BMG FOUNDATION AND IRRI: CORPORATE HIJACK OF RICE SCIENCE

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The Bill and Melinda Gates Foundation (BMGF)

Bill Gates is one of the richest people on earth who has established the world's largest philanthropic organization, the Bill and Melinda Gates Foundation (BMGF). Organized in 2000, BMGF was reported to have total assets of $46.8 billion (as of 2018). It has become the world's largest donor, and with it the most influential, in international development particularly in global health and agriculture policy, research, and programs. In fact, its influence in agricultural development is far greater than most countries.

BMGF is the biggest private charitable donor to the CGIAR system, and third overall (after the US and UK) contributing 13 percent of total budget (2014 CGIAR Annual Report). In recognition of its huge contribution, BMGF is the only private/non-governmental voting member in the CGIAR System Council.
Over a period of 15 years, BMGF's direct grants to IRRI averaged US$ 10.3M/yr which amounts to 15 percent of IRRI's annual budget (IRRI audited 2016 financial statement). Out of all of IRRI's bilateral and restricted research funds for 2016, BMGF grants of US$11.716M constitute 18 percent.

The generous philanthropic contributions of BMGF towards alleviating poverty and hunger would be welcomed except that such contributions carry their own agenda. It attempts to bring simplistic solutions based on science and technology to address the complex problems of hunger and poverty. Such high-end science and technology are, in fact, more aligned to corporate interests rather than the contexts and needs of poor farmers. Importantly, BMGF lacks transparency and accountability. The philanthropic foundation is only accountable to its three trustees, Bill Gates, Melinda Gates and Warren Buffet.

This paper analyzes the grants of BMGF to the Consultative Group on International Agricultural Research (CGIAR), focusing on one of its research centers, the International Rice Research Institute (IRRI).

The International Rice Research Institute (IRRI)

The International Rice Research Institute (IRRI) was established in the Philippines on April 4, 1960 by the Rockefeller Foundation and Ford Foundation "to feed the world" within a Malthusian framing. Its signature program was called the 'Green Revolution' (GR) in rice. Implicit in the name of the program, it is alluded to as an alternative in order to contain the spreading red revolution/communism of those years.

IRRI's GR in rice is actually composed of a package of technology centered on 'high yielding variety' seeds, under conditions of high fossil energy-based inputs (fertilizers, pesticides, machinery), irrigation, and production loans. It was successful in converting rural peasant farming into the capitalist market economy. This helped pave the way for globalization and corporate control of agriculture and food systems.

In a broader picture, similar international research centers on agriculture, forestry, and fishery were established, and in 1971, the Consultative Group on International Agricultural Research (CGIAR) was formed to serve as a coordinating body through which funds for international agricultural research could be? administered to its 15 research centers. Being the biggest private donor to CGIAR, Bill Gates now sits in the CGIAR Fund Council. The Chair of CGIAR is a senior vice president of the World Bank.

IRRI, as an international research organization, appears to be public—hence it projects as an unquestioned public interest institution, but it is not. IRRI is a not for profit organization. Research donors are governments, foundations, and business corporations. It has tremendous power to influence the direction of agricultural research, but it lacks public accountability. In fact, IRRI in the Philippines is protected by law (Presidential Decree 1620) and is immune/not accountable to any adverse effects of its research and technology.

"Golden Rice grain compared to white rice grain in screenhouse of Golden Rice plants", by International Rice Research Institute (IRRI) is licensed under CC BY 2.0 (https://creativecommons.org/licenses/by/2.0/).

Who determines IRRI's Agenda? Gone were the days when science is unquestionably for the public good. IRRI is always on the path of 'modernization' of agriculture which is unmistakably industrial farming. Its agenda is guided by corporate values, influenced by corporate representatives, and often determined by its funding sources. In fact, there is a funding mechanism (Window 3 funds) wherein the donor designates to individual research centers for specific purposes. It used to be called **commissioned research**, but perhaps realizing the very private image of the term, they now call it **bilateral restricted funding**. This means that the funds provided by the donor are for predetermined, specific activities and outputs. Often, any commercializable results are reserved for the funding donor.

BMGF funding to CGIAR and IRRI

Over a span of 13 years (2008-2020), BMGF has granted a total of US$1.136 Billion funding to 12 CGIAR research centers and the CGIAR system organization (Table 1). In fact, it contributes 13 percent of its entire budget. As mentioned above, BMGF is the third largest donor (next to US and UK) and the largest private donor.

