



National Biotechnology Policies and Realism: Overcoming Challenges in Implementation

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Abstract: The Philippines currently utilizes modern biotechnology. As of 2008, 350,000 hectares have been planted to genetically modified corn, thereby providing substantial economic benefits to approximately 175,000 farmers. The existence of an official government policy, the issuances of implementing rules and guidelines for commercial deployment of genetically modified plants and the investment in capacity building have made this possible. Several genetically modified crops are in the research and development pipeline. For these crops to reach commercial release without encountering crushing regulatory hurdles, the Philippines must continue its information dissemination activities, further strengthen its regulatory system, obtain necessary access to support services and create a national biotechnology roadmap which substantially meets the requirements of stakeholders. For continued advances in rational utilization of modern biotechnology, the Philippines must continue to learn from global initiatives and cooperate more closely with other countries to continue to find acceptable solutions to global issues.

Keywords: Philippines, biotechnology, roadmap, enabling strategies.

Philippine Policies

The Philippines has policies and enabling measures regarding biotechnology in place. On 16 July 2001, Philippine President Gloria Macapagal-Arroyo issued a National Statement on Modern Biotechnology that states, "We shall promote the safe and responsible use of modern biotechnology and its products as one of the means to achieve food security, equal access to health services, a sustainable and safe environment and industry development."

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Earlier, on 15 October 1990 the President Corazon C. Aquino issued Executive Order 430, which created the National Committee on Biosafety of the Philippines (NCBP). With the creation of the NCBP, more than 80 project proposals were evaluated, thereby gaining valuable insights and leading to the issuance of the National Statement on Biotechnology. Subsequently, in 2002, the Philippine Secretary of Agriculture issued Administrative Order Number 8 (AO 8), which spelled out the rules and regulations for the importation and release into the environment of plants and plant products derived from the use of modern biotechnology. With the release of AO 8, on 4 December 2002, approval was given for commercial planting of corn with resistance to corn borer. On 8 February, 2005, approval was given to commercial planting of corn with tolerance to the herbicide Glyphosate. On 14 April 2005, approval was given to commercial release of corn with stacked traits of insect protection and herbicide tolerance. From 2003 to 2007, the Bureau of Plant Industry of the Department of Agriculture approved 23 transformation events and 13 combined trait products for importation for direct use for food, feed and processing. The transformation events approved were for corn, alfalfa, cotton, sugarbeet, potato, canola and soybean. Approved products with combined traits were corn and cotton.¹

To augment the earlier policy statement, in 2006 the office of the Philippine President issued Executive Order 514 which established the Philippine National Biosafety Framework and the Senate ratified the Cartagena Protocol on Biosafety to the United Nations Convention on Biological Diversity. On 5 October, 2006, the Philippine government submitted the Senate Ratification of the Cartagena Protocol to the United Nations.

Reality with Respect to Biotechnology

On 29 August 2001, just over one month after issuance of the Philippine National Statement on Modern Biotechnology, protesters destroyed an ongoing field trial on Bt corn in South Cotabato, a province in the southern Philippine island of Mindanao. Tragically, that field trial in fact was intended to address the very issues which concerned the protesters.

Resistance to utilization of modern biotechnology was quite pronounced during the early part of this decade. As an example, an elected official of the capital city of Manila was mulling over a proposal to make the city free of genetically modified organisms (GMOs). When the safety record, extensive researches and advantages of modern

biotechnology were shared, the official no longer proceeded to push through with the proposal. Among the points raised during that discussion were that virtually all insulin in the Philippine market was made through genetically modified *E. coli* and that a substantial percentage of cotton used in local fabrics was derived from genetically modified cotton. During that information exchange, the official said that information then available on the Internet was skewed to the disadvantages of modern biotechnology. That comment underscored the reality that modern biotechnology was a new development and being such, people tended to view it with mistrust. To call attention to GMOs, one protester went on a hunger strike on the grounds of the Philippine Department of Agriculture. A broadsheet statement signed by respected Philippine scientists quelled sympathy for the hunger strike which ended with no untoward incidents.

