

Raise Worms For Better Crops

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the upper layers of soil are released when disturbed. Initially, the release of nutrients results in good crop harvests because the plants can readily use those nutrients.

However, the plant nutrients locked up in the organic matter constitutes a base level — like a time-release fertilizer — in soils that provides season-long food for plants, regulates soil moisture and alkalinity, and not only reduces erosion, but eventually increases soil bulk.

The whole system depends on several tools, according to Kinsella, the most important of which is the farmer's brain, and of course, a healthy supply of large earthworms, otherwise known as nightcrawlers.

Many fields no longer have populations of earthworms. They are starved out when no crop residue is left on the field, they are killed by certain chemicals such as Furadan, used to control grubs and other soil insects which prey on the roots of plants, and there are other ways in which they can be eliminated, such as through continual plowing.

The reason earthworms, especially nightcrawlers, are so important to soils is because their tunnels allow water and air to infiltrate the soil so that it is retained and can be used by the plant over the season.

Small worms, such as common redworms are also important, though their tunnels aren't as deep,

because they also provide hundreds of miles of air and water passages, like pores in a sponge.

In fact a sponge is what Kinsella attempts to create.

Additionally, because of their sheer volume and tunneling ability, earthworms can eliminate compaction problems, as long as farmers don't frequently drive heavy machinery on their fields and keep trips in the fields limited to the barest minimum.

Kinsella's system depends heavily on the use of herbicides, however, while the herbicide costs may go up, the overall cost of raising crops is reduced significantly because of the elimination of the need to use a lot of machinery and tractors.

He showed charts which compared overall costs of raising crops by both methods with the cost of business as usual much higher than no-till.

Kinsella said that many are not thrilled with no-till because of early attempts to use a technology that was little understood. He said he made many mistakes in the early years, but has since worked out those problems.

He told the group "Don't be the first one to use new technology, but don't be the last one."

The use of herbicides has received a lot of bad publicity over the recent years, which Kinsella addressed.

"Some of the chemicals we used in the past should not be used, but

there are a lot of people who have an irrational fear of chemicals because they don't understand them."

Kinsella said he has to explain to some people that the herbicides he uses work by blocking the function of the chlorophyll (the sun-activated energy producing part of a plant) in the plant. He said he tries to explain that since people don't have chlorophyll they are in no danger of dying from these types of herbicides.

He said he also uses less chemical overall than traditional farming would demand and that he wouldn't use anything that would injure his earthworm population.

There were apparently several people in the audience who also practice no-till farming, as at least one "Amen," was said during Kinsella's talk.

The earthworm tunnels also help prevent the spread of chemicals, because the oxygen-needing microbes in the soil line the walls of the worm tunnels and break down the chemicals, thus preventing the chemicals from reaching the ground water.

Kinsella said that years ago, the thought was to try to kill the earthworms because it was feared that the tunnels they provided would help speed the travel of chemicals into ground water supplies.

"In fact, the opposite is true," he said.

Kinsella said he uses starter fertilizer everytime he seeds no-till,

because, while plenty of nutrients are present in the ground, they are not in readily available form when the seed needs it. In addition, he said his seeding rates are probably lower because he is planting seeds exactly at the depth they should be and providing a more hospitable environment for plant growth.

An example of the results of his methods is a 200 bushel per acre corn yields he got this past year.

Although a user's manual on no-till farming is still being developed for use in the East, the Midwest edition can be obtained through BASF Corporation, P.O. Box

13528, Research Triangle Park, N.C., 27709.

Yogurt, cheese, ice cream and puddings are among the favorite foods of 6th to 12th graders, according to a survey conducted by Harris/Scholastic Research. Other favored foods include milk, pasta, potatoes and fruit.

The American Academy of Pediatrics recommends that parents serve children under 2 years of age whole milk, since fat plays a vital role in brain development.

Manure Structures

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improving the operation and maintenance of the facilities.

In addition, farmers can contact the local SCS office to look into options to help them improve existing facilities. New facilities can be constructed with cost-share money available from ASCS and the Chesapeake Bay program.

In addition, Bowers and safety engineers are working to make use

of the results of the survey in the Department of Environmental Resources (DER) Manure Manual update.

"One of the purposes of the study was to get the information and what to do with the information," said Goodlander. "So I hope that we can do something now that we have the knowledge and information about it."

