

POLICY BRIEFS

Bioprospecting: legitimate research or 'biopiracy'?

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Summary

A growing number of critics of 'bioprospecting' complain that companies often fail to adequately compensate holders of traditional knowledge, and that patents on products developed in this way are actually a form of intellectual piracy.

What is bioprospecting?

'Bioprospecting' is a word that has recently been coined to describe the centuries-old practice of collecting and screening plant and other biological material for commercial purposes, such as the development of new drugs, seeds and cosmetics.

Companies that sponsor bioprospecting expeditions, in particular from the pharmaceutical or food industries, hope to find information from the biological resources they collect that will lead to new products, for example novel drugs. Some of these expeditions also seek to acquire useful information about such resources from local people including, in the case of drugs, native healers.

It can also be argued that bioprospecting also plays a wider role in encouraging the preservation of biodiversity. Many conservationists, for example, believe that by highlighting and — hopefully — confirming the economic potential of a wide range of biological resources, bioprospecting expeditions can create incentives to protect tropical forests, coral reefs and other biologically diverse and threatened ecosystems.

At the same time, however, a growing number of critics complain that bioprospectors often fail adequately to compensate the countries and communities that provide access to their resources and associated traditional knowledge (TK). Such critics argue that patents on products developed as a result of the efforts of 'bioprospectors' are sometimes based so closely on TK that they are in fact a form of intellectual piracy.

What counts as biopiracy?

The word 'biopiracy' was coined by the North American advocacy group, Action Group on Erosion, Technology and Concentration (ETC Group) — formerly known as Rural Advancement Foundation International — to refer to the uncompensated commercial use of biological resources or associated TK from developing countries, as well as the patenting by corporations of claimed inventions based on such resources or knowledge.

ETC Group and others allege that such patents are wrongly awarded. This could be due to a number of factors: the examiners may not have enough time and resources to conduct 'prior art' searches; the required standards of inventiveness being applied to patent applications may be too low; or the companies or scientific institutions applying for the patents may deliberately fail to cite the prior art upon which their inventions were based.

Groups such as ETC claim to have uncovered many cases either of patents being acquired for 'inventions' that are closely based on TK (such as the pesticidal uses of seeds from the neem tree), or of Plant Breeders' Rights (PBR) certificates — a kind of IPR system for plant varieties — being awarded for plant varieties that are virtually identical to 'folk varieties' of the same plants. ETC Group claims to have identified over 100 cases of PBR protection being sought for varieties acquired from international genebanks, many of which they allege are folk varieties that have been subjected to little, if any, additional breeding. [1]

The bioprospecting/'biopiracy' debate has pitted corporations against a number of developing country governments and indigenous peoples, who claim that they are being exploited by such practices. It has also led to tensions between academic researchers, who have long studied biological resources for primarily scientific reasons — and maintain that ethically sound and non-exploitative bioprospecting is possible — and environmental NGOs. [2] Indeed, some of the latter take an extreme view, dismissing all bioprospecting as biopiracy by another name.

Patenting traditional knowledge

In principle, application of intellectual property rights to biological resources should not be exploitative, as anyone has the right to apply for — and enjoy the fruits of — an invention based on a biological discovery. In practice, however, patent rules tend to favour corporations rather than indigenous communities. A native healer, for example, may have developed a therapeutic plant extract or herbal formulation. But acquiring a patent for it would be extremely difficult, first because applications usually require inventions to be described in technical language, and secondly because the cost of applying for a patent is likely to be prohibitive.

At the same time, while most TK cannot be patented due to lack of novelty, some researchers argue that they have added an 'inventive step' that makes their version of a product patentable. Such arguments are frequently accepted as legitimate by patent offices. For example, the pharmaceutical giant Pfizer has obtained a licence to manufacture the anti-obesity drug P57 — the active ingredient of the *Hoodia* cactus — originally patented by the South African Council for Scientific and Industrial Research (CSIR). In March 2002 — after threatened legal action — the CSIR reached a preliminary agreement to share any benefits arising from the commercialisation of P57 with San bushmen, who claim they have been using the cactus to stave off hunger for thousands of years. [3]

Challenges to patents on TK have been successful in the past. For example, in May 2000, the European Patent Office revoked a patent covering the fungicidal properties of neem tree seeds due to the absence of

an inventive step. And a US patent awarded in 1995 to the University of Mississippi for the use of turmeric powder in wound healing — a property well-known in India — was revoked following a legal challenge by the Indian government.

