

SEEDS OF RESISTANCE

ED HAMER discovers how the proposed EU Seed Law threatens to undermine the livelihoods of small growers and businesses. Illustrations by VAL LITTLEWOOD.

As hotbeds of resistance go, the redbrick exterior of Garden Organic's Heritage Seed Library (HSL) is about as unassuming as it gets. Set as it is in the gently rolling arable heartland of Warwickshire you'd be forgiven for assuming the building surrounded by greenhouses was breeding hybrid wheat for local cereal barons. The reality however, depending very much on the wording of a law currently making its way through the European Parliament, is that the HSL could well represent the UK's last stand for a cultural legacy dating back to the dawn of agriculture.

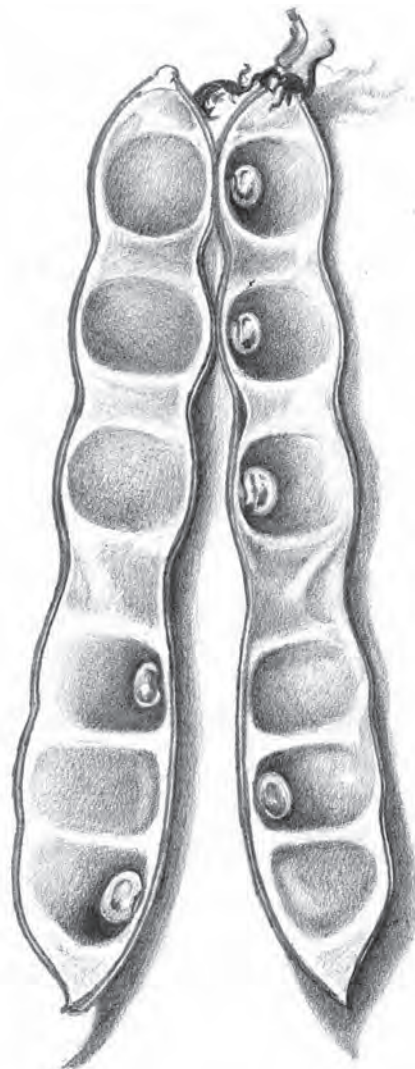
Neil Munro, the HSL manager, is equally unassuming as he shows me around the library's modest set up. As well as maintaining its own seed stocks the HSL relies on a community of amateur gardeners to grow and save their own, mostly vegetable, seed every year. These are sent to the library to be cleaned, dried and stored at a stable 12 degrees Centigrade before they are made available the following year for other gardeners to repeat the process.

"In many ways we're simply continuing a long tradition of seed saving"

Munro tells me, "but it's a tradition that's being lost all too quickly." One of the most valuable assets of the HSL's work is involving a community of gardeners in a process which has otherwise been left to a handful of professional plant breeders. "As well as ensuring that our seeds are kept alive and evolving over time, we are also keeping alive the skills of seed saving which can be useful to any gardener – large or small."

The HSL currently stocks around 800 or so varieties that are unlikely to appear in any commercial seed catalogue. These are defined as either Heritage or Heirloom varieties. Heritage seeds were widely available up until around the beginning of the 20th century but have since become commercially unavailable, while Heirloom seeds have never appeared in a catalogue but have been grown, saved and handed down by generations of growers, often adapting to a specific locality or region.

While the HSL's work may seem innocent enough, it is only made possible due to a loophole that forces them to operate on the fringes of legality. In the UK it is against the law to sell any plant seed that does not appear on a "National List" managed by the National Institute of Agricultural Botany (NIAB).



The aim of the National List is to regulate the quality of commercially grown crops. Registration requires each variety to be independently tested by NIAB, and the payment of an annual royalty fee. Clearly it only makes sense for seed companies to register a variety if they are going to sell enough of that seed each year to cover the cost of registration. This is simply not the case for Heritage and Heirloom varieties.

As a result the HSL can only legally operate if its customers become members of the library and in return receive six packets of seed each year. "It is frustrating that we can't operate more transparently" says Munro, "but in many ways we should count ourselves lucky we can operate at all. Despite this we're not only committed to keeping these varieties alive for growers today, but we could well be ensuring vital genetic resources for growers in the future."

Sustainable Intensification

To many people this level of regulation may seem disproportionate, particularly when you consider that the UK currently enjoys some of the most lenient seed regulations in Europe.

