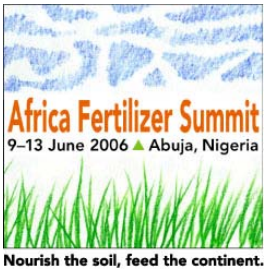

FERTILIZERS AND THE ENVIRONMENT IN AFRICA

Bringing Life to Africa's Soils: Nourish the Soil to Feed the Continent

African agriculture is in crisis. The continuous farming of African soils without the replacement of soil nutrients (most African farmers use less than one-fifth the amount of nutrients needed yearly to keep their soils healthy) is draining the life from the soil. More than 240 million people in Africa face daily hunger and recurrent famine. In order to boost food output, reduce hunger, and protect Africa's fragile ecosystems, African farmers need access to mineral and organic fertilizers.

To address this crisis, the African Union's New Economic Partnership for Africa's Development (NEPAD) has called for an Africa Fertilizer Summit. It will launch a continent-wide effort to restore soils and increase farm yield through the efficient use of fertilizers—both manufactured and organic—in an environmentally sound way.

This will bring enormous benefits to Africa. Even so, it is important to recognize that misuse of fertilizer has the potential to harm the environment, as has at times occurred elsewhere. The question must be asked: What are the environmental risks and benefits of increased fertilizer use in Africa today?

Environmental Benefits of Fertilizer Use

Efficient use of fertilizer will help conserve the African environment, which is being devastated by under-fertilization of farmlands. Long-term soil mining leads to loss of soil organic matter—the roots, plant residues and other materials that give soil its structure. This loss reduces the soil's biodiversity and limits its ability to retain nutrients and water, leading to massive erosion. As soils decline and farm yields drop, impoverished farmers move on to clear forest or other natural environments.

Consider the ills caused by lack of adequate fertilization:

- 70% of deforestation in Africa is a result of clearing land for cultivation;
- Almost half of the African continent (46 percent) is already undergoing desertification, and soil depletion and erosion is accelerating this process;
- The fragile ecosystems that support Africa's great wildlife—in the Serengeti in East Africa and the Kalahari savannas in southern Africa, for example—are being converted to farmland, threatening Africa's legendary biodiversity;
- Sediment runoff from poor agricultural soils is clogging waterways, from streams to coastlines. Along the East African coast, such runoff is contributing to the destruction of more than 20 percent of the region's coral reefs;

- According to new data, over three-quarters of Africa's farm lands face severe degradation. If soil erosion and nutrient loss continue unabated, crop yields in Africa will be reduced by up to 30 percent within 15 years—exacerbating hunger, and putting added pressure on the environment.

The efficient and environmentally sound use of fertilizers—both manufactured and organic—can begin to reverse these trends and bring substantial benefits to the African environment by: diminishing the pressure to clear forests or cultivate more fragile lands by allowing African farmers to produce more on existing farm land; rebuilding soil structure and thus stemming erosion; and improving the efficiency of water use by increasing the depth and density of roots, allowing them to quickly capture even small amounts of water—an increasingly scarce resource in Africa.

Environmental Risks of Increased Fertilizer Use

Increased fertilizer use is not a panacea and, in fact, if used inappropriately it can create environmental problems of its own, as seen in developed and developing countries from the United States to India. Environmental problems that have been associated with the misuse and over use of fertilizers include:

- Eutrophication (nutrient pollution that depletes water of oxygen and can kill aquatic life) of lakes and coastal waters by nitrogen and phosphorus run off;

- Build up of nitrogen that leads to acidification of soil (this can foster the release of elements like aluminum, which are toxic to roots and can lead to yield declines in crops such as sorghum);

- Increases in toxic chemicals in the soil through impurities left in fertilizer;

- Over-application of fertilizers can kill soil organisms, which harms the soil's ability to retain and recycle nutrients;

- Emission of nitrogen gasses into the air can contribute to global ozone depletion and greenhouse gasses.

Promoting the Efficient and Environmentally Sound Use of Fertilizer

Farmers can achieve tremendous gains in yield through modest fertilizer use that enhances soil fertility. Put simply, efficient use is synonymous with sound environmental use. For example, with only a bottle capful of fertilizer for each millet plant, farmers in drylands can increase yield by 50 percent to 100 percent, and at the same time avoid potential environmental harm. The Africa Fertilizer Summit will focus on such practices. It will address a number of well-tested and complementary strategies, all of which aim to limit the required amount and maximize the efficiency of fertilizer. These include:

- Integrated Soil Fertility Management (ISFM) or the complementary use of organic and inorganic sources of nutrients rather than either one alone. ISFM also includes farming methods such as agroforestry, conservation tillage, and growing nitrogen-fixing leguminous crops;

- Fertilizer use that is tuned to site-specific soil nutrient needs, crop needs and climate conditions. The goal is to deliver the right combination of plant nutrients at the right time and in the amount that maximizes plant uptake and minimizes loss to the environment;

- Developing networks of agrodealears (retailers) and agricultural extension services that can help farmers understand what to use and how to use it, and make fertilizer available in the quantities and mixes needed at affordable prices;

- Paying close attention to water management along with fertilizer use;

- Monitoring the environment for any signs of problems such as eutrophication or soil acidity that can be associated with misuse of fertilizer;

- Using fertilizer along with improved seeds to maximize efficiency and farmers' return on investment.