THE CORPORATE CAPTURE OF RICE

Navdanya international

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The Corporate Capture of Rice

Modern industrial agriculture has labelled indigenous and traditional crop varieties as 'unproductive', 'low-yielding, and in desperate need of technological improvement if we are to feed the world or survive climate change. This false idea has cemented the notion that farmer's traditional varieties, bred, adapted, and improved throughout the millennia, are backward, and inefficient.

Opening the door to agribusiness companies, along with international institutions, to capture farmer's traditional and indigenous seeds to breed new, "improved" and most importantly, patented hybrid and GMO varieties which directly rely on monocultures and chemical inputs.

Nowhere is this story more apparent than in the story of the corporate capture of rice. As one of the most important staple crops in the world, there have been systematic attempts to capture the huge array of rice diversity and capitalize on its importance through the imposition of industrial rice farming.

Whether it's through patenting, capturing seed diversity, direct biopiracy, or imposing hybrid rice varieties on small farmers to extract profits, it all begins with the centralization of rice diversity into the CGIAR centres which now hold 108,925 rice samples that are no longer accessible to farmers (Ceccarelli, Seed Freedom, 2012).

Rice varieties at Navdanya Orissa Seed Bank, Shaani Singh

Below is a selection of excerpts from over **30 years of Navdanya reports and experience**, as well as the direct result of collaborative work with partners in Asia which showcase a part of the complex story of not only the capture of rice seed diversity, but the repercussions of the erasure of traditional cultivation and knowledge systems.

As a pertinent example, since the introduction of hybrid rice and the GreenRevolution, we have seen a huge decline in rice diversity and its associated biodiversity, the livelihoods of farmers put into jeopardy and the degradation of ecosystems and cultural lifeways.

This has contributed to the direct elimination of natural rice diversity, as the now widely cultivated HYV rice is limited to just a few varieties, and hence fails to adapt to extreme eco-climatic conditions like saline inundations, flood, and drought and meet nutritional requirements.

Genetic uniformity and the elimination of biodiversity in rice and rice fields have also created extreme vulnerabilities to pests and diseases and perpetuated food insecurity. Today, aromatic rice has vanished from the local markets and in Odisha, the existence of therapeutic rice is now believed to be a myth (Navdanya, Seed Freedom, 2012).

Decline in Diversity

India

- In India, more than 75 percent of the total rice production comes from less than 10 high yielding varieties that have replaced most of the indigenous landraces.
- Rice varieties have declined from an estimated 400,000 before colonialism to 30,000 in the mid-19th century with several thousand more lost after the Green Revolution in the 1960s.

Bangladesh

- 15,000 varieties of rice existed during the early 20th century. A survey in 1976 revealed that only 6,000 varieties were now available.
- Now there are 57 varieties and 3 hybrids released from the Bangladesh Rice Research Institute (BRRI), 75 hybrids introduced from China, Thailand, Vietnam, India and a few local varieties escaping to specific niches (Akhter, Seed Freedom, 2012).
- 62percent of rice now descends from a common stock (Ceccarelli, Seed Freedom, 2012)
- In the BRRI over 7,000 varieties of rice are still found. Although the collections in the National Gene Banks are impressive, the National Gene Banks have absolutely no connection with the farmers. The seeds and germplasm are kept in cold storage without any effort to regenerate them (Akhter, Seed Freedom, 2012).

Indonesia, Philippines and Sri Lanka

- 74 percent of rice varieties in Indonesia descend from a common stock (Ceccarelli, Seed Freedom)
- At least 85 percent of the fields in Burma, Indonesia, Philippines and Thailand are now occupied by high yield varieties (HYVs).
- In addition, some 375,000 ha or nine percent of total rice lands in the Philippines was planted with hybrid rice in 2011. (Medina, Seed Freedom, 2012)
- The number of rice varieties in Sri Lanka decreased from 2,000 in 1959 to less than 100 today of which 75 percent descend from a common stock.