Things are however set to change. Significantly. On 6th May 2013 a draft was released of the proposed EU Plant Reproductive Material Law (PRML 2013/0137). The PRML has been proposed to unify a number of separate EU Directives concerning the trade of seeds, plants, tubers and "all types of plant reproductive material".¹

The executive summary states that the aims of the legislation are; "to improve variety registration, enforce certification and inspection of plant breeders and reduce bureaucracy". Ambiguously it also intends to bring seed rules in line with "policy aims such as the sustainable intensification of agricultural biodiversity". Although the final draft is still being negotiated the proposals as they stand would result in the most significant changes to the UK seed market for a generation.

The Cutworm & the Crow

While the extent of the controls proposed by the PRML are a recent blip in the entire history of agriculture, they are seen by many as the logical progression of a story that stretches back to the early 19th century. Until that point farmers and

growers had saved their own seed out of necessity and in the knowledge that the skills of seed saving were as much a part of successful farming as those of working the soil and crop husbandry.

The saving of seed from one year to the next however was only half the battle. These seeds would only germinate the following spring if they had been pollinated, and there was no way of telling a fertile seed from a barren one. The only option was to save a lot more seed than was needed in the hope that enough would germinate to produce a decent crop.

As a rule farmers tended to save three or four times the amount of seed that was required. This was a significant sacrifice for small farmers and gave rise to the oral sowing tradition: "One for the cutworm, one for the crow, one to rot and one to grow". The reality was that poor seed quality was as much to blame for low germination as any damage inflicted by pests or disease.

Towards the middle of the 19th century advances in crop science enabled a few enterprising individuals to control pollinations using glasshouses and muslin screens, and to begin breeding seeds of a slightly higher quality than farmers could otherwise produce for themselves. The point at which these improved seeds were marketed to farmers, allowing them to send their entire harvest to the grain mill without holding any back for sowing, marks the birth of the commercial seed industry.

It was however a faltering start. Because these early breeders relied on open pollinators, ie wind and insects, to produce seed, there was nothing to stop someone from exploiting their work by buying these improved seed stocks and using them for further breeding and resale. As a result entrepreneurial investment in plant breeding was restricted, and commercial seed sales stagnated.

Hybrid Vigour

In the second half of the 19th century an Austrian monk named Gregor Mendel conducted a series of experiments from which he discovered the potential of recessive and dominant gene traits in offspring bred between two different plants. It wasn't until 1900 that the significance of Mendel's experiments was recognised and gave rise to the "principle of heredity" – the idea that plants could be selected, isolated and cross-bred for desired characteristics.

Mendel's work inspired a generation of early 20th century agronomists to experiment with cross-breeding various crops to produce uniform offspring with improved vigour. These crops were called "Filial 1" or "F1" hybrids, indicating that their vigour was the result of a first generation cross between two parent plants deliberately chosen for specific traits. A significant commercial side effect of F1 breeding is that further crossing over another generation will not produce offspring true to the parent type, but will lead to genetic problems associated with in-breeding: lack of vigour and poor yields.

The advent of F1 breeding resulted not only in a dramatic increase in seed quality, but importantly it offered plant breeders a degree of protection over their work. By ensuring that their hybrid seed could only be produced from their own selected



plants, breeders could justify a new wave of investment focussed on improving not only seed quality but also crop yields. Following lobbying by the fledgling U.S. seed industry² this was given added weight by the introduction of the world's first Plant Patent Act in 1930.

Meanwhile out on the fields, particularly across the American mid-west, mechanisation was encouraging the scale-up of cereal enterprises and leading to demand for crops that could demonstrate not only high yields but also uniformity and disease resistance when grown in large monocultures. Whereas previously farmers had relied on diversity as a defence against disease, the new hybrid seeds claimed to offer everything in one easy package. As the local varieties fell out of favour so too did the traditional skills and knowledge that had kept them alive for the best part of three centuries.

As one Kentucky farmer from the 1930s remembers:

"With hybridisation the farmer's role in genetic selection diminished. Seed production became more concentrated as the number of seed companies decreased over time." The attraction for a new generation of industrial farmers was undeniable: "the yield advantages were immense, and the breeders could also select for other desired characteristics such as disease resistance and standability"³.

The Green Revolution

Post WWII seed research and development was driven by advances in synthetic fertilizers, pesticides and plant breeding characterised by the semi-dwarf wheat developed by Norman Borlaug, the reluctant hero of the Green Revolution. Borlaug's disease-resistant wheat, along with the high-yielding varieties of rice and maize that followed it, cemented the perception

amongst everyday farmers that seed production was best left to the scientists and that yields, and farm profits, would balloon as a result.

