Undertaking Biotechnological Research: A Pressing Need of the Time

by Dr. Khalilur Rahman

There is an urgent need for the government to initiate research in biotechnology in public sector. In order to ensure required funds, perhaps our private sector may also be invited to participate in this research endeavour under clear terms and conditions.

BIOTECHNOLOGY and biodiversity has become an emerging global issue because of increased interest in linkages between intellectual property aspects of biotechnology and the conservation, use and benefit-sharing of biological resources as provided for in the Convention on Biological Diversity.

Biotechnology includes all technologies that involve use of biological properties of biological entities existing in their natural or genetically modified state to improve agricultural production or the industrial manufacture of various chemical compounds including medicinal drugs. It is a range of new techniques and methods that are increasingly influencing and enhancing the effectiveness of established tools in the area of conventional breeding.

The new biotechnological processes including genetic engineering, can not only bring miracle in food production; but also it can significantly influence production of medical equipments (diagnostic kits), methods of early treatment of plant diseases, vaccines etc. It can also encompass the environmental sector including the restoration of contaminated areas, purification of drinking water, recycling of organic wastes and its processing for food and feed purposes, development of drought-tolerant shrubs for the greening of desert areas and the containment of erosion, renewable energies, bio-gas installations etc.

Protagonists of biotechnology are of the view that by developing and applying these techniques, the developing countries can reap significant benefits including the elimination of hunger and the technical solution of most environmental problems. The antagonists of biotechnology, however, fear that these techniques could be monopolised by the private ownership and might entail significant socio-economic risks and disadvantages for the poorest countries.

The much talked-about TRIPS Agreement imposes obligation on WTO member-states to grant patents for all products or processes in all fields of technology with certain exclusions from patentability based on public morality, especially in regard to protection of human, animal or plant life, or to prevent serious damage to the environment. They are also allowed to exclude diagnostic, therapeutic and surgical methods for the treatment of humans or animals. Article 27.3(b) of the TRIPS Agreement provides that only plants and animals and essentially biological processes for the production of plants or animals may be excluded from patentability. The Agreement however, does not recognise rights on traditional knowledge that is rich in developing countries.

In the backdrop of these developments, the multinationals are increasingly investing in biotechnological research. They are rushing mad in order to secure patent rights for plant derived products that have been traditionally used in developing countries for medicinal and other purposes. For budgetary and other reasons most of governments in developing countries are withdrawing from research and the responsibility of carrying out research in the agricultural and other fields has been taken over by the chemical, pharmaceutical and food international corporations.

Their main aim in undertaking biotechnological research is, however, to maximise their profits and certainly is not intended to development of any particular country. Patents and other intellectual property rights enshrined in the TRIPS Agreement provide them the useful tool for achieving this objective.

Through biotechnological research, a US company has recently invented a technique that can genetically alter seeds so that "they will not germinate if planted second time". Significantly, this new technique has also obtained patent. The recognition of patents on this type of techniques on plants can affect developing countries in a number of ways — farmers will be prohibited to re-use the saved seeds resulting in increase in costs and dominance by large seed companies; while breeding-based protected varieties would be banned, traditional innovation at farm level is likely to be discouraged; patenting of high yield or similar trait may hinder production and commercialization of important crops. Patenting plant would also contribute to erosion of biodiversity, increased concentration in farming and in the seeds industry.

In pharmaceuticals sector, the TRIPS Agreement is expected to significantly increase prices of pharmaceuticals sold in the developing and the least developed countries. For the poor people in these countries such increase in prices could have serious consequences.

In view of the above, there is an urgent need for the government to initiate research in biotechnology in public sector. In order to ensure required funds, perhaps our private sector may also be invited to participate in this research endeavour under clear terms and conditions.

Ours is an agro-based economy. Development in agro-based sector can perhaps bring more fortune and rapid economic development of the country. Undertaking research in biomedics and biotechnology which could be very useful for the country's economic development as well as to ensure medicinal drugs at a lower cost for the entire population of the country.

Unfortunately we are far behind in the field of biotechnology despite the fact that we have enough prospects in such research. Our biggest problem is that we do not have a proper laboratory to undertake this type of research. There is a pressing need for us to immediately establish a National Institute of Biotechnological Research in the country.

