Farmers Must Reconsider Application, Use Of Pesticides

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LANCASTER (Lancaster Co.) — Traditions often die hard, but some traditions are worth changing because of the long-range environmental impact they may have on us all.

In the past, when applying pesticides to their field, many farmers sometimes passed over a sinkhole and thought little of it. The boom sprayer stayed on, or the manure applicator kept rotating. But now, geologists know that sinkholes are a direct source to groundwater — and that water could be you or your neighbor's homestead well water.

That's the message delivered on Tuesday to those attending the 31st annual Lancaster County Crops and Soils Day. John Yocum, head of the Landisville Southeastern Agronomy Research Laboratory, spoke on the topic, "Limiting the Environmental Impact of Pesticides."

"If we didn't have a problem, we wouldn't have to limit the impact," said Yocum. Yocum spoke about recent studies undertaken by various agencies that discovered that, indeed, some herbicides were turning up in wells.

Perception of problem

"Although we have not found very many wells that are above the advisory levels . . . there is a perception of a problem here," he said.

While the evidence of pesticides showing up in wells is extremely low, the public perceives it as a problem that agriculture must address.

He spoke about a Midwest study of pesticide contamination of wells that examined about 430 wells and found that only 13 percent had evidence of pesticide contamination. In the Mississippi River area, samples were taken at various areas and researchers determined that atrazine was detected year-round in most of the sample locations.

"They calculated that 1 percent of the applied atrazine out there in the Midwest on those farms would up at the mouth of the Mississippi," said Yocum. "That's not good, no matter how you look at it."

Watching application site

In this area, according to Yocum, farmers must concentrate on watching the application site and being especially careful about surface water pollution. Nitrates from manure are also of top concern, a problem that farmers must learn to manage.

Also, the methods in which farmers apply pesticides have to be carefully considered. Yocum stressed the importance of safety when applying pesticides.

In some cases, farmers carelessly fill their sprayers with a garden hose and don't use some type of flow restrictor.

"And some of that happened in Lancaster County this past year," he said, "where people were filling sprayers with garden hoses and it backsiphoned and they wound up with spray materials in their wells."

Prevent backsiphoning

A restrictor or some type of flow check valve is critical to prevent backsiphoning into the well.

It could happen that, in certain instances, a hose used to fill the pesticide tank could be lying there, and "somebody comes into the farm during the summer when it's hot and dry, they pick up that hose and try to take a drink of water, don't they?"

Certain wells that are hand-dug rather than concrete-cased can fall victim to pesticide or nitrate pollution. Yocum said farmers should make sure the pesticide mixing and storage sites are at least 50 feet away from the well head and the well be protected with casing. Also, containers should be disposed of properly, away from ponds and other sources of groundwater infiltration.

Also, following good conservation practices is the key — by keeping soil erosion from carrying the herbicides and nitrates to a water source. "Maybe we need to do less moldboard plowing, more chisel plowing, or more no-tilling so that we have more residue on the surface."

Be more conscientious

Yocum advised the farmers to be more conscientious in managing the soil. "Don't plow right out against the road," he said, because rain drainage can easily carry the soil and any pesticides or nitrates applied to groundwater sources. Grass buffer zones should be used near roadways, ponds, and creeks.

"I think we need to do some of these things on our own before they're dictated to us," he said.

Yocum discusssed several studies that indicated that pre-emergent pesticides are more likely to leach to groundwater than those applied post-emergence to a plant that is growing. Also, several new technological developments are paving the way to more safety both for farmers and the environment, including:

- New 2½ -gallon no-glug pesticide containers that contain air sections to prevent glugging, which may be safer to use and less likely to cause a spill.
- Laminated pesticide bags which are easier to use, won't wet the pesticide, and can be incinerated.
- "Lock and load" systems which are made to easily attach to mixing tank or drop tank to drop pesticide directly to applicator hopper (a totally closed system).
- Soluable packs, which contain the exact amounts of needed pesticide which, when dropped into the tank, readily dissolve. There's no container to dispose of and no contact to the farmer.
- Returnable containers, which some companies are working on to reuse. The farmer would simply return the containers for a refund.

"The nice thing about these is that you don't have to handle the pesticide," said Yocum.

Plants stressed

"Very seldom a year goes by where the plants aren't stressed — they're either too wet, too dry, too cold. . . ." said O. Elwood Hatley, Penn State agronomist, who spoke about "Cropping Strategies for Environmental Stress."

To combat what may turn out to be another dry year much like 1991, for 1992 the best defense is a good set of records and knowing what types of crop to plant under certain soil conditions, according to Hatley.

"1991 was a stressful year on plants," he said. "Even though we don't know what the summer holds out there, I can tell you right now, the time when we'll have the hottest and driest period of the year . . . if we're going on probabilities, that's probably July and August."

Corn and any other plants are most sensitive to drought and heat stress during their early reproductive phases. For corn, that comes about 60 days after emergence, at silking and pollination. During that time, a window of 10 days opens when the plant can recover if enough rainfall occurs.

Soybeans sensitive

Soybeans are most sensitive at early pod set. In 1991, many of the flowers fell off because of a lack of moisture. At planting, where the seeds require substantial moisture, is another critical time.

Farmers must keep careful records of their soil types and records on a yearly basis on how crops were affected by rainfall in order to more adequately prepare for a possible dry and stress-filled growing season.

Also, the weather patterns we are in now, with the El Nino effect and the cycling nature of Pennsylvania patterns, dictate that farmers more carefully consider soil types, planting conditions, and selecting appropriate hybrids to deal with times of possible plant stress.