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FREQUENTLY ASKED QUESTIONS:
Fertilizers and the Africa Fertilizer Summit

Questions about fertilizers

What are fertilizers?

Think of fertilizers as plant food. Fertilizers are combinations of the nutrients that plants must have to grow, in a form they can use. The main nutrients in fertilizers are three essential elements: nitrogen, phosphorus, and potassium, often called N–P–K. About 20 secondary or "trace" minerals such as copper, iron, manganese, zinc, and boron are also necessary for normal plant growth. People require the same nutrients. These plant nutrients can be supplied by organic fertilizers, such as plant residues or livestock manure, or mineral fertilizers, which are chemically processed to meet crop needs.

Plants generally need more nitrogen than phosphorus or potassium. Thus, nitrogen is the major component of most fertilizers. Phosphorus is the plant world's equivalent of carbohydrates—it provides energy for plants to thrive. Potassium helps plants fight stresses and disease, and grow strong stalks.

Most nitrogen in mineral fertilizers is drawn from the air—which is 80% nitrogen—by an industrial process and converted to ammonia. The ammonia is converted to various nitrogen-based fertilizers such as granular urea and liquid ammonia. Phosphorus, potassium, and most secondary or trace nutrients are mined from the ground.

All plant nutrients, whether in organic or mineral fertilizers, are the same, but mineral fertilizers have the advantage of concentration, and nutrients can be blended to meet specifications. Thus, mineral fertilizers can be better "targeted" to meet the nutritional needs of specific plants and soils.

Why do we need fertilizers?

As plants grow, they absorb and deplete or "mine" nutrients from the soil. Farmers harvest those same nutrients when they harvest crops. Fertilizers,

whether mineral or organic, nourish the soil by returning essential mineral nutrients.

It is a biological fact that plants require 1 kilogram of nitrogen to produce 10 to 15 kg of grain. Our atmosphere is about 80% nitrogen. Most tropical soils "fix," or draw from the atmosphere, enough nitrogen to produce about 1 ton of grain per hectare. To produce more grain, the plants must have more nitrogen, whether as organic or mineral fertilizer. Plants must also have phosphorus, potassium, and "trace" minerals. If a soil lacks or has insufficient amounts of these minerals, they must be added as fertilizers, or production will stagnate or cease.

Couldn't the world be fed using organic fertilizers?

Organic farming is less efficient and lower yielding than farming with mineral fertilizers, especially in Africa. This is partly because mineral fertilizers deliver far more essential nutrients per unit weight than does organic matter. Also, Africa's depleted soils can no longer deliver enough organic matter to maintain soil health.

If the world's 1.5 billion hectares of farm land were farmed organically, we would have enough food for only about 2.4 billion people—leaving more than half the world's 6.5 billion people without food. Organic sources of mineral nutrients are certainly not available in sufficient quantities to feed sub-Saharan Africa's current population of about 750 million—and that population will be 1.1 billion by 2020.

Mineral fertilizers are the only practical way to provide enough plant nutrients to feed Africa and provide organic matter to restore Africa's nutrient-depleted soils. Also, it is difficult to guarantee the optimal balance among, or quantity of, vital crop nutrients using only organic sources. For example, providing enough nitrogen for a crop by applying manure would mean adding four to five times more potassium and phosphorus than is needed. Runoff can pollute waterways and the life they support.

Mineral fertilizers are generally highly cost effective, but require an up-front investment that may be difficult for small farmers without credit. Ideally, mineral fertilizers should be used together with organic fertilizers, which improve soil structure and the soil's water-holding capacity. Combined use may reduce the total cost of improving soil fertility. The precision that

manufactured mineral fertilizers offer helps overcome the limitations of organic fertilizer.

How have fertilizers benefited the world?

About half of the world's population is alive today because of increased food production fueled by mineral fertilizers. Fertilizers and other inputs give the industrialized countries inexpensive food. For example, the average US farm feeds about 150 Americans for a year, with a balance to export worldwide. US citizens spend only about 10 cents of each dollar on food, so they have 90 cents for other things. Most rural families in Africa spend as much as three-fourths of their income on food. Little is left for necessities like education of children and health care.

The Green Revolution—the dramatic increases in food production in Asia and Latin America—was through higher yields, made possible through improved seeds and inputs, especially mineral fertilizers. The Green Revolution is credited with feeding more than 1 billion people in Asia alone. The far lower increases in food production in Africa have been mostly through bringing marginal land into production. That further threatens Africa's endangered wildlife.

Nobel Laureate Dr. Norman Borlaug, often called the "father of the Green Revolution," has called improved seeds the "catalysts that ignited the Green Revolution" and mineral fertilizer the "fuel" that powers it.

Isn't it true that fertilizers can be environmentally detrimental?

