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A snapshot of illegal practices in the trade in

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## Abstract

Seed is the most important input in crop production. Reliable, high-quality seeds are vital to agriculture and the food supply chain. High-quality seeds enable farmers to boost crop productivity, improve livelihoods and feed a growing world population. In recent years, there has been an increase in illegal seed practices. Many of these practices constitute a violation of intellectual property rights, such as trademark infringements, including the production of counterfeit seeds, the illegal reproduction of seeds in violation of a plant breeder's right (PBR) and the theft of proprietary material.

This chapter demonstrates through three case studies the impact of illegal practices on breeders, farmers, consumers, the seed value chain and the entire agricultural production process. It highlights the need for cooperation among all actors involved in the global seed supply chain, emphasizing the crucial role that must be played by regulatory authorities at the national, regional and international levels and the actions required to better combat illegal seed practices in future.

## Introduction

Seed is often referred to as the heart of agriculture. It is the foundation on which global food production depends. The genetic potential and quality of the seed directly influences crop yield and crop resilience and with that farmers' capacity to grow their yields and cope with climate change. High-quality seeds are thus essential to providing a solution to environmental and societal challenges and to meet the ever increasing demands of a growing population<sup>1</sup>.

However, a concerning rise in illegal seed practices threatens global food security, the livelihood of farmers and trust in a professional seed industry. Furthermore, illegal practices impact worker safety, and illegal work practices can violate labour laws. Sometimes such occurrences are also associated with other forms of illegal activities, such as tax evasion and the circulation of fraudulent crop inputs (e.g. fake crop protection products and seed treatments).

Seeds are unlike other agricultural inputs. Seeds have great economic value derived from the high investment in R&D required to breed them and the innovation they embody, as well as their societal value to farmers and food systems (IHS Markit, 2019). At the same time, seeds – and the plants grown from them – are self-reproducing material, which makes them easy to copy and thus vulnerable to intellectual property infringements and other illegal practices. Therefore, seeds require intellectual property protection, which is mostly provided through plant breeder's rights (PBRs), and breeders must apply for such protection as a first line of defence against infringement.

For many crops, the seed production and distribution chain is long and involves multiple actors until the seeds reach the grower or farmer. This further complicates the situation and increases the likelihood of illegal practices. The global dimension of the seed sector acts as a further layer of complexity, since the different phases of breeding and seed production can occur in different locations around the world.

## Diversity of illegal seed practices

Several decades of experience have shown that fraudulent seed practices are extremely diverse and are often not limited to a single modus operandi but instead encompass a spectrum of illicit activities. In addition, fraudsters are constantly in search of new and innovative ways of engaging in illegal practices, making this a challenge for regulatory authorities.

While it is clear that growers and breeders suffer from illegal seed practices, many illegal practices also end up deceiving farmers who buy fraudulent seed products in the belief that they are genuine. Historically, the seed sector has been founded on trust and confidence, with farmers believing in the quality of the seeds that they purchase. However, the yields that fraudulent seeds deliver are sometimes only a fifth of their real potential for certain maize varieties or a third in the case of rice. The trustful relationship between the seed supplier and the farmer is harmed, and the livelihood of a smallholder farmer can even be put at risk when such scenarios materialize.

While there is no global overview of the extent and diversity of illegal seed practices, a study conducted by

Examples of regulatory offences include:

- mislabelling of seed bags with false variety names;
- misrepresentation of grain harvested from hybrids and its sale as genuine hybrid seed (without the use of the original parent line);
- selling of seeds with false seed certificates with minimum seed quality standards being unmet, such as varietal purity or germination thresholds (i.e. certificates not issued by a governmental authority);
- commercialization of seeds not registered in the national or regional variety catalogue despite the market authorization requirements in place.

## Consequences of illegal seed practices

Fraudsters within the global seed supply chain are often actors that no one would suspect. They can be fraudulent companies that have managed to insert themselves in the supply chain and that free ride on the investments made by professional seed companies, or even their customers. Occasionally, seed fraud is part of larger organized crime operations. The consequences of illegal seed practices are manifold and extend far beyond the immediate economic losses incurred by breeders. Illicit activities threaten consumer health, global food security, sustainable agriculture in several ways (see Table 1). Moreover, these practices are often connected with criminal activities, such as tax evasion, corruption, economic espionage or even labour exploitation, all of which can impact societies negatively.

## How to address illegal seed practices: investigation, prosecution or other?

Addressing the escalating issue of fraudulent seed practices requires a clear and enabling legal and policy framework as well as concerted efforts by governments, all stakeholders in the global seed value chain and the broader agricultural community. Three case studies outline this in Boxes 1-3.

These case studies are emblematic of weak regulatory enforcement (see Box 1) and new types of infringement committed on a massive scale (see examples of grafting in Boxes 2 and 3). They required years of organized action and collaboration between breeders to achieve an outcome. They illustrate how a few key steps which the industry has identified can play an important role in combating illegal seed practices (see Table 2).

