



Optimum Pesticide Performance Directions Using pHase5

Updated 7.1.07

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With the loss of some tried and true pesticides from our arsenal more pressure has been placed on the existing chemistry. Resistance to various insecticides, fungicides and herbicides has caused us to re-evaluate our pest management programs with an eye towards fine-tuning them for maximum effectiveness and wise stewardship of the active ingredients.

It has never been more important to insure that the chemical applications we make are as effective as possible. Most pesticides are expensive and our time is valuable. Each pesticide application needs to be made under conditions that will yield maximum control. An area that deserves more attention is the effect that water quality has on the efficacy of many pesticides. The pH and hardness (calcium and magnesium content) of the water source used for spraying pesticides can have a significant effect on the ability of certain products to do their jobs. Hydrolysis is the term used to describe the process that begins to degrade pesticides after they are added to water. For many pesticides this process is accelerated by high pH water. In some cases this decrease in activity happens quickly.

pHase5 utilizes a color change to indicate the changes in pH that are taking place as you add the product. If your goal is pH of 5 add product until the water turns pink or red (depending on the hardness of your water). A pH of 6.0 is satisfactory for many pesticides and can be achieved by just adding enough pHase5 to cause the spray water to turn orange. pHase5 also negates the effects of high calcium and magnesium associated with hard water sources. The harder the water source the more product it takes to achieve the desired pH and pHase5 takes the guess work out of the process with the easily observable color change. This process should take place before the chemical is added to the spray tank.

Additional benefits from pHase5

- Contains a surfactant to reduce surface tension increasing pesticide coverage and decreasing visible residue from wettable powders. **Caution:** Do not add additional surfactant if you are already using pHase5 as this could cause a phytotoxic reaction. Some pesticide labels specify that no surfactant should be used with that product.
- Aids in compatibilities of tank mixes. (Test all tank mixes for safety before wide scale use and never attempt tank mixes forbidden on the pesticide label.)

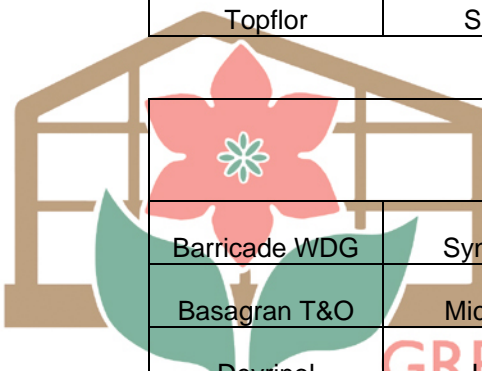
We believe this information is correct but the pesticide user must always read and follow label directions. No endorsement is implied by inclusion in this document. Products other than those listed may be effective.

Check the following tables to find the chemical manufacture's recommendation for the ideal spray water pH for their products:

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
<u>FUNGICIDES</u>			
Actinovate SP	Natural Industries	5.5 - 8.5	Optimum pH for the organism is 7.2 spray water can be anywhere between 4.0 - 10.0. Ideally 5.5 – 8.5.
Aliette	Bayer	6.0	--
Allban	Scotts	5.0 - 8.0	
Alude	Cleary's	6.0 - 7.0	Alude (Phosphorous Acid) will have a tendency to buffer tank solutions to 6.3 range at the 16 - 32 oz/100 gal rate.
Banner Maxx	Syngenta	4.0 - 9.0	
Camelot	Whitmire	6.0 or higher	
Captan 50WP	UPA Northwest	5.5 - 7.0	
Chipco 26019	OHP	4.5 - 8.0	
Cleary 26/36	Cleary	6.0 - 7.0	
Cleary 3336-F	Cleary	6.0 - 7.0	pH of less than 7.5 is OK
Cleary 3336-WP	Cleary	6.0 - 7.0	pH of less than 7.5 is OK
Clevis	Prokoz	6.0 - 9.0	
Compass 50 WG	OHP	3.0 - 7.0	
Companion	Growth Products	4.0 - 8.0	
Contrast 70 WSP	Scotts	5.0 - 8.0	
Cygnus WDG	BASF	4.0 - 8.0	
CuPro	Sepro	6.5 - 7.5	
Daconil Ultrex	Syngenta	6.5 - 7.5	
Daconil Weather-Stik	Syngenta	6.5 - 7.5	
Decree 50 WDG	Sepro	5.5 - 6.5	Not critical, avoid high pH
Eagle	Dow	6.5 - 7.5	

