Transactions Natl. Acad. Sci & Tech. Philippines 25 (2): 194-208 (2003)
ISSN 0115-8848

FOOD SECURITY AND SAFETY THROUGH SCIENCE AND TECHNOLOGY

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Abstract

The uncontrolled growth of population has resulted in increased demand for food and conversion of agricultural lands for industrial use. The potentials of science and technology are being tapped in addressing these problems.

In this paper, four major technology transfer concerns from the developed to the developing countries were presented. These are: (i) the steep decline of international funding and aid for agricultural R&D and Extension; (ii) the impassable roadblocks against developing countries in a bid to catch up with developed countries in scientific innovations; (iii) the failure of developing countries to sustain the adoption of the Green Revolution; and (iv) the need to establish a partnership of technology transfer between developed countries and developing countries.

As a result, the Department of Agriculture identified priority commodities such as rice, corn and livestock, fisheries and seaweeds, sugar, coconut and intercrops. Roadmaps were also developed to help the country achieve improved levels of food security, and confidence building among the greater number of farmers and fisher folks.

Scientists were challenged to help strengthen the agricultural sector of the country to enable it to compete internationally.

Key words: food security, technology transfer, biotechnology

Introduction

In the last 25 years that the NAST existed, the world has never changed as fast, as it rode on the crest of the third wave technologies. Aerodynamics and

space technology, robotics and information technology, genomics and biotechnology -- all these new and exciting sciences have radically changed the way we live and work, the way we produce and consume, and the way we make love and war.

Through all these global milestones in science and technology, the NAST proudly stood as the Filipino scientists' bulwark of strength and inspiration, uniting them towards a vision of excellence and achievement, and goading them on to catch up with the rest of the world.

I therefore salute the NAST and all the hard-working, world-class *Pinoy* scientists for all your achievements and contributions to science and technology.

Demographics and Food

We all know that the world's population explosion is not abating. It was six billion in 1999. It will be nine billion in 2050, of which ironically 90% will be in the developing countries, like the Philippines. Today, our population has ballooned to 82 million, from 76.5 million in 2000, growing by 2.4 percent annually, and doubling from only 41 million 30 years ago. This, indeed, remains our biggest challenge.

When I stepped into my position as Presidential Adviser on Jobs Creation a year and a half ago, and then eight months ago as Agriculture Secretary, I remember that food security was the farthest from my mind.

I was a global thinker. I was a global competitor. I thought I could buy food anywhere in the world, when there is a shortfall in our country. But when you begin to deal every single day with the dynamics of not only the global market of supply and demand, and when you deal with the population that is growing and a land mass and a resource base that has to be fine-tuned more and more, we come to grip with the term food security. You feel this everyday. For instance, it is typical at this time of the year, when we look at what we need to import to meet certain needs for our people or for the animals that we feed.

And it struck me when India said outright that it could not supply 20% of what we need in the country as ingredients or grains that go into feed production. This is basically the feed wheat, 1.2 million metric tons, from India, which it automatically cancelled because it said it has a drought, and they need the feed wheat for their own security buffer stock. And so, here I was scrambling, worrying about the P100-billion peso swine industry, and what more the poultry industry, and 70% of all hogs in the country are grown by backyard raisers. Where are we going to get the feed to put into that formula.

So scrambling around the world made me realized I prefer domestic supply, provided the quality and prices to consumers could meet international standards. However, I recognize that to keep the domestic producers and suppliers competitive, there has to be a segment that should allow for importation, but as

to how many percent that will be depends on the specific commodity that we are willing to import.

Therefore, these dynamics that we work with everyday is something I must say in the context of balancing supply and demand, and meeting farmers and rural folk incomes, cash flow, jobs, and food security needs with fair, affordable quality food to feed especially the urban and general masses of our people.

The uncontrolled growth of our population has therefore increased the demand for food, and converted prime and not-so-prime agricultural lands into urban and industrial uses. In the rural areas, population growth has worsened poverty, driving people to unsustainable modes of developing farm and off-farm resources.

Thus, it is imperative that we increase productivity, food sufficiency and food security. These have to be achieved by increasing yields of quality products from diminishing land areas with less water, less productive soils, and vanishing biodiversity.

