WASHINGTON STATE UNIVERSITY
WHATCOM COUNTY EXTENSION

Taken from and additional images at: http://whatcom.wsu.edu/ag/aminopyralid/

Aminopyralid Residues in Compost and other Organic Amendments

Pepper, 2010

Background
Effects of aminopyralid residues in dairy organic matter (manure, composted manure, silage) applied to broadleaf crops on farms and gardens in Whatcom County have been seen in 2009 and 2010. Aminopyralid is an auxinic herbicide that will cause damage to sensitive broadleaf plants such as tomato, beans and peas; these plants will usually not die, but will produce no or few, low quality fruit.

What is aminopyralid?
Aminopyralid is a broadleaf herbicide registered for use on grassland and rangeland. It is registered under several product names to control many broadleaf weeds, including invasive and noxious weeds, on grass crops as rangeland, permanent grass pastures, as well as non-cropland areas.

Why is aminopyralid used?
It has long-lasting effects against target weeds when applied at low rates. Aminopyralid has low toxicity to humans and animals.

How did aminopyralid get into my compost/manure/topsoil mix?
Aminopyralid was probably used to control weeds on grassland for dairy farms. The grass was cut and fed to dairy cattle. Aminopyralid in the feed does not harm livestock and is rapidly excreted in urine and manure. Manure is often separated into solid and liquid portions on the dairy farm. The soilds are collected from the dairy and distributed to a farm (to be applied directly as organic matter and nutrient source) or to a composter (to produce compost for farms and gardens). Aminopyralid breaks down slowly or not at all in the digestive system of a cow or in the composting process, instead remaining with the organic matter through the process.

Dairy manure is a significant component of compost in Whatcom County and manure solids are distributed throughout the county as an organic soil amendment. It is often used in "topsoil" mixes, such as "3-way" or "5-way" mixes, for use in home gardens and landscapes.

What can herbicide residues do to my plants?
Residues of aminopyralid in manure, composts or soils can cause damage to sensitive plants at levels as low as 1 part per billion. Some plant species are more sensitive than others, but all broadleaf plants are considered sensitive to this molecule. Damage includes cupped leaves, twisted stems, distorted apical growing points, and reduced fruit set.

Are fruits and vegetables grown in aminopyralid contaminated soil safe to eat?
According to Dow AgroSciences, "If aminopyralid has been introduced into your garden, and plants are showing symptoms of herbicide damage consistent with aminopyralid, but produce a harvestable yield, these inadvertent aminopyralid residues are at a level low enough that you can eat the produce from the garden. Produce from the garden cannot, however, be sold."

How do I know if my organic matter is safe?
Before planting in soil that contains organic matter from a dairy, perform a bioassay. This entails growing a small number of the desired plant in the soil or media to be used; the plants should be grown to full maturity to determine if damage will occur. The bioassay should be performed before the organic matter is applied to the farm or garden, but can also be done after the organic material has been added to your field, garden or landscape. This can be done by planting seeds of plants with known susceptibility, such as peas, beans or tomatoes, in small pots with a mix of suspicious material and peat based potting mix. For instructions for this bioassay, see the WSU publication at:
http://www.puyallup.wsu.edu/soilmgmt/Pubs/CloBioassay.pdf

What can I do if I know that my organic matter contains herbicide residue?
Aminopyralid is slowly broken down by microorganisms commonly found in soil. If organic matter is found to contain herbicide residues, it should be incorporated into the soil and irrigated heavily; a second and third mixing with the soil may speed the decomposition of the material. An additional bioassay should be performed before planting a new broadleaf plant into the material.

Other options may be to 1) plant a cover crop (such as winter wheat), then remove the plants to either burn them or shred and apply them to a non-sensitive area, 2) plant crops that have a higher tolerance to aminopyralid, or 3) remove the organic material that was applied and spread it on a non-sensitive crop area, such as grassland.

What is being done to reduce the impact of this issue?
Washington State University Extension is working with Washington State Department of Agriculture and other agriculture organizations to determine the best way to use remaining dairy derived organic matter containing aminopyralid residue. It is expected that the use of aminopyralid on dairy forage crops will be greatly reduced to lessen the risk of contaminated organic matter in the future. Residues may remain in the soil, plant tissue, and dairy waste for another year or more; the farming and gardening communities need to work together to fully understand this issue and take steps to manage it.

Colleen Burrows and Craig MacConnell; June 29, 2010

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