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# THE ROLE OF TRADE AND THE WTO IN ENSURING FOOD SECURITY

- **Gerard Downes**

“Food security... is a critically important part of national security. A nation that does not produce its own seed and its own food cannot be a secure nation.”

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*This article seeks to examine the role of trade and specifically that of the WTO (World Trade Organization) in ensuring, or otherwise, food security and fulfilling one of the Millennium Development Goals' objectives of halving world hunger by 2015. It highlights the impact of the WTO agreement on trade-related intellectual property rights (TRIPs) on the domestic regulatory and legislative framework of WTO members. The article also draws attention to the implications that TRIPs may have for future food security and examines briefly the Indian sub-continent where the impact of the food security-related provisions of the agreement have been greatly contested. By following such an approach it may be possible to illuminate the dangers and pitfalls in TRIPs, but also instances where amendments to and flexibilities within TRIPs can be utilised by WTO member states in order to enhance their citizens' food security.*

## Introduction

A perennial problem confronting any examination of the concept of food security is that a consensual definition of what constitutes food security remains elusive. While a tendency exists among several institutions such as the World Bank and the IMF (International Monetary Fund) to use a macroeconomic definition by equating it with global production levels, the definition used for the purposes of this paper will be the one promulgated by the UN FAO (Food and Agriculture Organization) in its report *The State of Food Insecurity in the World 2001*, namely: “Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”.<sup>2</sup>

## Origins of the WTO’s agreement on intellectual property rights

A major difficulty customarily faced by agricultural corporations is how to transform food, feed and agrofuels into areas of commodification which can yield high returns on investment.<sup>3</sup> Because agricultural production requires extensive amounts of land and is unpredictable due to factors such as weather, pests and the perishable quality of food, it is a sector of the economy that traditionally has been impervious to the capitalist logic of accumulation, i.e. the transformation of capital-as-money into capital-as-commodities, and the transformation of same into larger amounts of capital as money.<sup>4</sup> Since the end of the Second World War particularly the need to reduce the risk-laden elements intrinsic to agricultural production has led to a vast array of technologies and research which have transformed agriculture into industrial-scale agribusiness. While in certain instances the sale of agricultural inputs such as chemicals and equipment has created a dependency among farmers on the products of corporations such as Monsanto, seeds have the potential to bypass the process of accumulation because once purchased they can self-reproduce thereby annulling profits if farmers had to purchase these inputs each year.

In order to circumvent such obstacles to accumulation, the response of biotechnology conglomerates since the widespread development of genetic engineering in the early 1980s has been

two-fold, namely legal and biological. The biological response has entailed the development of hybrid and transgenic crops which do not reproduce the same characteristics of previous generations and require annual re-purchasing. The legal response has been an intellectual property rights regime in the arena of plant breeders' rights, best exemplified by the World Trade Organization's (WTO) trade-related aspects of intellectual property rights' agreement (TRIPs).

TRIPs came into being as a result of the Uruguay Round of trade talks of 1986-93 conducted under the auspices of the General Agreement on Tariffs and Trade (GATT) which the WTO brought into being in January 1995. Member states of the WTO<sup>5</sup> sign up to the principle of the *single undertaking* which requires them to accept all WTO Agreements as a complete package, rather than on an individual basis, and as such is unique among multilateral organisations.<sup>6</sup> All of the provisions of TRIPs, therefore, are binding on all WTO members. There is effectively no scope for states to deviate from any WTO agreement regardless of that member state's economic and social development. Under TRIPs, all WTO members must provide intellectual property rights' protection in the form of plant breeders' rights (PBR), on all new varieties of plants within their jurisdiction. This has proven highly contentious and provoked the frequent argument that while PBRs represent a category of intellectual property rights highly relevant to large-scale agriculture and biotechnology in industrialised states, imposing such a regime on WTO member states where large sectors of the population are dependent on agriculture is potentially counter-productive and detrimental for food security.

