

PHILIPPINE AGRICULTURE: RETROSPECT AND PROSPECTS IN GOOD AGRICULTURAL PRACTICES AMID GLOBALIZATION

Patricio S. Faylon and Eileen C. Cardona
Philippine Council for Agriculture,
Forestry and Natural Resources Research and Development (PCARRD),
Los Baños, Laguna, Philippines

ABSTRACT

The Philippines is stepping up its efforts to raise the capability of its agriculture, forestry, and natural resources sectors to meet the country's food security needs, and at the same time strengthen its resolve to gainfully participate in international trade while ensuring the sustainability of its agricultural processes and the resource base. Toward this end, the Philippine government has put in place the enabling development agenda, legislations, and policies on agricultural production and trade such that they meet food safety and biosafety standards. As well, reinforced by science-based research and development work, a number of good agricultural practices have been gaining ground in communities nationwide, particularly on managing watersheds and sloping and upland areas; organic farming; managing water resources; and biotechnology. However, the move toward more sustainable farming methods is highly constrained by population pressure, among other things, that is weighing heavily on the country's diminishing natural resources. Therefore, the country will need to push the right blend of science, policy, and regulations, backed by partnerships and cooperation of various stakeholders, to bring about the genuine sustainability of its development efforts.

Key words: Philippines, GAP, food safety

INTRODUCTION

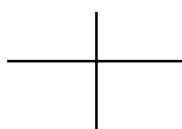
In the last four decades of the 20th century, agricultural production was all about quantity, which sparked many economic miracles in Asia. This large-scale, technological approach to agricultural development entailed farmers giving up traditional varieties in favor of high-yielding varieties, monocropping, and using high amounts of inorganic fertilizers and water, largely subsidized by the government through its various agricultural programs (Gicana 2001; Mendoza 1997).

Eventually, decades of unfavorable trends on the effects of intensive agriculture on environmental sustainability and on human health have triggered a shift from quantity-driven to quality-driven agricultural production. The 21st century saw a growing recognition of the

“techno-fix” approach as not the only solution to agricultural problems (Food and Agriculture Organization [FAO] n.d.).

Thus, concepts like sustainable development, sustainable agriculture, food safety, and good agricultural practices (GAPs) as well as the international agreements, protocols, guidelines, and standards to promote positive effects on the so-called public goods—like the environment and human health—have increasingly become the focus of government and nongovernmental efforts, shaping what FAO calls “globalization with a human face.”

In fact, the World Food Summit Plan of Action has recognized the importance of appropriate input technologies, farming techniques, and other sustainable methods such as organic farming to reduce environmental degradation while making agriculture profitable to smallholders (FAO n.d.).



The dichotomy and the correlation between quantity and quality in agricultural production have never been more pronounced as it was with the inception of the World Trade Organization (WTO) in 1994, which brought in globalization, particularly global economic liberalization. Globalization has changed how and where food and farm products are produced, processed, and traded.

As it came to be, free trade was not just about the free flow of goods between countries; rather, the outcome was more about stringent standards and regulations put in place so that consumer interest in product quality, in general, and national economic interests, in particular, could be protected.

Confronted with unabated population growth, developing countries, however, are finding it difficult to break into the established developed-country markets, when they could not even produce enough staples for all their citizens, who are mostly poverty-stricken, and when agricultural production is constrained by diminishing and damaged arable lands, scarce water, and lack of capital.

It is clear that with globalization, rich countries have reaped major gains, while poor countries have had difficulty in advancing themselves due to the lack of competitiveness of their agricultural products and their inability to meet international standards.

Nonetheless, in the complex web of globalization, governments are doing their share in providing the enabling policy and regulatory framework on agricultural production and trade while seeking to ensure food security and environmental sustainability.

In the Philippines, despite declining productivity, agriculture remains at the core of the government's policies and strategies for economic growth and poverty reduction. On the first half of 2005, the National Statistical Coordination Board (NSCB) reported that agriculture showed a lackluster growth of only 1.8 percent from 4.2 percent. The sectors of agriculture, forestry, and fisheries, which comprised 17.2 percent of the total gross domestic product (GDP), contributed 0.32 percentage point to the total GDP growth. Although agriculture's contribution to GDP has diminished, it continued to employ a third (33%, according to 2005 Asian Development Bank [ADB] figures) of the labor force.

