Managing Liability Associated with Genetically Modified Crops

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ABSTRACT
Recent years have seen intense global debate about whether or not agricultural biotechnology—particularly genetically modified organisms (GMOs) and genetically modified crops (GM crops)—should be covered by a specially designed liability regime. This chapter examines common and statutory law theories of liability; various attempts at the national and international levels to design liability regimes for GMOs, and liability risk-mitigation measures.

1. INTRODUCTION
Liability is the "quality or state of being legally obligated or accountable." The word refers to the obligation of a person or institution to provide compensation for damage it is deemed to be responsible for. Historically, liability has been determined using common and statutory national laws; however, when questions of liability overreach national borders—as they often do in such fields as agricultural biotechnology—historical legal methods are not always applicable. Indeed, there has been intense global debate about the creation of a liability regime for genetically modified organisms (GMOs) and genetically modified crops (GM crops or transgenic crops).

This chapter examines the existing common law and statutory theories of liability; the various attempts to design liability regimes for GMOs at national and international levels; the potential liability risks shared by stakeholders, including small-scale farmers; and risk-mitigation measures.

2. COMMON LAW AND STATUTORY THEORIES OF LIABILITY
Common law forms a major part of the law of those countries of the world that were once British territories or colonies. It is the body of law derived from centuries of judicial rulings, rather than from statutes or constitutions. The common law provides a means of compensating for wrongful acts (known as torts), whether they are intentional or are caused by negligence; it is also a way to regulate contracts.

The common law theories of liability include the following: negligence, which refers to the breach of a legal duty by one party that proximately causes damage to another party; trespass, which refers to an unlawful act committed against the person or property of another, including wrongful entry on another's property; nuisance, which refers to an unreasonable interference in another person's or other persons' use and enjoyment of their land (private nuisance and public nuisance, respectively); and the principle of strict liability, which is not fault-based and may apply despite the exercise of utmost care on the part of the offender.


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The main statutory theories of liability include strict liability and infringement of intellectual property (IP). Strict liability was first defined in the case *Rylands v Fletcher,* in which the defendant had a reservoir built on his land that caused flooding of the plaintiff’s mine. This case articulated the principle that liability would arise in cases where damage is not necessarily caused as a result of the defendant’s actual negligence or intent to harm but based on the breach of an absolute duty as, for instance, when his or her nonnatural use of land causes the accumulation of dangerous things, which then escape and cause damage. In modern statutory law, a use is considered to be nonnatural if it is a special use that creates an abnormal risk of damage to another person’s property. The occupier of the land is liable for damage caused by an escape and has several defenses (for example, common benefit, act of a stranger, statutory authority, consent of the plaintiff, default of the plaintiff, or act of God). *Infringement* of IP refers to use by an unauthorized party of any of the exclusive rights enjoyed by the owner over his or her own IP.

### 3. LEGAL LIABILITIES AND GM CROPS

#### 3.1 The international debate

There has been considerable international debate about the liabilities associated with GMOs and specifically the liabilities with GM crops. One school of thought believes that GMOs pose no unique risks and argues that GMOs can be covered by liability regimes commonly used for other agricultural technologies; the other school of thought maintains that agricultural biotechnology is fundamentally different from other forms of agricultural breeding technology and argues that special legal liability regimes are required to ensure that those who experience loss arising from GMOs can obtain adequate relief. Countries such as Canada, the United States, the United Kingdom, and New Zealand adhere to the first school of thought and apply general agricultural liability laws to GM products. The European Union, which holds the opposing view, has proposed that GM products be subject to a special legal liability regime. Certain E.U. countries, such as Austria and Germany, have passed national laws that impose strict liability for particular types of loss (such as death, injury, and damage to property) caused by GMOs. Under Austrian law, in the event of an accident involving GMOs (such as contamination of the food chain), the releasing entity will be liable for any harm to health, property, or the environment, and must return any affected property to its “original” state. For example, Austrian companies that manufacture GMOs must obtain sufficient liability insurance. German law imposes liability for injury to property or human health caused by GMOs. German regulations place liability at the “manager level” of the company, or installation, an assumption that is likely to make farmers who grow GM crops (as installation managers) liable for any accidents that may occur. German law also makes liability insurance mandatory for GM operators.

#### 3.2 The African Model Law approach

In the midst of this international debate, the Organization for African Unity (OAU), now known as the African Union (AU) and the Ethiopian Environmental Protection Authority developed the African Model Law on Safety in Biotechnology in 2001 that was intended to be a basis for formulating national laws concerning biotechnology. This model law proposed instating a strict liability regime for GMOs. To date, however, the liability regimes being proposed in the draft biosafety laws of African countries seem to disregard the extreme position of the African Model Law.

