and the examined characteristics are poorly suited for such varieties. It was also noted that there has been too much

focus on yield: in the future, broader assessments should be done; further, because trials last for two years, they do not evaluate ‘yield stability’ (FCEC 2008).

While certification standards on the whole were perceived as relevant by a majority, and a substantial majority of the respondents were in favour of maintaining both the certification structure and the certification standards of the EU legislation, stakeholders active in niche and emerging markets saw current costs as disproportionate to the market size of niche varieties like landraces and organic varieties (FCEC 2008).

One suggestion discussed was to remove species of minor economic importance or species for which certification adds no additional value from the legislation. It was also suggested that subspecies with special end-uses for organic farming or adapted to local conditions should be shifted to a list with less stringent rules. And although most respondents opposed the introduction of a voluntary certification scheme, some felt that the flexibility needed for alternative farming practices could be provided by maintaining mandatory certification for non-direct sales and mass seed sales whereas certification could be voluntary for small quantities, niche markets and direct sales (FCEC 2008).

With regard to the revision of the EU seed legislation in general, the aims that received most support from the majority of stakeholders consulted were productivity, plant health and sufficient quality of seed and plant propagating material. However, it was also argued that legislation should be sufficiently flexible and that improving agricultural biodiversity will be important to mitigation efforts related to climate change and to reducing chemical inputs (FCEC 2008).

The evaluation also briefly addressed Commission Directive 2008/62/EC, which had just been approved when the evaluation was conducted. Among some stakeholders, there was concern that the new directive would undermine the main commercial system for introducing new varieties and would offer a quick and cheap way for varieties to be registered. Concerns were also voiced regarding specific provisions: some stakeholders preferred a longer interval before a variety that has been removed from the Common Catalogue can become a conservation variety, and found the quantitative restrictions to have been set too high (FCEC 2008).

On the other hand, stakeholders involved with organic and low-input varieties considered the quantitative restrictions to be too limiting. It was also believed that it would be difficult for member states to define ‘regions’ in their implementation of the directive. In addition, there was some concern about the influence of the main commercial breeders, and that implementation would prove unnecessarily restrictive (FCEC 2008).

As the results of the stakeholder consultation show, and as the Kokopelli court case highlighted, there is considerable disagreement among the various actors in the seed sector regarding the ideal nature of both variety registration and seed certification.

#### **4.1.2 Problems and Potentials**

Although most of the stakeholders consulted felt that the costs associated with implementing EU seed legislation were reasonable, the evaluation points to the high quality of the seed and propagating material currently produced in the EU as a

factor that could enable a reduction of the rather high certification costs. For many member states this issue has become central: for instance, France and the United Kingdom have already taken steps to reduce costs and relieve the administrative burdens within the limits set by the EU legislation by changing the certification system to one 'under official supervision' (FCEC 2008).

In addition, the evaluation points out that the context within which seed legislation operates in has changed since it was first enacted, and the seed sector is now part of an increasingly international environment that is constantly evolving. New consumer demands, for example related to sustainability, also play a role, as well as developments in biotechnology and plant breeding (FCEC 2008).

Other problems with the EU seed legislation are also identified by the evaluators, such as its complexity and inadaptability to a changing market and what they see as an uneven playing field. According to the evaluation, this last problem stems from inharmonious implementation of provisions, for example those on value for cultivation and use and distinctness, uniformity and stability, some countries' additional implementation measures, inharmonious national systems for costs and responsibility, and lack of information sharing among member states when it comes to implementation (FCEC 2008).

The evaluation also recognizes the negative impact that the legislation can have on cultivation of agricultural biodiversity. Interestingly, the Food Chain Evaluation Consortium team notes that it 'believes that the two different systems of the large commercial breeding companies and the smaller market or regional breeders and producers could run side by side because they are targeting completely different markets' (2008: 172). This can be seen as a counterargument to the fear expressed by some that the legal space provided by the conservation directives would undermine the commercial system.

With regard to Commission Directive 2008/62/EC, the evaluation expresses fears that member states might not understand how to implement it 'with the flexibility, freedom and adaptability that the Commission intended' (FCEC 2008: 172), and that, as a result, this directive may prove restrictive. Similar fears regarding the restrictiveness of this directive has, as seen in Sect. 3, also been expressed by researchers and other academics.