To achieve this, however, we need no miracles. We only need science and technology to speed up and sustain progress. Apply science and technology in the field. You — scientists and technology generators — are the miracle workers.

However, that must be translated to the field so that people can feel science at work.

Sharing Science

I have had the pleasure in the last six weeks to speak at three global forums.

One was in the Middle East, where I chaired the United Nations Conference in Combating Desertification. Second was at John Hopkins University, Washington, DC, where I spoke before imminent scientists of the Eastern seaboard, as well as ministers from Europe and told them about the realities of the developing world.

But perhaps, the most meaningful for me was two weeks ago, when I was chosen as the only Agriculture Minister from the Asia-Pacific region to address 1,000 leaders in science, health and agriculture at the ***World Ministerial Conference and Expo on Science and Technology*** in Sacramento, California.

I had the rare opportunity to present to the global science community the concerns and aspirations of the Third World farming sectors, particularly on technology generation and transfer. The four major concerns I raised were:

- **First, the steep decline of international funding and aid for agricultural R&D and Extension or RDE since the 1980s;**
- **Second, the impassable roadblocks against developing countries in a bid to catch up with developed countries in scientific innovations;**
- **Third, the failure of developing countries to sustain the adoption of the Green Revolution technologies; and**

- **Fourth, the need to establish a partnership of technology transfer between, on one hand, developed countries and developing countries offering conducive policy environments; and on the other hand, technology generators allowing the use of proprietary technologies under favorable terms.**

On behalf of the Filipino and Asian farmers, I dare the global science community to arrive at permanent solutions to the ancient, but persistent problems of poverty, hunger and underdevelopment — the roots of all conflicts and wars.

I urged scientists not to rest on their laurels, following the publication of their papers. I asked them not to hobble the wonders of science and technology behind the walls of their laboratories. Rather, they must aggressively actualize the marketability and adoption of their new discoveries, inventions and recommendations — and not be shy about it.

These are the concerns that I know you — Filipino scientists — share with the rest of the Third World agriculture sector.

And these are the same challenges that I pose before you as government's partners in empowering Filipino farmers and fishers towards modernization and progress: **Science must be shared. Technology must be taught. Progress must be people-powered.**

Second Green Revolution

As in many Asian countries, food security in the Philippines is anchored on as close to self-sufficiency as possible in rice — the staple food of some 80 percent of Filipinos. We must recognize, however, that food security is more than attaining self-sufficiency.

Food security also means increased production and trade of other products — quality products according to global standards — in the area of corn and livestock, fisheries, vegetables and more nutritious foods such as fruits.

It underscores the need to strengthen our production, processing and marketing systems — according to standards of industrialized countries' agriculture sector — toward higher food safety standards, global competitiveness, and higher rural incomes.

What is reeling in my mind, I keep saying time and time again, is President Arroyo's mandate for me: incomes and cash flows, jobs and food security. But beyond that, for me, is a confidence level that Filipinos are yearning for that they can do it — working with their two hands — in partnership with the science communities, LGUs, various line agencies, civil society and the private sector.

This ***bayanihan*** spirit must be kept alive and well. And only if people working with their hands properly held to get things done to improve their lives,

only then are we able to actualize the satisfied customers — our poor farmers and fisherfolk out in the countryside.

Unfortunately, with population growth, poverty and the wanton destruction of our resources eating up much of the gains of the 70s Green Revolution, we have yet to attain sufficiency in rice and corn, and other basic commodities.

I am very pleased that at least in sugar, we have achieved sufficiency this year, seven years ahead of target. But rather than belittle its achievements, we should all see the Green Revolution for what it is — a technological leap that once saved many poor countries like India, Pakistan and China from the pangs of starvation.

And so with due respect and admiration for his fathering the first one, I met a certain **Dr. Norman Borlaug**, who I didn't realize was the "Father of the Green Revolution," and who was a *Nobel Laureate* because of that achievement. After I spoke in Sacramento, as I was getting down the podium, this 89-year old gentleman stood up, came to me and hugged me, and said: "Mr. Secretary, it is your generation that must launch the Second Green Revolution."

As in the first, the key to the success of this ***"Doubly Green Revolution"*** is, what we call it, **technology.**

By summoning the powers of third wave technologies such as IT and biotechnology, we certainly can generate and disseminate much better technologies for enhancing seeds and breeds, eliminating diseases, improving irrigation and post-harvest infrastructure systems, and opening up new fields of business and employment opportunities in the countryside.