Being a party to a number of international agreements, conventions, and protocols, the Philippines is doing its best to gainfully participate in the global market economy by subscribing to GAPs, among other things.

This paper, therefore, broadly discusses the opportunities and challenges in Philippine agriculture as it tries to pace its way toward sustainable agriculture through GAPs amid the associated issues of globalization.

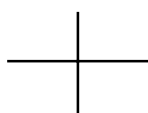
SETTING THE STAGE FOR GAP

In general, the country's national development goals are anchored on the United Nations' Millennium Development Goals (MDGs), as set forth in the Medium-term Philippine Development Plan (MTPDP) for 2005–2010. Under this plan, the agriculture, forestry, and natural resources (AFNR) sectors make up the three pillars to sustain economic growth and improve the lives of more than 80 million Filipinos. This lofty plan is further translated into the corporate plans of concerned government agencies.

Moreover, everything that has to do with agriculture and its ecosystems is set forth as a national policy in Republic Act 8435, otherwise known as the Agriculture and Fisheries Modernization Act (AFMA) of 1997. The act basically aims for a modernized agroindustrialization that is technology-based, market-driven, and sustainable development-anchored.

Earlier, in response to the 1992 Earth Summit in Rio de Janeiro, the Philippines launched in 1996 its Philippine Agenda 21 (PA 21), its blueprint for sustainable development. According to the Philippine Council for Sustainable Development (PCSD) (2004), PA 21 envisions a broad-based approach to managing various ecosystems (coastal, freshwater, upland, lowland, and urban) that is area-based, integrated, as well as people- and nature-centered.

Under the present structure of the Philippine research, development, and extension system, however, a concerted effort has always been a challenge since resources, responsibilities, and accountabilities are spread across many government departments and agencies (PCARRD 2005).



A case in point is the fact that various government agencies are involved in various development and regulatory efforts. For example, the Department of Agriculture (DA), Department of Health (DOH), Department of Trade and Industry (DTI), Department of Science and Technology (DOST), and the Department of Interior and Local Government (DILG) are involved in the country's rural development and food safety systems.

DA monitors and regulates the safety and quality of fresh, primary-, and secondary-processed agricultural and fishery products; DOH takes care of highly processed foods; DTI regulates trade matters for local producers, exporters, importers, and consumers of food; DOST supports the conduct of R&D in improving food processing technologies; and DILG is responsible for helping local government units (LGUs) put in place food production programs and implement food safety procedures for local consumers (Catelo 2003).

The Bureau of Food and Drugs under DOH regulates the production and sale of drugs and biologics needed for food production.

Within the DA is the National Meat Inspection Commission, which supervises abattoirs and inspects meat establishments and meat hygiene; Bureau of Animal Industry, which assesses livestock production and feed safety; the Fertilizer and Pesticide Authority (FPA), which controls the importation, manufacture, formulation, distribution, sale, transport, storage, labeling, use, and disposal of pesticides and fertilizers; and the Bureau of Plant Industry, which monitors the pesticide residues in crops and issues phytosanitary certificates for exported agricultural products (Catelo 2003). The DA also created the Bureau of Agriculture and Fisheries Product Standards (BAFPS) to implement product standards' use in the production, processing, distribution, and marketing of agricultural and fishery products. This bureau does all the food safety assessments.

There are organic agriculture standards for crop and animal production, particularly on labeling and consumer information, certified by the Organic Certification Center of the Philippines (OCCP). The country has also put in place standards equivalent to those of the Codex Alimentarius Commission (Codex).

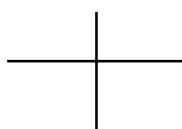
Sustainable development, on the other hand, is entrenched in various government programs and projects in agriculture and the environment, particularly by the DA, DOST, and Department of Environment and Natural Resources (DENR).