## **Intellectual property rights in biotechnology**

Plant genetic resources represent one of the most important inputs in knowledge economies since they comprise the raw material of biotechnology companies. Genetic modification of plants and animals through domestication and controlled breeding in order to produce a wide range of varieties and breeds suitable for differing climatic conditions has taken place for thousands of years.<sup>7</sup> However, the unlocking of DNA sequences has created unparalleled opportunities for advances in medical research, industry and agriculture as the discovery of

ways to visualise, characterise, map and move DNA from one organism to another has generated a new class of assets whose ownership is contested by multi-billion dollar corporations.<sup>8</sup> In conventional plant breeding, genes could only be transferred within related species; it was impossible, for instance, to take a disease-resistant gene from one species and plant it into another.

With biotechnology, however, such transfers are now possible, a phenomenon which has enormous implications for breeding new plant varieties and creating new pharmaceutical and agricultural products. In the arena of food production, the radicalising potential of biotechnology is enormous, given the potential for generating higher yields, and producing new seed varieties with stronger resistance to droughts, pests and diseases. Since the 1980s the issue of plant breeding has assumed greater importance with the rising number of gene-related patents and rapid progress in genetic engineering.

Biotechnology inventions consist of genetic research, research tools, pharmaceutical products, transgenic strains of plants and animals, and biological industrial processes. The fact that over half of what are categorised as important pharmaceutical drugs either on the market or under development are based on biotechnological inventions highlights its importance.<sup>9</sup> Pharmaceutical, biotechnology and other life science corporations are increasingly surveying plant life in developing countries in order to locate genes for use as raw material in the research and development of lucrative new drugs. They synthesise chemical substances with mild alterations and patent them as proprietary pharmaceutical products.

As a consequence of this technological breakthrough, biotechnology corporations have sought intellectual property rights protection for new plant varieties to guarantee a return on investment for the high R&D (research and development) costs incurred in what is one of the most research-intensive industries in the world. Industrialised plant breeding is dependent upon broad patents which have extensive ramifications. For example, corporate breeders are patenting entire species (cotton), economic characteristics (oil quality), plant reproductive behaviour (apomixes) and basic techniques of biotechnology (gene transfer tools).<sup>10</sup> The biotechnological revolution in agriculture is reflective of changes in the structure of the global economy whereby agriculture has evolved into an industrial activity hugely dependent on R&D and intellectual property rights protection for its continued growth and

development. As Suman Sahai, the convenor of the Indian grouping Gene Campaign and winner of the 2004 Norman Borlaug Award, affirms:

TRIPs came about solely because of biotechnology. The development of biotechnology brought about an interesting split between resources in the South and technology in the North. How was it going to be possible for corporations to access these resources for technology? The answer was intellectual property rights in the form of patents and plant breeders' rights. These are the instruments which would give control of these resources to biotechnology corporations.<sup>11</sup>

Since the inception of TRIPs the value of plant genetic resources to biotechnology companies is threatening the practice of free exchange of seeds in agriculture as newly-empowered life science industries seek to apportion private property rights and monopolisation of genetic resources in what is becoming an ever-more lucrative industry. However, stronger intellectual property rights in developing countries is leading to increased royalty payments to holders of patents and plant breeders' rights (the overwhelming majority of whom are based in developed states). At the same time TRIPs is restricting countries from imitating innovation such as reverse engineering—a scenario that limits the ability of firms to reduce their technological disadvantage.<sup>12</sup>

John Stopford and Susan Strange<sup>13</sup> have highlighted how throughout the 1980s, in anticipation of the TRIPs Agreement, the world's top chemical and food firms spent an estimated \$10 billion buying up seed companies to provide an outlet for the coming stream of biotechnology products. (The global biotechnology market is forecast to have a value of \$271.4 billion by 2011, an increase of over 75% from 2006.)<sup>14</sup> As a result of consolidation in the biotechnology industry deriving from structural changes in the global economy, the world's top five biotechnology firms, all of them based in the United States and Europe, controlled more than 95% of all gene-related patents by the beginning of this century.<sup>15</sup> This figure represents a momentous shift from the situation prior to the significant legislative changes emanating from TRIPs, when public researchers were the primary generators of plant breeding knowledge. As Michael Blakeney has outlined:

The development of gene technologies as a vehicle for modern agricultural research and the proprietisation of those technologies is an explanation of the growth of private agricultural research in the OECD at an annual rate of 5.1 per cent, compared with the 1.7 per cent growth rate for public agricultural research.<sup>16</sup>

In tandem with the vertical integration of agrochemical plant breeding and food processing corporations since the early 1980s, TRIPs has led to further consolidation of the market by a small number of large firms that has resulted in extreme concentration in a few crops, more mergers and acquisitions leading to further economic concentration, an increase in seed prices, and marginal, at best, productivity gains.<sup>17</sup> As highlighted by Philip Howard,<sup>18</sup> when four firms attain control of 40% of a market, that market is no longer competitive. In the current situation, where the four top seed firms control 56% of the global proprietary (brand-name) seed market that market becomes highly uncompetitive.