The History of Biopiracy Cases in India

India's rice varieties possess a wide diversity in their morphological and physiological characteristics. These varieties were and are the gifts of nature and farmers' innovation over millennia from the temperate high hills of the Himalayas to the tropical lowland deep water and salt-water marshes of the seacoasts. Global biotechnology and agribusiness corporations like Monsanto, BASF Bayer, Dupont and Syngenta have attempted to make broad intellectual property rights (IPR) claims on genetically engineered varieties even though the genes introduced by them in their genetically engineered seeds were not created by them.

Biopiracy of RiceTech and Basmati in 2001

From Akshat by Navdanya

On September 2, 1997, Texas-based RiceTec Inc. was granted patent number 5663481 on Basmati rice lines and grains. RiceTec got patent rights on Basmati rice and grains while already trading in its brand names such as Kasmati, Texmati, and Jasmati. Navdanya and its sister organisation, the Research Foundation for Science, Technology & Ecology held a major campaign against the Biopiracy of Basmati by RiceTec. Eventually, because of legal sets & broad social protests, most of the claims of RiceTec were struck down, proving successful in one fight against the Biopiracy of Basmati.

The patent taken out would have allowed RiceTec Inc. to sell a "new" variety of Basmati which it claims to have developed under the same name, in the US and abroad. The Basmati variety for which RiceTec has claimed a patent has been derived from Indian Basmati crossed with semi-dwarf varieties, including indica varieties. **The patent was thus for a variety that is essentially derived from a farmer's variety; therefore, it cannot be treated as novel.**

It falsely claims a derivation as an invention. A patent can only be issued if it meets the three criteria of novelty, non-obviousness, and utility. Novelty implies that the innovation must be new. It must not be part of "prior art" or existing knowledge. Non-obviousness implies that someone familiar with the art should not be able to achieve the same step. The development of the 'new' variety (Basmati 867) by RiceTec has been derived from Indian Basmati through conventional breeding techniques. The claims of "novelty" and "invention" are therefore false.

Indian law forbids the patenting of any life forms, unlike US law. If Indian patent laws were in conjunction with US patent laws, then patents like RiceTec would be applicable in India. This is precisely what the TRIPs dispute initiated by the US in the WTO aimed at achieving. US case law is already establishing that once a patent is granted for a genetic trait (in this case aroma), all occurrences of that trait will be an infringement, irrespective of how they came to exist (Shiva, 1998). This could have led to the absurd situation in which RiceTec could claim that Indian farmers growing Basmati were "infringing" on the RiceTec patent.

The gene bank of the International Rice Research Institute (IRRI) is maintained by the CGIAR (Consultative Group on International Agriculture Research), which now has an agreement with the FAO. None of the varieties held in this gene bank can be strain from this bank, its product cannot be patented under the terms of the agreement of which both the US and India are members.

The name "Basmati" is not a generic one as RiceTec claims but is distinctive of the rice grown in the Indian subcontinent. Just as champagne is unique to France, Basmati is unique to India and Pakistan. The RiceTec patent is for a rice variety grown under different climatic and soil conditions and called Basmati. This should be against the trade-related Intellectual Property Rights of the World Trade Organisation which is supposed to protect geographic appellations.

If the US pressure had forced India to implement US-style patent laws, RiceTec would have had the sole right to use the term 'basmati' for marketing the rice anywhere in the world. Indian exports to the Middle East and the EU would have suffered as RiceTec would have been able to capture these markets with its patented, illegitimate basmati, constituting a non-competitive trade barrier.

The threat to farmers:

- The patent was a direct appropriation of traditional knowledge of Indian farmers. It reduced years of informal research, breeding and innovation to a pirated product patent.
- If the patent claim was interpreted to apply to all functional varieties of Basmati which were used to develop the patented variety (basmati 867) Indian and Pakistani farmers could be forced to pay royalties to RiceTec Inc, for the use of their *own* seeds and strains.
- The livelihood of 250,000 farmers growing Basmati in India and Pakistan could have been jeopardized by the barriers this patent would have established.