There are a number of Bangladeshi scientists like Dr. Kader Khan and Dr. Abul Kalam Azad, who are working abroad and whose intellects and success stories in research in many fields are being used by foreign countries and multinationals. We have to tap their knowledge and expertise for the development of the country. Their success in research in fields like biomedics and biotechnology may surpass so-called scientific and technological success and superiority in nuclear technology of many countries.

Moreover, success in biomedics and biotechnological research will not entail any economic sanctions for us; rather it would ensure economic prosperity and projection of high profile of our country. One of our such expatriate scientists is Dr. Ahmed A Azad who is presently working in the Biomolecular Research Institute, Australia. He is considered one of the outstanding researchers in vaccine and pharmaceutical biotechnology in the world. I am sure like Dr. Azad, there are many Bangladeshi life scientists who can immensely contribute to our scientific and economic development.

A feasibility study was made in 1992 to establish a National Institute of Biotechnological Research at the behest of the Ministry of Science and Technology. It appeared that a huge amount of money would be required to undertake such a project. The matter got stranded there. There is no alternative to undertaking research in fields of comparative advantage to us for our development. Certainly undertaking research in biotechnology is the field where we have comparative and practical advantage. We need to spend some amount of money for our future generation. We also have to make sincere efforts in arranging for outside financial assistance to this type of project. Organisations like IDB, ADB, JICA and others may be of assistance to this type of project.

Given the resource constraints, the government may consider getting all related existing research institutions in the country together under one roof in order to launch a well-coordinated and concerted initiative in biotechnological research. The researches in the existing BCSIR, Bangladesh Medical Research Council, Khamar Bari and others, may be brought under one administration for effective and better coordination and management along with arranging for additional new equipment and other laboratory facilities. This will also save a lot of resources.

Other options for setting up a new and separate institute for this purpose may also be explored. ICGEB (International Centre of Genetic Engineering and Biotechnology) may also be approached for assistance in this field. ICGEB was established by UNIDO with Trieste (Italy) as its Headquarters. BAPTC (Bangladesh Association for Plant Tissue Culture) is ICGEB's focal point for Bangladesh. ICGEB has a Council for Scientific Advisors (CSA), its main advisory body and a Board of Governors.

Its main purpose is to help developing countries in building capabilities in the field of molecular biology. The organisation also helps the member-states in setting up molecular biology related industries such as vaccine production, insect resistant cereals, vegetable and cash crops like cotton. ICGEB may provide financial and technical assistance to set up a standard molecular biology laboratory. It may also help in developing manpower to run multipurpose projects of this proposed laboratory.

It goes without saying that if we can develop molecular biological facilities and related appropriate expertise, funds will automatically come from various international agencies resulting in development of a competitive biotechnology industry for the economic development of the country. Organisation like WHO can also come up with assistance to our biomolecular or biotechnological institute and the latter could also be converted into a WHO Collaborating Centre. WHO is collaborating with many of this kind of institutes all over the world.

The difficulty in getting support from ICGEB, however, is that presently there is no representative in the CSA of ICGEB, who can facilitate ICGEB's assistance to our projects on molecular biology. Given this scenario, the BAPTC approached the Ministry of Science and Technology to nominate Dr. Ahmed A Azad for a seat in the CSA of ICGEB. The government accepted the suggestion and nominated Dr. Azad accordingly. Some of our Missions are also aware of this matter and taking appropriate steps. Perhaps, somewhat vigorous campaign is necessary to see Dr. Azad's candidacy through.

Bangladesh has also applied for the Affiliated Status with ICGEB to get both financial and technical assistance from ICGEB in bimolecular research. In order to achieve this status, Bangladesh is competing with countries like Argentina, Brazil, Chile, China, India, Italy, Peru, Russia and others. The recognition of this affiliated status will be determined in ICGEB's Trieste meeting due to take place in September next. Adequate campaign is also needed for the recognition of our affiliated status with ICGEB.