Poor management of plant nutrients—whether as organic amendments or mineral fertilizers—can mean loss of some nutrients to the environment where they can upset the balance of natural ecosystems. Nitrogen may also be lost as gases that affect the atmosphere. But if a farmer uses appropriate agricultural practices, the crop will absorb most applied fertilizer.

Using too few crop nutrients can also have devastating environmental effects. In the 1930s—before mineral fertilizers were widely used—nutrient depletion was widespread on many agricultural lands in North America. The result was the "Dust Bowl" era, with its extensive wind erosion and massive dust storms.

Africa today faces a soil fertility crisis. African soils are losing an estimated $4 billion worth of soil nutrients yearly. Three-fourth of the farmland in sub-Saharan Africa is plagued by severe nutrient depletion, and 46% of the African continent suffers from desertification. African farmers desperately need mineral fertilizers to bring life back to the depleted soils, and to feed the continent.

And if production on existing farm land is not intensified, African farmers will continue to bring marginal land into production—a further threat to what remains of Africa's precious wildlife and forests.

Questions about African agriculture

Can Africa feed itself?

Agricultural production in sub-Saharan Africa is hampered by low use of inputs such as improved seeds and mineral fertilizers, low inherent soil fertility in much of the continent, and nutrient-depleted soils. Farmers have traditionally cleared land, grown a few crops, and then moved on to clear more land, leaving the land fallow to regain its fertility. But a 3% annual growth in population—among the world's highest—now forces farmers to grow crop after crop on the same land, "mining" or depleting mineral nutrients from the soil while giving nothing back, and to bring marginal land into production. Mineral fertilizers are the only practical way to restore plant nutrients and bring life to the severely depleted soils. But small-scale farmers, who comprise the vast majority of the farming population, have little access to fertilizers, and can't always afford them. The African farmer must pay two to four times the average world market price for fertilizers. Worsening the problem are weak input and output markets, unfavorable policies, corruption, poor transportation systems, limited irrigation, and inadequate access to credit.

How does agriculture affect African economies?

Africa is a rural continent and agriculture is, by far, its most important economic sector. More than 70% of Africa's population is directly engaged in agriculture. Sub-Saharan Africa (excluding South Africa) imported almost 20 million tons of cereal, at a cost of $4.4 billion, in 2004, according to the UN Food and Agriculture Organization. By 2020 sub-Saharan Africa is

projected to import more than 34 million tons yearly, at a cost of $8.5 billion.

What are potential solutions to Africa's agricultural crisis?

UN Secretary General Kofi Annan has called for a "uniquely African" Green Revolution similar to the one that revolutionized agricultural production in Asia and Latin America. The increased food production was made possible by improved seeds and other inputs, especially fertilizer. High-yielding varieties of key African crops are available, but can produce well only if nutrients are available in the soil to feed them. Farmers in sub-Saharan Africa today apply about 8 kg per hectare yearly (excluding South Africa). Fertilizer is essential to catalyze the new African Green Revolution by adding nutrients and organic matter to improve crop production and restore soil health. African farmers will use fertilizer, if they have access at an affordable price—and if it is profitable. This means ensuring fair prices for farm products.

Why are fertilizers so expensive in Africa?

It is a cruel irony that a farmer in sub-Saharan Africa—where half the population survives, somehow, on about 65 cents a day—must pay two to four times the average world price for fertilizer. This is mainly due to geography and poor infrastructure. Africa has few navigable waterways, so bulky goods such as fertilizers must be transported long distances overland—on bad road and rail systems. Africa has the world's fewest kilometers of paved roads per capita. For example, Uganda has 94 km of paved road per 1 million people and Mozambique, 141 km. In contrast, France has 12,987 km of paved road per million people and the United States, 20,987 km. Transporting fertilizers from an African seaport to a farm 100 km inland costs more than to ship those same fertilizers from North America to Africa. Also, the current low demand for fertilizer in Africa reduces potential economies of scale in procurement. Government policies, including those affecting tariffs and trade, often contribute to high prices. Corruption is another factor.

Why not give away fertilizer free in Africa?

Sustainable growth in agricultural production requires the development of markets, for both agricultural inputs and for farm products. In most African

countries, less than a third of the food produced enters into commercial marketing channels beyond the local area. Also, it is often impossible for smallholder farmers to obtain reasonably priced farm inputs such as fertilizer and improved seeds. Simply giving fertilizer away would do nothing to develop the market.

The alternative is for African governments to adopt policies and develop institutions that increase farmers' purchasing power while also increasing access to farm inputs. For example, new financing arrangements could allow farmers to pool their resources, or make credit available at low risk, or that provide "smart" subsidies (rather than blank checks) to help farmers purchase fertilizer.

In the case of the poorest farmers who truly have no other options, it may make sense to begin by using market-friendly, targeted subsidies for fertilizer, together with advice on its efficient use, to jump-start a process of increased production and profits.

