

Rights and Wrongs

Do patents on plant traits hinder innovation? Or are they indispensable for safeguarding the intellectual property of plant breeders?

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The global trade in vegetable seeds is worth roughly 3 billion euros per year, on a market dominated by about ten big players, including three Dutch plant-breeding companies. That market changed dramatically in 2004, when it became possible to patent not only new methods and techniques but also live material. Already 150 patents on vegetable traits have been applied for or granted in Europe. Patents have been granted, for example, on resistance to mosaic virus in capsicum and on resistance to aphids in lettuce. Previously, breeders' rights were in force, which meant that plant breeders were free to use existing varieties to develop and select new hybrid varieties. 'The new patent law makes our work extremely complicated', says Ben Tax, director of breeding company Rijk Zwaan, a large family-run business in De Lier. 'You could be far advanced in a breeding programme before finding out that a patent application is pending for one of the parent plants, because these applications are not immediately made public. And then it can take years before it becomes clear whether the patent will be granted. This means years of uncertainty. After that you have to start negotiating the terms of a possible licence, a permit to make use of the parent plant, and the patent holder can sometimes demand very high royalties.

So you don't know in advance which plants you can still use for breeding purposes.' This is why the Dutch Parliament has asked State Secretary for Agriculture Bleker to take measures in both the national and the European contexts to ensure that breeders can go back to making use of all plant material in their breeding programmes, through a broad breeders' exemption (see box). 'This exemption is extremely important for preventing monopolization and safeguarding the global food supply', believes Tax.

NO TIME TO RECOUP

Not everyone agrees with this standpoint. 'Patent law plays a very important role in plant breeding, especially when it comes to protecting broadly applicable innovations', says external relations manager Gerard Meijerink from Syngenta, a multinational that has taken over breeding company Zaadunie in Enkhuizen, among others. 'If you come up with a new disease resistance that you've been working on for some 20 years and that is commercially very interesting, within three or four years it's likely to be present in every one of your competitors' commercial varieties', says Meijerink. 'Then you don't have enough time to earn your money back. That's why we are in favour of patents on plant characteristics, as long as

they are genuinely innovative. Some patents granted 10 to 15 years ago would not be considered innovative today.'

At the end of May, the Dutch Parliament debated with State Secretary Bleker about revising the patent law. The Wageningen report *Veredelde Zaken*, commissioned by the then Ministry of Agriculture, Nature and Food Quality (LNV), informed the debate. 'The many patent applications inhibit innovation', says Niels Louwaars of the Centre for Genetic Resources, the Netherlands (CGN), a part of Wageningen UR, and co-author of a report suggesting that plant breeding companies need more lawyers than breeders on their staff these days. State Secretary Bleker has agreed to revise the Dutch patent law as requested by the Dutch parliament. He will also meet with European colleagues to discuss whether the expanded breeders' exemption can be implemented within the EU. Breeders would then be free to develop hybrids using existing varieties and to introduce these new varieties onto the market. 'Our study shows that the patent law together with technological developments in the field of biology contribute to the current concentration in the plant breeding sector and constitute a threat to future innovation', says Louwaars. 'Particularly the current use of the patent law, which results in large >



numbers of far-reaching patents, is causing problems.’ Recommendations in the Wageningen report include revising the law and regulations, increasing the quality of patents and improving patenting procedures. ‘We are pleased that Bleker agrees’, says Louwaars. ‘France and Germany also already have a breeders’ exemption. Competition and profitability in the breeding sector are crucial for the sustainability of the food chain. Farmers and gardeners – including those in developing countries – benefit from competition on the seed and planting material market.’

‘If Dutch patent law is revised, as Bleker has promised, breeders will once again be free to

BEN TAX,

director of plant-breeding company Rijk Zwaan

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use patented material in their hybrids’, says Anke van den Hurk of Plantum, the association for the Dutch plant reproduction material sector. ‘But with the limited breeders’ exemption a licence will still be required to commercialize the resulting varieties, so we are not quite there yet. We do by the way support the idea of patents to protect innovative techniques or methods. But biological material must remain freely available for breeding.’ According to Van den Hurk, the value of such a broad breeders’ exemption has been demonstrated since the nineteen forties.