## Country preparedness

The investigation and prosecution of illegal seed practices continues to be challenging. Country preparedness falls into three broad categories:

- countries without a specific legislative framework in place;
- countries with a legislative framework in place but with limited enforcement capacity;
- countries with both a legislative framework in place and enforcement capacity, but that may still suffer from other factors which discourage enforcement.

In the first instance, infringers face zero risk. In the second instance, public authorities may lack awareness of the issues involved, and courts may not be equipped to deal with illegal seed practices. In the third instance, where police and prosecutors are aware of the risks of illegal seeds and are trained to tackle them, enforcement challenges may still persist if the cost of legal action is prohibitively high or the fines for convicted infringers are so low that they do not act as a sufficient deterrent for illegal activity.

In general, policymakers need to be sensitized to the impact of illegal seed practices and urged to put in place the necessary legislative frameworks and tools for enforcement. Considering the impact that illegal seeds have on the health and safety of human, animal and plant life, as well as their impact on the entire global agricultural value chain, it is vital that this issue be prioritized.



Most crops in countries across South America must be certified by the responsible governmental authorities prior to their marketing and sale. However, farmers in a number of countries have been found to sell seeds that have not undergone the formal certification process, and have also breached breeders' rights. This means that seeds can enter the marketplace without having undergone official controls, with the risk of breaching intellectual property rights, or not meeting quality and/or health and safety standards. Some farmers have also been found in violation of the national contractual systems that has been put in place to collect remuneration for the use of farm-saved seed.

Such illegal practices can be difficult to control; and while evidence of these practices have been found in South America, they exist across most continents and must be addressed.

Better enforcement can be achieved through amendments to seed laws, which permit breeders to seek injunctive relief without having to initiate an administrative procedure through competent governmental authorities, or which give breeders the right to be remunerated for the use of farm-saved seed. Beyond an improved legislative framework, developing a variety of identification methods that can be used to control the legal origin of a seed can also lead to more effective controls.



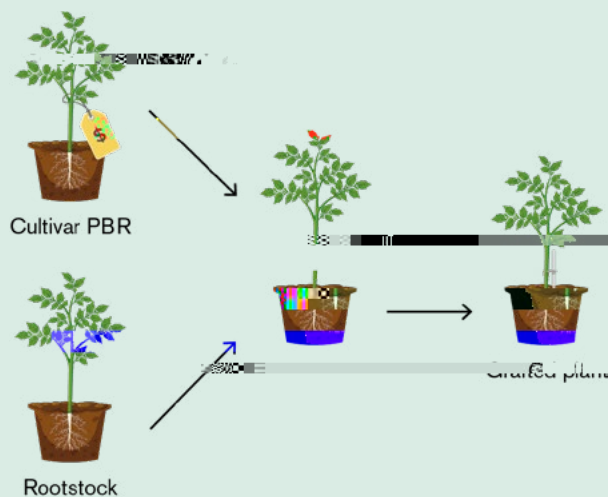
## BOX 2

### Cuttings and stubs used for illegal reproduction

In 2014-2015, several seed companies discovered that vegetative reproduction of their protected tomato varieties was taking place on a massive scale across several countries in Southern Europe. Careful investigation revealed that grafting by plant raisers and growers was being used for plant reproduction, which made it an illegal activity, causing significant economic damage to seed companies.

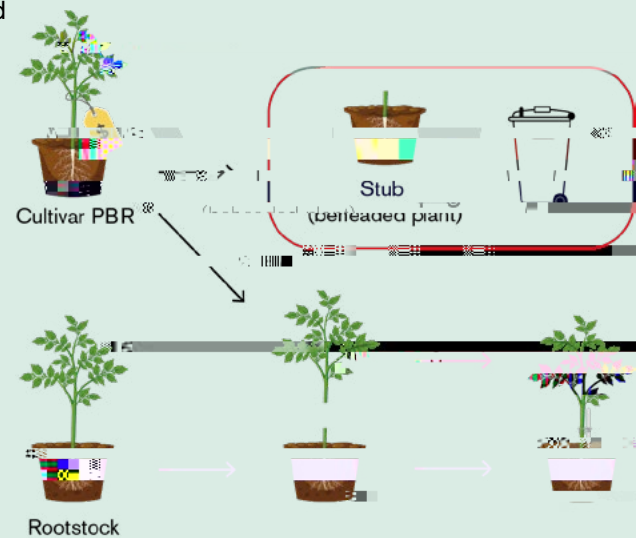
Grafting is the act of joining two plants together. The upper part of the graft (the scion) becomes the top of the plant, and the lower portion (the understock) becomes the root system or part of the trunk. It is illegal to graft tomatoes from protected varieties unless the proper process is followed (see (a)).

