

## Monitoring System Vital for Fertilizer

Sewage sludge should not be used as fertilizer until an effective monitoring system keeps track of heavy metals added to soils and taken up by plants, declared a soil chemist at The Pennsylvania State University recently.

Dr. Dale E. Baker and associates showed plots of corn and grain sorghum fertilized with sewage sludge as part of a recent Penn State field day. The fertilizer value of sewage sludge was demonstrated.

Sludge samples were analyzed every two weeks since April 1 for elements

and potentially toxic heavy metals. The results show the need for accurate systems of monitoring sewage sludge as a fertilizer, it was pointed out.

Composition of sludge varies greatly with time and is generally higher in copper, zinc, and cadmium than is desirable, Dr. Baker stated. The research is supported in part by fair funds from the Pennsylvania Department of Agriculture.

Both leaf and grain composition in plots at Penn State's Agronomy Research Farm showed additions of

zinc and cadmium from sludge. Concentrations of copper in plant tops were not changed by the sludge.

Traces of some heavy metals are needed in soil for healthy crop growth, Dr. Baker explained. Nine pounds per acre per year are recommended for zinc, for example. But common sludge increases the zinc in soil to about 200 pounds per acre.

Mention was made of feeding trials carried out with chickens to assess the content of cadmium in meat and eggs. The results showed

it is difficult to influence the cadmium content of eggs. Cadmium was fed at 3, 12, and 48 parts per million. Even 48 parts per million produced no significant change in cadmium content of eggs.

However, cadmium accumulated in the livers and kidneys of chickens from all levels of feeding. Cadmium content in the muscles was much lower than in livers and kidneys. Heading up the experiments with cadmium fed to chickens are Dr. Roland M. Leach and associates.

## Soybean Field Day Oct. 1st

A soybean field day and tour will take place on Tuesday, Oct. 1st at the Field Research Laboratory in Landisville beginning at 9:00 a.m.

Interested persons are invited to attend the field day where they will be able to view full season varieties of soybeans along with double crop variety trials. There will also be herbicides demonstrations.

Included in the program will be a tour of the Clarence Keener, Jr. Farm where a full season and double crop soybeans will be viewed.

The research lab is located near Landisville. From Lancaster take 283 west to the Salunga-Landisville Exit. Proceed north on Stooky Nook Road 1/4 of mile and turn left on Shank Road. Go through red covered bridge. Signs will be posted for further directions.

Field day visitors heard that a pilot program has been initiated at Penn State to provide a testing service for municipal sewage sludge and soil. The program is part of the ongoing testing service at the Merkle Soil and Forage Testing Laboratory on campus. Details are available from county Agricultural Extension agents or from Dr. Raymond F. Shipp in Agronomy Extension at University Park.

Under low concentrations of heavy metals, Dr. Baker and associates believe sewage sludge can be used safely as a fertilizer for at least three years at rates not exceeding 10 tons of dry matter per acre per year. The "kicker," of course, is the concentration of heavy metals in parts per million of dry matter.

From Penn State experiments, zinc should not exceed 1500 parts per million. Copper concentration should be no more than 750 parts per million. With lead it should not exceed 500 parts per million. Nickel's concentration is considered safe at 150 parts per million. The safe levels for mercury and chlorinated hydrocarbons are not specified at this time.

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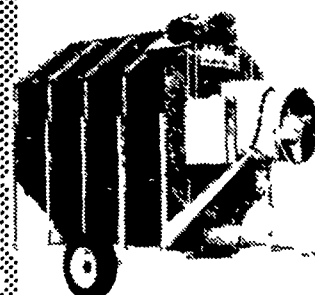
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