DA's Action Agenda

As Agriculture Secretary, I am lucky to be guided by the Agriculture and Fisheries Modernization Act or AFMA, which for me is the law that mandates a technology-propelled, farmer-centered and globally-oriented agricultural and fishery development.

Thus, in line with the AFMA, the DA through the Bureau of Agricultural Research (BAR) has integrated the country's research system through a National Integrated Research, Development and Extension (RDE) Agenda for major crops, fisheries, livestock and poultry.

And here I pause from my prepared speech and tell you how I lament the fact that our research institutions are short of resources, financial resources. The other evening, I was almost in tears at the Fulbright Scholarship Program launching, because the national government would not give us the money to make available to 41 potential scientists that need the extra training.

It means so much because we are so far behind in the world of science as applied in our country today. And yet beyond it all — in our yearning to upgrade the quality and skills of our people and scientists, and to continue the R&D efforts in our nation — there is so little to go around. I have tried, and every

time I speak at various forums and gone aboard to open as many doors as possible — in fact, number one on the list of all the DA officials and employees traveling abroad as well as agri attaches in other countries — is to find ways to get grant and aid. It is unfortunate that these loans get stuck in the Bureau of Treasury and do not filter down to the Department concerned.

We have also formed 23 national RDE networks and 30 regional RDE networks (15 each for fisheries and agriculture). It is through these networks that the DA courses its support to regional RDE programs.

We have addressed, and integrated and systematized research efforts of government and government-supported institutions.

We in the DA hope the country's science community will generate more appropriate, useful and cheaper technologies for the government's priority food programs. And tell us quickly if matured technologies are ready to be utilized in the field.

I have a very limited timeframe that ends in mid-2004, and so I have decided to focus on a few priority commodities that I believe would make the greatest impact and help the country achieve improved levels of food security, and confidence-building among the greater number of our farmers and fisherfolk. I have chosen commodity clusters around **rice, corn and livestock, fishery and seaweeds, sugar, coconut and intercrops, coffee, fruits and vegetables, and now rubber, and other high value crops.**

We have formed private sector-led boards for each commodity so that regardless of who is the next Secretary of Agriculture or the next President of our nation, if the private sector-led boards have a very clear roadmap, they can move in the right direction. It behooves that the Secretary of Agriculture or our next President will support it properly.

We have individual roadmaps for each of these commodities, anchored on a market-focused, total systems approach, also known as the supply-chain approach. Our strategy is to adopt the best systems and technologies for every stage of agricultural production, with the end in view of competing successfully against foreign products in both the local and foreign markets.

I must share this anecdote with you. Six months ago, I tasked a young man, Jojo Mitra (son of former Speaker Mitra), who heads a DA-attached agency, Livelihood Corporation or LIVECOR. I said: "Jo, I want you to mobilize a billion pesos for post-harvest equipment, either from China, Korea, and local sources. I need to have them in place when we have production upsurge, because no amount of labor will be able to handle this on our own."

And after six months, he tells me: "Mr. Secretary, we have the money. Sixty million pesos has been borrowed." So I said: "Why the P940 million? Why hasn't it been borrowed?" He said because the farmers, fisherfolk and LGU leaders are waiting for a free ride.

And I told him the system must change. People must learn to borrow and pay for their obligation. That's the way of the world. And we are already giving them preferential rates on the equipment that we are giving them for their use.

It takes a lot of hard selling. And those of you in government understand this. But I must move with political will, and in a certain passion and sense of urgency. And I will never give up until the last day that I will leave government.

Commodity Roadmaps

Now, this strategy must continue.

For **rice**, our goal is to close the import gap by increasing production of quality rice from 13.27 million last year to 14.2 million metric tons this year, and 14.9 to 15.9 million metric tons in 2004.

We will achieve this through increased use of certified and hybrid seeds, by mobilizing stakeholders in providing farmers much-needed inputs and services such as fertilizers, irrigation and credit, and linking farmers with markets.