Syngenta's Biopiracy of India's Rice Diversity

From Navdanya's Seed Freedom Report

Syngenta, the biotech giant, tried to grab the precious collection of 22,972 varieties of paddy, India's rice diversity, from Chhattisgarh in India. It had signed a Memorandum of Understanding (MoU) with the Indira Gandhi Agricultural University (IGAU) for access to Dr. Richharia's priceless collection of rice diversity. The mass agitation by the peoples' organization, farmers' unions, civil liberty groups, women's groups, students' groups and biodiversity conservation movements against Syngenta and IGAU bore results and Syngenta called off the deal.

Corporate Capture in Bangladesh

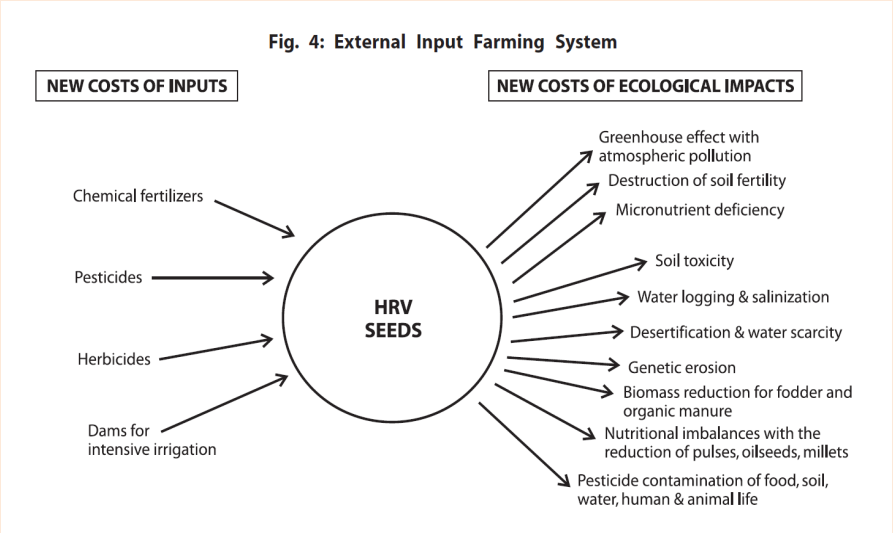
From Seed Freedom and Seed Sovereignty - The Current Situation in Bangladesh *by Farida Akhter from Navdanya's Seed Freedom Report*

In Bangladesh rice is not just a crop; it is the life and livelihood of farmers throughout the country. Bengali people are known as "Bheto Bangalee" meaning "rice-people". Most of the crops grown in Bangladesh, particularly those which are called "local varieties" are open-pollinated. The open-pollinated varieties are traditional varieties that have been grown and selected for their desirable traits for millennia. They grow well without high inputs because they have been selected under organic conditions. These varieties have better flavour, are hardier, and have more flexibility than hybrid varieties. These seeds are dynamic and adapt to the local ecosystems as opposed to the alternative hybrid varieties which are static. However, with **the introduction of the so-called "improved varieties", which are nothing but laboratory seeds found in packets and sold in the market, the farmers' personal seed collection disappears.** In the case of rice, the open-pollinated seeds started disappearing with the introduction of the Green Revolution. The open-pollinated seed system, known as the traditional system, cannot be used by the modern agricultural system. Efforts from international donors and the governments were made to adopt the technologies and so-called modern agricultural inputs such as chemical fertilizers and irrigation. In the early 1960s fertilizer application was limited to tea gardens and government agricultural farms, and irrigation was practiced on only about 7 percent of land. The government then created the Bangladesh Water Development Board and Bangladesh Agricultural Development Cooperation (BADC) to procure modern agricultural equipment, chemical fertilizers, and improved seeds and distribute them to farmers at highly subsidized prices throughout the country.

Modern varieties (MVs) of rice seeds were made available to farmers in 1968. By 1984 - 1985, the area irrigated under these seeds covered approximately 20 percent of the cultivated land which, "facilitated the spread of modern-input-responsive MVs to cover one-fourth of cropped land and one-third of the sown area under cereal crops" (Hossain, 1988).