Immediate Tasks

1. The government may wish to set up a "Body" comprising officials, researchers and private sector representatives to look into various aspects of establishing a National Institute of Biotechnological Research. This Body should also carefully examine as to how private sector, specially the leading national pharmaceutical companies like Beximco, Square, Opsonin and others, could be involved in providing financial assistance to this project. These companies for their own long term interests are likely to invest in this type of project as part of their Research & Development Programmes.

2. The government may also make necessary lobbying for acquiring Bangladesh's affiliated status with ICGEB and for election of Dr. Ahmed A Azad to the Council of Scientific Advisors of ICGEB in order for ensuring fund from ICGEB for research project in molecular biology. We may highlight in our campaign that Bangladesh, as one of the 48 LDCs, should get priority to be accorded affiliated status with ICGEB. Likewise, given the outstanding success and academic records, the candidacy of Dr. Azad for a seat in the CSA of ICGEB, should also receive careful and sympathetic consideration of the Board of Governors of ICGEB.

3. We need to develop a database of our scientists working abroad and to ask them to contribute to our country's development through their research. Many of them are willing either on a full-time or on a part-time basis to contribute to our efforts in scientific research destined to overall development of the country. Initiative in contacting these people may immediately be taken by the appropriate authority of the Government. The primary task, may, in the meantime, be done by the Ministry of Foreign Affairs by making a list of these persons along with their fields of specialisations and contact addressees and numbers. Our Missions abroad may be instructed accordingly for this purpose.

The writer is Counsellor in the Bangladesh Permanent Mission, Geneva. Views expressed in this Article do not reflect any Government's position.

Population and Development Programme of Action

The Engine that Drives Human Progress

by Werner Fornos

THE world's population is growing by more than 80 million per year. Our human numbers are projected to reach six billion next year. The most relevant fact about population growth may be that we live in a demographically divided world. Industrialised countries are growing by 0.1 per cent — a rate at which their population would double in 548 years.

The less developed countries, however, are on course to double their populations in 35-40 years. Such rapid human growth portends massive environmental degradation, economic stagnation and social disintegration — consequences with which Bangladeshis are all too familiar.

Several years back, Bangladesh was described in some industrialised world circles as an international "basket case" — American slang for dysfunctional, irreparable, beyond help. That assessment viewed conditions here as virtually hopeless — perhaps even beyond the ability of reasonable outlays of foreign assistance to set aright.

But that assessment was far too pessimistic.

When I first visited Bangladesh more than 20 years ago, the population of this country was about 78 million, women were averaging 7 children, and population was increasing annually by 2.8 per cent.

Today Bangladesh is the ninth most populous country in the world, exceeding 123 million. But women now average 3.3 children and the annual growth rate has slowed to 1.6 per cent.

In a book that I wrote eight years ago, I noted that 69 per cent of world population was concentrated in only 20 countries. My thesis was that if population could be stabilised in those countries, it would signal a virtual end to the world's overpopulation crisis. One of those 20 countries was Bangladesh, about which I wrote the following:

"Perhaps nowhere in the world are the tragic consequences of overpopulation more vividly apparent than in Bangladesh."

I went on to point out that some 40 years earlier "43 million people lived in Bangladesh, a country of fertile soil and lush rains."

By 1990, however, there were some 117 million people living in a land only slightly larger than the (US) State of Louisiana. And I wrote: "Bangladesh's population is overrunning its once-productive croplands and is gripped by terrible poverty."

A paragraph later I noted that while Bangladesh had achieved little success in slowing down its population growth that there indeed was hope.

I was encouraged by the fact that 98 per cent of couples in Bangladesh knew of at least one method of family planning and 70 per cent knew of five methods. I wrote:

"Also encouraging is that Bangladeshi couples have shown receptivity to family planning efforts and a majority say they want smaller families. 'The problem, quite obviously, was not one of lack of knowledge or desire for family planning, but rather lack of accessibility and availability of contraceptive methods.

When I visited Bangladesh more than 20 years ago, a mere 8 per cent of women were using a family planning method. By 1990 contraceptive use had risen to 20 per cent.

Today, according to the latest Demographic and Health Survey for Bangladesh, 50 per cent of couples are practicing birth control.

