Mushrooming into the future

Penicillin fungus related to the green mould found on fruit could cut the amount of fertilizer used by farmers by 90 %.

The 9 June 1989 New Scientist contained an article about how soil researchers in Canada have isolated a naturally occurring species of Penicillium, called Penicillium bilaji, which makes phosphate soluble so that it can be absorbed more easily by crops.

Most of the commonly used fertilizers contain phosphate or nitrates, but at present farmers have to add roughly 10 times as much as is actually needed. Lying in the soil the phosphate becomes less and less soluble over the years as it reacts with calcium, iron and aluminium in the earth.

Reg Kucey working at the Agriculture Canada Research Station in Alberta says that this fungus (Penicillium bilaji) dissolves phosphate faster than other phosphate-dissolving microorganisms and that it will maintain high rates of dissolution in soil, whereas many of the better known organisms die off.

The use of the fungus may mean that farmers can use less soluble forms of phosphate to start with, such as rock phosphate. At the moment these must first be dissolved in acid and then dried. Developing countries can neither afford the expensive equipment necessary to do this, nor the importation of large quantities of prepared phosphate fertilizer. However many countries, such as Malawi, have massive natural rock phosphate deposits which they could exploit by using the fungus.

This organism is being considered for practical exploitation by Philom Bios, a Canadian company that is field testing it across Canada and has applied for patents on the technology.

Initial tests have been successful. Crops treated with the fungus alone responded as well as those treated with monoammonium phosphate (MAP), a fertilizer widely used in the praries. Continued success, could mean that it could take its place as an agricultural product in a few years.