Pesticide Half-Life Chart

Adjusting the pH of the spray solution can reduce pesticide decomposition and make the spray more effective. The following chart shows the Pesticide Half-Life or the time it takes for half the amount of chemical to be decomposed (made inactive) at various pH levels.

Pesticide Product	Buffering*	Optimum pH	Half-Life at pH indicated (50% decomposition)					
			9.0 Alkaline	8.0 Alkaline	7.0 Neutral	6.0 Acidic	5.0 Acidic	4.5 Acidic
2, 4-D Amine		6.0			Stable at pH 4.5 - 7.0			
Aliette*		4.0		Stable at pH 3.0 - 5.0				
Ambush		6.0			Stable at pH 5.0 - 6.0			
Asana*	X	4.0			More Stable in Acidic Conditions			
Atrazine		7.0						
Banvel*	X	5.5				Stable at pH 5.0 - 6.0		
Bayleton*		7.0	Stable Over Wide Range of pH					
Bravo*		7.0	Stable Over Wide Range of pH					
Captan*	X	5.0		10 Minutes	8 Hours		32 Hours	
Chloropyrifos		6.0		1.5 Days	35 Days	12 Hours		63 Days
Daconil* 2787		7.0	Stable Over Wide Range of pH					
Dacthal*		7.0	Hydrolyzed in Strong Acid and Alkaline					
Danitol		6.0			Stable at pH 5.0 - 7.0			
Diazinon		7.0	29 Days	21 Days	0 Days		14 Days	8 Days
Dimethoate	X	5.0	48 Minutes			12 Hours		20 Hours
Dipel* (Bt)		6.0	Unstable in pH>8					
Diquat*		6.0			Stable in Neutral or Acid Solutions			
Dithane		7.0			Stable in Neutral or Acid Solutions			
Diuron		7.0		Stable in Neutral or Acid Solutions				
Furadan*		5.0	78 Hours			8 Days		
Fusilade*		7.0	17 Days		147 Days			455 Days
Gibberellic Acid	X							
Glyphosate	X	5.5						
Goal*		7.0			Stable in Neutral pH			
Gramoxone		6.5	Unstable in pH>7					
Guthion*	X	5.5	12 Hours		10 Days		17 Days	
Imidan*	X	5.0		4 Hours	12 Days		7 Days	13 Days
Kelthane*	X	5.5	1 Hour		5 Days		20 Days	
Kocide		7.0						
Krovar		7.0						
Lannate*		6.5					Stable in Slightly Acid Water	
Lorsban*		7.0		1.5 Days	35 Days		63 Days	
Malathion	X	5.0	5 Hours	19 Hours	3 Days	8 Days		
Maneb*	X	5.5	34 Hours		17 Hours		20 Days	
Manzate		6.0						

Pesticide Half-Life Chart (Continued)

Pesticide Product	Buffering*	Optimum pH	Half-Life at pH indicated (50% decomposition)					
			9.0 Alkaline	8.0 Alkaline	7.0 Alkaline	6.0 Acidic	9.0 Alkaline	4.5 Acidic
Monitor*	X	5.5	Decomposes Rapidly at pH>7					
Nemacur*		7.0	8 Days		700 Days			40 days
Orthene*	X	7.0	16 Days		46 Days		40 Days	
Parathion Ethyl		7.0		25 Hours	120 Days			
Pendimethalin		6.2	Stable Over Wide Range of pH					
Permethrin		6.0			Stable at pH 5.7 - 7.7			
Poast*		7.0	Stable at pH 4.0 - 10.0					
Pounce*		6.0			Stable at pH 5.7 - 7.7			
Princep*		6.0	24 Days				96 Days	20 Days
Prowl		6.5						
Ridomil		4.0						
Roundup*	X	5.5				Stable at pH 5.0 - 6.0		
Rovral*		7.0	Rapid Hydrolysis at pH>8					
Sencor*		6.5	Stable at pH 5.0 - 9.0					
Sevin*	X	7.0	24 Hours	2.5 Days	24 Days	100 Days		
Simabine		6.0						
Solicam		6.0 - 7.0						
Subdue*		7.0	Stable Over Wide Range of pH					
Surflan*		7.0	Stable Over Wide Range of pH					
Terrachlor*	X	5.5	Rapid Hydrolysis at pH>7					
Thiodan*		6.5	Some Alkaline Hydrolysis					
Topsin M		7.0						
Treflan*		7.0	Stable Over Wide Range of pH					
Trimec*		7.0					Avoid pH 5.0 or Less	
Ultra Flourish		7.0						
Vendex*		7.0	Not Stable at pH>7		Stable Over Wide Range of pH			
Vydate*	X	5.0	30 Hours				Stable at pH 4.7	
Weedar		6.5						

- For most pesticides, the optimum pH is in range of 5.0 - 6.5 (slightly acidic).
- *An (X) in the buffering column denotes that the use of a buffering agent should produce significant agronomic gains.
- Check with the respective manufacturer's label for recommended pH levels. Many factors determine the efficacy of sprays, therefore, it is not possible to guarantee any combination or results accordingly. The following factors are involved with chemical performance: pH; temperature; solubility; concentration; type of agitation; humidity; mixture time in tank; and time of day of application. The above pH half-life information has been obtained from various manufacturers, universities, and state agricultural sources.
- Data Sources: University of Massachusetts, Ohio State University, North Carolina Ag Extension, and Product labeling.