### 4.1.3 Recommendations

The evaluation examined three scenarios with regard to the future of the EU seed legislation: a 'status quo' scenario, where the legislation remains unchanged and therefore the current difficulties remain; a 'suppress' scenario, where the current EU provisions are suppressed and it becomes up to the member states to retain the national regulations or leave listing and certification up to the market; and a 'modify' scenario, where the EU seed legislation is changed (FCEC 2008).

The evaluation recommends modification of the current legislation: a large majority of the stakeholders do not support suppressing the Community provisions, and having different regulatory approaches at the national level might threaten the internal market and decrease transparency; choosing the 'status quo' scenario is not

in line with the Better Regulation initiative, and most stakeholders prefer to change the current EU legislation.

As possible objectives for a modification scenario the evaluation suggests simplification of the current EU legislation, introducing flexibility within the regulatory framework, reducing implementation differences among member states, promoting cost-reduction approaches, securing long-term consistency with other EU policies, and finalizing the discussion of the possible extension of the role of the Community Plant Variety Office and how to make the seed and propagating material sector benefit from the expertise of the Community Plant Variety Office and improve information to users. In the evaluation's assessment of the various implementing options associated with these objectives, it is only the options for introducing greater flexibility that are associated with increased agricultural biodiversity (FCEC 2008).

The implementing options for this objective are presented as being to make the official rules for uniformity more flexible, for the rules regarding value for cultivation and use to 'evolve to adapt to any type of agriculture and to test varieties created by new technologies' (FCEC 2008: 182) and to 'adapt the requirement for the marketing of seed to defined categories' (FCEC 2008: 182). Further, the first two options will lead to greater diversity in available varieties, and as a result the various agronomic needs of farmers will more easily be met, whereas the third option is believed to offer greater genetic diversity in commercial varieties (FCEC 2008).

As illustrated by the developments since, and in particular the Commission proposal, the 'modify' scenario has been chosen.

## **4.2 The Action Plan**

The Action Plan for Review of the Community legislation on marketing of seed and plant propagating material and related issues states that the Council has acknowledged the findings of the evaluation and welcomed the Commission's intention of undertaking an impact assessment and develop a proposal intended to lead to simpler legislation and reduced administrative burdens for all stakeholders (Commission of the European Communities 2009).

Central to the Action Plan is the goal of creating a modern, harmonized framework for marketing of seed and plant propagating material which should be easier to implement and understand than the current system. To this end, the plan includes a thorough review of this legislation, emphasizing legislative as well as non-legislative measures.

A collection of clear outcomes is outlined: one single horizontal legal framework for the marketing of seed and propagating material (a seed law); harmonized implementation through audits and training; lower administrative burdens and costs through efficient, effective and flexible procedures; consistency with other EU policies such as those for agriculture, environment, genetically modified organisms, plant health and food safety; an enhanced role for the Common Catalogues as a source of information; greater Community influence on international standards; the

establishment of a system for stakeholder involvement and a possible extension of the role of the Community Plant Variety Office to the seed and plant propagating material sector (Commission of the European Communities 2009).

The purposes of the overall objective of developing an EU seed law that, in the form of a Regulation, would replace the current 12 Council Directives are stated as being to ensure the availability of good-quality, healthy seed and plant propagating material; to make sure that user expectations regarding seed and plant propagating material are met; to make a contribution to halting the loss of biodiversity; to achieve harmonized implementation; and to boost economic competitiveness (Commission of the European Communities 2009).

The Action Plan also mentions that the Commission should consider whether it is appropriate to keep the current requirement for seed testing for crops of minor importance, and that part of the work to ensure consistency with other EU policies will involve improving coherence with environmental policies such as those on biodiversity (Commission of the European Communities 2009).

The objectives are recognized as challenging in the Action Plan, not just for the EU institutions and the member states, but for breeders, farmers and other seed users as well (Commission of the European Communities 2009).

The original timeframe was two and a half years. Thus, according to the Plan a legislative proposal for an EU Seed Law should have been ready in 2011 (Commission of the European Communities 2009). However, it would take until fall 2012 before a first draft proposal, in the form of a 'non paper', was circulated to stakeholders, and until May 2013 before the Commission adopted a proposal for a Regulation to replace the current directives.