Concomitantly, the global biotechnology industry has channelled the overwhelming majority of its investment into a narrow range of products which have little or no relevance to the needs of the world's hungry, leading even strident proponents of genetic engineering, such as Joel Cohen,<sup>19</sup> to recognise that while biotechnology may provide new opportunities for achieving significant productivity gains in agriculture, severe structural problems such as market access and infrastructure, as well as income and economic policies that address livelihood needs, remain.<sup>20</sup> Simply put, a solution to food insecurity that prioritises a technologically-based formula which either ignores or rejects the necessity of redistribution is not tenable in the long-term.

## Article 27.3 (b) of TRIPs

Article 27.3 (b) of TRIPs, which has become the most contentious aspect of the TRIPs Agreement and the article with the greatest implications for food security, states that all WTO members must provide intellectual property rights' protection in the form of plant breeders' rights on all new varieties "either by patents or by an effective *sui generis* system or by any combination thereof".<sup>21</sup> Article 27.3 (b) of TRIPs also provides for the patenting of non-biological and microbiological processes. In practice, this could mean that when a process used to produce a plant has been patented, the owner of that patent is entitled to exclusive rights over the plants obtained using that process.

Additionally, Article 27.3 (b) of TRIPs conflicts with several of the provisions of the UN Convention on Biological Diversity (CBD), signed by 168 states, recognising that countries have sovereign rights over the biological resources within their respective territorial jurisdictions; Article 8 (j) of the CBD recognises the concept of “communal knowledge”, which is clearly contrary to the individualistic conception of private rights embodied in TRIPs. Moreover, the use of the term “effective *sui generis* system” of plant breeders’ rights leaves WTO members with little scope but to join the Union for the Protection of New Varieties of Plants (UPOV), the only “effective” *sui generis* system of plant breeders’ rights recognised at international level. Former GATT (General Agreement on Tariffs and Trade) Director-General, Peter Sutherland, articulated this position in March 1993 while attempting to assuage the trepidation of Indian agricultural concerns:

...while the TRIPs provision on plant variety protection does not refer to any international convention, it is clear that if the standards of protection of UPOV 1978 were to be followed, it would be reasonable to claim that an effective *sui generis* system of protection had been provided.<sup>22</sup>

## The UPOV convention

The UPOV Convention was established in 1961 primarily to encourage the development of new plant varieties. Its purpose since then has been to ensure that the 68 member states<sup>23</sup> of the Convention acknowledge the achievements of institutionalised, commercialised breeders of new plant varieties by making available to them exclusive property rights on the basis of a set of uniform and clearly defined principles.<sup>24</sup> UPOV is the first internationally recognised multilateral convention on plant variety protection that seeks to set common rules to recognise and protect intellectual property over new plant varieties developed by plant breeders. This protection is a relatively non-contentious issue in states with a highly commercialised agribusiness sector. But applying the UPOV Convention in countries with a large proportion of the population involved in agriculture has proven hugely divisive and inappropriate to a state like India where traditional, if highly labour intensive agricultural practices such as seed saving and exchange have

resulted in the production of millions of new varieties. Even a staunch proponent of the current intellectual property regime in plant breeding, Rolf Jördens, Vice-Secretary General of UPOV acknowledges that “commercial plant breeding has resulted in over 70,000 new varieties since the early 1960s, while traditional practices have yielded over one million new varieties per annum on a world-wide basis”.<sup>25</sup>

Since its ratification, the UPOV Convention has been amended three times, in 1972, 1978 and 1991. On each occasion in a more restrictive fashion than before and in a way that has further eroded farmers’ rights to save seed for the following year’s sowing. The 1978 UPOV Convention, while granting breeders a minimum of 15 years protection over their new varieties, allowed farmers retain seeds and use “protected” seeds, i.e. on which intellectual property rights have been placed, to develop their own strains under certain conditions; this clause became known as “farmers’ privilege”. The 1978 Convention also contained a breeders’ exemption which allowed other breeders to freely use UPOV-protected varieties for the research purposes.