It is arguable that the dedicated work that resulted in the Green Revolution would not have been justified without the legal protection provided by the 1930 Patent Act. Indeed the incentives offered by patent protection for private research and development didn't go unnoticed on this side of the Atlantic and in 1961 Europe introduced its first International Convention for the Protection of New Varieties of Plants.

The Convention was built on the framework of earlier Acts trialled by the Netherlands (1942) and Germany (1953) ostensibly to "acknowledge the achievements of breeders of new plant varieties by making available to them an exclusive property right, on the basis of a set of uniform and clearly defined principles". Its critics saw it as an attempt to privatise the common resource of agricultural seeds but they were countered by the argument that it would "encourage the development of new varieties of plants for the benefit of society".⁴

The emphasis on altruism however was short lived. As agricultural historian John Navazio points out:

"The combination of a steadily expanding world seed market and this new form of proprietary ownership of seed began to be noticed by large agricultural companies in the 1970s. To them it really made sense to include seed as part of their marketing of everything from fertilizer, insecticides, and herbicides to machinery or in some cases processed foods or commodities."⁵

With the increasing involvement of multinational companies in the seed market came inevitable demand for more stringent commercial protection. These companies were used to complex legal protection of their existing commodities, like agrochemicals and machinery. To them the "intellectual property" of their newly acquired seed portfolios shouldn't have been any different.

The result was the 1970 Plant Variety Protection Act which, according to Navazio, provided a further incentive for big business to invest in the sector: "In the 1980s major oil, agrochemical, and pharmaceutical companies started to buy many of the major seed companies worldwide, having recognized that seed was an untapped intellectual property resource for the future. Seed company mergers became the order of the day, and by the mid-1980s Royal Dutch Shell, through a series of mergers and acquisitions, became the largest seed company in the world".⁵

With seemingly unlimited investment in the seed market and commercial biotechnology in its competitive infancy it was only a matter of time before plant breeding crossed the barrier between biology and genetics. In 1991 the first genetically-

modified crop was released onto the open market, a variety of tobacco engineered by U.S. and French scientists to be resistant to mosaic virus.

In the same year the U.S. and Europe justified their unilateral seed treaties under a single International Convention for the Protection of New Varieties of Plants (UPOV). And in June 1994 plant patent protection, as defined by the UPOV, was included as one of a raft of commitments signed up to by 148 countries under the World Trade Organisation's Agreement on Trade Related Aspects of Intellectual Property Rights.

Real Seeds

Here in the UK the UPOV Convention has for the past two decades been interpreted by Defra through various incarnations of the UK Plant Varieties Act. Despite the onerous impression of regulation Defra, perhaps mindful of the British obsession with gardening, have trod a fine line between upholding the UPOV and allowing home gardeners and vegetable growers access to a wide variety of both ornamental and edible plant seed. Until now, that is.

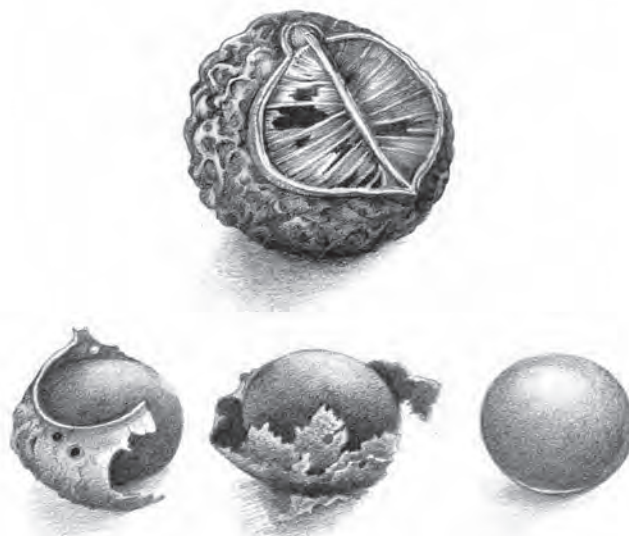
It's important to understand that the proposed PRML is seeking to replace existing EU Directives with a single piece of EU Regulation. The distinction is significant. EU Directives are policy actions imposed by the European Commission but interpreted by each member state as to how best to enforce them. An EU Regulation on the other hand is a "binding legislative act that must be applied in its entirety across the EU".⁶

Ben Gabel is the co-founder of the *Real Seed Catalogue*, arguably the UK's most radical purveyor of quality seed for small-scale growers. He explains how this scenario has worked in favour of small seed producers like himself:

"Up to now the UK government has preferred a light touch in terms of seed regulation in that it has only been enforced if someone lodged an official complaint over patent infringement. This has largely been to the credit of DEFRA who have recognized the distinction between large-scale commercial plant breeders and small-scale home gardeners.