From 2008 to 2020, BMGF has funded 15 projects of IRRI for a total of US$ 154,544,972 (Table 2). Over the years, the foundation has been contributing an average of 15 percent of IRRI's budget per year. On a yearly basis, BMGF contributed 18 percent of all research grants in 2016 (IRRI 2016 Audited Financial Statements), and 64 percent of all the Bilateral Restricted research grants in the same year.

Table 1. Project grants funded by Bill and Melinda Gates Foundation to the CGIAR and its research centers (2008-2020).

Agricultural Research Center	No. of Projects	Total Grants (US $)
Int'l. Maize and Wheat Improvement Center (CIMMYT)	25	280,155,682
Int'l. Food Policy Research Institute (IFPRI)	27	174,869,347
Int'l. Institute of Tropical Agriculture (IITA)	26	158,602,630
International Rice Research Institute (IRRI)	**15**	**154,544,972**
Int'l. Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	11	127,934,330
International Potato Center (CIP)	11	90,588,729
Int'l. Livestock Research Institute (ILRI)	16	65,907,489
Int'l. Center for Tropical Agriculture (CIAT)	13	29,229,888
World Agroforestry Center (ICRAF)	3	18,917,317
Int'l. Water Management Institute (IWMI)	1	9,012,826
Africa Rice Center	3	6,004,502
Bioversity International	3	5,097,884
Center for Int'l. Forestry Research (CIFOR)	0	--
Int'l. Center for Agric. Research in the Dry Areas (ICARDA)	0	--
WorldFish	0	--
SUB-TOTAL (Research)		**1,120,865,596**
CGIAR System Organization	4	15,494,677
GRAND TOTAL		**1,136,360,273**

Extracted from https://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database/Grants (accessed June 8, 2020)

There are at least five big research projects funded by BMGF in IRRI.

- The first was the 'Realizing Increased Photosynthetic Efficiency' (RIPE) program that started in 2008 and lasted for seven years where BMGF contributed US$19.4 M. It was touted as an innovative scientific research program attempting to make rice, a C3 plant, into a C4 plant in order to make it more efficient in photosynthesis for higher grain production, through genetic engineering. A C4 super rice was projected to produce 50% more yield and significantly contribute to global food security. To date, except for some knowledge gained, there is no tangible C4 super rice produced.
- The second IRRI project funded by BMGF is genetically engineered golden rice. The first phase lasted from 2010 to 2017 with a total grant of more than US$ 10M, and the second phase from 2017 to 2022 with a total grant of US$ 18 M. It aims to be able to reach the approved commercial stage in Bangladesh and in the Philippines, by then. Despite strong people's opposition, this overwhelming funding to push golden rice is too big to reckon with in the fight against this GMO.
- Third is the Stress Tolerant Rice for Africa and South Asia (STRASA) project focusing on development of seed systems tolerant to drought, submergence, salinity, iron toxicity, cold, and biotic stress. The first and second phases were implemented from 2007 to 2010 and 2011 to 2014 with US$ 20 M for each phase, and a third phase from 2014 to 2019 with a budget of US$ 32.77M. Perhaps the most publicized output is Swarna-Sub1 rice or scuba rice. The gene used here came from naturally occurring local Indian rice variety Swarna, and bred to modern varieties using marker assisted selection.
- Fourth is Transforming Rice Breeding (TRB) which was implemented from 2013 to 2018 with a budget of US$12.5 M. It focused on rice germplasm development and networking of trial and testing of newly developed varieties.
- Fifth, Accelerated Genetic Gain in Rice in South Asia and Africa (AGGRi) Alliance was organized from the merger of STRASA and TRB with a new funding of US$34.99B from BMGF. It aims to modernize and unify existing rice breeding efforts and strengthen its partnership with the National Agricultural Research and Extension System (NARES) to increase rice yield and improve livelihood of rice farmers in South Asia and Africa.

Another significant BMGF supported program where IRRI is involved (IFPRI and CIAT are the project holders) is Harvest Plus otherwise referred to as Challenge Program. This program started in the early 1990s, but BMGF started supporting it in 2003. It is a very big alliance of nine CGIAR research centers, universities, private sector, NGOs, and other international/national agricultural research institutes. This program aims to develop crops to provide higher levels of micronutrients such as iron, zinc, and vitamin A through biofortification. Rice biofortification is done through conventional breeding (high zinc rice), transgenic biofortification (Golden rice) and gene editing biofortification (high zinc rice).

In its networking mechanism, IRRI is the convenor and secretariat for the Global Rice Science Partnerships (GRiSP) which are also indirectly supported by BMGF through other programs. This influences and unifies all research activities on rice science.