Ultimately, the Green Revolution or chemical-based and mechanized agriculture led to the undoing of peoples' sustainable livelihoods. Rural areas were turned into semi-urban areas, and the monoculture of rice production led to the loss of genetic diversity throughout the country. **Out of 15,000 traditional local varieties of rice, presently 30 varieties are promoted as HYV varieties.** In the Bangladesh Rice Research Institute over 7000 varieties of rice are still found (UBINIG, 2003). Although the collections in the National Gene Banks are impressive, the National Gene Banks have absolutely no connection with the farmers. The seeds and germplasm are kept in cold storage without any effort to regenerate them. **The traditional practice of mixed cropping and crop rotation has been replaced with a monoculture of selected varieties and hybrids.**

Traditional agroecosystems are complex, and as shown in Traditional Rice Cultivation in India, every aspect of rice farming serves multiple uses and functions, of which the imposition of industrial agriculture directly degrades. For example, as put by Farida Akhter, "*When the conventional yield assessment labels the traditional varieties as 'unproductive', they do not take into account the overall productivity of the traditional farming systems and varieties. Thus, the farmer who grows a short variety of paddy ends up buying fodder for his cattle, as the short paddy varieties hardly yield any palatable straw.*" (Seed Freedom, pg. 47). In the end, the elimination of internal inputs, originating from the farm's agroecosystem, has caused farmer debt, and the precarity of livelihoods which also go on to have direct ecological impacts. Hence, the imposition and corporate capture of rice systems have caused a multidimensional problem throughout each rice-producing country.



(Image from: Biodiversity Based Organic Farming: A New Paradigm for Food Security and Food Safety. Vandana Shiva, Poonam Pandey. Navdanya 2006, pg. 4)

The Threat to Seed Sovereignty: Patents, Seed Law and GMO Contamination

Since the Green Revolution, seed has become an important item of trade and has since been treated as an industry. The patrons of the Green Revolution are now appearing as the leaders of the seed business. Initially, the seed business was initiated through Government agencies but over time it has been taken over by large companies. The Bangladesh Agriculture Development Corporation was established in 1962 as an autonomous corporation of the Government to deal with the issue of seeds.

Seed supply for the farmers of Bangladesh has been increasingly controlled by seed companies, both national and international. The Seed Law was modified, enforcing compulsory registration of seeds making it impossible for farmers to produce their own seeds. Thus, the farmers were forced to rely on the market seed supply.

In Bangladesh, government institutions have been involved in a number of biotechnological research projects. These include the University of Dhaka, Bangladesh Forest Research Institute (BFRI), Bangladesh Institute of Nuclear Agriculture (BINA), Bangladesh Rice Research Institute (BRRI), Bangladesh Agriculture Research Institute (BARI), and Bango Bandhu Sheikh Mojibor Rahman Agriculture University (BSMRAU). In addition, there are NGOs and private enterprises like BRAC, Proshika, Grameen Krishi Foundation, Bangladesh Seed Foundation, CARE Bangladesh, PROVA, Syngenta, Agriculture Marketing Company Ltd. (AMCL), Alpha Agro Ltd. are also involved with biotechnological research. The Department of Agricultural Extension, RDRS, and BRDB have implemented the extension of genetically modified crops.

In late 2003, The International Rice Research Institute (IRRI) in collaboration with Bangladesh Rice Research Institute (BRRI) arranged the PETRA fair (Poverty Elimination Through Rice Research Assistance IRRI/PETRA Project of Bangladesh) in Dhaka where details about the genetically engineered golden rice carrying vitamin-A related genes of the daffodil flower were discussed. PETRA informed the public that such genes have been introduced with BR-29, the widely cultivated rice variety of Bangladesh so that vitamin-A would be produced in its seeds.

