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**SPREAD-RITE, INC.**  
CUSTOM SPREADING  
FERTILIZER • DOLOMITE • ARAGONITE

LAMAR SAPP

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PLANTATION, FL 33317

## Acidifying Agent, Acidifier or Buffer

Acid adjuvants to lower the pH of alkaline spray solutions. Spray water pH should be around pH 6.0 for best results with most pesticide chemicals. An acidifier with buffering action not only lowers the pH but also helps maintain a desired pH range.

Alkaline water, even mildly alkaline, causes alkaline hydrolysis (degradation) of many pesticide chemicals, some in less time than it takes to put out a tank of spray. This problem is much more serious than is generally recognized.■

## pH Effect On Pesticides

A large number of commonly used pesticides are decomposed quite rapidly in water containing detectable amounts of alkalinity. This decomposition is due to a reaction called alkaline hydrolysis in which the pesticide molecule is split by the water and converted to an inactive form. The rate of decomposition is determined by the chemical make-up of the pesticide and is different for each compound. The reaction in all cases proceeds more rapidly as the pH of the water increases (becomes more alkaline). Organophosphate and carbamate insecticides are the principal types of materials affected in this manner. In areas where water supplies are alkaline (pH over 7.0), pesticide decomposition can proceed at a rate rapid enough to affect the degree of insect control obtained. This decomposition can be slowed or prevented by adjusting the pH in the range 4-6 (slightly acidic). Pesticides applied from solutions having a pH in this range will undergo the minimum amount of alkaline hydrolysis, and spray solutions will contain the maximum amount of active ingredient for pest control.

A list of pesticides which are subject to alkaline hydrolysis is given below. The list is incomplete. The information has been obtained from manufacturers and from various technical publications. Where such information is available, it is reported in terms of "half-life" or "time for 50% hydrolysis", i.e., the time required for 50% of the active ingredient to hydrolyze to inactive material in an aqueous solution have the indicated pH at a temperature of 25°C. The reaction proceeds more rapidly as the temperature increases.■

### *Effect Of Hydrolysis On Some Commonly Used Pesticides*

Chemical	Common Name	pH	Half-life (50% hydrolysis)
Cygon	dimethoate	6.0	12 Hours. Unstable in alkaline water
Diazinon	diazinon	6.0	37 hours. Hydrolysis rapid in strong acid or alkaline water
Dylox	trichlorfon	8.0	63 minutes
		7.0	6½ hours
		6.0	3.7 days
Guthion	azinphos-methyl	9.0	12 Hours
		5.0	17.3 days
Imidan	phosmet	8.0	4 hours
		7.0	12 hours
		4.5	13 days
Lannate			
Nudrin	methomyl		Stable only in slightly acid water
Enthyl Parathion	parathion	11.0	170 minutes
		10.0	29 hours
Sevin	carbaryl	9.0	24 hours
		8.0	2½ days
		7.0	24 days
Benlate	benomyl	7.0	1 hour
		5.6	Over 30 hours
Bravo	chlorothalonil	7.0	72 minutes
		6.0	6.8 hours
Captan	captan	10.0	2 minutes
		4.0	4 hours

W.M. Coli. S. A. Weis, J. M. Clark, University of Massachusetts, Amherst. "Does The pH Of Your Spray Tank Mix Influence Pesticide Efficacy?"■