#### 3.3 Liability and redress under the Cartagena Protocol on Biosafety

The issue of liability and redress for damage resulting from the transboundary movements of GMOs was addressed by the Biosafety Protocol of the Convention on Biodiversity (which referred to GMOs as living modified organisms [LMOs]). The negotiators were, however, unable to reach a consensus regarding the details of a liability regime. Therefore, in the final text of the protocol (Article 27), the Conference of Parties was urged...
to develop an international liability regime within four years. A group known as the Ad-Hoc Open-Ended Work Group of Legal and Technical Experts on Liability and Redress in the Context of the Cartagena Protocol on Biosafety has since been created in order to achieve this goal. The group has met twice, both times in Montreal, Canada, first on 25–27 March 2005 and again on 20–24 February 2006. In the second meeting, the group developed a list of criteria for assessing the effectiveness of any rules and procedures referred to in Article 27 of the protocol and developed different options for operational text on scope, damage, and causation. The group has yet to agree on a liability regime.

Kershen and Smyth have argued that “Developers of new agricultural biotechnology crops and animals—be they public or private; be they industrialized or developing countries—would be hindered by the inclusion of speculative risks in a liability and redress regime, especially public researchers in developing countries.” Kershen and Smyth contend further that an Article 27 liability and redress regime would reduce the amount and availability of agricultural biotechnology and thus impede public research on behalf of the poor in developing countries. They also assert, and the author of this chapter agrees, that future liability costs could adversely affect agricultural research in public research institutes in developing countries, since such facilities may not have the requisite financial resources to absorb the costs of any future liability. Furthermore, future liability costs could increase operational costs and thus raise product costs.

4. Managing Existing Potential Liabilities

The production and use of GMOs can create many potential liabilities. For instance, the producer or user of GM crops or animals may be liable for damage caused by GM crops or animals to the person or property of another person or to the environment. Pollen flow from transgenic crops to nontransgenic crops may cause crop damage. For instance, transgenic pollen flow may ruin the “organic” status of crops or the purity of the genetic material of other seeds. Questions may arise as to whether transgenic crops or their food products are toxic, allergenic, or pose a long-term health threat.

Claims for compensation in actions for personal or property damage could be based on a theory of negligence, trespass, nuisance, or strict liability, although there has not yet been a definitive judicial decision on these. A class action suit brought by farmers and other parties against Aventis Cropscience, U.S.A., alleged that their corn had been contaminated by transgenic corn approved for animal feed and ethanol production but not for human food. The court determined that plaintiffs who could prove the alleged contamination would have a claim based on the theories of negligence, private nuisance, and public nuisance. This case, which was settled with the proposed payment of over US$100 million to members of the defined class, underscored the potential for liability arising from the development, production, and use of agricultural biotechnology products.

4.1 Negligence

A person whose crops or property is damaged because a neighbouring farmer failed to take adequate precautions to contain his transgenic crops may have a claim against both the neighbouring farmer and the biotechnology company that created the transgenic crop. To sustain a claim based on negligence, the claimant (plaintiff) would need to prove four elements: the defendant’s duty of care—a legal obligation imposed on an individual requiring that they exercise a reasonable standard of care while performing any acts that could foreseeably harm others—to the plaintiff, breach of that duty by unreasonable conduct of the defendant, a causal link between the alleged unreasonable conduct and damage, and damages (a harm or injury valued in monetary terms). When a farmer growing GM crops knows that neighboring farmers (such as organic and GM-free farms) may be adversely affected by GMO contamination, he or she arguably owes a duty of care to such farmers and must keep his or her GMOs from spreading beyond the bounds of his or her property. However, because there is
no scientific proof regarding the extent to which pollen or seed may be dispersed, it is impossible to determine who is affected by the unintended spread of GMOs from the defendant’s land. A GM farmer’s breach of duty of care, and the damages that he or she must pay as a result, will be judged according to the standards of a reasonable person and may take into account such factors as the magnitude of the risk posed by the GMOs, the degree of probability that such contamination would naturally occur, and the expense, difficulty, and inconvenience to the GM farmer that would result if he or she were required to rectify the situation. Biotechnology companies and farmers may be obligated to take additional reasonable precautions to contain certain transgenic crops if, for example, the agronomic evidence shows that a particular transgenic crop causes weediness, pollen flow, or volunteer plants to a greater degree than do nontransgenic crops.23

