TABLE 2

Effect of fungicides against aflatoxin production in seeds

Fungicides*	Amount of aflatoxin B_1 in ppm		
	CSH-5	Local M35-1	Local Y-75
Bavistin	1.5	0.42	0.06
Thiram	1.9	0.82	0.25
Dithane Z-78	7.5	1.50	0.30
Control	15.0	7.50	0.75

*100 ppm concentration

and Local (Y-75). As such, CSH-5 and Local (M35-1) sorghum seeds are proved to be good substrates for aflatoxin production. CSH-5 and Local (M35-1) seeds possess the higher amounts of carbohydrates and starch[12]. In addition to the environment and the strain variability, carbohydrate content of the seed may enhance the aflatoxin production.

Authors are thankful to Dr Van Egmond, Department of Mycotoxin Research, the Netherlands for generous supply of aflatoxin standards and for the confirmation of aflatoxin production by isolate KRF-7 and to Dr Ramesh Bhat National Institute of Nutrition for permission to carry out a part of aflatoxin analysis. One of the authors (BB) is grateful to CSIR for a fellowship.

9 July 1982

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ISOLATION OF A PHOSPHATE DISSOLVING SOIL ACTINOMYCETE

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MICROORGANISMS capable of solubilizing mineral phosphates are known to occur in different soils[1,2]. Most of the organisms reported so far include fungi, bacteria and soil yeasts which were found to solubilize unavailable inorganic phosphates both in culture media and soil through the production of organic acids[2,3]. Although it was mentioned that actinomycetes too can solubilize inorganic phosphates[1], yet no detailed information is available. The present paper reports the isolation and characterization of a phosphate solubilizing actinomycete from a desertic soil. Further the phosphorus release as influenced by the period of incubation and temperature is also investigated.

While studying the distribution of phosphorous solubilizing microorganisms in desertic soils, a discrete colony of actionomycete showing a wide clearing zone in plates containing modified Pikovskaya's medium[4] was isolated. This organism was identified as *Streptomyces* sp. from its characteristic sporulation in slide culture. In order to study the phosphorus solubilization by this organism Erlenmeyer flasks of 150 ml capacity containing 50 ml of modified Pikovskaya's medium were inoculated with 1 ml of a 4-day old culture grown in Ken-Knight's broth and incubated at $30 \pm 1°C$. At three days interval of incubation, the pH of the medium and the available phosphorus were determined. In another experiment, the flasks were incubated at different temperatures and the pH and available phosphorus were estimated at the end of 7 days of incubation. Each treatment was replicated thrice. Available phosphorus was analysed by following chlorostannous reduced molybdo-phosphroic acid method[5].

The solubilization of tricalcium phosphate by *Streptomyces* sp. was observed as a clearing zone in the agar medium around the colony. The organism grew very slowly on modified Pikovskaya's medium while on nutrient agar medium it grew faster. The growth was in the form of suspended pellets in liquid medium. The solubilization of tricalcium phosphate was increased with time and reached a maximum by 12 days of incubation (table 1). Ortuno *et al.*[6] also reported the maximum phosphorus-solubilization by 12-15 days of incubation while working with *Aspergillus niger* and *Pseudomonas fluorescence*. The pH of the culture filtrate became acidic indicating the production of organic acids which catalyzed the solubili-

zation of tricalcium phosphate. This finding is in conformity with that of Sperber[1] and Gaur and Sachar[7]. However, Mehta and Bhide[8] did not observe any relation between acid production and the release of phosphorus. In the case of *Streptomyces* sp. the fall in pH was only from 6.8 to 5.5. But Gaur and Sachar[7] observed a decrease in pH from 7 to 3 with *Aspergillus awamori*. It seems that the nature of organic acids rather than total acidity determines the solubilization of trcalcium phosphate. Beyond 12 days of incubation, the solubilization of phosphorus decreased which may be due to the exhaustion of nutrients or the release of toxic metabolites into the medium. *Streptomyces* sp. could also release available phosphorus from rock phosphate but the release was 60% less as compared with tricalcium phosphate.

TABLE 1

Solubilization of tricalcium phosphate by Strepotomyces sp. at 30±1°C

Incubation time (Days)	Available phosphorus mg P/100 ml	pH of the culture filtrate
3	4.00	6.30
6	5.24	6.15
9	7.74	5.75
12	10.88	5.50
15	6.86	6.05
18	6.04	6.20
CD at 5%	1.17	—

Actinomycetes in general are known to thrive in desertic soils under conditions of high temperature and desiccation[9]. In the present study it was observed that the phosphorus release from tricalcium phosphate was increased with increase in incubation temperature from 25° to 40° C. Thereafter it started declining. Maximum release of 4.65 mg of P was observed at 40° C after 7 days of incubation. The pH of the culture filtrate was also decreased from 6.6 to 4.8 at 40° C. The results indicated that *Streptomyces* sp. being a thermotolerant organism can be utilized as a potential phosphorus solubilizer in desertic soils.

The authors wish to thank Dr A. N. Lahiri, Head, Division of Soil-Water-Plant Relationship for his valuable guidance and encouragement.

20 February 1982

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A NEW REPORT OF DIE-BACK DISEASE ON RUBBER (*H. BRASILIENSIS*) FROM TRIPURA

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DURING a recent survey of rubber plantations in Tripura, a severe, unrecorded die-back disease attacking only the RRIM-600 clone of *Hevea brasiliensis* M. Arg. was discovered and the causal organism, isolated from different parts of the affected plants, was identified as *Botryodiplodia theobromae* Pat. The disease, although severe, happened to be sporadic in Agartala, Tripura.

Figures 1 & 2. 1. Diseased plant with weak shoot. **2.** Inoculated plant showing die-back symptoms.