In August 2003, a petition was submitted to the provincial health officer of South Cotabato calling attention to alleged extraordinary experiences of residents regarding their health. The provincial governor and the media were furnished with copies. In October 2003, a Norwegian obtained blood samples from 38 farmers in that area. At a side event during the 7th meeting of the Conference of Parties of the Convention on Biological Diversity held in February 2004 in Bangkok, this Norwegian presented his findings through a powerpoint presentation. In news released by Reuters on 23 February, 2004, this Norwegian was quoted to have said, "We are absolutely sure it's a reaction to being exposed to the Bt maize." In a series of press conferences held in Manila the following month, this Norwegian announced, "My research showed that footprints of Bt toxin were found in the blood samples". This was duly reported in various newspapers. However, when pressed as to whether the traces of Bt toxin in the blood samples were the result of the natives' exposure to Bt corn, the Norwegian said, "It is difficult to completely conclude if the Bt toxin indeed came from Bt corn. We need to conduct further researches on that. However, this alarming finding should serve as an early warning that (Bt corn) could be harmful to our health." Predictably, this warning caused public concern.

Science requires confirmation and validation of results by independent investigators before final acceptance. When requested by Philippine officials and scientists to share his methods and full report, the Norwegian's responded that these would be presented in due time. With no full report forthcoming, an international group of scientists issued a statement condemning the scare tactics resorted to by the Norwegian.

When a Philippine team consisting of physicians and scientists visited the community where adverse reactions to Bt corn were reported, the following were established:

1. Many of the residents in the area were found to have illnesses such as upper respiratory tract infection, neuromuscular disorder, systemic viral infection and diarrhea, which were also common in the surrounding communities. One resident in fact admitted to the physicians on the Philippine team that he had amoebiasis and tuberculosis. The Municipal Health Office found it premature to conclude that the illnesses reported were caused by "the flowering and existence of Bt corn in that area." The health effects which were the subject of the petition were more compatible to toxicity resulting from chemical exposure than with allergy resulting from biological exposure. The report of a pungent odor which the residents smelled was more consistent with the solvent component of pesticides rather than corn pollen.
2. The writer of the petition and her group blamed the media for misquoting the Norwegian.

With obstacles such as these, what has been the overall result? From an initial planting of about 129 hectares to Bt corn in 2002, in 2004, 50,000 hectares were planted to Bt corn. In 2007, 248,000 hectares were grown to Bt corn; in 2008, 350,000 hectares. Corn is grown basically by small holder farmers cultivating on average of 2 hectares of land. Thus, the number of resource-poor farmers who have planted Bt corn in 2008 is estimated to be 175,000. The yearly increase in the planting of Bt corn results from the benefits derived. Several studies have shown increased net farmer income. From data gathered during the 2004-2005 crop year, it was determined that Bt corn could provide an overall income advantage of 5 to 14 per cent during the wet season and 20 to 48 per cent during the dry season.

Other than Bt corn, other genetically modified crops are in the pipeline. At various development stages and undergoing the process of meeting regulatory requirements are rice with built-in beta carotene, the so-called Golden Rice, Bt eggplant, virus resistant papaya and papayas with extended shelf-lives.

By no means is the Philippines home free. In democratic forms of government such as exist in the Philippines, all voices must be heard. Notwithstanding the existing National Policy Statement on Modern Biotechnology, bills have been introduced into its legislative bodies by

two congressmen and two senators banning the planting of GMOs. Other pending bills, if passed, would make it mandatory to label genetically modified foods, as opposed to voluntary labeling. Issues such as safety of GMOs are at the crux of the labeling issue. If, however, it is accepted that no GMO is released unless deemed to be safe, labeling could be construed to be an added cost burden. The existing guidelines in place specifically aim to ensure that no unsafe GMO is released.

Successful Strategies

Strategies which have helped so far are information dissemination, creation of a credible regulatory system, and access to necessary support services. Another strategy which needs to be put into place is the creation of a national biotechnology roadmap.