Attached to DOST is the National Committee on Biosafety of the Philippines (NCBP), constituted in 1990, which is tasked with the "study and evaluation of existing laws, policies, and guidelines on biotechnology and recommending measures for its effective utilization and prevention of possible pernicious effects on the environment" (Malacañang Executive Order No. 430). This executive order is concretized by the Philippine Biosafety Guidelines (1991) regulating the genetic manipulation of plants, microorganisms, and animals as well as the entry of genetically derived products.

The DOST is also providing services such as technology upgrading, packaging and labeling, product standards development and identification, laboratory testing, and calibration or measurement tests. Remarkably successful were its interventions for small and medium enterprises engaged in furniture making and food processing in various regions of the country (DOST n.d.).

Also an agency of DOST, the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) is committed to achieving the balance of protection and utilization of the country's natural resources through science-backed research, development, and extension.

Toward this end, the Council is advancing industry strategic plans (ISPs) on various priority commodities that have competitive advantage and potential to contribute to food security, self-sufficiency, and sustainable development. These ISPs are translations of the National Academy of Science and Technology's Philippine Agriculture 2020, which is a long-term plan that integrates agriculture, environment, and the natural resources sectors, as well as the social systems using the millennium ecosystem assessment framework of the United Nations.



GAPS IN THE PHILIPPINES

The government has been providing the enabling environment and policy for GAPS. Corollary to this are significant research and development (R&D) efforts on a range of areas. Some examples of successful ventures on good agricultural practices in the country are as follows:

Watershed Management

Because agriculture has encroached upon the forestlands, the watersheds have been consequently degraded. To help stop the further decline, PCARRD, in collaboration with DENR, LGUs, nongovernmental organizations (NGOs), and the National Agriculture and Resources Research System, has been working on projects to sustain the watersheds.

The most successful has been the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) in Bukidnon, Mindanao, which began in 1993 and ended in 2004. This international program was an effort of a consortium of US-based universities that partnered with various organizations in developing countries.

Through participatory and interdisciplinary collaborations, innovative conservation practices evolved for the sustainable development of the fragile Manupali watershed in the area (Coxhead and Buenavista, eds. 2001).

Experiments were done on multicropping, planting fast-growing timber species, intercropping trees with vegetables, and using other cultural practices like fallowing, periodic pruning, and contour farming to assess the sustainability of the agricultural production systems in the watershed area (Midmore et al. 2001).

The community residents, including women, were also trained on water data collection as well as chemical and bacteriological testing, particularly of the water in the rivers.

At the end of the program, a watershed conservation and management plan was put in place, which was largely a local initiative. Environmental concerns are now high on the legislative agenda, with regular consultations within the community.

Management of Sloping and Upland Areas

In the Philippines, 75 percent or 22.6 million out of 30 million hectares are experiencing slight to severe soil erosion. In view of this, PCARRD, in cooperation with the International Water Management Institute (IWMI) and local partner-institutions, implemented the project, "Management of degraded hilly lands in the Philippines," which introduced the conservation farming village (CFV) concept in a small village in Batangas, Southern Luzon, in July 1999.

CFV is a community-based participatory approach to technology development, promotion, and utilization, in which researchers, extension workers, and farmers work and learn together. The project introduced sloping land management (SLM) technologies and practices such as alley cropping, agroforestry, contour farming, natural vegetative strip technique, intercropping, and mulching to help solve the soil erosion problems in these degraded hilly lands.

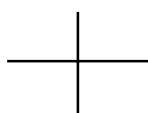
The same concept was introduced in Camarines Sur, also in Southern Luzon, in 2000, but it was led by an NGO, CARE Philippines.

Before the entry of these projects, farmers in these the two communities were not organized and had no access to assistance programs from external sources. They lacked awareness on conservation. Forest degradation was rampant. As such, the communities lacked sustainable economic opportunities. After several years, however, through the partnerships, the groundwork was done to come up with ecologically sustainable livelihoods for the organized farmers living in these areas.

In Batangas, the original 10 farmer-adoptors increased to more than 75. In Camarines Sur, more than 800 farmers in the 14 forest-edge communities on Mt. Isarog have been using SLM technologies. Moreover, these farmers organized themselves that strengthened their resolve to act together.

