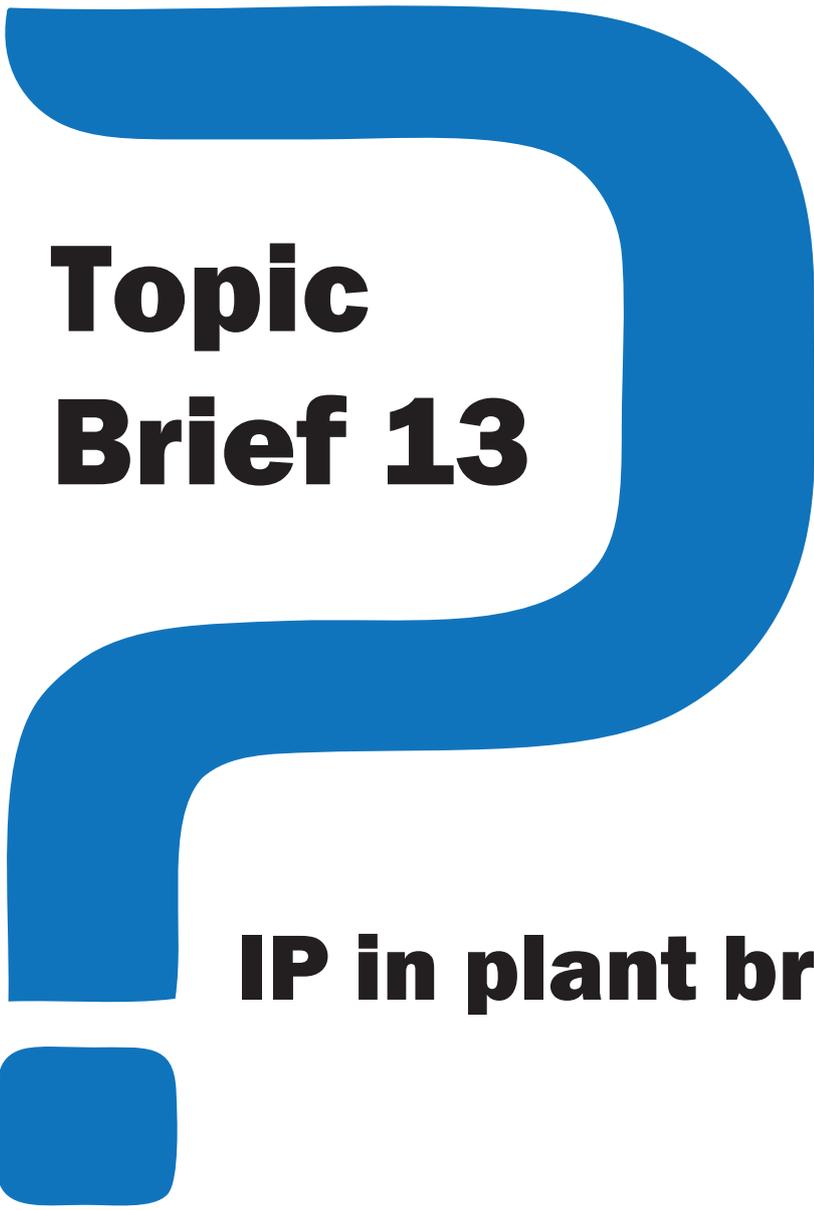




■ Intellectual Property Awareness Network

A large, thick blue question mark graphic that frames the text on the page.

Topic Brief 13

IP in plant breeding

Brief 13



Improved crop varieties provide the essential foundation for the UK's £103bn food production chain.

IP in plant breeding

Context

Plant breeding is the business and science of crop improvement. The industry develops new varieties of agricultural and horticultural crops with improved yield, performance and end-use quality. It is a complex, costly and skilled operation, requiring many years of upfront investment in research and development.

Improved crop varieties provide the essential foundation for the UK's £103bn food production chain. The economic benefits of plant breeding range from increased productivity at the farm level through to import substitution, export earnings and enhanced processing quality within the food and drink manufacturing sector. A study by DTZ's life sciences group found that the annual contribution of plant breeding in three key crops (wheat, barley and forage maize) exceeds £1 billion in additional value within the UK farming and food supply chain – equivalent to a 40-fold return on the annual royalty income on those three crops.

Crop genetic improvement is increasingly recognised as a key factor in delivering the sustainable increases in agricultural productivity needed to address global challenges of food security and climate change. Plant breeding also makes positive contributions to health and nutrition, sustainable use of resources, environmental protection and enhancement and the quality of life.

Commercial plant breeding provides the only route to market for such genetic improvement.