Information Dissemination

As is the case in many developing countries, information dissemination to all stakeholders requires time and money. Information dissemination is necessary because not only is modern biotechnology novel, it is complex. Although the Philippine literacy rate is in the 90 per cent level, only a small minority is knowledgeable about science, let alone modern biotechnology. Information dissemination about modern biotechnology, however, is necessary because it impinges on basic needs, namely food and health. Acceptance of the need for biotechnology in the health arena is deemed to be easier, as demonstrated by the easy acceptance of insulin produced by genetically modified microorganisms. Vaccines and pharmaceutical actives which combat cancer, Alzheimer's disease, diabetes, AIDS and other diseases will probably not elicit the contentious issues which accompany the GMO food issue.

In its early stages, information dissemination was provided by scientists and government officials. As has been demonstrated, scientists themselves have been prudent. Aware of the power of modern biotechnology, scientists convened in 1975 at Asilomar, California to examine the potential threats of modern biotechnology. Maybe they succeeded too well, as their good intentions subsequently created strong negative reactions to the pursuit of modern biotechnology. In the initial stages of information dissemination in the Philippines, scientists at the forefront of modern biotechnology were tapped to explain the intricacies of the technology. Many scientists gave freely and abundantly of their time and energies to explain their craft to audiences of varied backgrounds.

Perhaps because of problems such as the mad-cow disease in Europe which slipped through the science net and maybe simply because of cynicism, scientists who spoke of modern biotechnology attained only a modicum of success. It turned out that ideologies and economic impact had to be considered. Thus, thought leaders from religious groups and political parties and economists were invited to share their points of views. Through all these information dissemination activities, practitioners active in radio, TV and print media were invited.

Once commercial planting of a GMO was allowed, information dissemination shifted to another set of stakeholders, the farmers. Some farmer leaders became the featured speakers. Results, however, counted for far more than words. Increased yields and better economic returns soon spread rapidly. It takes a rare farmer who witnesses his neighbour farmer reaping better harvests not to want to achieve similar results.

Creating a Credible Regulatory System

While farmers may accept a technology which is easy to adopt for it merely involves choosing seeds, naysayers need to be convinced that the technology does not lead to future problems. The knowledge that other countries have successfully and safely grown and consumed GMOs is deemed insufficient reason to grow GMOs in other locales. For countries which grow sufficient food, feed and fiber to meet their requirements, GMOs in fact present threats. Entry into their shores of imported GMOs which are grown more efficiently and cheaply than their existing technology threaten their own farmers. Since many nations in fact subsidize their farmers, cheaper GMOs would upset the status quo. Farmers' lobby groups in many countries are well entrenched and amply funded. Another factor, particularly for some countries with declining populations may simply be the perception that since needs are already met, why bother with a new technology which at some time in the unforeseeable future may create an as yet unknown negative aspect. Thus, it is understandable that some nations which opt to protect their farmers' interests and are content with the status quo place roadblocks to the progress of GMOs in all available fora. Unfortunately, such countries influence other countries which export to them by getting those exporting countries to play by their rules. Such exporting countries for some reason fail to see that their needs differ from countries which are self-sufficient as far as their food, feed and fiber needs are concerned, or at least have sufficient resources to purchase in the world market their needs for these items. This is a tragedy for the poor people in these exporter countries

which place the potential for exports above the food, feed and fiber needs of their own people. This negative scenario notwithstanding, due diligence requires the creation of a credible regulatory system. At this juncture, I recall the comment of a Philippine senator at one senate hearing regarding GMOs. He said, "Why bother with all these requirements when American and Canadians have been growing and using these GMOs for many years?" Although I described a scenario as to why certain countries remain steadfastly opposed to GMOs, with the realization that each country must safeguard itself and not rely on the good intentions of a foreign country, a credible regulatory system must be established. The optimist in me hopes that in time, each and everyone thinks of himself as a passenger on Spaceship Earth and thus chooses the solutions good for all human beings but I am realistic enough to know that such a dream remains a pipe dream in my lifetime. Civilization at present is not sufficiently evolved to rise significantly higher than the tribal stage which dominated not so long ago. Through the smokescreen of patriotism which is perhaps defensible at the present stage of evolution of civilization, so-called nationalists defend their turfs.

