CASE STUDY

BANGLADESH

Pesticide Use in Developing Countries
Development Economics Research Group (DECRG)
World Bank
Official Name
People’s Republic of Bangladesh

Geography
Bangladesh is a low-lying, riverine country located in South Asia, between Myanmar and India with a largely marshy jungle coastline of 710 kilometers (440 miles) bordering the northern littoral of the Bay of Bengal. Formed by a deltaic plain at the confluence of the Ganges (Padma), Brahmaputra (Jamuna), and Meghna Rivers and their tributaries, Bangladesh’s alluvial soil is highly fertile but vulnerable to flood and drought.

Area: 147,570 sq. km. (56,977 sq. mi.)
Terrain: Mainly flat alluvial plain, with hills in the northeast and southeast.
Climate: Tropical; mild winter (October to March); hot and humid summer (March to June); humid and warm rainy monsoon (June to October).
Capital: Dhaka

People
Growth rate: 1.48% (2004)
Education: Literacy– 55.0% for males, 43.3% for females; Total– 49.2%. (15 years & above) (2004)
Health: Infant mortality- 53.27/1,000 (2002); Life expectancy- 64.50 years (male), 65.40 (female). (2002)
Work force: 44.3 million; Agriculture- 51.69%, Industry- 13.56%, Services 34.75 %. (above 15 years) (2002-03)

Economy
GDP
Growth rate: 5.38% (2005)
Per capita: $445 (2005)
Inflation: 6.32% (2004-05)
Natural Resources: Natural gas, fertile soil, water.
Agriculture: Products- rice, jute, tea, sugarcane, wheat.
Land- cultivated area cropped at the rate of 175% in 2000; largely subsistence farming dependent on monsoon rainfall, but growing commercial farming and increasing use of irrigation.
Industry: Garments and knitwear, jute goods, frozen fish and seafood, textiles, fertilizer, sugar, tea, leather, ship-breaking for scrap, pharmaceuticals, ceramic tableware, newsprint.
Agriculture
Bangladesh is predominantly an agricultural economy. Approximately 84% of Bangladesh’s people are directly or indirectly dependent on agriculture for their livelihood, and agriculture contributes about 24% of gross domestic product (Bangladesh Bureau of Statistics, 2001). Although rice is the major staple crop, wheat, vegetables and fruits are assuming greater importance. Rice accounts for 76% of the cultivated area, 78% of the irrigated area, 52% of agricultural GDP, and 71% of caloric intake (Bangladesh Bureau of Statistics, 2001). Because of Bangladesh’s fertile soil and normally ample water supply, rice can be grown and harvested three times a year in many areas. Due to a number of factors, Bangladesh’s labor-intensive agriculture has achieved steady increases in food grain production despite the often-unfavorable weather conditions. These include better flood control and irrigation, a generally more efficient use of fertilizers, and the establishment of better distribution and rural credit networks. However, Plant, animal and insect pests pose a constant threat to rice production, inflicting losses conservatively estimated at 10-15% annually (United Nations, 2001). Farmers have used toxic chemicals extensively for pest control, because of their reputation for speed and effectiveness. However, rising use of chemical pesticides has also posed serious health risks, as well as threatening widespread ecological damage. These problems will undoubtedly increase if Bangladeshi farmers respond to rapidly rising food demand by intensifying their use of chemicals for pest control.

Pesticide Use
As in many developing countries, Bangladesh has promoted the use of pesticides to expand agricultural land and increase output per acre. Promotional activities have included extension services and significant subsidies. As a consequence of this expansive policy, pesticide use has more than doubled since 1992, rising from 7,350 metric tons to 16,200 metric tons in 2001 (See Figure 1). A FAO analysis of pesticide composition revealed high shares of toxic chemicals (for example, carbamates and organophosphates in insecticides, and dithiocarbamates and inorganics in fungicides) which have been known to cause cancer, genetic damage, fetal damage, and severe allergic responses in exposed populations.

Figure 1: Trends in Pesticide Use, 1992-2001
Many pesticides used in Bangladesh are also banned or restricted under international agreements. Pesticide suppliers in Bangladesh even continue to sell the 12 particularly controversial pesticides known by activists campaigning worldwide as the “dirty dozen”. In substantial anecdotal evidence suggests that users’ lack of information have led to widespread overuse or misuse of pesticides. As a result, pesticide poisonings and ecological damage have become common in Bangladesh.

**Integrated Pest Management**

In response to rising concern about the sustainability of conventional agriculture, the government has collaborated with international assistance agencies to promote Integrated Pest Management (IPM). IPM has no standard definition, but comprises approaches that range from carefully targeted use of chemical pesticides to biological techniques that use natural parasites and predators to control pests.

Bangladesh’s IPM activities began with rice in 1981, and the FAO played a strong catalytic role with government officials and the donor community. The program provided capacity-building for the Department of Agricultural Extension, introduced Farmer Field Schools, and trained representatives of local NGO’s. Subsequently, the government and NGOs initiated several IPM projects for rice and vegetables with donor funds. To date, major IPM programs in Bangladesh have included the DAE-UNDP/FAO IPM Project (BGD/95/003); DAE-DANIDA Strengthening Plant Protection Services (SPPS) Project; Command Area Development Project (CAD); CARE-New Options for Pest Management; CARE-Integrated Rice and Fish Project (INTERFISH); AID-Comilla’s Integrated Pest Management Project; USAID-funded IPM Collaborative Research Support Program; and FAO’s Regional Cotton Project. At present, the Plant Protection Wing of the DAE is responsible for the implementation of IPM activities.