Obviously, biotechnology companies and farmers must develop techniques that minimize pollen flow and the establishment of volunteer plants in order to protect themselves from liability. For example, transgenic crops could be engineered to have biological barriers against pollen flow or preventing volunteer survival through male sterility (preventing fertilization), seed sterility (preventing volunteer crops), or control of flowering time (preventing cross-pollination with other, nontransgenic crops).24 Indeed, if such biological barriers can reasonably be incorporated into a transgenic crop, a biotechnology company that failed to incorporate these biological barriers and was subsequently accused of causing damage to property or person might be liable for a product’s liability claim for design defect.25 Furthermore, farmers of transgenic crops can adopt agronomic practices to prevent pollen flow or the establishment of volunteer plants: farmers can plant fields at isolation distances; plant barrier crops, border rows, or refugia (non-GM areas of the same crop); or establish agronomic zones dedicated to non-GM crops.26 Biotechnology companies would likely have a duty to educate farmers, with whom the companies have entered into contracts, about these agronomic management practices and possibly have the obligation to police farmers growing the companies’ crops. Farmers, for their part, would have duty of care to abide by the agronomic management practices recommended by the biotechnology companies.

However, given the nature of agriculture in most of the developing world, where subsistence farming and small landholdings are the norm, it would be impractical to expect developing-world farmers to adopt most of the agronomic practices mentioned above. Biotechnology companies that donate their technologies for humanitarian use would benefit from a technology transfer scheme that permits such companies to provide technologies, like genes and transformation systems, to developing-world farmers, while protecting them from liability risk in case the transgenic crops are misused.

4.2 Trespass

Persons who believe they have suffered damage from transgenic pollen flow may bring a common law cause of action based on the theory of trespass.27 In this case, trespass indicates the physical invasion by transgenic crops of the possessor interests of the property (land) of the person claiming damages. Technically, proof that transgenic pollen has spread to neighboring fields could be sufficient evidence to establish trespass. However, it is a biological fact that pollen flows between varieties of the same crop and between related plant species. Therefore, if pollen flow constituted trespass upon a neighbor’s crops, all farmers would be liable for trespass for almost every crop they grow. Jurisdictions such as the United States have differentiated between pollen flow that constitutes trespass and pollen flow that is accepted as a biological fact of farming;28 to sustain a successful action in trespass, there must be proof that the alleged physical invasion caused damage (such as contaminated seed). Naturally, the extent to which a claimant could rely on this theory of liability would depend on the local laws regulating seed and crop standards.

4.3 Private nuisance

Unlike the common law claims of trespass, strict liability, and negligence, all of which focus on the conduct or activity that causes harm to the
person or property of another, the claim of private nuisance focuses on a person’s interests being protected (that is, the right of an individual to use and enjoy, free from interference by others, one’s private land). Fundamental to the private nuisance claim is the notion that neighbors must be accommodating of one another so as to allow peaceful coexistence. A private nuisance claim must prove that an invasion (1) is either intentional and unreasonable or unintentional and otherwise actionable as a legal claim for trespass, strict liability, or negligence; and (2) causes significant harm (the definition of which is based on the gravity of the alleged harm and its level of normality in a particular locality). In the case of GMOs, a claimant must prove that nearby fields of transgenic crops have unreasonably interfered with the use and enjoyment of his or her own land. The courts are unlikely to endorse a private nuisance claim that, for example, insists on zero tolerance of pollen flow or of volunteer plants, or which claims “significant [emotional] harm” from personal opposition to transgenic crops.29

4.4 Strict liability
Persons who believe their land or crops have been damaged by a neighbor’s transgenic crops may bring a tort claim in strict liability if the activity of growing transgenic crops is “abnormally dangerous” when the following factors are taken into account:

- the degree of risk of some harm to the person, land, or chattels of others resulting from the growing of the crop
- the likelihood that the harm that results from growing the crop will be great
- the grower’s inability to eliminate the risk by exercising reasonable care
- the extent to which the grower’s activities are unusual or unapproved
- the inappropriateness of the grower’s activities to the location in which they are conducted
- the extent to which the value of the grower’s activities are outweighed by their potential dangers

In the United States, where transgenic crops are grown on a wide scale and where agricultural biotechnology is not considered legally different in kind from other agricultural breeding technologies, liability claims based on any of the above theories are difficult to establish.30 It will be interesting to see how the policy-makers and courts of the developing world will deal with the transgenic crops beginning to arrive on their shores.

