

# Does Sprayer Tank-Mix pH Effect White Grub Insecticide Performance?



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Some pesticides are sensitive to alkaline (basic) conditions and can be rapidly broken down (hydrolyzed) in the spray tank. For example, trichlorfon is especially sensitive to deactivation hydrolysis. Rarely does low (acidic) pH cause a problem. To minimize the problem of hydrolysis, most insecticides that are sensitive to pH have buffers added to the product formulation to stabilize the pH near neutral (pH = 7). In general, tank mixes should be maintained near neutral or slightly acidic. Tank mix pH can be easily checked with an inexpensive pH meter, or indicator papers that change according to pH. In the event that the spray tank solution pH is above 7.0, a commercial buffering agent should be added to adjust the pH downward to the 6 - 6.5 range. Most pesticides that are affected by pH will indicate or state so on the label. Additionally, agitation and warming can cause spray tank solution pH to change during the day, especially when fertilizers and other chemicals are added. Subsequently, it is advantageous to apply the tank mix spray immediately or soon after mixing. Should the tank mix be permitted to sit for a measurable period of time (i.e., > 2 hours), it is recommended that pH reading be taken and the spray tank solution be appropriately adjusted.

To save valuable time, many turfgrass managers often combine two or more pesticides, or a pesticide and a fertilizer or other related turfgrass products so they can be applied at the same time. On occasion, chemicals can be incompatible, causing deactivation of one or all of the pesticides, clumping, severe separa-

tion, or undesirable gelling in the spray tank. Combining or tank mixing products can drastically alter or change the spray tank pH, subsequently affecting the performance respective product(s) by hydrolysis.

A study was conducted to evaluate the effect that spray tank-mix pH had on two widely used white grub insecticides: halofenozide (Mach 2®) and imidacloprid (Merit®). Both Mach 2 and Merit were evaluated at four pH levels: 5.0, 7.0, 7.6, and 9.0. Each respective insecticide treatment was exposed to respective spray tank-mix pH for a period of 72 hours before the application was made to the turf prior to Japanese beetle oviposition (egg-lay). The results of this study suggest that spray tank-mix pH has no adverse or negative affect on the performance of halofenozide or imidacloprid (Table 1.)

Table 1. Effect of Tank Mix pH on the Efficacy of Mach 2 and Merit for Control of Japanese Beetle Larvae.

Treatment	pH	Rate (lbs. ai/A)	% Control
Mach 2 2SC	5.0	1.5*	100
Merit 75WP	5.0	0.3	98.9
Mach 2 2SC	7.0	1.5*	97.2
Merit 75WP	7.0	0.3	100
Mach 2 2SC	7.6	1.5*	98.6
Merit 75WP	7.6	0.3	100
Mach 2 2SC	9.0	1.5*	100
Merit 75WP	9.0	0.3	100

\* The current labeled rate for halofenozide (Mach 2) is 2.0 lbs. ai/A (2.9 fl oz of product /1000 ft<sup>2</sup>).

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