The Africa Fertilizer Summit

What is the Africa Fertilizer Summit, and why will it be held?

The Africa Fertilizer Summit will be held 9─13 June 2006 in Abuja, Nigeria. Its purpose is to develop a strategy to make vital plant nutrients available to African farmers. Delegates will work to build consensus around the key issues surrounding fertilizer use in Africa, and agree on bold actions to facilitate the access of millions of poor farmers to mineral fertilizers and complementary inputs.

What are the objectives of the Africa Fertilizer Summit?

The objectives are to:
affirm the critical importance of fertilizer in contributing to rapid and sustainable pro-poor growth in agricultural productivity in Africa,
review the status of fertilizer use in African agriculture and identify the main constraints that poor farmers face in accessing fertilizers,
assess innovative private sector approaches that have been used to build infrastructure for markets that supply agricultural inputs to the rural poor, and

agree on a strategy for developing an *African Fertilizer Action Plan* to accelerate the access of millions of poor farmers to mineral fertilizers and complementary inputs.

What outcomes are expected from the African Fertilizer Summit?

An *African Fertilizer Action Plan* will be the salient outcome. The plan will include:

Prototype action plans will be developed to alleviate key constraints to fertilizer use: policy, regulatory, institutional, structural, and human capacity. Partnerships and cross-country and sub-regional linkages will be developed to encourage fertilizer use.

Frameworks will be recommended for developing, financing, and implementing the Africa Fertilizer Action Plan. Action-oriented programs will be identified in country and regional fertilizer strategy reports.

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Will the Summit contribute to meeting the UN's Millennium Development Goals?

The UN Millennium Development Goals are a blueprint agreed upon by the world's governments and leading development institutions to meet needs of the earth's poorest people by 2015. The Summit will contribute to meeting at least four of the eight MDGs:

Goal 1. ***Eradicate extreme poverty and hunger.*** The Summit will pave the way for the "uniquely African" Green Revolution called for by UN Secretary General Kofi Annan. Increased productivity is desperately needed in sub-Saharan Africa where half the population survives on about 65 cents a day, and food imports cost $4.7 billion yearly. The number of malnourished Africans has grown from about 88 million in 1970 to more than 200 million in 1999-2001. If the current trend continues, 340 million people will live in abject poverty by 2015.

Goal 3. ***Promote gender equality and empower women.*** Most African farmers are women.

Goal 7. ***Ensure environmental sustainability.*** Judicious use of mineral fertilizers will restore health to Africa's nutrient-depleted soils. Higher productivity per unit of land will slow the expansion of farming into marginal land and thus, lessen the threat to Africa's endangered wildlife and forests.

Goal 8. ***Develop a global partnership for development.*** A global cooperative effort of governments, the private sector, farmers organizations,

donor agencies, and NGOs will work to build consensus around key issues concerning fertilizer use in Africa, and agree on bold actions to facilitate the access of millions of poor farmers to mineral fertilizers and complementary inputs.

Who is organizing the Africa Fertilizer Summit?

The Summit is being convened by the African Union's New Partnership for Africa's Development (NEPAD). It will be chaired by His Excellency Olusegun Obasanjo, President of Nigeria and Chair of the African Union and of NEPAD's Implementation Committee. The International Center for Soil Fertility and Agricultural Development (IFDC) is the implementing agency, in close cooperation with NEPAD. The Federal Republic of Nigeria will host the Summit. A Communications Strategy Group has been formed to harness the power of information and communications technology.

Who will participate in the Summit?

The Summit will bring together African heads of state, ministers, and presidents; international donor organizations; private sector firms; farmers' organizations; senior policy makers; and bilateral and multilateral development institutions. Farmers will share personal perspectives on key issues.

Who is funding the Summit?

Funding agencies will include the Rockefeller Foundation, the Department for International Development (DFID, UK), the International Fund for Agricultural Development (IFAD), Partnership to Cut Hunger and Poverty in Africa, Sasakawa Global 2000 (SG 2000), and Agriterra. Corporate sponsors include the International Fertilizer Industry Association (IFA) and the Arab Fertilizer Association (AFA).

How can I participate in the Summit?

Attendance is mainly by invitation, but there may be some self-selected participants. These prospective participants may apply by completing and submitting a Summit registration form, which is available on the Summit web site at www,africafertilizersummit.org.

Is support available for participants?

The Summit has limited funds, but some support has been made available to key participants such as farmers organizations and speakers.

How can I support the Africa Fertilizer Summit?

Organizations may support the Summit as donors or as corporate sponsors. For information about these programs, go to: http://www.africafertilizersummit.org/Donors/index.html. Individuals who wish to support the Summit financially should contact the Summit Secretariat at: AFS.secretariat@IFDC.org