Bangladesh Rural Advancement Committee (BRAC) is one of the largest NGOs in the world now working in all sectors of agriculture development in Bangladesh. BRAC's present activities on agriculture development include the establishment of two Agriculture Research and Development Centers at Joydevpur, Gazipur near the national research institute BARI and BRRI and at Sherpur, Bogra where applied agricultural research is done. The BRAC agriculture program is coordinated with both national and international agricultural research organizations. It has signed a Memorandum of Understanding with BRRI, BARI, and BINA. BRAC coordinates with international research organizations like IRRI, International Wheat Research and Maize Research Center (CIMMYT), International Potato Center (CIP), and multinational seed companies including Monsanto and ACI with agreements for sharing technology and the marketing of agro-products. At present, the partnership with the multinational seed companies includes: Yuans Hi-Tech Seed Co. Ltd. China, Hi-Tech Seed Co. Ltd. Pacific Seed Company, Australia. Mahyco Seed Company, India, Druk Seed Company, Bhutan, and Seminis Vegetable Seed (India) Ltd. India.

In 1997, Rangpur Dinajpur Rural Service in Bangladesh (RDRS) became an autonomous organization as the Bangladesh field program of the Geneva-based Lutheran World Federation whose work expanded over 10 different districts. RDRS Bangladesh and Udyog Foundation have promoted flood-tolerant paddy Swarna Sub1 developed by the International Rice Research Institute (IRRI) in the country's northern district. The Bill and Melinda Gates Foundation (BMGF) provided financial assistance through IRRI to increase seed production and disseminate the technology under its Stress Tolerant Rice for Poor Farmers in Africa & South Asia (Strasa) programme. RDRS is also involved in research on drought-tolerant varieties.

Corporate Capture in the Philippines

From Philippine Farmers Reclaiming Their Own Seeds *By Chito Medina from Navdanya's Seed Freedom Report and* BMG Foundation and IRRI: Corporate Hijack of Rice Science *by Chito Medina*

Biotech corporations had been using all tactics to promote GMOs. First, Syngenta had been very aggressive in promoting vitamin A Golden Rice masquerading as a technology to feed malnourished children. Second, climate change is used as an opportunity to advocate GMOs hyped as climate-smart seeds in the form of drought-tolerant and 'submarine' rice. These new seeds promoted as 'climate ready' seeds are expected to be a 'medicine worse than the illness' because these crop varieties have narrow genetic make-up, high response to chemical fertilizers, and displace many farmers' varieties. At the landscape and ecosystem level, it replaces the mosaic of varieties into a monocrop of single traits.

On another dimension, it has to be emphasized that farmers' knowledge, sometimes called associated knowledge is also important because it embodies the 'software' of the seeds, i.e., every variety's ecological adaptability, tolerance to climatic stress, resistance or susceptibility to pests, and diseases, even gastronomic qualities. Having the seeds without the associated knowledge of farmers is like having a library without a catalogue. But all of these are lost with the proliferation of modern seeds developed in research institutions or corporate laboratories to the exclusion of the farmers.

Modern varieties and technologies have directly or indirectly caused genetic erosion of farmers' varieties and associated diversity. In rice, at least 85 percent of the fields in Burma, Indonesia, the Philippines, and Thailand are now occupied by high yield varieties (HYVs). In addition, some 375,000 ha or nine percent of total rice lands in the Philippines was planted to hybrid rice in 2011, with the hectarage bound to increase as the government targets increase.

Packaged technologies have now become the norm even in highly heterogeneous environments, objectives, and cultures. Peasant-oriented approaches to increasing production were ignored or considered backward. This homogenizing effect transcended seeds, technology, and growers' objectives. Government policy and programs have had a big role in the disappearance of traditional and farmers' varieties.

Government policy and programs

Under the Philippine Hybrid Rice Commercialization Program (HRCP), production of hybrid rice seeds is promoted through (1) procurement of seeds at a guaranteed price, (2) distribution of the procured seeds to participating farmers at half the procurement price, and (3) payment of additional money to participating farmers to help defray fertilizer input costs. This way, the spread of hybrid seeds was facilitated, displacing local varieties, and enhancing the use of chemical fertilizers and pesticides.