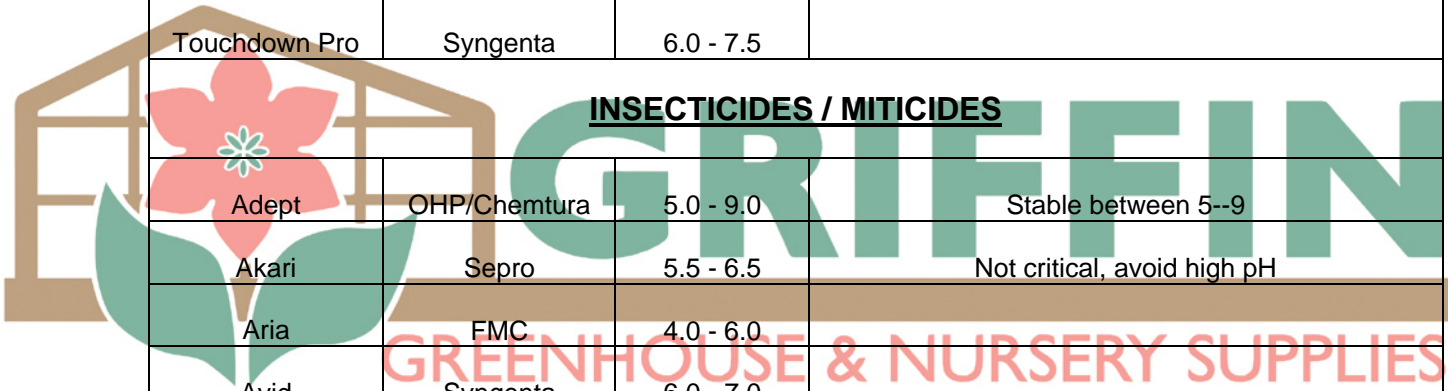
<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
<u>FUNGICIDES</u>			
Endorse	Cleary's	6.0 - 7.0	
FenStop	OHP	5.5 - 6.5	
Heritage	Syngenta	7.0	
Insignia	BASF	4.0 - 8.0	
Kocide 2000	Sepro	6.5 - 7.5	
Medallion 50 WP	Syngenta	7.0 - 8.0	
Milstop	Bioworks	8.0	Buffered to approx. 8.1 and should not be mixed with an acid or in a solution that has buffering capacity in the acidic range
OHP 6672	OHP	4.0 - 7.0	
Phyton 27	Source Tech Bio	6.5	Both spray and dip
Pipron	Sepro	5.5 - 6.5	Not critical, avoid high pH
PlantShield	Bioworks	4.0 - 8.0	
Plantvax 75W	Cromptons	5.0 - 7.0	Hydrolyzes @ pH 7 - 9
Protect DF	Cleary	pH not a factor	Chemical stable between 4-8
Rubigan EC	Sepro	5.5 - 6.5	Not critical, avoid high pH
Rhapsody	Agraquest	pH not a factor	
Serenade	Agraquest	pH not a factor	
Sextant	OHP	6.0 - 7.0	
Spectro WDG	Cleary	6.0 - 7.0	pH of less than 7.5 is OK
Stature DM	BASF	4.0 - 8.0	
Strike 50% WDG	OHP	3.0 - 7.0	
Sunspray Ultrafine	Whitmire	3.0 - 8.0	
Terraclor 75% WP	OHP/Chemtura	5.0 - 9.0	
Terrachlor 400	OHP/Chemtura	pH not a factor	
Terraguard	OHP/Chemtura	7.0	Begins to hydrolyze as pH approaches 5 or 9
Triact 70	OHP	3.0 - 7.0	
Zero Tol	Bio Safe	5.0 - 7.0	pH between 3-8 efficacy will not be significantly diminished
Zyban WSB	Scotts	5.0 - 8.0	

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
<u>GROWTH REGULATORS</u>			
A-Rest	Sepro	5.5 - 6.5	Not critical, avoid high pH
B-Nine	OHP/Chemtura	5.0 - 9.0	B-Nine is acidic-pH 3
Bonzi	Syngenta	4.0 - 9.0	No degradation-these pH
Cycocel	OHP	3.0 - 7.0	
Fascination	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Florel	Monterey Chemical	5.0	Keep below 5.0
Progibb	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Sumagic	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Topflor	Sepro	pH not a factor	