4.5 Liability for infringement of intellectual property rights
IP rights are a category of intangible rights regarding creations of the human intellect.31 The holder of an IP right may exercise exclusive control over its use for a limited period of time; any unauthorized use of the IP right during the statutory period of protection would constitute an infringement. It is possible, therefore, that farmers whose crops are accidentally affected by the presence of GMOs (as a result of pollen flow or seed comingling) might be held liable for IP rights infringement. Recently, Monsanto successfully brought suit in Canada against a conventional farmer who replanted seeds that had been contaminated with genetic material from Monsanto’s genetically modified crops. The GMOs in question, Roundup resistant plants, contain a patented transgenic gene that confers herbicide resistance. The court held that the harvesting and sale of crops derived from seeds that were known, or suspected, to be Roundup tolerant infringed on Monsanto’s exclusive IP rights.32

5. OTHER LIABILITY-MANAGEMENT TOOLS AND APPROACHES

5.1 Compliance with IP, license, and regulatory requirements
The developers of GM products must adopt appropriate scientific and technical safeguards for all products and advise stakeholders, including smallholder farmers, as to the appropriate use of technologies and products. Farmers of GM crops, for their part, need to comply with relevant license conditions, standards, guidelines, and directions regarding deployment or use of GM products.
Proper compliance with these guidelines can help protect all parties from liability risks.

5.2 Indemnification

Indemnification is a promise, usually contractual, to protect a party from financial loss. Indemnification may work by either direct compensation to the injured or by reimbursement for any loss incurred. One way to manage liability is to include indemnification provisions in agreements relating to the transfer, development, and deployment of technologies. Such a provision specifies that the indemnifying party will compensate the indemnified party for any loss or damage that may be sustained by it as a result of the actions of the former. Under this approach, the first party (the indemnifying party) agrees to hold the second party (the indemnified party) harmless and to defend the second party and its officials against claims resulting from the first party’s actions and/or omissions.

In order to limit the risk of liability to what it can adequately control, AATF might reasonably agree to indemnify a technology donor for claims resulting from AATF’s use of the licensed technology, provided that the indemnity granted under these conditions excludes claims resulting from the technology donor’s own acts and/or omissions.33

5.3 Warranty disclaimers

Another approach to managing liability is the use of warranty disclaimers. A warranty, either express or implied, is a guarantee that a particular product or technology will serve a specified purpose. A warranty disclaimer enables one party, usually a technology developer or transferor, to expressly disclaim guarantees. Conceivably, technology developers or transferors could be held to one of two implied warranties: merchantability or fitness for a particular purpose.

An implied warranty of merchantability is a warranty implied by law, such that if a merchant (someone who makes an occupation of selling things) sells an item, he or she is guaranteeing that the item is reasonably fit for the general purpose for which it are sold. GM-technology developers qualify as merchants and their technologies deemed to be reasonably efficacious for the general purpose for which they may be transferred to a user. Thus, the failure of GM technology could subject the developer/transferor to liability for breach of the technology’s implied warranty of merchantability. An implied warranty of fitness for a particular purpose, sometimes referred to simply as a warranty of fitness, is a warranty implied by law, such that if a seller knows of, or has reason to know of, a particular purpose for which an item is being purchased, the seller guarantees that the item is fit for that particular purpose. For instance, if a GM technology is developed for, or transferred to, a user for the purpose of addressing a particular agricultural constraint, the technology developer would be deemed to provide a guarantee that the technology would indeed address the constraint. To manage potential liability claims resulting from the GM technology failing to fulfill the general purpose for which it was developed or sold or effect the specific constraint the technology was meant to address, the technology developer/transferor would need, at the time it develops or transfers the technology, to expressly disclaim implied warranties of merchantability and fitness for a particular purpose.

4.4 Letters of nonassertion

A letter of nonassertion assures the user that the technology owner will not enforce its IP rights.

4.5 Technology/product stewardship

Technology- and/or product-stewardship procedures include: comprehensive risk analyses for projects and/or phases of projects; appropriate risk-mitigation strategies (including appropriate insurance coverage, outlining specific uses for technology, management and oversight protocols, procedures to protect confidential information, etc.); and compliance with all applicable laws.

Adherence to appropriate technology/product-stewardship best practice guidelines can help protect technology developers and users from potential liability as their actions would likely be deemed reasonable under the applicable circumstances.
6. CONCLUSION
The international legal debate continues about whether or not GMOs should have special legal liability. Actors in agricultural development have a responsibility to develop and deploy safe and environmentally friendly products through the adoption of appropriate technology-and/or product-stewardship measures. The legal, health, and environmental risks of using GMOs should be reduced as far as possible. Failure to manage risk appropriately may be extremely costly in terms of lost time and money.

The African Agricultural Technology Foundation (AATF) is an institution that gives smallholder farmers in Sub-Saharan Africa access to technologies, including agricultural biotechnology. It is imperative that the AATF examine the potential liability issues associated with GM crops, identify the key liability risks for specific members of the agricultural communities, and suggest measures that may be implemented to minimize such risks.