Role of IP in the plant breeding sector

Plant breeding is funded in the UK and Europe predominantly through an internationally recognised system of IP protection known as Plant Breeders' Rights (PBR) or Plant Variety Rights (PVR). PBR gives breeders limited monopoly rights over the multiplication and sale of their varieties and allows a royalty payment to be collected on the use of each protected crop variety, both as purchased (certified) seed and farm-saved seed.

The PBR system also stimulates further research and improvement across the sector, through the 'breeder's exemption', which ensures that all protected varieties are freely available for use in future breeding programmes.

For most crop species, the British Society of Plant Breeders (BSPB) licenses production and collects and distributes seed royalties on members' behalf.

Relevant legislation

Plant Breeders' Rights were first established by an international agreement – the UPOV Convention – in 1961. In the UK, Plant Breeders' Rights were first introduced with the passing into law of the 1964 Plant Varieties and Seeds Act. A UK plant breeder may hold UK Plant Breeders Rights under the Plant Varieties Act 1997 or Community Plant Variety Rights under the Community Plant Variety Rights Regulation 2100/94.

UK Plant Breeding Sector

The UK agricultural and vegetable breeding industry consists of some 60-70 enterprises, ranging from SMEs to large multinationals. The total royalty income to UK plant breeders, across all crop species, is relatively inelastic at around £50m per year. Plant breeders spend about a third of their royalty income on R&D, a much higher proportion than most industry sectors.

Key IP issues for Plant Breeders

1. Return on investment

For the major UK arable crops, a fundamental issue is the collection of royalty as a component of the seed price, effectively imposing a ceiling on royalty levels and preventing the capture or realisation of significant value added along the food chain. While our expanding knowledge of plant genetics opens up major new opportunities for crop improvement, the investment needed to exploit this new knowledge-base remains greater than commercial plant breeders can manage alone and public/private partnerships are vital. This is a matter of wider public concern. Without alternative IP models or new sources of investment, current rates of genetic yield gain deliverable from the limited royalty income available to plant breeders will fall short of the food security goals set for 2030.

2. Farm-saved seed

Plant Breeders' Rights legislation allows a farmer to use the product of his own harvest as seed when it is resown on his own holding. The farmer must declare his use of protected varieties as farm-saved seed and pay equitable remuneration which is around 50% of the royalty paid for certified seed. The UK has an effective system collecting £10m annually which is an essential funding source, at around a third of breeders' income for the main arable crops. 35-60% of the UK crop is grown from farm saved seed, depending on the crop. While the system for collecting royalties on certified seed is relatively efficient and cost-effective, the collection of payments on farm-saved seed is more difficult to achieve and to enforce. Since the UK farm saved seed payment system was introduced in 1996, the plant breeding industry has invested in a range of initiatives to improve compliance, from increased monitoring and enforcement to information campaigns such as FAIR PLAY on farm-saved seed supported by the National Farming Unions.

3. Alternative IP

Some plant breeding companies, particularly those operating in parts of the world that have embraced GM varieties protect their varieties through patents. The USA uses a system of utility patents rather than PBR. In Europe a variety cannot be the subject of a patent but traits and technologies can be patented and breeders in Europe are increasingly making use of the stronger IP protection that patents afford. The patent/PBR interface is an evolving and important issue for the global industry and legislators, seeking to find a balance between access to germplasm for breeding and the needs of rights holders to protect their investment.

4. PVR trade mark

In the UK, the PVR campaign aims to raise awareness and understanding of how IP protection within the plant breeding industry is delivered and how it sustains investment and innovation in the industry. Central to the campaign is the PVR trade mark. The trade mark may be seen on seed bags, and packaging, stationery, invoices, field boards, web sites, seed catalogues, in fact anywhere connected with the development, sale and use of high quality seeds of varieties protected by Plant Variety Rights. The mark demonstrates that the company or organisation using it supports the principles of investment in breeding innovation and its delivery through high quality seed and that the variety is the result of years of research, innovation, investment, testing and evaluation.



References for further information:

- Find out all about the science and business of plant breeding¹⁰⁶
- The British Society of Plant Breeders¹⁰⁷
- PVR trade mark¹⁰⁸
- FAIR PLAY on farm-saved seed¹⁰⁹
- Animal and Plant Health Agency Plant Variety Rights¹¹⁰
- Community Plant Variety Rights Office¹¹¹
- International Union for the Protection of New Varieties of Plants (UPOV)¹¹²

106 <http://www.plantbreedingmatters.com/>

107 <http://www.bspb.co.uk/>

108 <http://www.plantvarietyrights.org/> and on Twitter @PVR_org

109 <http://www.fairplay.org.uk>

110 <https://www.gov.uk/guidance/plant-breeders-rights>

111 <http://www.cpvo.europa.eu/>

112 <http://www.upov.int>