Yesterday, at the Cabinet Meeting, I reminded the President — where I thought we only had 950,000 hectares of operating irrigation systems — and told her: "You know, Mrs. President, in the last two years we have increased that to a functioning 1.4 million hectares: 400,000 of repaired irrigation systems and 50,000 in new irrigation systems."

With that, there is no reason — with the right seed program, with the right training on soil analysis and proper placement of inputs, with the proper post harvest, and the management of the product through the supply chain — that we cannot achieve rice self-sufficiency in the soonest possible time.

For **corn**, because of my feed wheat insecurity, we aim to achieve 80% sufficiency from the current 66%, by promoting open-pollinated, but shifting to hybrid, and where a needed option, such as Bt corn for corn borer infestation. We aim to hit 3.2 million metric tons by May 2004.

Through the "Grains Highway" program, we will mechanize corn production, processing and handling systems, where we can. We will integrate corn farming with the livestock sector by encouraging animal raisers to locate near major feed centers, including Isabela, Bukidnon and Cotabato provinces.

I must highlight to all of you again, in the early 70s, we had 41 million people on the same resource base. Today, we have 82 million and growing, depending on the same resource base.

For **livestock and poultry**, we are targeting a 4.6% increase in poultry, 9% increase in pork, and a 3% increase in beef. And we keep upgrading our centers, and hitting right at the heart of what is causing the high cost to produce meat protein. To my shock, a significant expense has evolved over the years in the area of medication, vaccines and medicines for swine and poultry. And it is high especially in Luzon, where cost of production is double that in the Visayas and

Mindanao, principally because of the lack of awareness and discipline in quarantine to control FMD, employing reactive rather than preventive measures.

We will continue to upgrade and make sure that meat safety and quality standards through an expanded "Triple A" abattoir development and cold storage program, with a lot of investment from the private sector. I must congratulate them, 20 abattoirs around the country are being upgraded. And with the help of the USDA by the end of next year, we hope to be able to start exporting our own meat products under internationally accepted standards.

Particularly, we must emphasize on partnerships. For instance, with corn farmers in reducing feed costs, with producers for "big brother-small brother" arrangements, and with meat processors in creating more value-added meat products.

I am trying to change the mindset of our hog raisers to try to go beyond the farmgate and get involved in abattoir and in processed meat as a further value-added integration, and some of them have responded positively.

In **fisheries**, we will continue to focus on aquaculture, particularly bangus, tilapia, and seaweeds, in addition to continued support for other fishery products. We aim to achieve production increases that will double tilapia and bangus harvests. We will try to look at marketing initiatives here and abroad, aside from realizing that bangus is preferred as fish bait in many developed countries. So we are now exporting smaller sizes that may not satisfy the appetizing taste of the consuming public, similar to when it has a muddy taste.

In **seaweeds**, I had a lengthy discussion with the USAID director in-charge of Asia and the Middle East, who is here. She is going to Tawi-Tawi, and I pointed out that we have to help our fishers put up seaweed processing facilities — to be located in Jolo, Tawi-Tawi, Zamboanga or Basilan — so they could produce seaweed chips rather than just simple dried seaweeds. And we could do it with dispatch to cushion the volatile prices of primary products at the farmgate level.

We continue to look at applying these mature technologies as best we can. We are six months ahead of time on 12 national hatcheries for the fast-growing GET EXCEL tilapia and our bangus hatcheries. Gone are the days when we will be short of fingerlings and fries because of seasonal reasons and excuses. We will have them available 24 hours a day, 12 months a year.

In Pangasinan, a month and a half ago, we were not only able to pay for the lost bangus because of flooding, but we were also able to replenish all of the fingerlings that were lost at the government's expense.

On **sugar**, we achieved self-sufficiency this year, seven years ahead of schedule. And interestingly enough, this morning in the newspaper, the industry finally realized that they have to set up a separate category so that they could supply again the confectionery industry, as they were not able to afford themselves of competitively-priced sugar against finished confectionery products from other countries.

We continue to infuse new technologies — reviewing the varieties in every area of each commodity sector in cooperation with stakeholders of the sugar industry — and massively promote use of high-yielding varieties.

As for **coconut**, we continue to propagate and make available as many of the new dwarf, high-yielding varieties, which I saw in Zamboanga last week. While at the same time cognizant of our cooking oil requirement and growing population, I am therefore endorsing and supporting the private sector-led initiative in the growth of the palm oil industry.