### ***4.3 'Options and Analysis of Possible Scenarios'***

As mentioned, the document 'Options and Analysis of Possible Scenarios for the Review of the EU Legislation on the Marketing of Seed and Plant Propagating Material' presents and assesses five scenarios for modification of the EU legislation on marketing of seed and propagating material. The analysis presented in the document takes into account the problems identified in the evaluation, supported by the conference and reiterated in the Action Plan, and notes four key reasons why the current system should be reformed: the complexity and fragmentation of the legislation; the high level of administrative burden for public authorities in particular; the distortions in the internal market created by the non-harmonized implementation; and the room for improvement with regard to sustainability. Agreeing with the evaluation, the document concludes, that despite the achievements of the current system, the preferred option should be to modify it, as its identified shortcomings would otherwise persist (DG SANCO 2011).

The paper lists a set of general policy objectives, specific objectives and operational objectives, which build on the objectives in the Action Plan. One of the general policy objectives is listed as being to 'contribute to improve biodiversity,

sustainability and favour innovation' (DG SANCO 2011: 7). Among the specific objectives are to improve farmer access to a diversity of varieties, and promote innovative plant breeding that focuses on sustainable cultivation (DG SANCO 2011). While this indicates that issues related to agricultural biodiversity are considered, the document also underlines that not all the objectives can be realized to the same extent, so prioritizing among them will be necessary. As already noted, the paper presents five scenarios for modification of EU seed legislation. One of these, scenario 4, is meant to enable marketing of conservation varieties to a greater extent than today. This scenario, referred to as the 'enhanced flexibility system', introduces basic provisions for registration that are mandatory as well as a voluntary higher level for registration and certification. Thus certification becomes a right that only tested varieties have, instead of being an obligation, and that the national and common catalogues will consist of two sections (DG SANCO 2011).

The variety description criteria are to be in line with Community Plant Variety Office rules and the rules of the International Union for the Protection of New Varieties of Plants for both sections, but whereas Sect. 1 will consist of varieties that have undergone testing for distinctness, uniformity and stability and for value for cultivation and use (for value for cultivation and use the health and adaptation criteria will be mandatory for these varieties, while the yield and value tests will be optional), Sect. 2 will comprise varieties that have not been tested in the same way and that have been registered on the basis of harmonized descriptions, with only denomination, registration and labelling being checked by competent authorities (DG SANCO 2011).

Registration will be compulsory for all breeders and suppliers, and EU-level administrative tasks concerning variety registration will be handled by the Community Plant Variety Office. This scenario would allow conservation varieties and other heterogeneous or 'niche' varieties to be marketed as 'non-tested'. The rationale for proposing a seed and plant propagating material category that can be marketed at a very low cost is to offer new opportunities for the commercialization of varieties with smaller markets (DG SANCO 2011).

The enhanced flexibility system is expected to have positive environmental impacts – a result of the opportunities for marketing of varieties that now fulfil the current criteria, and the introduction of sustainability as part of the screening of tested varieties (DG SANCO 2011). However, one might question why this positive impact has been rated as 'minor'.

For non-tested varieties, there is believed to be a certain risk related to plant health and quality of seed and propagating material in the long run. As certification will no longer be mandatory and the quality of the suppliers' inspection work will be central here as well, the impact is rated as a small negative one. It is also expected that this system would have a medium negative impact on employment and jobs. With respect to administrative burdens and costs, however, the system is expected to have a large positive impact on both the private and the public sectors. The increased flexibility is also expected to have a positive effect on competitiveness, markets, trade and investment flows, as well as on innovation and research (DG SANCO 2011).



Overall, the enhanced flexibility system is the scenario for which most positive effects are expected if the presumed impacts under the various areas (plant health and seed quality, employment and jobs, administrative burden and costs for authorities and private sector, competitiveness, markets, trade and investment flows, innovation and market and environmental impact) are seen together. Moreover, the same result can be found if the expected achievements of the various scenarios with regard to the stated objectives of the review process are seen together.

These conclusions on impact derive from the tables in the paper where the various scenarios were rated and compared. However, the positive and negative ratings were not counted together in the paper, as has been done here.

#### ***4.4 The Response to the Option and Analysis Paper***

Altogether 257 replies to the online consultation on the review of the EU legislation on the marketing of seed and plant propagating material were received by the Directorate General for Health and Consumers.<sup>69</sup> These are available on the website of the European Commission.<sup>70</sup>

Not surprisingly, a quick review of the replies shows that differences exist with regard to views and stakeholder groups. The European Seed Association for example, offers the opinion that ‘the issue of niche markets is overestimated throughout the paper.’<sup>71</sup> As regards the objectives of the review, improving farmers’ choice and access to a wide diversity of plant varieties is seen as an inappropriate goal: the focus should be on ‘varieties which are beneficial, fit for use and fit for sustainable intensification’<sup>72</sup> rather than on achieving broader diversity. Scenario 4 is the option criticized in most detail by the European Seed Association: this scenario ‘seems to focus on turning existing niche markets into large markets’.<sup>73</sup>

