



Nutrients and Food Security; feast or famine?

Should scarcity of phosphorus and other non-renewable plant nutrients be on the priority agenda for global food security?

Thursday, June 13th, 2013, the Study Circle for Development Issues, (SKOV) of KLV, held a seminar in Hotel De Nieuwe Wereld in Wageningen. This was SKOV's third debate on food security in a row: the first in relation to water, the second in relation to meat production and this one in relation to a growing scarcity in plant nutrients.

Professor Oene Oenema (Plant nutrient management, WUR) opened the debate with a plea for more food and less pollution. Plants need 14 nutrient elements (in addition to C, H, O); animals and humans need 22 nutrient elements. Plant nutrients are unevenly distributed on the globe. Shortages lead to poor growth and retarded development, while surpluses lead to pollution and eutrophication. The alarming issue: easily accessible reserves are being depleted. The need for these elements is unconditional. No substitutes for them exist.

Professor Ken Giller (Plant production, WUR) reiterated the importance of nitrogen fixation for smallholder farmers in Africa. He concluded that mineral fertilizers and organic matter are both necessary - neither is sufficient alone; key issue is the lack of inputs in Africa; legume nitrogen fixation has a great role to play in African agriculture and the bottom line: fertilizers are essential.

Johan Vollenbroek, (Chemical technologist, Mobilization for the Environment, Nijmegen) presented options and constraints in fertilizer production. Nitrogen is abundant in atmosphere, but production of ammonia, urea and related nitrogenous fertilizers has high energy demands. Phosphorus and potassium are non renewable, but may be recycled. Focusing on phosphorous, phosphate rock is being exhausted, in the sense that remaining deposits are higher and higher in radioactivity and heavy metal concentrations. The remaining gypsum waste (each ton of phosphate generates 5 ton of toxic phosphor gypsum) is too radioactive and too high in heavy metal concentration to be used. It is dumped in large stockpiles all over the world. In some countries like India, parts of contaminants are packed into the fertilizer. This results in slow poisoning of the arable land by cadmium and radioactive substances. In the Netherlands largest polluters have been closed, but cleaner producers are facing shortages in the supply of cleaner rock phosphate.

Professor Michiel Keyzer (Economist, Centre for World Food Studies, VU University Amsterdam) concluded presentations by an introduction on policies for sustainable plant nutrient management. He reiterated that scarcity of P and K will be critical in the long run. There is no substitute. That requires priority of recycling of NPK and micronutrients, P and K purification close to mines, joint processing of organic-and mineral plant nutrients and precise application of plant nutrients (and of animal feed supplements also). Decontamination of rock phosphate will depend on the accessibility to nuclear science. In the US uranium for all nuclear bombs was extracted from rock phosphate, until the sixties. IAEA and EC-Environment are busy negotiating regulation to declassify this knowhow, still in the minds of the builders of "Little Boy" and "Fat Man", or in the archives of Westinghouse. A win-win mechanism would promote recycling further. However, in the short term regulation raises costs of plant nutrients, but N, P, K scarcity will not be too pressing in short run. Top priority should be on raising public awareness, in particularly about contamination, an issue to be more strongly emphasized in education and research.

The seminar was chaired by Dr. Prem Bindraban. This was two days before his departure to Washington DC. He has started his duties there as appointed Executive

Director of the Virtual Fertilizer Research Center of IFDC. With great empathy he reiterated and structured a large number of questions from the public. These were answered by the speakers. One conclusion, producing fertilizers is no rocket science, but decontaminating rock phosphate is a top priority, to be better researched and implemented. Could Wageningen (and Washington) do something with this?

Gijs Kok, SKOV-KLV