Food Safety and Quality Standards

We look at many, many opportunities. But one area that has hit me very hard in the recent past is that internationally countries are becoming more and more sensitive to food safety and quality standard.

In fact, unjustly we have had a recent temporary suspension of seafood exports to Europe basically due to some technical issue that we are hopefully correcting by the end of July.

With the onset of globalization, our farm and fishery products must continue to compete with those traded both in the export and domestic markets. In order to be globally competitive, therefore, all our food products must attain, maintain, and, if possible, surpass world standards of quality and safety.

And yet it is major initiative to communicate and teach the farmers how they could fit in, and how they could improve their lives. We have many examples and success stories in the area of rice, fishery, seaweeds, coffee and hog sector. But we have a long way to go, because they continue to be the exception rather than the rule.

The World Health Organization (WHO) has reported that each year seven main pathogens cause between 3.3 and 12.3 million cases of infection in the US alone, and losses range from US$ 6.5 billion to US$35 billion. It has been estimated that 70 percent of the 1.5 billion episodes of diarrhea that occur globally — resulting in some three million deaths annually — are directly caused by chemical or biological contamination of foods traded internationally.

In the Philippines, crop pests and diseases — such as the mango pulp weevil, bunchy top disease of bananas, feathery mottle virus of sweet potatoes, and papaya ring spot virus — have caused farmers and government huge losses in potential productivity increases and export earnings. At the same time, heavy use of pesticides — to control these diseases in the farm or disinfect out-going fruit and vegetable exports — poses health risks not only to farmers, animals and the environment, but also to food consumers.

A month ago, I had the pleasure to visit Egypt, where I spoke to about a hundred scientists. I remember when I was a growing boy in Mindanao, every time we have a long dry spell, locust infestation occurs and our corn harvests drop. But in Egypt, they now have bio-pesticides and many approaches to

effectively control locust infestation. Thus, in my discussion with the Egyptian Agriculture Minister, we will link with them so we could use their technologies particularly in locust-prone areas in Mindanao.

Recently, our octopus and desiccated coconut exports to Europe were detained when found contaminated with *salmonella*. Similarly, despite breakthroughs in managing *aflatoxin* and *mycotoxin* contamination of corn, coconut, peanut and other livestock products, we need to strengthen our control systems to avoid embarrassing situations of rejection of our food exports, as what we have recently experienced in Europe.

In fact, I got very upset the other week because there was one enterprising trader who is importing corn from China and re-exporting it to Europe, unfortunately affecting our reputation in that market.

This is quite alarming as well when we talk about toxins, because corn trials done in Isabela in 2001 revealed that even before harvest, their corn had been contaminated with higher-than-tolerable levels of *fumonisin*, a new *mycotoxin* that causes esophagus cancer in men and other diseases in animals. And while many developed countries has set tolerable *aflatoxin* levels at 10 parts per billion (ppb), it has been reported that in Region 11, the *aflatoxin* level found in poultry was 20 ppb, and in hog, 50 ppb.

All these technicalities, the general public must know. Thus, it is incumbent upon us working at the DA, DOH and DOST, and you — scientists and knowledgeable people — to find solutions today, and not wait for tomorrow.

Obviously, we have a lot of work to do in the field of food safety and competitiveness, and I commend the NAST for highlighting and posing this challenge before the country's science community.

DA at the Frontlines

The DA — through BAR and other research entities, including PhilRice — has been at the frontlines of addressing the war against crop pests and animal diseases.

When I was in the US, I visited St. Louis, Missouri, in Monsanto, and I saw the biggest concentration of Asian scientists I have ever seen. I have seen 20 Filipino scientists at work with international multinational corporations. I appealed to their chairman and talked to their leaders that they have a growing social responsibility to make sure that what they do is not only for profit but to help the world feed the underprivileged. I don't know how much I said will be ingrained in their mind and practice in reality.

This is the reason why scientists continue doing what they do — not for personal gain, but for the greater glory of society.

I can keep talking about FMD control. And the irradiation facility that will be coming soon to the Philippines to help our tropical fruits gain access to the US market, and perhaps shorten the phytosanitary and quarantine freedom

area analysis that developed countries make it so expensive and prohibitive for us to do. These opportunities require education, education and learning that you must implement, that you must teach and communicate to the public.