Ironically, the challenge to the turmeric patent would not have succeeded if it had relied on the argument that the 'invention' was common knowledge in India, since US patent rules do not recognise foreign undocumented knowledge as 'prior art' if it is not also known in the United States. It was only when the Indian government provided written proof (including an ancient Sanskrit text) that the patent was revoked due to lack of novelty. [4]

Rules on the eligibility of 'novel' biological material for patent protection are quite demanding. Usually it is not sufficient simply to describe how a plant compound exerts a therapeutic effect, or even what this compound is. Meeting requirements of 'novelty' and 'inventive step' — or 'non-obviousness' in the United States — means that the applicant usually needs to produce at least a synthetic version of the compound or a purified extract. On these grounds, many scientists deny most — if not all — allegations of biopiracy, arguing that the patent is intended to reward the extra work necessary to produce a patentable invention from a biological resource, not the initial discovery of the resource itself.

Critics, however, challenge this argument by claiming that the most creative achievement was frequently the initial discovery of the useful characteristic of the resource by indigenous community members, as well as their development of techniques and procedures to apply it. The subsequent isolation and elucidation of the active compound by laboratory scientists, they argue, can be relatively routine tasks. In addition, they point out that some national patent offices do not conduct thorough examinations of patent applications. Consequently, patents that do not describe genuine inventions are sometimes granted mistakenly.

Legislating to protect indigenous communities

In recent years, these issues have been debated in several international forums under the auspices, for example, of the Convention on Biological Diversity, the World Trade Organisation, the World Intellectual Property Organisation (WIPO), and the UN Food and Agriculture Organisation.

A number of policy measures are being considered to ensure that bioprospecting is regulated in ways that benefit all the stakeholders. Proposed measures include the introduction of 'access and benefit sharing' legislation that require bioprospectors to negotiate access to genetic resources with governments and indigenous peoples, and to share any financial benefits from these activities with such communities. The Philippines, for example, already has such legislation. [5]

In addition, several countries, such as India, have proposed that patent applications for inventions resulting from bioprospecting expeditions should indicate the source of biological material on which the invention was based, and also include documentary evidence that the provider country had given its prior informed consent to the collection. [6] In fact, Costa Rica and member states of the Andean Community (Bolivia, Colombia, Ecuador, Peru and Venezuela) already include both requirements in their legislation.

Another approach has been for individual countries to develop legislation specifically designed to protect indigenous knowledge, which is currently largely excluded from patenting on the grounds of lacking novelty. This might be done, for example, by documenting TK that is not publicly available and providing access in

exchange for monetary and other benefits. Peru has recently passed legislation based upon such an approach. [7]

It remains uncertain where international debates on this issue are heading. But international organisations increasingly consider it necessary to provide forums to discuss appropriate solutions. WIPO, for example, established an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore in 2000. And the state parties to the CBD have set up a new body, the Working Group on Access and Benefit Sharing, which first met in Bonn in October 2001.

All parties are hoping that such meetings will be able to develop ways of reconciling the often conflicting scientific, commercial and social implications of bioprospecting. Equally, all agree that achieving this goal will not be easy.

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REFERENCES

- [1] Doing Well by Doing Little or Nothing? A Partial List of Varieties under RAFI Investigation. Rural Advancement Foundation International, 1998.
- [2] Political uncertainty halts bioprospecting in Mexico. *Nature* 408, 278 (2000).
- [3] [Bushmen to share gains from 'slimming cactus'](#). SciDev.Net, 27 March 2002.
- [4] Siddhartha Prakash (1998) [India. Part 2: Agriculture \(Trade and Development Case Studies\)](#). WTO / World Bank Trade and Development Centre.
- [5] Graham Dutfield (2000) *Intellectual Property Rights, Trade and Biodiversity: Seeds and Plant Varieties*. Earthscan Books, London.
- [6] WTO Committee on Trade and Environment / Council for TRIPS (2000) *Protection of Biodiversity and Traditional Knowledge: The Indian Experience*. Submission by India.
- [7] National Institute for the Defence of Competition and the Protection of Intellectual Property (2000) [Proposed Regime of Protection of the Collective Knowledge of Indigenous Peoples \(in Spanish only\)](#).

<http://www.scidev.net/en/agriculture-and-environment/bioprospecting/policy-briefs/bioprospecting-legitimate-research-or-biopiracy--1.html>

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Bioprospecting/Biopiracy and Indigenous Peoples. Submitted by ETC Staff on Tue, 1995-12-26 18:00. Bio-Prospectors Hall of Shame...or Guess Who's Coming to Pirate Your Plants?!^Â Today, it is estimated that over 200 companies and research organizations worldwide are screening plant and animal compounds for medicinal properties. The renaissance of natural product screening and recognition of the value of indigenous knowledge is fueled, in part, by the realization that species, their genetic material, and the ecosystems of which they are a part are rapidly disappearing from the face of the earth.^Â * PIC and NIC: Intellectual integrity also means the right of indigenous communities to say "no" to bio-pirates, or to legitimate bio-prospectors.