The 1991 revision (UPOV 1991), alternatively, requires members to grant a minimum of 20 years’ exclusive rights to plant breeders. The provision relating to farmers’ privilege was deleted with farmers’ rights to retain and use protected seeds left at the discretion of national governments. This deletion has been an immensely controversial provision in India where farmers are the largest seed producers and provide, according to one estimate, between 75 and 85% of the country’s annual requirement of over 6 million tons.<sup>26</sup> Depriving farmers of the right to sell saved seed not only limits agricultural workers’ incomes, it also allows for a restructuring of the seed industry whereby biotechnology corporations replace the farming community as the country’s major seed provider. Additionally, in order to protect a plant variety that variety must fulfil the criteria of being distinct, uniform and stable (commonly abbreviated to DUS). A panoply of scientific studies has recognised the DUS criteria of plant variety protection outlined in the UPOV Convention as wholly inappropriate for the myriad of heterogeneous, locally-adapted farmers’ varieties that abound within India.<sup>27</sup> As PBRs are only given for varieties that are genetically uniform they automatically limit which kind of seeds can be marketed and who can market them. UPOV thereby discourages genetically diverse and locally adapted seeds from both the market and the field.

## India's response to Article 27.3 (B) of TRIPs

Article 27.3 (b) of TRIPs has led to a significant backlash against the Agreement in many WTO member states, but particularly among civil society groups and smallholder farmers in India, a country where plant genetic resources have been developed, exchanged and shared within the public domain for centuries. India provides an exemplar of a country rich in these resources but with large capacity in indigenous technology, due primarily to the high level of investment in public sector agricultural research throughout the Green Revolution. The first documented demonstrations against TRIPs anywhere in the world took place in October 1993 when upwards of half a million Indian farmers converged on the southern city of Bangalore to express their fear about the proposed provisions relating to intellectual property in the ongoing Uruguay Round. Many of the demonstrators feared that TRIPs would overhaul Indian legislation which had long held that private ownership, via patents or plant breeders' rights, of biological materials was not permissible. As a means of protecting the country's rich patrimony of plant genetic resources from commercial exploitation, the 1970 Indian Patents Act introduced a series of legislative measures which forbade the patenting of any method of agriculture or horticulture, while attempting to balance the interests of the private sector with the need to ensure basic developmental requirements, such as food security. Under TRIPs however, the Indian Patents Act may violate WTO rules, a deviation with potentially debilitating and punitive consequences for Indian society and its economy.

While the Indian government announced its intention to join UPOV on 31 May 2002, India is still not a party to the UPOV Convention predominantly because its own 2001 domestic legislation contravenes Article 27.3 (b) of TRIPs by enshrining farmers' rights to sell, save and exchange seed with virtual impunity. UPOV has however sought to contravene its own regulations and allow India join an earlier version of the convention, UPOV 1978, in order to encourage India to become a member. Because of the significance of India's agricultural sector as both a direct source of food needs and a primary sector in terms of employment, the country's move towards compatibility with TRIPs and resistance to legislative change within the agricultural sector and civil society are trends that have been carefully monitored by other WTO member states, particularly in Asia. As B.K. Keayla, Convener of the National Working Group on Patent Laws within India asserts:

India's membership of UPOV is considered fundamental to the TRIPs regime because of India's size and status as a developing country. If India joins UPOV then plenty of other developing countries will follow our lead and join UPOV. This should not happen. India should not be imitated simply because our politicians messed up monumentally by agreeing to TRIPs.<sup>28</sup>

For a country such as India rich in biological and plant genetic resources, their use by biotechnology firms could, potentially, bring enormous advantage. This is provided there is a benefit-sharing mechanism and a disclosure requirement revealing the source and country of origin of the biological resource used in an invention is codified for the use of such resources. Given that no such mechanisms are currently in place within TRIPs, WTO member states rich in biological resources face the possibility of being confronted with unencumbered exploitation of their genetic diversity. Likewise, TRIPs makes little or no provision for mandating plant breeders to seek the prior informed consent of national authorities before acquiring any biological resources and/or traditional knowledge within a particular state's territory. TRIPs therefore, fails to de-legitimise bio-prospecting (pejoratively known as bio-piracy) as a tenet of international law, a scenario that has provoked outrage in India where the patenting by foreign plant breeders of strains of indigenous plants such as neem, basmati and turmeric has further galvanised opposition to TRIPs.<sup>29</sup>