This does not mean that Bangladesh has solved all of its problems. Far from it. Bangladesh is still one of the most densely-populated countries in the world. Only two countries — Singapore and Malta — have a population density higher than Bangladesh's 2,454 people per square mile.

Half of the country's population lives below the poverty line. The combination of poverty and high density results in far too many Bangladeshis living on flood-prone lands: the reason that monsoon season virtually always takes its toll of death and devastation.

Bangladesh is also witnessing what is perhaps the defining demographic characteristic of this century: massive movements from the countryside to cities.

There are many benefits of urbanisation, foremost of which is accessibility to employment, education, health care and basic services. But there is a dark side to urbanisation — pitfalls ranging from urban decay to air pollution to the spread of disease. If is absolutely astounding that Dhaka, with a population of 10 million is growing by another 5,000 people per day, 7 per cent per year, and that by the year 2010 it is projected to become a megalopolis of 20 million people.

But the progress achieved in reducing population growth provides reason to believe that Bangladesh will continue to make strides in dealing with other critical issues — elevating the role of women in development and civil society and in the education of children, improving literacy and health and achieving environmental and economic stability.

I am especially heartened by Prime Minister Sheikh Hasina's strong convictions about ending violence against women and quelling terrorism regardless of the political faction from which it emanates.

I have attended every major development conference of this decade. I can attest to the fact that Bangladesh is playing a major role in the international arena, that the country is gaining respect and stature at the United Nations as well as with other international agencies. This is a tribute to the high caliber of the individuals representing your country in international forums.

It is my firm conviction that one of the most important tasks for all segments of Bangladeshi society in the months and years ahead is to work diligently for the implementation of the International Conference on Population and Development Programme of Action (PoA).

The PoA is a strategy for slowing down population growth — an issue the world community must address because there are no humanitarian alternatives. But the Programme of Action is about more than stabilising human numbers. It is about the equality of women. It is about improving child and maternal health. Most of all, it is about human dignity — the engine that drives human progress.

The Cairo Programme of Action is perhaps the most important international document yet conceived for ensuring the fulfilment of universal aspirations for a better quality of life. It is these very aspirations that warrant global focus and the exertion of global energy.

I have every expectation and full confidence that the leaders and the citizens of Bangladesh will do their part and more to ensure that the noble rhetoric of the Programme of Action will be transformed into global reality.

The author is the President of the Population Institute of Washington DC, USA. The above is based on his speech delivered at Rotary Club meeting in Dhaka on July 28.

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Hybrid Cotton under Criticism

Grameen-Monsanto Joint-venture Abandoned

by Quamrul Islam Chowdhury

GRAMEEN Bank founder Professor Mohammad Yunus on July 27 declared that his globally famed institution had abandoned its joint venture with US multinational agro-chemical company Monsanto to test hybrid cotton and raise its yield in the northern Bangladesh as it received strong opposition from the environmentalists who warn against this partnership as Monsanto has a bad track record. The environmentalists expressed a sigh of relief at the declaration that Grameen has at last abandoned the idea.

Prof Yunus in an e-mail (on July 27) addressed to this writer made it very clear that there would be no Grameen-Monsanto Centre. Dr Yunus also shared the concerns expressed by the environment groups including Forum of Environmental Journalists of Bangladesh[FEJB] against the proposed joint-venture.

Grameen Bank founder Prof Mohammad Yunus and Monsanto chairman Robert Shapiro end June in New York declared the creation of Grameen Monsanto Centre saying the centre's first project to be a demonstration farm of about 10 acres where Monsanto would test hybrid genetically improved cotton that could raise Bangladesh's cotton yield to reduce imports and save foreign exchange.

The promises of transfer of technology or environment-friendly technology should be taken with a grain of salt, reacts Prof Amir Hossain Khan of Dhaka University and calls for taking particular care so that Bangladesh is not used as a testing ground for Monsanto technologies.