Lastly, IRRI is the secretariat of the Hybrid Rice Research and Development Consortium (HRRDC) organized in 2007. HRRDC laid down the foundation for a direct relationship between IRRI and private seed companies, with the former providing parent lines to the latter. GRiSP, AGGRi Alliance and HRRDC are big networks for the consolidation, diffusion, and with it, influence on rice research, development, and farming.

Table 2. BMG Foundation Funding Granted to IRRI from 2008 to 2019.

YEAR	AMOUNT(US$)	PURPOSE OF PROJECT
RIPE Program (Realizing Increased Photosynthetic Efficiency)		
2008 (to 2012)	11,017,675	to increase yield by increase the photosynthetic efficiency of rice (44)
2012 (to 2016)	8,375,747	to increase yield by increasing the photosynthetic efficiency of rice (43)
Golden Rice Project		
2010 (to 2017)	10,287,784	to address the problem of Vitamin A deficiency among millions of people in the Philippines and Bangladesh (83)
2017 (to 2022)	18,000,000	to develop and deploy healthier rice varieties genetically engineered to improve the nutritional and health status of the poor in Asia, particularly in Bangladesh and the Philippines (63)
STRASA (Stress Tolerant Rice For Africa and South Asia Project)		
2011 (to 2014)	20,000,000	to develop and disseminate stress-tolerant rice varieties for smallholder farmers in Africa and South Asia. (37)
2014 (to 2019)	32,770,000	to reduce poverty and hunger and increase food and income security for farm families and rice consumers in South Asia and sub-Saharan Africa through the development and dissemination of high-yielding rice varieties tolerant of abiotic stresses (61)
TRB Project (Transforming Rice Breeding)		
2013 (to 2018)	12,500,000	to significantly increase the efficiency and genetic gain in irrigated rice breeding programs by using modern breeding tools and approaches to increase food and income security of resource-poor farmers, and to ensure rice food security in Asia and Africa (61)
AGGRi Alliance (Accelerated Genetic Gain in Rice in South Asia and Africa), merged TRB and STRASA		
2018 (to 2023)	34,990,000	to unify existing rice breeding efforts targeting South Asia and Sub-Saharan Africa into a system capable of sustainably delivering genetic gain in farmers' fields (60)
Other Project Grants		
2008	22,128.658	to decrease hunger and poverty in South Asia by increasing rice, wheat and maize production (43)
2009	96,869	to support the Conference in Beijing, China in connection with the IAAE conference (30)
2010	600,000	to monitor the diffusion of improved crop varieties in rainfed areas of South Asia (40)
2013	690,327	to conduct pilot survey to monitor varietal adoption and rice production in South Asia (12)

2014	3,359,914	to increase rice productivity in South Asia and improve agricultural policies (54)
2016	880,000	to help Indian and Bangladeshi rice breeding programs deliver higher rates of genetic gains in the farmers' fields by improving product design, shorten breeding cycles, increase selection pressure, and improve heritability (50)
2019	954,527	to evaluate the effectiveness of the organization and identify potential improvements in strategy, management, and partnership that could enhance the rate of genetic gain delivered to smallholder farmers (16)

Extracted from https://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database/Grants (accessed June 15, 2020)

Outcome of IRRI Science

The introduction of IRRI's modern rice varieties through the Green Revolution has caused genetic erosion wherein a majority of local rice varieties in rice growing countries have disappeared. In Indonesia, some 1,500 traditional rice varieties and landraces disappeared between 1975 and 1990; in India, some 30,000 rice varieties is down to just 10 varieties in 75% of its rice (Ryan, 1992); 99% of rice fields in Pakistan were planted with only four High Yielding Varieties (HYV) (IRRI World Rice Statistics, 2004); and at least 85% of the rice fields in Burma, Indonesia, Philippines, and Thailand are occupied by HYVs (WRI, UNEP and IUCN, 2002).
The associated biodiversity in rice fields were also displaced due to monocultures. Edible fish, snails, crustaceans, and plants were killed by pesticides. Due to intensive planting and reliance on synthetic fertilizers, soil nutrient imbalance and depletion became prevalent. Pests and diseases had periodic outbreaks due to high nitrogen levels, overuse of pesticides, and crop management practices. Water, soil, biodiversity, and humans were poisoned by pesticide residues. The expensive inputs of seeds, fertilizers, and pesticides became an economic burden to farmers and many became bankrupt. The pervasive modern rice technology developed in IRRI, supported by aggressive government extension work, made farmers 'forget how to grow rice'.