We must look beyond all of these technicalities to make sure that we as a very progressive nation, even if we are still struggling, transcend the developing country image and are able not only to provide quality food for all our people, but must also able to maintain and implement standards such as the Hazards Analysis Critical Control Point (HACCP) the world demands of us today. We continue as well to give credence to the Bureau of Agriculture and Fishery Product Standards (BAFPS) as it has come up with 17 product standards for fruits, cutflowers, sugar, meat and fish products.

What I lament as well, like many things in our country, is we have many laws, but in the implementation of these laws we lack the follow through, we lack the diligence, we lack the discipline or the resources, but we have the people. Oftentimes, we take shortcuts and do not meet the right standards on a consistent basis.

Biotechnology

Let me take this opportunity now to thank the science community for supporting the Department of Agriculture's stand on the process-driven biotechnology and actively involving itself in its regulation.

Biotechnology offers us a new hope for the massive production of safe food products that are free of diseases, pesticides, and other contaminants. Thus, at the end of the day, it is a less expensive option to the people who will consume such food products. Experiences with biotech varieties such as *Bt corn* show dramatic yield increases, where there is a high pest infestation as well as a reduction in pesticide use. The development of *Vitamin A-fortified* rice will certainly reduce the incidence of Vitamin A deficiency among Filipino children, currently at 30 percent.

New advances in medicinal genetically-modified or GM crops, like the banana vaccine, give us new hope for more effective and more affordable medicines for plants, animals and human beings. There are so many exciting things out there. But what is important if ever there are antagonists and protagonists to or for biotechnology understanding, let us make sure that the scientific debate is kept within bounds and does not fall into an emotional argument.

Despite the country's relatively small core of scientists and modest infrastructure for biotech R&D, we are proud of what we have achieved so far, and look forward to biotechnology's promise of a food-secure and prosperous future.

To date, the most fully developed local research for GM crops is on bacterial blight-resistant rice. It is scheduled for multi-location, field-testing this year.

There are efforts to develop a ring spot virus-resistant papaya variety, which I saw at UP Los Baños, and a variety which has a delayed ripening characteristic for longer shelf life. These are now being tested in the screenhouse. At the same time, laboratory experiments are being done on slow-ripening mangoes with thick peel, salt-tolerant rice, drought-resistant crop varieties, bunchy top-resistant bananas, and sweet potatoes resistant to feathery mottle and weevil.

Sanitary and Phyto-Sanitary (SPS), Other Global Standards

Having seen your full support for the DA's stand on biotechnology, I know that the NAST will also help us in drafting a position on the Sanitary and Phyto-Sanitary or SPS negotiations in the World Trade Organization, and in developing a strategy for ensuring the Philippines' compliance with the agreement.

At the International Food Policy Research Institute in Washington, I urged the world's agriculture ministers to help put up a capacity-building program for developing countries that will allow harmonization of agricultural standards with international norms and reduce barriers in farm trade.

The debate over standards — promulgated by the Sanitary and Phyto-Sanitary Agreement for unprocessed food, the *Codex Alimentarius* Commission for processed food, the International Plant Protection Convention for plants and plant materials, and the *Office International des Epizooties* (OIE) for animals and livestock — we know is dominated by Western countries that can generate and present scientific evidence under their own terms and conditions.

Thus, at the IFPRI meeting I found myself suddenly as the spokesperson of the developing countries of the South, where I stressed that developed countries of the North impose trade standards that are more often skewed, lop-sided and unfavorable to developing countries. Based on production and consumption procedures that are uncommon between developed and developing countries, such standards merely create barriers to the South's export trade and economic growth.

Thus, during the Washington consultative meeting, I had a very lively debate with the German Minister of Agriculture, where I stressed that developed countries — because of their financial capacity — must fund the capacity-building programs of developing countries, while putting in black and white the minimum standards acceptable for all food and agricultural products. We must not leave this is a very loose form and not go for the maximum, but go for the minimum.

This is urgent because next year, we will be forced to do away with tariffs. By then, we should have favorable answers to the following questions:

- Are Filipino farmers and fishermen, and food manufacturers ready?
- Are we now strong to survive the competition? or
- Are we just ready to be wiped out by it?

