

form of N is adsorbed by soil particles and is less subject to leaching. However, ammonium N is converted to nitrate N in the soil, and this can occur quite rapidly. Note that urea, a common form of fertilizer N, is converted in the soil to ammonium and then to nitrate.

Appropriate management practices can reduce the likelihood of nitrate leaching. Any time large amounts of N are applied, significant leaching can occur if there is heavy rain. By applying some of the needed N at planting and the rest during one or more topdressings, you can avoid having large amounts of nitrate present at any one time. Not only can this reduce leaching, it can improve production by providing N during periods of greatest crop uptake.

Nitrogen left over in the soil at the end of the season is highly subject to leaching. A cover crop should be planted to take up unused N. The N will again become available for future crops as the cover crop breaks down.

Contact Cooperative Extension and the Natural Resource Conservation Service about questions you may have regarding the use of certain pesticides on your soils.

Know Your Water

The pH of the water in your tank mix can sometimes affect the efficacy of pesticides. Insecticides, in particular, have a tendency to break down (hydrolyze) rapidly in alkaline water. Water pH can

vary, depending on the source, from 5.0 to 9.5. Neutral water has a pH of 7.0, while alkaline water is higher than 7.0. If your water pH is much higher than 8.0, you may want to consider using an acidifying agent such as vinegar to lower the pH in the tank. Many of the pH-sensitive pesticides have acidifying agents in the formulation that moderate the effect of alkaline water. However, growers who suspect a pH problem should have their water tested. This can be done on the farm with pH test kits. Also, organic matter can tie up certain pesticides or clog nozzles.

Fumigation: Materials and Risks

The practice of soil fumigation, while providing significant benefits as outlined above, also carries with it significant risks. One such risk is reintroducing pathogens on transplant material or farm equipment. This can cause a phenomenon called “the boomerang effect” in which a pathogen is (re)introduced in a partially sterilized soil and proliferates rapidly because checks and balances no longer exist in that soil. In such a case, the resulting epidemic is worse than if the soil had never been fumigated. So, it is very important to take care to plant very clean transplant material and to use only clean equipment when working in a newly fumigated field.

Fumigation is also a costly practice, one which a

Table 9. Fumigant rates and spectrums of activity.

Common Name	Trade Name	Rates/A	LEVELS OF CONTROL			Comments
			nematodes	fungi	weeds	
metam-sodium	Vapam HL	37.5-75.0 gal	yes	yes	yes	Water-soluble liquid that decomposes to a gaseous fumigant. Efficacy affected by soil moisture, temperature, texture, and organic matter content.
dazomet	Basamid	265-350 lb	yes	yes	yes	Granular product. Incorporate thoroughly in soil. Toxic gasses released following absorption of soil moisture by product. Affected by same factors as metam-sodium. 365 days-to-harvest limitation.
1,3 dichloropropene	Telone II	15-27 gal (annual plantings) 27-35 gal (perennial plantings)	yes	no	no	Liquid that diffuses as a gas through soil. Effective against nematodes and insects. Rates vary with soil texture; efficacy strongly affected by soil moisture and temperature
1,3 dichloropropene + chloropicrin	Telone C17 Telone C35	32.4-42.0 gal 39-50 gal	yes yes	yes yes	no* no*	Most effective for control of weeds, soil-borne diseases; nematodes, and insects; requires plastic seal; highly toxic.

*Sealing with plastic and/or using higher rates may also result in good weed control
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