Organic Farming

A news report (Philippine Star 13 January 2005) estimated the share of organic farming in Philippine agriculture at one percent, as no official data exist at present.



NGOs have been leading the promotion of organic farming in the Philippines. In Negros Occidental, central Philippines, the NGO Broad Initiatives for Negros Development, Inc. (BIND) has been helping farmers use vermicompost as fertilizer and herbal plants to ward off farm pests to produce organic rice and vegetables (The Manila Times 19 February 2005). They also produce organic livestock.

In the cold highlands of Benguet, organic Arabica coffee is being grown through the partnership of a private firm, Figaro Foundation Corp., and the Benguet State University (Inquirer News Service 25 March 2004).

The country's organically produced muscovado sugar, fresh banana, banana chips, desiccated coconut, and coconut oil, among other products, are already being exported to Europe, Japan, the United States, and Canada (Philippine Star 13 January 2005).

The OCCP has certified a number of farms growing organic chicken, herbals, rice, vegetables, and vinegar around the country. The organic market in the Philippines is estimated at P250 million and its demand is growing at 20 percent annually (Philippine Star 13 January 2005).

The following are some of the practices which support organic farming:

Use of new disease-free planting materials of banana. Since 2002, smallholder banana growers in selected provinces in Luzon have been planting tissue-cultured banana planting materials that are disease-resistant, courtesy of a project collaboration of PCARRD, International Network for the Improvement of Banana and Plantain (INIBAP), and the International Plant Genetic Resources Institute (IPGRI). The project has distributed 77,500 tissue-cultured planting materials and most of these plants are now bearing fruits, much bigger than those borne by the farmers' previous plants grown from suckers. Very minimal incidence of BBTV was observed in the test locations. However, grower acceptability of the produce, especially the introduced disease-resistant varieties, will still be determined.

Trichoderma-based compost and organic fertilizer production. The national program on rapid composting and the use of compost as fertilizer, which began in 1997, has been sustained even after it officially ended. There

are now 22 more centers to the original 23 nationwide, producing the compost fungus activator and compost, and selling these to farmers.

Supporting the drive to promote organic farming is a good number of small and medium enterprises producing organic fertilizers using the technology of the above-mentioned program that have been recorded.

Moreover, the scientist who developed the technology discovered that the Trichoderma-processed compost not only improved the soil's physical and chemical properties but also was an effective control agent for clubroot disease in cabbage.

Integrated plant nutrient management (IPNM). Various studies on IPNM in the country showed sustainable high yields and improvement in fertilizer use efficiency, leading to an improved benefit-cost ratio, specifically for rice, corn, vegetables, and coconut (Gicana 2001).

The researches included testing the effects of mixing inorganic fertilizers with fresh rice straw, chicken manure, green manure like azolla and sesbania for rice; with a combination of organic materials, lime, rock phosphate for corn; and with chicken manure and household waste compost for vegetables.

An example of IPNS is the balanced fertilization strategy (BFS), developed by DA, FPA, and the Bureau of Soils and Water Management (BSWM), which provides location-specific recommendation for organic and inorganic fertilizers to sustain high crop yields over long cropping seasons without depleting the natural resource base; provides guidelines for the judicious use of pesticides; and promotes low-water use crops, among other things (Merilo 2001). BFS proved to be economically viable on rice farms that were half-hectare in size (Concepcion et al.1999).

A project on analyzing the agribusiness supply chain in Mindanao led to the organization of vegetable farmers into a cooperative, allowing them to be trained on balancing the use of organic and inorganic fertilizers and using biocontrol agents, instead of chemical pesticides on their crops (PCARRD 2005).

Use of ethnobotanicals. Liquid and powder formulations of botanical pesticides and parasiticides have been developed and found

effective against pests and nontoxic to nontarget organisms. The botanical pesticides are from the roots of *Derris philippinensis*, vines of *Tinospora rumphii*, and tubers of *Dioscorea hispida*. *Areca catechu* and *T. rumphii* are used in formulating parasiticides (PCARRD 2004).