"We have also had the benefit of an 'amateur varieties provision' within the National List. This is basically an option to register niche varieties that weren't going to sell huge volumes for a one-off registration fee rather than an annual royalty. This provision however has been specifically targeted by the PRML and an annual fee will now need to be paid for those varieties to keep them on the list.

"The effect of the new legislation will be to massively limit the choice of vegetable varieties available to home gardeners. Even the biggest seed companies will only be selling a few kilos of



the more unusual varieties of seed, sometimes just a few hundred grams. It just doesn't work if they have to pay thousands of pounds to register that variety, so only seeds bred for large commercial farmers will be registered and legally saleable."

The single biggest argument in favour of the new legislation is that seed quality must be regulated in the interests of food security. However, as Gabel explains, those varieties suitable for large-scale farmers often aren't appropriate for small producers. "Large growers usually want all of their produce to be ready at the same time so they can harvest and sell a whole field's worth at once. In contrast home gardeners usually want their crops to mature over a longer period; we don't want to eat all our vegetables on the same day.

"In many ways we support farmers in demanding that seed quality is regulated. After all, if a farmer is growing several hundred acres of cabbage, for instance, that represents a significant contribution to the UK's food security and there is an argument that it should be protected in some way. However the same argument simply doesn't apply to the small gardener or allotment grower. These growers are already protected by existing trading standards law. If they buy seed that doesn't germinate they have the right to return it for a new packet or a full refund. To me this seems an appropriate level of regulation."

Seed Swaps

Since the suggestion of a revision to EU seed laws was first raised in 2010 there has been some confusion, and no small amount of controversy, over the need to replace a system that has worked adequately. By far the most active proponent of the new law has been the European Seed Association which lobbies on behalf of the continent's largest seed companies. The earliest version of the PRML text was in fact subject to a legal challenge after it emerged that the individual who drafted it, Isabelle Clément-Nissou, had also worked for the privately funded Groupement National Interprofessionnel des Semailles et Plants, that represents and defends the commercial interests of the French seed industry.

Gabel is concerned about the impact of the legislation as it stands, but the original draft was even more restrictive. According to Bret Willers, Garden Organic's Director of Development, who was involved in the early stages of consultation on the PRML with DG SANCO (the EU Directorate General for Health & Consumer Affairs), the original proposal included a regulation prohibiting the non-financial exchange of seeds: "Although they are now reluctant to admit it, the original draft included a clear reference to regulating all types of seed exchange, including seed swaps," he says.

Swapping seeds has become increasingly popular in recent years as a new generation of young growers have embraced the need for diversity in resilient small farm enterprises. In the face of stringent controls on seed sales elsewhere in Europe, and particularly in the US, "seed swaps" have become recognised as a symbolic, and also a practical, act of defiance against the commercialisation of a cultural resource. The big seed companies have made it clear that seed swapping, along with seed saving, are a significant threat to the security of their markets, and have successfully sued individuals involved using national patent laws.

The PRML however was the first international legislation to propose this type of regulation and as a result was met with massive opposition. "We immediately went to the media with the issue," says Willers: "They contacted Brussels who said it was a non-story. So we said 'OK if seed swapping is not an issue are you going to make that an official statement?' But they never responded. Instead we, along with a coalition of civil society groups from across the EU, kept the issue in the media and by the time the proposal was officially released on 6th May 2013 the reference to seed-swapping had been removed.

"We were also successful in removing a 'sources of origin proposal' that stipulated that a seed can only be grown in the geographical region where it was bred. This would have meant, for instance, that none of the HSL members could legally grow the Latvian Pea. It would have had a massive impact on the diversity of seed available to home gardeners and in addition it would have undermined the role local varieties can play in breeding useful traits for different regions and changing climates."