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2 The common law of England was one of the three main historical sources of English law, with the other two being legislation and the doctrines of equity. Common law constitutes the basis of the legal systems of Australia (both federal and individual states), Brunei, federal law in Canada and the provinces’ laws (except Quebec civil law), Hong Kong, India, Malaysia, Malta, New Zealand, Pakistan, Singapore, South Africa, Sri Lanka, most of the United Kingdom (that is, England and Wales, Northern Ireland, and the Republic of Ireland), federal law in the United States and the states’ laws (except Louisiana), and many other generally English-speaking countries and British Commonwealth countries. Essentially, every country that has been colonized at some time by Britain uses common law except those that had been colonized by other nations (Quebec follows French law to some extent and South Africa follows Roman Dutch law), in which the prior civil law system was retained to respect the civil rights of the local colonists. India’s system of common law is a mixture of English law and the local Hindu law.
3 Statutory law is written law set down by a legislature or other governing authority, such as the executive branch of government (unlike common law that is based on judicial rulings) in response to a perceived need to clarify the functioning of government, improve civil order, answer a public need, or codify existing law or for an individual or company to obtain special treatment.
4 L.R. 3 H.L. 330 (1868).
6 The issue has been debated at several meetings, including a Workshop on Liability and Redress (Cartagena Protocol, 2–4 December 2002, Rome, Italy); a meeting of the Technical Group of Experts on Liability and Redress (18–20 October 2004, Montreal, Canada); the first meeting of the Ad Hoc Group on Liability And Redress (25–27 May 2005, Montreal, Canada); and the second meeting of the Working Group on Liability and Redress (20–24 February 2006, Montreal, Canada). See also [No Authors Listed]. 1987: Designer Genes That Don’t Fit: A Tort Regime for Commercial Releases of Genetic Engineering Products. Harvard Law Review 100:1086–105.
8 See supra note 7, at page 3.
11 Article 14 says, in part, that “a person who imports, arranges transit, makes contained use of, releases, or places on the market a genetically modified organism or a product of a genetically modified organism shall be strictly liable for any harm caused by such a genetically modified organism or a product of a genetically modified organism. The harm shall be fully compensated.”
12 See, for instance, the draft biosafety laws of Cameroon, Ghana, Kenya, and Uganda.
13 Article 27 of the Biosafety Protocol reads as follows: “The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first meeting, adopt a process with respect to the appropriate elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified
organisms, analysing and taking due account of the ongoing processes in international law on these matters, and shall endeavour to complete this process within four years."


17. Ibid., at page 104.

18. The issue of liability for environmental damage, including loss of diversity, is typically addressed with reference to the statutes of the relevant jurisdiction and has not been explored in this chapter.

19. Note, however, that Kershen and Smyth (see supra note 16) assert that "Organic agriculture is a set of production standards and not product standards" and thus, "…an organic farmer who follows an approved production plan produces organic products on an organic farm regardless of adventitious presence of transgenic material..."; see also Hoffman v. Monsanto Canada, Inc., S.K.Q.B. 225 (2005) where the plaintiffs abandoned claims (among others) alleging loss of organic label.


21. In re StarLink Corn Products Liability Litigation, Proposed Settlement and Fairness Hearing Document, MDL Docket No. 1403 (N.D. Ill. 2003). The defined class included farmers and other persons (individuals, partnerships, and corporations) with a financial interest in non-StarLink corn harvested between 1998 and the time of the settlement who either (i) operated a farm from which non-StarLink corn was harvested in 1998, 1999, 2000, 2001, or 2002, whether or not the crops or corn stores suffered actual Cry9C contamination; or (ii) operated a farm from which non-StarLink corn was harvested at any time since 1998 and suffered actual Cry9C contamination.

22. See supra note 7, at page 10.

23. See supra note 7, at page 10.

24. See supra note 7, at page 10.

25. See supra note 7, at page 11.

26. See supra note 7, at page 11.


28. See supra note 7, at page 6.

29. See supra note 7, at page 12.

30. See supra note 7, at page 8.


33. AATF would usually indemnify and hold a technology donor and its employees, directors, officers, and agents harmless against any and all claims, losses, liabilities, or expenses on account of any infringement or alleged infringement of IP or injury or death of persons or damage to property caused by, arising, or alleged to arise out of AATF’s acts or omissions under, or in connection with, the applicable agreement except to the extent that such claims, losses, liabilities, or expenses are the result of the technology donor’s acts or omissions.