<u>HERBICIDES</u>			
Barricade WDG	Syngenta	pH not a factor	
Basagran T&O	Micro Flo	8.1 - 8.8	
Devrinol	UAP	5.5 - 7.0	
Envoy	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Finale	Ago Evo	4.0 - 8.0	
Gallery 75DF	Helena	pH not a factor	
Goal 2XL	Dow	5.0 - 8.0	
Lontrel	Dow	5.0 - 9.0	
Manage 75%WDG	Monsanto	5.0 - 7.0	Not to be used w/ hard water. Needs to be less than 500 ppm Ca, Mg, & Fe
Pendulum EC	UAP Northwest	5.5 - 7.0	
Pendulum WDG	UAP	5.5 - 7.0	
Pennant	Syngenta	6.0 - 7.5	
Pennant Magnum	Syngenta	pH not a factor	

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
<u>HERBICIDES</u>			
Princep 4L	Syngenta	Above 4.0	
Reward	Syngenta	pH not a factor	
Prozalin	Prokoz	6.5 – 7.0	
Roundup Pro Dry	Monsanto	5 - 7	pH range between 5.0 -- 7.0 is OK
Roundup Pro 41%	Monsanto	5 - 7	pH range between 5.0 -- 7.0 is OK
Scythe	Dow	6.5 - 7.5	
Sureguard	Valent	pH not a factor	
Touchdown Pro	Syngenta	6.0 - 7.5	
<u>INSECTICIDES / MITICIDES</u>			
Adept	OHP/Chemtura	5.0 - 9.0	Stable between 5--9
Akari	Sepro	5.5 - 6.5	Not critical, avoid high pH
Aria	FMC	4.0 - 6.0	
Avid	Syngenta	6.0 - 7.0	
Azatin	OHP	3.0 - 7.0	
Botanigard	Whitmire	3.0 - 7.8	
Citation	Syngenta	6.5 - 7.0	
Conserve	Dow	6.5 - 7.5	
Decathlon	OHP	3.0 - 7.0	
Dipel Pro DF	Valent	6.5 - 7.5	
Discus	OHP	3.0 - 7.0	
Distance	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Duraguard ME	Whitmire	3.0 - 9.0	
Endeavor	Syngenta	7.0 - 9.0	Rapidly degrades at low pH



<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
<u>INSECTICIDES / MITICIDES</u>			
Flagship	Syngenta	< 9.0	pH around 9.0 will increase half life, pH 7.0 is best
Floramite	OHP/Chemtura	< 9.0*	*Some growers report anecdotally that Floramite is effective at a lower pH range than that listed by the manufacturer.
Hexygon DF	Gowan	5.0 - 9.0	
Judo	OHP	3.0 - 7.0	
Kelthane	Prosource One	5.0 - 7.0	
M-pede	Dow	6.5 - 7.5	
Marathon II	OHP	3.0 - 7.0	
Mavrik	Lynx	5.0 - 7.0	
Mesuroil 75 WP	Gowan	5.0 - 9.0	
OHP Insecticidal Soap	OHP	6.5 - 7.5	Calcium, magnesium and iron cause precipitate- pure water (low EC) is best
Ornazin	Sepro	5.5 - 6.5	Important to avoid high pH
Orthene 97	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Ovation SC	Scotts	5.0 - 8.0	
Pedestal	OHP/Chemtura	< 9.0	
Pylon	OHP	3.0 - 7.0	
Pyreth-it	Whitmire	3.0 - 8.0	
Safari	Valent	5.0 - 8.0	
Saf-T-Side Oil	Brant	pH not a factor	Not pH dependant
Sanmite 75% WSB	Scotts	5.0 - 8.0	
Scimitar	Syngenta	7.0	
Sevin	Bayer Chemical	pH not a factor	Avoid rally high pH around 9.0
Shuttle	Arvesta Life Sciences	6.5 - 7.0	
Sunspray Ultrafine	Whitmire	3.0 - 8.0	
Talstar GH	Prokoz	4.0 - 6.0	
Talstar N	Prokoz	4.0 - 6.0	
Talus	Sepro	5.5 - 6.5	
Tame	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Tetrasan	Valent	6.0 - 8.0	
Thionex WSP	FMC	7.0	Higher pH degrades product Lower pH will extend its half life
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Triact 70	OHP	3.0 - 7.0	
TriStar	Cleary's	5.0 - 9.0	