The Grameen Bank officials also conceded they received warnings from environmental groups against having partnership with Monsanto. Grameen Bank Deputy Managing Director Khaled Shams assures his organisation would examine all aspects of thing before finalising it with Monsanto. "We would do nothing that would be harmful to our farmers and the country. But Bangladesh should move ahead with the advancement of technology instead of sitting idle and remaining satisfied with the ramnants of technology. Grameen Krishi Foundation is supposed to utilise biotechnology of Monsanto to increase production of cotton. It has already done successful experiment with hybrid maize cultivation. Through crop diversification in the tobacco growing areas the Grameen Krishi Foundation helped produce 20,000 tonnes of maize in the northern Bangladesh this year," he said.

Greenpeace USA report says Monsanto's record is one of introducing products that are harmful to health and environment. "The company's research in genetic engineering is focused on increasing their profits, not the world food supply...In 1996 Monsanto had promised farmers that a genetically engineered cotton would produce poison against caterpillar attack. American cotton farmers planted 1,70,000 acres ....but in some fields upto 60 per cent of the plants were destroyed by caterpillars. Almost 20,000 acres of cotton [worth about US$ one billion] in Texas was lost," the report adds. Environmentalists were worried about the fate of 'genetically engineered cotton' farmers of Bangladesh.

The environmentalists were perturbed at the news of joint venture between the Grameen Bank, which pioneered the idea of making small loans to groups of women so they could start businesses, and the Monsanto Co. "The objective," said Yunus, "is to make Bangladesh self-sufficient in cotton production. Today, although the garment industry is a big industry as a foreign exchange earner, 90 per cent of the cotton is imported from outside." Later, the center will experiment with other new crops. Monsanto scientists also will try to apply their water-cleaning technologies to eliminating arsenic from water in Bangladesh, he told the Washington Post.

Monsanto scientists claim one of Monsanto's patented products is genetically improved cotton that contains the Bollgard gene, which produces a protein that shuts down the digestive systems of predatory worms. The Bollgard cotton increases production and reduces the need for insecticides, and there is no need to train farmers in any new agricultural technique, they argue.

Shapiro sees biotechnology and bioscience as solutions for figuring out ways to double the world's food supply at a time when most good farmland is already under cultivation. Shifting dependence away from fertilizers and insecticides to genetically altered plants has "the potential of not only increasing yield and outputs, but you have the potential of doing it sustainably," he adds.

As for aging, Shapiro says, lifestyle changes, improved nutrition and the development of "products that blur the line between foods and pharmaceuticals" can help prevent disease and lead to more healthy and less medically costly aging.

He has great hopes for people in developing nations. For them, he says, "biotechnology poses the possibility of leapfrogging the industrial revolution and moving to a post-industrial society that is economically attractive and environmentally sustainable."

Jay Byrne, a former official with the U.S. Agency for International Development who is now director of public affairs for Monsanto, says four out of five consumers will live in the developing world by 2000, which is one reason Monsanto is moving quickly into these markets. One of Monsanto's efforts, in collaboration with USAID, has been the development of disease- resistant cassava, a subsistence crop that grows during periods of drought in Africa and can keep people alive if it grows well.

"Monsanto sees the potential for entering into markets that may not be profitable today but will be profitable in the near future," says Byrne. "This is not philanthropic. These are business investments."

The Grameen-Monsanto center was not for Bangladesh alone, Yunus said while announcing the project. "This is a demonstration, this is where we experiment with it . . . and then take it from there to other countries."

Environmentalists expressed a sigh of relief after hearing that Dr Yunus has abandoned the idea of Grameen-Monsanto partnership as they had expressed concern at his earlier move to turn Bangladesh as a testing ground for Monsanto technology.

The writer is Chairman of Forum of Environmental Journalists of Bangladesh [FEJB] and Secretary General of Association for Green Accounting in Bangladesh [AGAB].

Their Shoulders Bend Young

NEW DELHI: There are more adolescents — one billion — on this planet now than at any time in history, and 85 per cent of them live in developing countries. The manner in which gender disparities come into play in the lives of millions of young girls between 10 and 19, make a mockery of the Convention on the Rights of the Child that entitles them the help and protection of society, according to the latest United Nations Children's Educational Fund (UNICEF)global report titled 'The Progress of Nations 1998'.

Consider the facts: nearly 60 per cent girls are not enrolled in secondary schools in developing countries. Girls between 15 to 19 give birth to 15 million babies a year and more among them die due to pregnancy related complications than from any other reason.

