Herbicide Carryover in Manure and Hay

Many farmers and home gardeners report damage to their vegetables after applying livestock manure to their soils for a fertilizer source. The symptoms of herbicide carryover exposure include poor seed germination, death of young plants, twisted elongated leaves, misshapen fruits, and of course reduced yields. Exposure to disease, pests, and other pesticides can cause similar symptoms in the garden. Common broadleaf herbicides like Grazon, Trooper P+D, Surmount, Milestone, and others have shown to carryover from manure and effect plant life in the soil. These products are registered for use in pasture and hay fields but if livestock are exposed to these forages improperly, the manure may contain a concentrated dose of herbicide. Livestock consume the forages or hay and pass the chemical unprocessed through the body. The manure is then harvested for a fertilizer source and contaminates the soil it is exposed to with carryover herbicide and ultimately effects plant life.

The chemicals of greatest concern for carryover issues are picloram, clopyralid, and aminopyralid because they remain active in hay, grass, manure, and garden soil for an unusually long time. Some reports show the herbicide surviving up to 3 years in hay in a dark barn. These herbicides eventually break down over time through heat, moisture, microbes, and sunlight but the deactivation period is highly variable. The point to remember is to ask your manure source what herbicides were applied and to avoid potential risks associated with herbicide carryover.
Ivermectin Resistance for Internal Parasites

Recent studies at the University of Arkansas have identified parasite resistance to ivermectin. A group of 100 heifers were randomly assigned to three treatment groups to see the parasite control efficacy of Valbazen drench, injectable Ivomec Plus, and injectable Noromectin Plus which is a generic. Remember that a practical definition of resistance is a failure to kill greater than 90% of the parasite burden. To see the parasite population of the cattle, a fecal sample was pulled prior to treatment and at day 17 and day 28 after exposure to the Ivermectin products. The study concluded that Valbazen drench held parasite control up to 97% for up to 28 days. The brand name Ivomec Plus performed significantly better (83%) than the generic Noromectin but still showed a significant loss of effectiveness (45%) at day 28 post treatment. Noromectin (generic) underperformed throughout the entire study with 60% control at day 17 and 30% at day 28.

To sum it up, avoid the use of generic dewormers on the cattle operation. It will give very low results and will increase parasite resistance within the herd. If you look at the treatment costs per head, Valbazen costs the same to treat a 550 lbs calf and $0.49 less to treat per cow with effective control. The trick to internal parasite control is to control the problem and not to create one.

<table>
<thead>
<tr>
<th>Price to Treat per lbs.</th>
<th>Valbazen</th>
<th>Ivomec Plus</th>
<th>Noromectin-generic</th>
</tr>
</thead>
<tbody>
<tr>
<td>550 lbs</td>
<td>$1.76/head</td>
<td>$1.75/head</td>
<td>$0.90/head</td>
</tr>
<tr>
<td>1100 lbs</td>
<td>$3.36/head</td>
<td>$3.85/head</td>
<td>$1.98/head</td>
</tr>
</tbody>
</table>

![Graph showing parasite control effectiveness over time]
Tank Mixing Equation

No single aspect of spray application is as important and so abused as sprayer calibration. There is no way to accurately apply a herbicide without calibrating the sprayer and figuring the tank mix. Using the following method and example, you can calculate quickly, so do it!

The number one rule to tank mixing with this equation is knowing how many acres that the tank will cover for broadcast application. Without knowing this fact, tank mixing is a shot in the dark. The cheapest and most efficient way to figure out how many acres that can be covered is to go through the steps to calibrate the sprayer. The sprayer will not perform the same each year or even between each application so this is important. But if you have used the sprayer and have an idea of how many acres can be covered, then the following example will enable you to quickly figure the tank mix.

Divide tank capacity or the size of the tank by the calibrated gallons per acre. This is the number of acres the sprayer will cover with each spray. Multiply the recommended rate of the herbicide by the acreage the sprayer can cover to get the amount of herbicide to be put in the tank.

Example 1

Tank Capacity-200 gallons

15 gallons per acre (gpa)

Recommended Herbicide Rate-1 quart/A

1 quart X 13.3 acres = 13.3 qts per tank

Example 2

Tank Capacity-500 gallons

13 gallons per acre (gpa)

Recommended Herbicide Rate-2 pints/A

2 pints X 38.5 acres = 77 pts per tank

Figure Your Own Tank Mixture Below

Tank Capacity________

Tank Capacity _______ / _______ gpa= _______ acres covered

____ gallons per acre (gpa)

Recommended Herbicide Rate-_______/A

Recommended Herb. Rate_______ x _______ acres covered

= _________ to be mixed per tank
Pasture Weed Control-
Buttercup (Ranunculus spp.)

As the warm spring days continue to occur more often, I anticipate a sea of yellow flowers to bloom throughout the fields of Arkansas. These noxious weeds known as Buttercups are a common sign of infertility and spread aggressively across pastures. The largest issue with buttercups is once you see the flower bloom, it is too late to spray because the problem has already hit and they will be back next year.

Buttercups are annuals that grow throughout the winter and compete aggressively in ideal conditions and love to choke out desirable forages. February and March are the ideal time to spray for these nuisance weeds. An application rate of 1-2 pints per acre of 2,4-D amine does shows excellent control for buttercups.

One interesting fact about buttercups is that they are toxic to all species of livestock and pose a risk of dermatitis in humans if handled frequently. The toxin is released once buttercups are injured (chewed, mowed). This toxin creates symptoms of mouth and intestinal blistering, diarrhea, colic, and death in extreme cases. Fortunately, buttercups are unpalatable and will not eat it unless there is no other food source available. Once the toxin is dried, it does not pose a threat and is of no concern in hay.

Picture courtesy of University of Maryland-Extension