

## Plant breeders test-drive first open-source seed bank

Two German plant breeders this April released newly developed tomato and wheat varieties under open-source licenses. The breeders, Göttingen University's Bernd Horneburg and his team, and Dottenfelderhof researcher Hartmut Spieß, issued the licenses to encourage other scientists and breeders to experiment and improve these plant varieties under a legal framework. Under the OpenSourceSeed initiative, agricultural scientists can access open-source seeds, by paying a small fee to cover maintenance breeding and delivery costs. They are then allowed to "use the seeds in multiple ways," according to the open-source license. But should users develop subsequent varieties, they are not allowed to issue patents on them, and instead must agree to release them under the original open-source license.

Open-source seed licenses are a new move in a long-running global debate over the best way to promote plant biodiversity. Proponents say their approach will build a public genetic bulwark against large agriculture firms, just a few of which hold the majority of plant intellectual property. "Patenting has become, not an incentive for innovation, but a constraint," for some biology research, says agricultural scientist Johannes Kotschi of the Association for Agriculture and Ecology (AGRECOL), the nonprofit group of plant breeders, agronomists, lawyers and activists based in Marburg, Germany, that launched the scheme.

The classical economics position is that patents promote investment in innovation and ensure scientific progress, says intellectual property (IP) lawyer and researcher Viola Prifti of Bournemouth University in the UK. But plant breeding research is often driven by breeders' needs and market demands. "It's not easy to give a clear answer" to the question of whether an open-source license would drive or stifle innovation, Prifti says.

In cases where plants are IP-protected, researchers may use a privately-held variety for free to develop a new one. But if the new variety uses a protected trait, the owner of the protected variety can charge a usage fee. Instead, the OpenSourceSeed license states that users who follow its terms have "free use" of the seeds.

The OpenSourceSeed license for new plant varieties is a civil contract between breeders and AGRECOL under German law and applicable throughout the EU. For example, by licensing the tomato they developed called "Sunviva" to AGRECOL, Horneburg's group forfeits the rights to charge anyone for the IP. In exchange, under the license, AGRECOL and partner Culinaris, make Horneburg's seeds available to anyone who agrees to deposit any new varieties they develop. AGRECOL's partner



The Open Source Seeds catalogue includes this early-maturing cherry tomato 'Sunviva' (*Lycopersicon esculentum* L.) developed by Göttingen University plant researchers.

Culinaris manages the product's distribution on Horneburg's behalf, which entails attaching a label with a license summary to seeds or potted plants.

As an academic researcher, Horneburg, who normally sends seeds to anyone who requests them, worried the label would be complicated and off-putting for his collaborations. But the AGRECOL labels are "very well thought-out," he says. So far, intermediate-sized seed companies and nurseries that sell to amateurs or other nurseries have been the main users of the seeds.

The Open Source Seeds Initiative, a US group, made a stab at a similar license in 2014. They concluded that a pledge, rather than an enforceable license, would have to do because the full license was too unwieldy to attach to seeds sold in retail settings. Indian plant IP law gives farmers more discretion to retain, share and work with protected varieties, but limits resale.

Lawyer Eric Furman, at the Knobbe Martens firm in San Diego, who has worked on biological material licensing, says a government entity with no profit motive would be "great" for managing seeds and seed enhancement rights. But he is concerned that such a set-up might begin to replicate the present hodgepodge of international agreements and systems, including compulsory licensing and march-in rights, whereby the US government can force companies to license unused medical innovations funded by federal grants. "This is a pretty difficult goal to accomplish," he says.

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