Hopefully, the forthcoming internationally-initiated and funded capacity-building program for developing countries should provide the right answers.

Fruits from US Visit, Good News for S&T Sector

We certainly have made significant progress in S&T through the years, but we could have achieved more, had we been more blessed with resources. Unfortunately, due to our perennial budgetary shortfall, we have yet to attain AFMA's vision of increasing the budget for R&D to 1% of gross value added (GVA) in agriculture. In fact, our R&D budget has been significantly pruned this year due to lack of funds. Thus, all the DA attached agencies, including the BAR, as a priority has to find money to fund our needs. To remedy the situation, we have been aggressive on this.

From the President's successful US State Visit, we have brought home good news for the local S&T sector, particularly for the agricultural R&D community.

We have forged an agreement with the US to allot to agricultural R&D 10 percent of the proceeds from PL 480 commodities. Called the RP-US Agricultural R&D Endowment Fund, it would provide grants to cover the costs of bilateral cooperation between research teams from science agencies and the academe, from our country and the US. In 2001, PL 480 commodities like rice and corn alone reached P1.53 billion. This year, allocation was doubled to $40 million; the largest ever amount under PL 480 to be received by a single country.

I also sought US government support for the expansion of the five-year Fulbright-Philippine Agricultural Scholarship Program. Also funded under the PL 480 since 2000, the program provides qualified applicants study grants to pursue higher education in the US. Annual allocation is P150 M, or P750 M in five years. And we are looking for the best and the brightest that can avail of the program.

I also see in the audience today members of the Diplomatic Corps, the Ambassador of New Zealand. I would like to appeal to him and others to look and consider your respective countries' opportunities to have our people study in your country, or perhaps extend assistance to our R&D.

Success Story: Sharing Science

My friends in the science community, we all know that food security and safety have become inseparable from the issues of poverty and hunger, as well as productivity, jobs and incomes.

As I interact with you today, I see in your faces the sincere desire to help our people -- especially the underprivileged among us, the small farmers, the fishermen and the ruralfolk — to improve their lives by sharing with them the key to greater productivity and global competitiveness, that is science and technology.

I have the pleasure of meeting many of you, in your areas of work. You are my mentors.

And so, I am reminded of the President's recent speech which I read on her behalf about a farmer's son from Argao, Cebu, who after graduating from UP Los Baños returned to his hometown to share the wonders of science and technology with his people. He established the *Farmer-Scientist Training Program* to free farmers from poverty by training them to become scientists themselves. You know him, Dr. 'Romy' Davide, with whom I had the pleasure of seeing him working with farmers. A huge success, the Farmer-Scientist Training Program has expanded to other provinces, teaching farmers on-farm systems, use of high-yielding varieties, cheaper yet environment-friendly technologies like IPM, small-scale irrigation systems, production and post-harvest mechanization, and marketing techniques.

He has graciously shared with me a lot of his learning, and I am using them in the field in many difficult areas in Southern Philippines. I believe he is most remembered as the ***"Father of the Farmer-Scientist Training Program,"*** who empowered thousands of farmers he has worked with. Several of them have become model farmers, and helped others as well and the people they have enjoined.

Dr. Davide's story teaches us how to harness the powers of science and technology in bringing about development and progress to rural families and communities. He showed us that as technology-generators, we must also be technology-disseminators; that as scientists, we must also be science teachers; and that as human beings, we must share our skills and resources with our communities and the rest of mankind.

I am also reminded as now that I have already many faithful followers — the farmers in the field, whose lives have been enhanced. They are the ones I bring with me in many of the town hall gatherings. And I make sure that they are the ones that speak about what they did, working with their hands, imbibing science and technology in practical applications that have helped improved their lives.

And so, in closing, let me once again urge you all in partnership to join us in the war against poverty and hunger by doing what you do best: pursuing new knowledge and innovations, and selflessly sharing all these "miracles" of technology with the Filipino people, particularly the poorest farmers and fishers in the countryside.

And so let me reiterate my plea: Share science. Teach technology. Communicate not just to the farmers, but to the general public, and to the

decision-makers and leaders who shape the future of our nation. Empower yourself. Empower the people. Empower the Filipino nation to progress.