Agricultural policy was also crafted in promoting these modern seeds and technologies. Government programs supported the distribution of modern seeds through its extension program. It also provided subsidies and agricultural credits to users of modern seeds, chemical fertilizers, and pesticides, and is the only recognized method covered by crop insurance. Farmers who insisted on using their varieties were ridiculed as backward and irrational.

The Bureau of Plant Industry under the Department of Agriculture has approved 68 GMO transformation events for importation for direct use as food or feed, and not a single application has been turned down so far. Risk assessments lack rigour because these are reduced into simplified procedures of checking of positive or negative effects and conducted by a single person in contrast to the usual practice of a risk assessment being executed by a multidisciplinary team. Field testing for efficacy tests is advocated as safety tests and the science and technical review panel of the approving government body are all pro-GMO.

There are **11 seed companies active in hybrid rice in the Philippines** and these include Bayer, Bioseed Research, Cargill, Syngenta, Yuan Longping High-Tech Agriculture (LPHT), Hyrice Seed Tech, and Advanta among others. In addition, Monsanto, Syngenta, and Pioneer are active in developing and commercializing genetically modified crops in the country. The setting up of multi-million-dollar seed production plants in the Philippines by Syngenta and Pioneer is an indication of the lucrative seed business. Not to mention that these biotech corporations have a very strong lobby and influence on research institutions

and government policies through the International Service for the Acquisition of Agri-biotech Applications (ISAAA). Researchers from the University of the Philippines Los Banos (a government institution) were the ones who field-tested Monsanto's Bt corn, the first GM crop in the Philippines.

IRRI, the architect institution of the green revolution in rice, was established in the Philippines on April 4, 1960, by the Rockefeller Foundation and Ford Foundation "to feed the world". Although the institution has the appearance of being a public entity, it receives much of its research donations from foundations (such as the Bill and Melinda Gates Foundation), governments, and businesses. **IRRI is now increasingly dependent on corporate funding**- doing research focused on breakthroughs with potential patentability and therefore market viability. Research 'commissioned' by seed companies is also increasing, results of which are obviously for the corporations that provide the funds. These mutual relationships steer IRRI to conduct research that directly or indirectly legitimizes or endorses technologies of biotech and seed corporations.

Hence, Intellectual Property Rights (IPR) is affecting research and the kinds of varieties and technologies that are being developed. Research priorities and directions of public and international institutions are shifting to patentable and profitable technologies at the expense of practical and safe technologies. A problem as the institution is also protected by Philippine law (presidential decree 1620) and is not accountable for the adverse effects of its research. Proponents of IPR claim that these public-private partnerships help stimulate research but what is happening is the contrary. There is a greater restriction of research on patented varieties because they can't be used for breeding materials without the patent owner's consent. Making public research very difficult and making seeds with patented genes difficult to access by independent scientists who would like to research health impacts.

IRRI's influence has had a profound impact on national research initiatives, even when the diverse approaches of traditional cultivation were co-opted to the paradigm, framework, and priorities of the Green Revolution. IRRI is regarded as having the best rice scientists in the world who in turn provide advice that permeates into local policies and priorities. Golden Rice, for example, is being promoted through IRRI by the Golden Rice Humanitarian Board. Also, many rice scientists are trained in IRRI and they consequently espouse the same paradigm as they move on to other institutions and research centres. For example, some local scientists who worked in IRRI later transferred to the Philippine Rice Research Institute.

Based in IRRI is a multitude of networks and consortiums pushing for hybrid, GMO, and industrial rice varieties. For example, A Consortium for Unfavourable Rice Environments based in IRRI is a regional platform for partnerships among national research and extension systems (NARES) seem to appear relevant in addressing climate change, but then again, promotes a technocentric approach and espousing genetic uniformity of so-called 'climate ready' varieties. The Hybrid Rice Development Consortium at IRRI is also pushing for hybrid rice.

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