By contrast, most stakeholders involved in the conservation of plant genetic diversity seem to prefer scenario 4, or a scenario with new features based on scenario 4. Such stakeholders include seed savers’ associations,<sup>74</sup> the European Consortium for

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<sup>69</sup> See the website of the Directorate General for Health and Consumers: [http://ec.europa.eu/food/plant/propagation/evaluation/index\\_en.htm](http://ec.europa.eu/food/plant/propagation/evaluation/index_en.htm)

<sup>70</sup> See [http://ec.europa.eu/food/plant/propagation/evaluation/options\\_review\\_legislation\\_replies\\_en.htm](http://ec.europa.eu/food/plant/propagation/evaluation/options_review_legislation_replies_en.htm)

<sup>71</sup> ESA questionnaire, page 3: [http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder\\_replies\\_2011/ESA\\_EuropeanSeedAssociation.pdf](http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder_replies_2011/ESA_EuropeanSeedAssociation.pdf)

<sup>72</sup> ESA questionnaire, page 4 (see link in footnote 72).

<sup>73</sup> ESA questionnaire, page 5 (see link in footnote 72).

<sup>74</sup> Both the Irish Seed Savers Association (their responses can be found here: [http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder\\_replies\\_2011/IrishSeedSaversAssociation.pdf](http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder_replies_2011/IrishSeedSaversAssociation.pdf)) and the Danish Seed Savers Association (their responses can be found here: [http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder\\_replies\\_2011/DanishSeedSaversAssociationFrosamlerne.pdf](http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder_replies_2011/DanishSeedSaversAssociationFrosamlerne.pdf)) are among the organizations that prefer scenario 4.

Organic Plant Breeding,<sup>75</sup> Association Kokopelli<sup>76</sup> and European Coordination Via Campesina.<sup>77</sup> The European Consortium for Organic Plant Breeding emphasizes that it would be logical to differentiate between the requirements for seed and plant propagating material with relatively high market shares, and seed and plant propagating material for quite small niche markets, with stricter requirements for the former than for the latter.

As opposed to the European Seed Association, Association Kokopelli argues that the issue of biodiversity and the need to strengthen sustainability is underestimated in the options and analysis paper, and that current legislation has led to a dramatic loss in crop diversity. The association prefers scenario 4, but would like to see some changes made to it: there should be no application of the rules of the International Union for the Protection of New Varieties of Plants in connection with the registration of non-tested varieties, and they stress the importance of not confusing intellectual property rules and seed market regulation. In addition, this organization underlines the need for excluding ‘non-professional uses of seeds’ from the scope of the revised legislation.<sup>78</sup>

It should also be noted that many respondents indicate that they do not know which scenario they prefer or that all scenarios are equally undesirable. Many also respond that they prefer a combination of scenarios, or scenarios with new features.

#### ***4.5 The Way Forward for European Seed Legislation and Crop Genetic Diversity***

The process towards the adoption of a legislative proposal took longer than originally anticipated. Although it was still believed in July 2012 that a proposal would be submitted by the Commission to the European Parliament and the member states by the end of 2012 (ESA 2012), the Commission did not adopt the proposal on plant reproductive material until May 2013. This proposal was part of the Commission’s proposed package of measures to ‘modernise, simplify and strengthen the agri-food chain in Europe’ (European Commission 2013: 1).

The proposal would, if adopted, replace the 12 basic Directives currently in force, and as this is a proposal for a regulation, it would become binding in all member countries in its entirety. If a new plant reproductive material law based on the Commission proposal is enacted, mandatory registration and certification would

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<sup>75</sup>Their responses can be found here: [http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder\\_replies\\_2011/EuropeanConsortiumforOrganicPlantBreeding.pdf](http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder_replies_2011/EuropeanConsortiumforOrganicPlantBreeding.pdf)

<sup>76</sup>Their responses can be found here: [http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder\\_replies\\_2011/KokopelliFrance.pdf](http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder_replies_2011/KokopelliFrance.pdf)

<sup>77</sup>Their responses can be found here: [http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder\\_replies\\_2011/EuropeanCoordinationViaCampesina.pdf](http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder_replies_2011/EuropeanCoordinationViaCampesina.pdf)