‘Our government representatives now have to gather support for the Dutch standpoint among their European colleagues, because our members are international companies.’ ‘Plant-breeding is the basis of the food supply, adds Rijk Zwaan director Tax. ‘A handful of companies now control a large segment of the market in this sector. It’s very important to preserve sufficient competition and biodiversity. That’s what the breeders’ right is for. Our sector has thrived thanks to this right, which offers sufficient protection for plant varieties. In creating the EU biotechnology directive in the late nineties, legislators underestimated how many patents on plant traits breeding companies would apply for. Wageningen professor Rudy Rabbinge, a Labour Party senator at the time, warned against this. Now the politicians have to fix the problem.’

Taking advantage of the most advanced molecular techniques, large corn-breeding companies now put every new maize variety that enters the market through a DNA scanner to check whether it might contain any DNA patented by the company itself. If any are found, damage suits will follow.

Louwaars: ‘For this reason breeders are now afraid to use any crossing material that does not originate from their own gene pool, out of fear that it may be patented by someone else; this restricts innovation and progress. Patent offices are incidentally becoming more reluctant to grant broad patents.’

Large breeding companies invest 15 to 25 per cent of their turnover in research and development. New plant varieties tend to be successful for three to seven years, until a successor takes over that is even better at



GERARD MEIJERINK,

external relations manager of plant-breeding company Syngenta

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ANKE VAN DEN HURK,
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sector organization Plantum

**‘Biological material must remain
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meeting producer and consumer demands. In that short time span the plant breeder has to make a profitable return on investments. This is why the breeders’ right has been in effect since 1941. According to this law, plant breeders can use existing varieties for the development of new varieties. Thanks to this broad breeders’ exemption, the best varieties are constantly being improved.

A patent is granted for 20 years, calculated from the application date. But according to Syngenta, the breeding company often cannot start recovering its investment until ten years later, when the first variety with the patented trait enters the market. In practice patent applications are submitted as soon as possible, sometimes even before the first test hybrids are created. This is very different from the breeders’ right, which is valid for 25 years from the time the new variety enters the market.

According to Meijerink from Syngenta, good patent protection is crucial for innovation in many sectors and especially for the leading sectors of food (agri-food) and horticulture, which are expected to play a pivotal role in Dutch innovation. ‘Innovation needs the stimulus of good patent protection to enable companies to continue making the high annual investments. At Syngenta we invest more than one billion dollars each year in research and development. ‘We are looking for a solution based on the motto “Free access, but no access for free”. You have to be free to use patented material for breeding, but if you introduce new varieties onto the market, you have to pay for the patents used. Clear rules have to apply so that all parties know what is allowed and how to proceed – negotiations between breeders and patent holders are now often very time-consuming. Incidentally, the

possibility to protect innovations through patent law and to earn back research money in this way is an interesting source of income for universities and institutes as well.’

According to Rijk Zwaan director Ben Tax, patent law is not needed to safeguard breeders’ incomes. ‘Thanks to the breeders’ right, this sector has been highly profitable for the past 70 years; that system has proven itself. Plus, advances in biotechnology have made it possible for us to improve our varieties faster and with more precision. The development period for a variety has decreased from 10-20 years to 6-12 years. Effective use of biotechnology has made our work cheaper, not more expensive.’ ■

NIELS LOUWAARS,
senior policy staffmember CGN

**‘Plant breeding companies should
almost be employing more lawyers that
plant-breeders’**



THE RIGHT TO BREED AND THE RIGHT TO PATENT

EU legislation allows for the patenting of plant characteristics, doing away with breeders’ rights to use existing plant varieties to develop new ones. Following years of controversy, the Dutch State Secretary for Agriculture Henk Bleker agreed in May to a limited breeders’ exemption so that new plant breeds can now be freely developed. But to market their new breeds, breeders must still apply to the patentholder for a licence. The Dutch parliament has therefore asked for a broad breeders’ exemption covering marketing as well.