## Conclusion

While the scenario depicted in this paper may portray the provisions within Article 27. 3 (b) of TRIPs as inimical to food security, there are some grounds for optimism that the WTO's agreement on intellectual property can be made more attuned to the needs of the world's food insecure. For example, discussions have been taking place within the WTO since the Doha Declaration of November 2001 seeking to find compatibility in the relationship between TRIPs and the UN's Convention on Biological Diversity (CBD). More significantly, separate proposals tabled in 2006 by Norway and the so-called Disclosure Group, consisting of eight WTO members, have called for a new amendment (Article 29 bis) to be incorporated into TRIPs

which would require patent applicants to disclose the country of origin of the plant genetic resources used in their inventions. They will also have to show evidence of prior informed consent of the country from where they acquired such resources. While there is little prospect of Article 29 bis becoming a tenet of international law while the current impasse on WTO negotiations persists, the proposal represents an excellent opportunity to achieve one of the CBD's primary objectives, namely the "fair and equitable sharing of the benefits arising out of the utilisation of genetic resources".<sup>30</sup>

Ultimately, those WTO member states whose citizenry depend predominantly on agriculture for their livelihood must ensure that future negotiations within the organisation yield amended provisions, such as Article 29 bis of TRIPs, to ensure that:

- (a) WTO member states have free and fair access to plant genetic resources within their respective national territories;
- (b) they are permitted to engage in benefit-sharing agreements with any potential bio-prospectors who wish to appropriate plant genetic materials from within their jurisdictions; and
- (c) they are party to an arrangement which allows for prior informed consent between prospectors and national authorities in order to ensure that bio-piracy is diminished.

Similar amendments to improve access to life-saving medicines were made to TRIPs (Article 31 bis) in December 2005. Provisions which link the UN's CBD to TRIPs will not only help to create a more equitable multilateral trading system, they will also help in a significant way to unblock the stalled Doha Development Round by allowing negotiators engage in *quid-pro-quo* trade diplomacy. Without putting in place such provisions, the WTO further risks becoming an institution which undermines local-level decision making and the national sovereignty of its member states.

## Endnotes

- <sup>1</sup> Sahai (2000), p. 879
- <sup>2</sup> FAO (2002)
- <sup>3</sup> Bello (2009)
- <sup>4</sup> Howard (2009)
- <sup>5</sup> On 31 May 2010 the WTO comprised 153 member states.
- <sup>6</sup> UNDP (2003)
- <sup>7</sup> Paarlberg (2000), p.24
- <sup>8</sup> Herdt (1999)
- <sup>9</sup> Weissman (1996), p.1090
- <sup>10</sup> Sell (2004), p.199
- <sup>11</sup> Interview with the author, New Delhi, 10 November 2006, transcript available on request.
- <sup>12</sup> Stiglitz. and Charlton (2005), p.103
- <sup>13</sup> Stopford and Strange (1991), p.282, note 7
- <sup>14</sup> Datamonitor (2009)
- <sup>15</sup> Mytelka (2000)
- <sup>16</sup> Blakeney (2002), p. 110
- <sup>17</sup> Rao (2003)
- <sup>18</sup> Howard (2009), p.1268
- <sup>19</sup> Cohen (2001), pp. 240-1
- <sup>20</sup> Ibid.
- <sup>21</sup> World Intellectual Property Organization (1996), p. 31
- <sup>22</sup> Sutherland (1993)
- <sup>23</sup> As of June 2010
- <sup>24</sup> Commission on Intellectual Property Rights (2002), p. 62
- <sup>25</sup> Jördens (2003)
- <sup>26</sup> Sahai (2002)
- <sup>27</sup> See Ramanna and Smale (2004), p.432
- <sup>28</sup> Keayla (2004)
- <sup>29</sup> Commission on Intellectual Property Rights (2002) pp.88-9
- <sup>30</sup> OECD (2001), p.140

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