Filipinos are fortunate in that various agencies, principally the country's Department of Agriculture and Department of Science and Technology funded and continue to fund measures needed to establish a credible regulatory system. The necessary tools of the trade were purchased and more importantly, training was and continues to be provided to minimize the possibility that the equipment purchased do not end up as white elephants. As described above, the Philippines created a National Committee on Biosafety, issued rules and regulations regarding the release of GMOs which are deemed safe in its environment, created its National Biosafety Framework, and submitted its ratification of the Cartagena Protocol on Biosafety to the United Nations. In August 2008, the country launched its National Biosafety Clearinghouse, BCH Pilipinas, to serve as the Philippine node of the Biosafety Clearing-House mechanism established under the Cartagena Protocol on Biosafety.

Access to Support Services

Naysayers to the utilization of modern biotechnology find all sorts of means to achieve their objectives. A suit was served on a Philippine government agency regarding a transformation event in rice. Although the Philippine government provided means for defense, the legal status of that suit remains unresolved.

The need for legal services extends to comprehensive expertise in intellectual property rights. Without sufficient expertise in intellectual property rights, research and development efforts could hit major snags.

In addition to legal support services, efforts to collaborate with other stakeholder nations regarding international global trade agreements must continue. Poor nations with grinding poverty must find common lifelines to avoid sinking further into helplessness.

Concluding Remarks

Although the adoption of a GMO has increased and continues to increase and there is strong likelihood that GMO products in the local pipeline will reach the commercial stage, there are good reasons why a roadmap on biotechnology is needed.

Since one third of Filipinos are involved in agriculture, the emphasis to increase agricultural productivity is a given. One handicap is that while the Department of Agriculture and the Department of Science and Technology address enabling mechanisms to increase food, feed and fiber through R&D, there remains a perceived lack of convergence in the activities of these departments relative to the mission and goals of the Philippine Department of Environment and Natural Resources. Moreover, the Philippine Department of Health has not acted on pending labeling issues. Years ago, the Department of Agriculture devolved its extension services function to local government units but until now agricultural extension services are considered a weak link. In the 2004 Bangkok meeting mentioned earlier, an official from the Philippine Department of Foreign Affairs was one of the leaders advocating the scuttling of modern biotechnology. In a word, government units thus far have not successfully cooperated on their own to come up with an integrated plan.

Given that the Philippines is an agricultural country making the transition to an industrialized country, better efforts must be made in the utilization of modern biotechnology in other than the agricultural sector. A case in point is the need for its more rapid deployment in the health care sector.

A necessary component of capacity building is the need to have sufficient numbers of qualified professionals trained in modern biotechnology. This requires adequate mechanisms for balancing demand and supply requirements.

In some developed countries, private entities fund biotechnology initiatives. In other countries such as Singapore, government funding

has catalysed growth in biotechnology initiatives. A Philippine government park intended to be the center of biotechnology adoption has so far failed to attract partners for sustained growth. A substantially strong, viable mix of private and government initiatives has yet to be found in the Philippine biotechnology landscape.

While naysayers to the adoption of modern biotechnology continue their initiatives, a unified central Philippine body to address issues raised by the naysayers does not exist. Entities involved in the pursuit of modern biotechnology have so far reacted with knee jerk responses. The capability of naysayers to craft bills and file bills in Congress and the Senate underscores the effectivity of pressure groups to influence legislators. It also indicates that the offices of these legislators do not seek the advice of the National Academy of Science and Technology (NAST), the line councils of the Department of Science and Technology nor the policy arm of the Department of Agriculture regarding biotechnology issues. The NAST is the government collegial body of Philippine scientists; it generally advocates the pursuit of modern biotechnology. When pending legislative bills were brought to the attention of one government council, its response was that it responds only to issues brought directly to it. The actions and more to the point, the lack of timely action suggests that no one is tasked to address the pending legislative issues. Further, a national road map would help in addressing these issues. The creation of a national road-map can profit from the experience of other countries. In this context, one may look into Indian experience through the creation of a Department of Biotechnology for further advancing institutional development.

Endnotes

¹ Peczon (2008).

References

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