Rapid test kits. PCARRD funded a number of projects that developed rapid test kits for detecting the presence of insecticides, herbicides, and fungicide residues in fruits, grains, and vegetables, as well as in soil, water, and air.

The test methods are highly sensitive, capable of detecting residue levels even lower than the standard maximum residue limit (MRL) set by FAO and the World Health Organization. Moreover, each kit is about 1,000 times cheaper than conventional methods using laboratory equipment and large quantities of chemical reagents.

Managing water resources. Since water is a highly important resource for agriculture, its conservation and efficient use are the subjects of various R&D projects in the Philippines, two examples of which are the following:

Small farm reservoir technology. This is a water-impounding earth dam used to collect rainfall and runoff, designed for use in a single farm. Its typical area is about 300 to 2,000 square meters with an embankment height of about 4 meters above ground.

This technology provides irrigation for a dry-season crop and supplements water for wet-season cropping. Farmers can also raise fish in it. It helps reduce flooding and siltation and increases groundwater recharge.

Evaporation suppressant. It is a nontoxic and biodegradable material that comes in the form of white crystals, paste, or slurry. When applied on rice fields, water reservoirs, or fishponds, it forms a layer of protective film that retards evaporation. While facilitating oxygen exchange, it also blocks nitrogen from escaping into the atmosphere. It also maintains the optimum water temperature necessary for the faster growth of rice plants. Three to four tablespoons of the paste can cover 1,000 square meters.

Biotechnology

The Philippines, the first in Asia to commercialize genetically modified corn, has just approved the sale and planting of the fourth Bt corn (Decision News Media 10 August 2005). This goes to show that the country has indeed been open to new production technologies.

Government policies, since 1995, have been supportive of biotechnology R&D. The Philippine government subscribes to the responsible use of modern biotechnology and its products to help achieve and sustain food security, equitable access to health services, and the sustainable development of the environment and industries. To date, the DOST National S&T Plan (2002–2010) has biotechnology as one of its priorities.

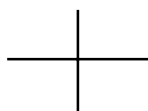
The country's R&D institutions working on AFNR have been employing biotechnology in their breeding works. So far done are projects on mango, banana, and abaca; projects on biofertilizers using conventional biotechnology; plant tissue culture for clean planting materials and superior tree species; and reproductive biotechniques for ruminants (PCARRD 2003).

From 1995 to 2000, the government began funding five genetic engineering projects focused on disease resistance traits of rice, coconut, corn, mango, banana, and papaya. Genetic transformation work is still ongoing for these five crops, in addition to the development of livestock vaccines. A gene discovery project on coconut is fully supported by PCARRD-DOST.

REVISITING THE STRUCTURAL REFORMS AND REGULATORY FRAMEWORKS

Five years into the 21st century, albeit some significant progress, much still needs to be done in realizing the aims of the Rio Summit, in general, and PA 21, in particular. Some analysts say, these visioning exercises are merely being subscribed to as a means to substantiate the country's participation in international conferences and agreements.

On AFMA, while it is comprehensive and promising, it has not really taken off because the budget appropriations have not been forthcoming. To implement the act, the



government was supposed to disburse P20 billion (US\$357 million) in its first year and not less than P17 billion (US\$304 million) in each of the succeeding six years (Tenth Congress 1997).

With the many institutions and legal instruments for ensuring food safety and for monitoring and implementing biosafety, pesticide and fertilizer use, and the like, that are well in place in the country, the “farm to fork” safety scheme is still a work in progress.

For instance, the nationwide adoption of hygiene and quality-related practices such as the Hazard Analysis Critical Control Point (HACCP) has been slow, with the resistance of the local food industry, which finds the guidelines too restrictive and costly (Layese 2002, cited in Catelo 2003).

With these inefficiencies, not to mention the new and emerging imperatives such as the MDGs, the country is yet to truly create impacts on the ground—beyond the visioning, multilevel consultations, strategic planning, advocacy, and policy making. A bold organizational restructuring or rationalization is therefore in order.