IRRI is a tool for privatizing farmers' seeds. They have collected 132,442 rice accessions from farmers and stored them in their gene bank, with a duplicate in the Svalbard seed vault in Norway. They value farmers' rice varieties, only because of their genetic diversity but they never acknowledge the associated farmers' knowledge, and the seed diversity that farmers developed is neither officially recognized nor honored. Instead, IRRI, in partnership with Diversity Seek are doing genome sequence mapping of the seeds in the 'public seed banks' and taking patents. By genetic characterization, IRRI and DivSeek are dematerializing the farmers' seeds and committing biopiracy of seed commons because they are dealing with the non-material dimensions (gene sequence) of the farmers' seeds.

Rice science in IRRI is now biased towards technologies that are covered by Intellectual Property Rights (IPR), particularly in breeding, genetic engineering, gene editing, and towards synthetic biology. For example, genetically engineered Vitamin A rice; gene editing for zinc enhanced rice; Phosphorus starvation tolerance gene (PSTOL1) to solve phosphorus deficiency; looking for rice gene to reduce methane emission and many more. These are cutting edge science but there are so many practical, ecological, cost-effective, and affordable

alternatives. These approaches are in fact aligned with corporate interests of commodified seed products, and conversely, farmers' loss of seed control, undermining localized, practical, safe, sustainable, affordable approaches.

IRRI's solution to climate change is through exploitation of genetic resources mainly through biotechnological approaches. This approach creates uniform genetic makeup rather than diversification in breeds and varieties, species and management approaches. As such, this is not reliable in an unpredictable climate change.

Restricted research can be assumed to be beneficial to IRRI because it adds to their research fund portfolio. However, it might be turning into the opposite/having an opposite effect. It is the research fund donors that benefit because they are in effect being subsidized by IRRI through its existing resources such as salaries of researchers in plantilla position, laboratory equipment, and use of other existing facilities. In some of the restricted or commissioned research, any commercializable results are reserved for the funder.

BMGF as tool for corporate hijack of rice science

With the huge funding granted for agricultural research to produce modern science and technology in order to address hunger and poverty, one is tempted to praise Mr. Bill Gates for his humanitarian character. However, there are serious concerns beneath the veneer of his philanthropy. His big actions have a particular narrative or framing that is inconsistent with the root causes of hunger and poverty. His narrative of a Malthusian framework and solutions can emanate purely from technical and scientific developments. Poverty and malnutrition actually is more complex than that, and it is the structures that perpetuate these problems that need to be fixed. Often, poverty is brought about by precarious assets and livelihood, discriminating social relations, lack of security, disempowerment, and lack of democracy. To fix such socio-political problems with expensive technological fixes will not work, no matter how sincere the philanthropic donor might be. It only aggravates and perpetuates the problem it is intending to solve.

Supporting modern farming with the use of chemical fertilizers and pesticides will only create more environmental and socio-economic and health problems as shown by the outcome of the first Green Revolution. Even if there will be successes in chemical farming or industrial agriculture, such would be ephemeral because they are not sustainable. Other than productivity, Mr. Gates is missing equity (intragenerational justice) and sustainability (intergenerational justice) which are equally important in rural development.

Mr. Gates' strong push for GMOs and its modern versions of gene editing and synthetic biology creates more serious and intense problems. Health problems associated with exposure to GMOs had been elucidated in scientific literature, yet proponents like Mr. Gates deny the problems. Contamination of biodiversity and the environment had been reported in scientific literature, but the proponents refuse to open their eyes. Unreliability of the genetic mutilation processes had been reported yet proponents refuse to listen. And so, people wonder why? This is because GMOs are patented, and it would be advantageous to the biotech seed and agrochemical companies. Corporate interest in GMOs is undeniable, and with the full support of Mr. Gates for GMOs, he is inevitably promoting corporate interests.

With funding in agricultural research, BMGF and IRRI (and CGIAR) easily influence and co-opt the National Agricultural Research and Extension System (NARES) of governments through the IRRI network, through advice, staff training, seed distribution and technology. For example, the Global Rice Science Partnership (GRiSP), another program collaboration of IRRI, lists 302 NARES partners. This means that national research and extension institutions are harmonized and homogenized, all in framing, focus and approaches, thereby setting aside other approaches which are more sustainable, and equitable. For example, organic approaches to farming, agroecology, permaculture, etc. would be labeled as second-class science because it does not conform to the cutting-edge science of Mr. Gates. With such homogenization of approaches, any unforeseen or unintended results would be more catastrophic.

Bill Gates, through his BMGF Foundation has hijacked agricultural science in rice into a corporate science. First, it focuses on the very expensive cutting-edge science of genomics, gene editing and synthetic biology that can't be afforded by most NARES in many countries. Second, the resulting technology (seeds) are covered by intellectual property rights (IPR) which can be turned to a business entity for corporate benefits. Farmers buy the seeds at exorbitant prices, making the farmers poorer while the corporations accumulate huge wealth. If the cycle goes on, this creates corporate philanthropy.

