

## Nutrient Management

(Continued from Page A1)

why nutrient runoff causes problems and they suggested solutions.

When manure and fertilizer are managed improperly, nitrogen and phosphorus pollutes the farmers own wells and the ground water which affects not only his neighbors but the Susquehanna River and Chesapeake Bay region.

Penn State scientists want to change that. They are convinced that the groundwater can be protected and that farmers can still have an effective agriculture industry within the state.

"Farmers got to get a profit," Dr. Baker said. "They can't stand more expense in cleaning up water."

As he sees it, cleaning up the water poses many problems. He asks, "Can we afford to destroy agriculture to control water problems?"

Workshop leaders maintained that there does not need to be a depression in crop yields by decreasing nutrients. The initial cost for storage containers may seem prohibitive, but many farmers discover that nutrient management eventually benefits their profits when it results in less illnesses for livestock and less expense for unnecessary applications of crop fertilizers.

Les Lanyon, Associate Professor of Soil Fertility, said, "The farmers's record keeping system is the most important step to analysis in making better farming decisions." The college has worked hard at simplifying record keeping. If farmers use the forms they provide, the college can then feed that information into their computer which can pinpoint problem areas and show the farmer how much nutrients his soil needs and how much it is getting.

Baker demonstrated how a farmer can obtain individual help in nutrient management. He set-up

and used a programmed computer by having a local farmer answer the required questions for analysis. In a few moments the print-out pinpointed problems and showed an overabundance of nutrient pollution.

The audience then commented and asked questions about the program. A few pointed out some possible loopholes in the program. Baker admitted the validity of those questions and promised to perfect the program by using their input in the future.

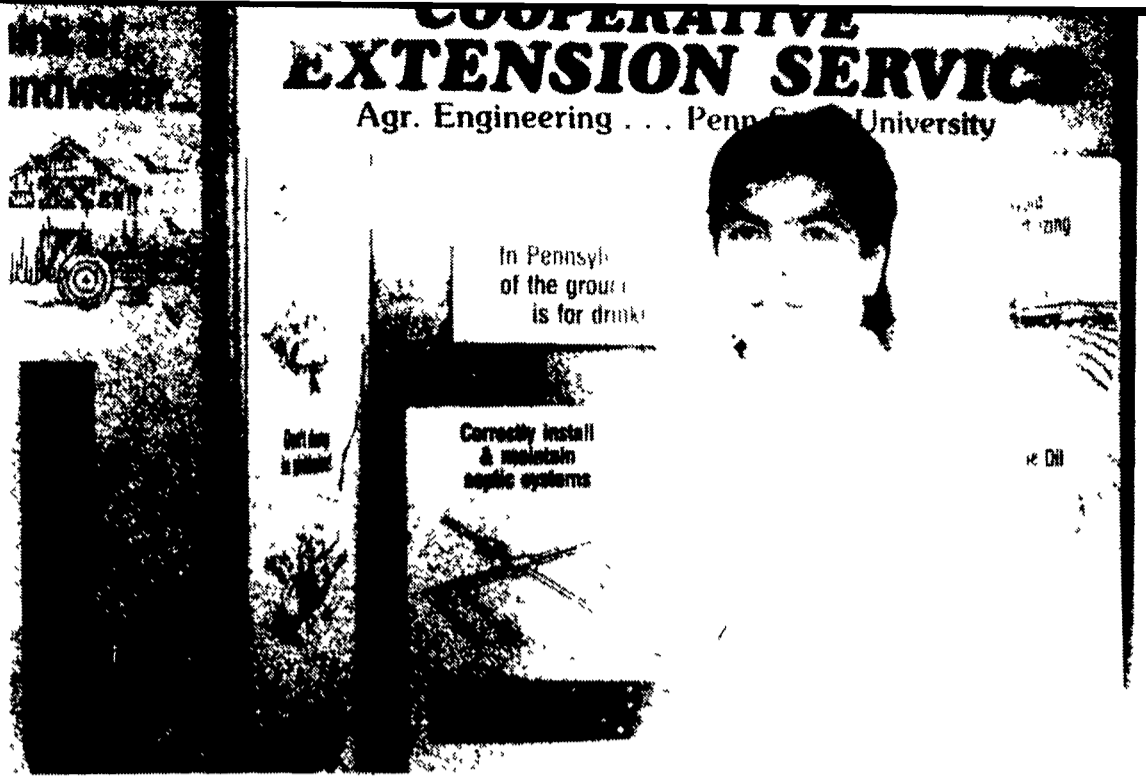
The College of Agriculture's goal is to attain an economically and environmentally sound on-farm nutrient management. For each individual farmer to accomplish that goal, he must know the nutrient requirement his soil needs to produce crops. Too much, results in an excess which the land cannot handle effectively. Ideally, the right amount will allow the soil to filter the bacteria before it reaches the ground water level.

"Nutrient management is a process—not an answer," Les Lanyon stressed. "It needs to get into the workings of the farm."

During the sessions and breaks, conversations buzzed with ideas, problems and possible solutions. Edwina Coder, chairman of the Citizens Advisory Committee for the Chesapeake Bay clean-up said that the committee is calling for nutrients to be reduced 40% instead of maintaining the same level as their goal originally stated.

To protect the water from contamination, sealed wells should be located away from bacteria sources. Pesticide containers should never be dumped in sink holes because the poison goes directly into the ground water.

Nitrate, found in manure and fertilizer, which is important for crop growth, is very soluble and easily reaches the ground water when there is an excess. Statistics



Joe Makuch and other Nutrient Management Workshop leaders used charts, graphs and slides to illustrate problems and solutions to agricultural pollution. Makuch is a Water Quality Specialist with Penn State's Department of Agriculture Engineering.

show that the nitrate percentages of water in agricultural areas is noticeably higher than in residential areas. It was pointed out that the percentages are not necessarily accurate since actual samples were usually derived from farmers' wells rather than the agriculture community. But it does show that "Farmers are polluting their own wells," said Baker.

Workshop participants agreed that water pollution can not be ignored. The common contaminants of pesticides and manure bacteria can cause illnesses and in some cases death especially to infants. Since nutrient run-off effects the population's drinking water, this issue will probably be one of the most discussed subjects in the late '80's and '90's.

Whether farmers like it or not,

they must comply with the Pennsylvania Department of Environmental Resources standards. Personnel from the agriculture college are initiating and conducting several projects to aid the farmer in making agriculture economically and environmentally sound.

Workshop speakers included Mitch Woodward, Regional Manure Management Agent; Al Turgeon, Head, Department of Agronomy and Penn State/Chesapeake

Bay Project Coordinator; Joe Makuch, Water Quality Specialist, Department of Agricultural Engineering; Les Lanyon, Associate Professor of Soil Fertility, Department of Agronomy; Dale Baker, Professor of Soil Chemistry, Department of Agronomy; Douglas Beegle, Assistant Professor of Agronomy, Department of Agronomy; and Richard Fox, Professor of Soil Science, Department of Agronomy.

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