OTHER ISSUES AND CONCERNS

The Philippines is a tropical country of 7,107 islands, three of which are the largest main islands (Luzon, Visayas, and Mindanao). Its total land area is 300,000 square kilometers. It has 17 regions; 79 provinces; 115 cities; 1,495 municipalities; and 41,956 barangays (NSCB 2003).

Given its archipelagic nature, the country’s agricultural problems on soil fertility, water management, and crop production cannot be solved by one general prescription alone. What may work for farm problem in Luzon may not work in Mindanao.

Moreover, given its tropical climate, which favors the existence of disease vectors and parasites, the country has to continually contend with plant and animal diseases.

Therefore, the country is pinning its hopes on science-based solutions, such as modern biotechnology tools, not only for developing better crops but also for developing interventions through disease diagnosis, detection kits, biofertilizer production, biodeodorization of livestock wastes, waste

degradation, and bioremediation of heavy metals and contaminated soil.

Another concern is the fact that the country now has an estimated 83.5 million people (ADB 2005), ranking seventh as the most populous country in Asia and 12th in the world (U.S. Census Bureau 2005). As it has been the past decades, the unabated population growth has put a huge pressure on the diminishing resources.

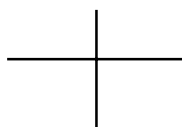
Moreover, although current development goals center on uplifting human conditions, in reality, trickling down the benefits of sustainable agricultural practices to the basic sectors, at least in the Philippines, remains a pipe dream. The basic sectors of Philippine society, comprising nearly 40 percent of the total population, are living below the poverty line (PCSD 2004). They are the farmers, landless workers, marginalized fisherfolk, indigenous peoples, urban poor, and other disadvantaged groups.

Nevertheless, there is hope as ordinary people at the grassroots level, according to Kirby et al. (1995), are “showing their ability to create, rebuild, and maintain their own bits of environment, cooperating to build sustainable lives.” The community-based natural resource management approach adopted by the government since the late 1980s has been proven effective, especially in the fragile uplands of the Philippines.

Also a sign of hope is the fact that the Philippines has strong institutional building blocks for sustainable development, including a strong civil society, socially and environmentally conscious business groups, community empowerment initiatives, devolution, and decentralization (PCSD 2004). Although it is easier said than done, what the country needs is an effective mechanism to promote and enforce its policies and regulations.

CONCLUSION AND RECOMMENDATIONS

Nearly five decades of extensive R&D in AFNR have accumulated a wealth of knowledge, technologies, and modalities that promise to boost agricultural productivity while lessening the negative impacts on the environment. Meanwhile, indigenous agricultural knowledge and practices that conserve soil, water, and nutrients to sustain productivity are



increasingly gaining back their place in the scheme of conservation.

Therefore, the best course of action is to pick the best element from the different agricultural production systems (indigenous, conventional, organic, biotechnology, etc.). Creating a balance between going back to basics and adopting new ideas on GAPs is a step in the right direction.

Besides, globalization has changed the way people view the food they eat, as they now show keener interest in food safety and healthy diets. On a positive note, this creates the potential for niche markets that are more concerned with quality than quantity, where, in the long run, smaller-scale production may prove to be an economically sustainable investment after all.

Indeed, there is an emergent rethinking of what development should be: that it is no longer about exploiting natural resources for purely economic gains and material wealth, but more about moderate use of resources, quality products, and with an end in view of sustainability.

Thus, it is best to set forth an appropriate mix of policies for the sustainable productivity of the AFNR sectors.

After all, sustainable development entails the right blend of science, policy, and regulations, made more potent by the partnership and cooperation of various stakeholders, especially the participation of end-users themselves.

Lastly, since it has been proven that farmers generally dislike being told what to do, the bottom-up approach of upscaling technologies may be a better idea. Science-based solutions to practical problems can be introduced by shifting from researcher-driven trials to studies where farmers participate in the discovery-learning process. In the end, progress is all about people seeking change in processes that no longer work and harnessing their own innate potential to address their needs.

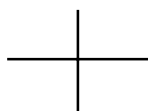
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