"Despite the concessions we have managed to achieve we still have serious concerns about the legislation as it stands," explains Willers. "Any seed which is sold commercially, including ornamental and wildflower seeds, will have to be registered on a central EU list and undergo rigorous testing. Each variety, depending on its status, will be subject to a registration fee as well as an annual royalty. If the legislation is enforced it would cost the HSL between £500,000 to £900,000 simply to register our existing varieties." The Horticultural Trades Association consider it could cost over £50 million to license ornamental varieties alone.

Resistance is Fertile

Since May 2013 there have been massive civil society mobilisations over the PRML. The Austrian NGO Arche Noah has co-ordinated several demonstrations outside the European Parliament as well as a petition which has attracted 270,000 signatures. The European co-ordination of La Via Campesina has



also condemned what it sees as “the incredible gift of patents and property rights that has been made to the agribusiness industry”. And there have been successes. Most notably the inclusion of a so-called “micro-enterprise clause” exempting regulation of seed companies “with fewer than 10 employees, or an annual turnover of less than €2 million.” However this remains one of the most controversial elements of the proposal.

James Mills is the National Farmers Union’s cereal crops advisor. He has also been closely involved with NFU’s representations to DG SANCO on the PRML. He explains that the NFU believes it has been working hard to represent the interests of their small-scale growers: “Most notably the NFU would like to see a derogation included that would come into effect when seed supplies are unusually restricted, for example following the poor 2012 growing season. In these circumstances we would like farmers to be able to trade seed between themselves, in a controlled and regulated fashion, that would allow them to readily access seed and ensure subsequent royalty payments remain within the UK breeding sector.”

However the NFU is explicitly lobbying against the micro-enterprise clause on the basis that it would undermine “full cost recovery” within seed certification and investment in plant breeding in the UK. “One of our priorities is to guarantee the traceability of seed within the commercial farming sector that allows the certainty of supply for our consumers,” Mills explains. “Ultimately this could undermine investment in the UK seed industry and lead to unnecessary restructuring of seed companies”.

The reality of EU policy-making is such that these conflicting points of view will be represented and taken into account by successive teams of Brussels-based diplomats. Ultimately however the Commission has to deliver a workable policy and this will inevitably mean that some concessions will be granted at the cost of others. “In the UK the most vociferous opposition has so far come from the ornamental growers – whose position we strongly support” says Ben Gabel, “Our biggest concern however is that a concession may well be granted for ornamental growers at the cost of small seed companies like ourselves.”

“It is no coincidence that the two countries within the EU that currently have the most lenient approach to seed regulation, the UK and the Netherlands, also have the most diverse and vibrant seed industry with largest number of small scale seed producers. What we really want to see is a two tier approach where farmers can buy regulated seed but home gardeners can continue to choose open pollinated varieties. In this way small-scale seed sales will be self regulating – if the seed is poor quality people won’t buy it.”



In November 2013 representatives of farmers’ organisations, gardeners and plant breeders, including Garden Organic, met in Vienna, Austria, to discuss the latest PRML proposals. They heard how Sergio Silvestris, chief rapporteur for the EU Parliament’s Agriculture Committee, was now actively seeking the removal of the micro enterprise clause. The meeting resulted in the drafting of the Vienna Declaration⁷ to demand the rights of farmers and growers to openly share seeds and to develop new plant varieties using open pollination.

“Regrettably it looks like we have lost many of our earlier concessions” conceded Willers. “Seed exchange networks and living seed banks like the Heritage Seed Library are now also targetted with

exemptions only included for statutory seed banks like those at Kew and the Royal Botanic Gardens in Edinburgh. This defies the fact that living seed banks contribute most to food security by constantly adapting crop varieties to a changing climate”. The legislation will now be debated at the European Parliament in Brussels on 20th January 2014 where an estimated 20,000 people are expected to attend a “Seed Freedom” march.

Back at the Heritage Seed Library my tour finishes in the HSL office where Neil Munro shows me a bank of filing cabinets that contain paper records of the library’s heirloom varieties, some dating back over half a century. “This is really the heart of our work” Munro tells me, pulling a random file from one of the drawers. “These files tell the story of each of our heirloom varieties, when they were bred, by whom, where they have been grown and what yields they have achieved over the years. These stories and what they can tell us are as important as the seed itself. This is the true history and the culture of our work.”

And as he thoughtfully replaces the file, I can’t help but take a deep breath and feel acutely aware of the real significance of what’s at stake.

For more information on the work of the Heritage Seed Library see:

www.gardenorganic.org.uk/hsl/

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