<sup>78</sup>Association Kokopelli questionnaire, page 4: [http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder\\_replies\\_2011/KokopelliFrance.pdf](http://ec.europa.eu/food/plant/propagation/evaluation/docs/stakeholder_replies_2011/KokopelliFrance.pdf)

still form the basis of EU seed legislation. However, the proposal provides exclusions that are relevant to the maintenance of crop genetic diversity. Central in this connection is the specification that the proposed regulation ‘shall not apply to plant reproductive material exchanged in kind between persons other than professional operators’ (Article 2). As can be seen, some new concepts and definitions are also introduced. The proposed exclusion of ‘plant reproductive material intended solely for, and maintained by, gene banks, organisations and networks of conservation of genetic resources, or persons belonging to those organisations or networks’ (Article 2) is also of interest in this connection.

However, this proposal will be reviewed by the European Parliament and the Council as part of the ‘co-decision’ procedure of the EU,<sup>79</sup> and that process could lead to some amendments. It can be expected that the central stakeholders will try to influence this process, and it remains to be seen what the results of this will be for the future maintenance of crop genetic diversity in the EU.

According to the Commission, the new regulation might enter into force in 2016 (European Commission 2013). However, progress thus far could indicate that further delays should be expected.



**Fig. 5** Sharing seed of fruit varieties, like this traditional Norwegian apple variety, ‘Red Torstein’, is something many people do without being familiar with seed legislation (Source: The Norwegian Genetic Resource Centre, Norwegian Forest and Landscape Institute. Photographer: Åsmund Asdal)

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<sup>79</sup>The EU’s ordinary decision-making procedure is known as ‘co-decision’: both the European Parliament (which is directly elected) and the Council (the governments of the EU member countries) have to approve EU legislation. Commission proposals are reviewed by both institutions and they have to agree on proposed amendments.

## 5 Conclusion

As this article has shown, current EU seed legislation is quite complicated. Thus, the review process represented a welcome step toward simplification and clarification. Indeed, one of the main conclusions of the external evaluation that was conducted as part of the review of EU seed legislation was that the legislation ought to be modified. The evaluation concluded that efforts must be made to rein in the costs for governments, and that the complexity and lack of ability to adapt to a changing market are main problems of today's EU seed legislation.

In addition to complexity, a frequently cited drawback of the current legislation is its impact on agricultural biodiversity. Experts and practitioners engaged in the maintenance of such biodiversity argue that the EU seed legislation functions as a barrier to this work. Under today's seed legislation, varietal change cannot take place during the commercial life of a variety; moreover, it is difficult to market old, traditional and/or locally adapted varieties legally, as these usually do not fulfil the requirements for distinctness, uniformity and stability. Efforts to develop or maintain such varieties, to create local seed enterprises and to upscale existing initiatives are therefore struggling. Altering the legislation is seen as necessary. Suggested changes include exempting traditional varieties from variety registration and introducing voluntary registration.

In this context it is relevant to compare the control-based EU seed system with the voluntary system in the USA. In the latter, variety registration, performance testing and seed certification are all voluntary, and there is no national variety release authority. By contrast, all of the above are mandatory in the EU. It can be argued that the need of seed users to know what they are buying could be met without all varieties having to adhere to strict distinctness, uniformity and stability requirements, and that a system with more voluntary elements could work also in the EU. As long as the labelling clearly states the extent to which the seed can be expected to be distinct, uniform and stable, surely the interest of users can be regarded as sufficiently protected here.

However, seed legislation is a contested subject and considerable disagreement exists between stakeholders regarding to what extent and how the current EU seed legislation should be changed. These differences were showcased by the Kokopelli court case. When Advocate General Kokott concluded that the prohibition on the marketing of seed of varieties that do not fulfil the distinctness, uniformity and stability criteria, and, where relevant, the value for cultivation and use criteria, as established in Council Directive 2002/55/EC on the marketing of vegetable seed, was invalid because it infringes on the principle of proportionality, the freedom to conduct a business, the free movement of goods and the principle of equal treatment, it was both hoped and feared that the judgment of the Court of Justice of the EU would include a similar conclusion. This was not to be, however.

Now that the Commission has adopted a proposal on plant reproductive material, stakeholder attention will shift to the European Parliament and the Council. It is these two institutions that will determine how much legal space is provided for the maintenance and sustainable use of crop genetic diversity in the EU in the years to come.

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### ***Treaties, Directives and the Proposal***

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