Ninety per cent of children working as domestic servants globally are girls. A survey in India found that nine out of 10 households keeping domestic servants preferred girls between 12 and 15. Moreover the global figure of 73 million working children does not include the invisible army of millions of young girls.

And, in Bangladesh, boys not going to school spend a mere 12 minutes a day on domestic chores as compared to five hours for girls. In Kenya girls between eight and 14 work 19 hours while boys work for 14 hours.

A Gender-responsive Approach to Habitat

NAIROBI: In its drive to make gender-responsiveness an integral component of Environmental Planning and Management (EOM) and sustainable urban development, the United Nations' Sustainable Cities Programme (SCP) is planning to come out with a gender tool source book, based on the practical experiences from cities worldwide.

Early this year SCP — a joint initiative of the United Nations Centre for Human Settlements and the United Nations Environmental Programme — published a brochure, 'Gender Responsive Environmental Planning and Management'. And at an International Workshop on Gender Responsive Environmental Planning and Management scheduled to be held from September 28-30 in Nairobi this year, 100 experts comprising authors, gender study specialists, affiliated programmes and SCP partner cities will review 24 case studies selected from various parts of the world.

— WFS/News Network

Police Chief Gives Permission to Kill

PAPUA New Guinea's police chief has said that police can "shoot to kill" if they consider it necessary.

Pater Aigilo gave the go-ahead as a sign to criminals that he means business in his new job.

"We have to be firm and fair," said the quiet-spoken Aigilo, before adding, "If a situation calls for it, we have to be tough, too."

Aigilo was responding to public clamour for action to curb crime.

Before his appointment as Police Commissioner at the age of 41, states of emergency, curfews and increases in police funding had all been tried. Tougher laws, including the death penalty for a number of crimes have also been passed, but it is too early to assess their effectiveness.

One of the dangers of the new policy — that the public might take it as a signal to take the law into their own hands — quickly surfaced when two youths were beaten to death in the provinces of Morobe and Oro.

Aigilo, who was previously a practising lawyer, sees police indiscipline as the main problem in tackling crime, and also gives high priority to winning back public confidence.

Public cooperation with the police had slumped, partly because of incidents in which considerable force was used against innocent civilians.

"For the public to respect and work with the police, police force members must be disciplined," he emphasises.

"I don't want to be popular. I want the people and the police to respect me and I want to earn that respect.

"I want to see greater police involvement in the community. I want to see policemen and officers living among the people."

He himself lives in a small block of flats in one of Port Moresby's most notorious suburbs, Tokarara, and drives about in his own car rather than his luxurious official vehicle.

He often walks around the streets near his home, talking to boys and young men. Many have taken to talking to him about their problems.

A key issue is the involvement of soldiers, politicians and police in crime. Many criminals are armed with high-powered weapons stolen from the police and military, or supplied by friends and contacts in the two forces.

Army personnel have been arrested in connection with two recent thefts from Defence Force armouries in Port Moresby, in which 59 guns were stolen. Aigilo condemned the Force for the thefts, and the Force's chief, Brigadier-General Leo Nuia, imposed a curfew in the two barracks.

Aigilo has promised to take firm decisions even if they are unpopular with some sections of society : "I will let my conscience alone (guide me) in making decisions, as long as I think that they are in the best interest of the force and the country."

Aigilo, a devout Catholic, comes from a family of policemen. His father was in the force, and his mother is the daughter of a policeman. His sister is a sergeant, and the son and daughter of two of his sisters are constables.

He enlisted in 1976 and left in 1995 to practise law, which he studied at the University of Papua New Guinea. During a spell as commandant of the country's only police training college, he lifted its reputation. One of his achievements was the re-introduction of officer training.

Prime Minister Bill Skate says the government is giving top priority to law and order. He promises special crime-busting operations in particular areas, and a three-year construction programme for new police stations and police accommodation.

Papua New Guineans are still reeling from the shock of the tsunami which killed hundreds of people. But they also have more day-to-day worries, such as an increase in murder and other violent crime. In response to public concern, reports *Gemini News Service*, the police have been given permission to shoot to kill. **Sam Vulum** writes from Port Moresby