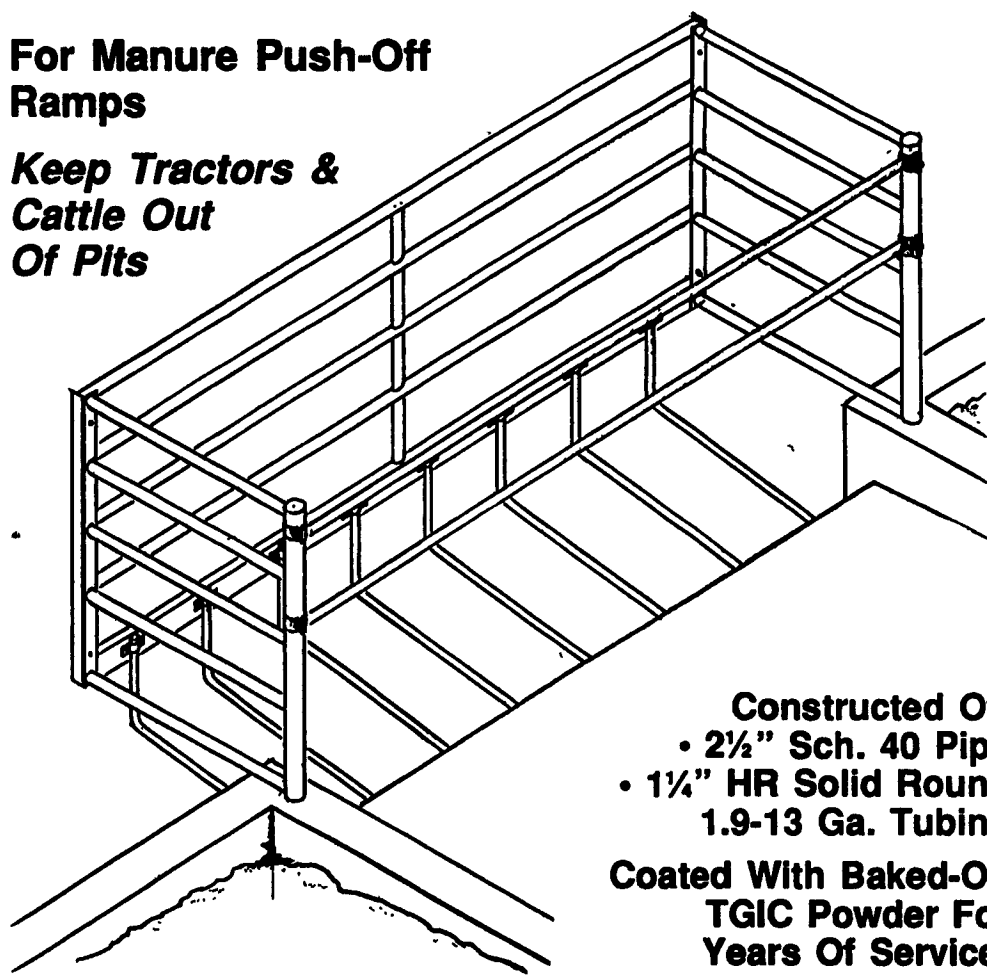
'A well-constructed, well-maintained pond or structure within 50 feet of a stream, if it's catching the barnyard runoff that got in the stream before, I think it's a very positive action that the farmer has taken.'



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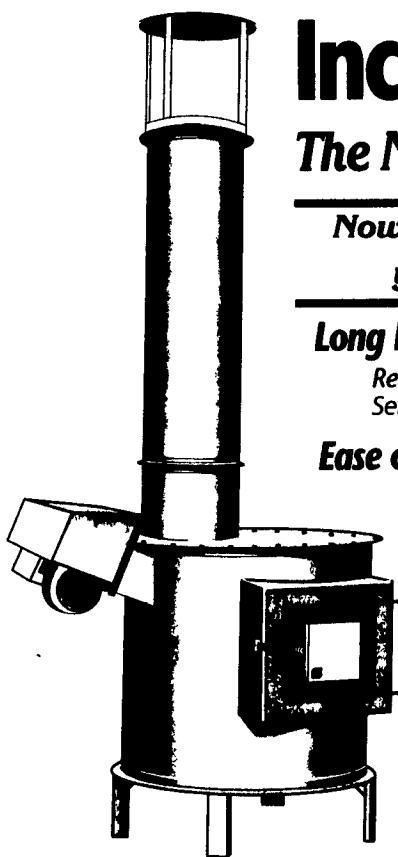
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