Corporate power has extended so well in science that any finding against the interest of corporations can be suppressed by interested parties. There have been uncovered situations where corporations hire scientists to make biased research to counteract any damaging independent science to their business. They can simply turn down publication of research results inimical to the interest of corporate business.

Chito P. Medina at Food. Faming. Freedom Conference 2019

Currently, no assessments have been done into whether the intentions of BMGF are indeed successfully achieved. Generosity does not automatically make positive results and success on societal objectives. Because of the potential magnitude of impacts of BMGF philanthropic funding on research and policies, there is a need for transparency and accountability and mechanisms of assessments.

Conclusion

The generous philanthropy of BMGF is actually more generous to corporate interests than the poor and hungry. It pursues industrial and chemical farming which are expensive and unsustainable. One thing is sure, the science and technology emanating from the BMGF's support makes biotech, agrochemical corporations and agribusiness control agriculture and food. It is corporate philanthropy.

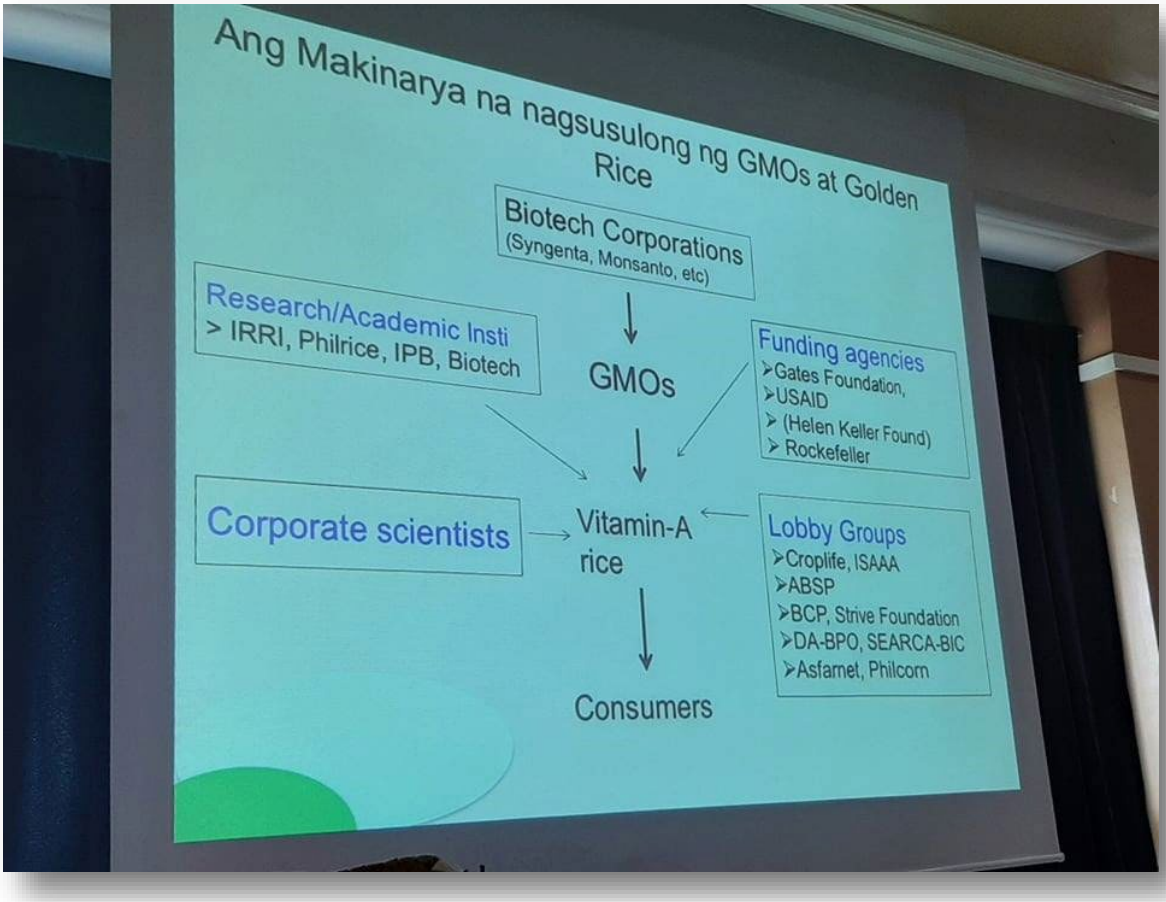

Photo: Food. Farming Freedom Conference 2019

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