(a) Legal grafting process



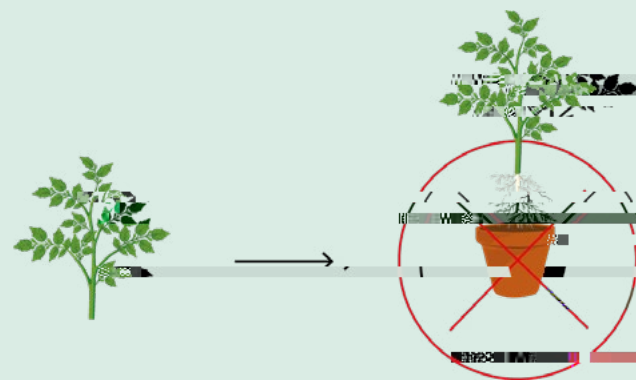
An important condition for grafting varieties protected by plant breeder's rights (PBRs) is that only one grafted plant be produced from a protected seed. If more plants are produced, this qualifies as "propagation", which requires specific authorization of the holder of the PBR. This means that when a cutting is taken from a plantlet and grafted onto a rootstock, the remaining part of the plantlet – called the stub – must be discarded (see (b)).

(b) The beheaded cultivar (stub) must be discarded after grafting



In various Southern European countries, however, the plant growers did not throw away the stubs but made additional cuttings from the cultivars and grew them, thus creating second and even third generation plants – a profitable business for infringers (see (c)).

(c) Illegal production of plants using cuttings





PBR holders suffered significant economic damage as a result of this practice, and mobilized to organize inspections at the sites of the infringement together with the local police, acquiring samples of the potentially illegal genetic material. Prior to taking legal action, breeders wanted to know that their scientific and legal understanding of the situation was correct and that this activity truly constituted an infringement of PBRs.

Three well-known agricultural universities were requested to perform technical analyses on the acquired samples to determine whether the varieties had remained the same after grafting. The three universities confirmed in parallel that the practice at issue constituted the reproduction of a protected variety. For the holders of the PBRs, it was therefore time to act.

In reaction, the breeders first sent a letter to all growers through their national associations asking them to stop the illegal practice. While some did indeed stop, many did not and therefore the breeders decided to take further

action. With the help of various official institutions, such as agricultural inspectorates and public agricultural research centres that undertake DNA analysis for variety identification, breeders managed to gather sufficient evidence for the launch of criminal court cases.

A total of 18 cases concerning the vegetative propagation of tomato plants were referred to the inspection authorities in one of the countries concerned. Three-quarters of these cases resulted in an administrative sanction, while only two cases resulted in a criminal sentence. It is important to highlight that:

- (i) most courts lacked knowledge of PBRs and how to prosecute such infringements;
- (ii) the threshold for criminal sentences is generally quite high in most legal systems;
- (iii) slow justice systems have sometimes meant that the



In 2008, the illegal vegetative reproduction of tomatoes in Sicily was widespread. Infringers constantly try to keep down costs, and by doing so increase the risk of illegal grafting (see Box 2). The illegally reproduced tomato

## Conclusion

In a world where agricultural production is critical to ensuring global food security, and where seeds are the starting point of the production process, it is crucial that illegal seed practices be weeded out. The ISF, which represents the private seed sector globally, is strongly committed to fighting infringements and seed fraud more broadly and to engaging externally with all relevant partners in doing so.

Moreover, in a world where the seed industry has gone global, joint efforts with international organizations, such as the WTO, can be particularly critical in the field of intellectual property. However, the most important actions that can be taken to combat seed fraud remain at the national level. Governments must create effective regulatory frameworks to protect the holders of PBRs and to ensure enforcement.



## Illegal seed practices discourage innovation.

The impact of illicit trade in seeds and seed fraud can be significant for farmers, the agri-food value chain and global food security. Most importantly, illegal seed practices discourage innovation. By raising awareness of the problem, fostering collaboration across all actors in the seed value chain, strengthening legal protection and enhancing enforcement, the world can protect the integrity of the seed sector and ensure that farmers have access to reliable, high-quality seeds. Ultimately, this will be the real guarantor of a safe, stable and reliable global food system.

## References

Food and Agriculture Organization of the United Nations (FAO) (2018), *The Future of Food and Agriculture: Alternative Pathways to 2050*, Rome: FAO.

IHS Markit (2019), *Analysis of Sales and Profitability Within the Seed Sector*, IHS Markit.

International Bank for Reconstruction and Development (IBRD) (2017), *Enabling the Business of Agriculture 2017*, Washington, D.C.: World Bank Group.

## Endnotes

1. The main challenges world agriculture will face in the coming decades is producing more food for the estimated 9.7 billion people in 2050, while at the same time combating poverty and hunger, using scarce natural resources more efficiently and adapting to climate change (FAO, 2018).
2. For an overview of seed regulations, see IBRD (2017).
3. Based on survey feedback from 77 respondents.