



## Optimum Pesticide Spray Water pH using Indicate 5 Updated 8/19/11

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Resistance to pesticides has made pest control more difficult and more expensive. It has never been more important to insure that the chemical applications made are as effective as possible. 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 efficacy of many products. 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.

Indicate 5 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 Indicate 5 to cause the spray water to turn orange. Indicate 5 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 Indicate 5 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 Indicate 5:

- 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 Indicate 5 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 by 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 safe, legal and effective.

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

## FUNGICIDES

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
Actinovate SP	Natural Industries	5.5 - 8.5	optimum pH is 7.2, spray water can be anywhere between 4.0 - 10.0
Adorn	Valent	6.0 - 8.0	
Aliette	OHP	6	
Alude	Cleary's	6.0 - 7.0	Phosphorous Acid will have a tendency to buffer tank solutions to around 6.3 at the 16 - 32 oz per 100 gal rate
Banner Maxx, Banner Maxx II	Syngenta	4.0 - 9.0	
Camelot, Camelot O	SePro	6.0 or higher	
Captan 50WP	UPS Northwest	5.5 - 7.0	
Cease	BioWorks	pH not a factor	
Chipco 26019	OHP	4.5 - 8.0	
Cleary 26/36	Cleary's	6.0 - 7.0	
Cleary 3336-F	Cleary's	6.0 - 7.0	pH of less than 7.5 is OK
Cleary 3336-WP	Cleary's	6.0 - 7.0	pH of less than 7.5 is OK
Clevis	Dow	6.5 - 7.0	
Companion	Growth Products	4.0 - 8.0	
Compass 50 WDG	OHP	3.0 - 7.0	
Cygnus WDG	BASF	4.0 - 8.0	
CuPro	SePro	6.5 - 7.5	
Daconil Ultrex	Syngenta	6.5 - 7.5	
Daconil Ultrex, Weather-Stik	Syngenta	6.5 - 7.5	
Decree 50 WDG	SePro	5.5 - 6.5	not critical, avoid high pH
Disarm O	OHP	3.0 - 7.0	
Dithane DF Rainshield	Dow	pH not a factor	
Eagle 20 EW	Dow	6.5 - 7.5	
Endorse	Cleary's	6.0 - 7.0	
FenStop	OHP	5.5 - 6.5	
Fosphite EC	JH Biotech Inc	6.5 - 7.0	
Heritage	Syngenta	7	
Iprodione E-Pro	Nufarm	6.0 - 7.0	
Kleengrow	Pace 49	4.0 - 9.0	
Medallion 50 WP	Syngenta	7.0 - 8.0	
Milstop	Bioworks	8	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 26 GT-O	OHP	6.0 - 7.0	
OHP 6672 L OHP 6672 WSP	OHP	5.0 - 9.0	
Oxidate	Biosafe	3.0 - 8.0	
Pageant	BASF	6.0 - 7.0	can tolerate 4.0 - 9.0
Palladium	Syngenta	5.0 - 9.0	
Phyton 27	Source Tech Bio	6.5	both spray and dip
Pipron	SePro	5.5 - 6.5	not critical, avoid high pH

## FUNGICIDES (cont'd)

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
Propiconazole E-Pro 14.3 Mec	Nufarm	5.0 - 9.0	
Protect DF	Cleary's	pH not a factor	stable between 4 - 8
Rootshield WP	BioWorks	4.0 - 8.0	
Rubigan EC	SePro	5.5 - 6.5	not critical, avoid high pH
Spectro 90 WDG	Cleary's	6.0 - 7.0	pH of less than 7.5 is OK
Stature DM, SC	BASF	4.0 - 8.0	
Strike 50% WDG	OHP	3.0 - 7.0	
Terraclor 400	OHP	pH not a factor	
Terraguard SC	OHP	6.5 - 7.0	begins to hydrolyze as pH approaches 5 or 9
TM & CTN E-Pro	Nufarm	6.0 - 7.0	
Transom 50 WSB	Nufarm	6.0 - 7.0	
Transom 4.5 F	Nufarm	6.0 - 7.0	
Triact 70	OHP	3.0 - 7.0	
Ultra-Pure Oil	BASF	3.0 - 8.0	
Veranda O	OHP	7	
Xeroton 3 (X-3)	Phyton Corp	4.0 - 10.0	very acidic and can lower spray water pH on it's own if alkalinity is very low
Zero Tol	Bio Safe	5.0 - 7.0	pH between 3 - 8 efficacy will not be significantly diminished
Zyban WSB	Everris	5.0 - 8.0	

## GROWTH REGULATORS

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
A-Rest	SePro	5.5 - 6.5	not critical, avoid high pH
Augeo	OHP	6.0 - 7.5	
B-Nine	OHP	5.0 - 8.0	B-Nine is acidic - pH 3
Bonzi	Syngenta	4.0 - 9.0	
Chlormequat E-Pro	Nufarm	4.0 - 9.0	
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	keep below 5.0 - check pH after mixing
Paczol	OHP	5.0 - 9.0	
Paclo Pro	Syngenta	5.0 - 9.0	
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	

## HERBICIDES

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
Barricade WDG, Barricade 4L	Syngenta	pH not a factor	
Basagran T&O	Micro Flo	8.1 - 8.8	
Devrinol 50 DF	UAP	5.5 - 7.0	
Envoy Plus	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Finale	Aventis	4.0 - 8.0	
Gallery 75DF	Helena	pH not a factor	
Glyphosate Pro 4	Monsanto	6.0 - 8.0	not pH sensitive
Goal 2XL	Dow	5.0 - 8.0	
Guardrail	QualiPro	6.5 - 7.0	
Halosulfuron Pro	Nufarm	6.0 - 7.0	
Lontrel	Dow	5.0 - 9.0	
Pendulum EC	UAP Northwest	5.5 - 7.0	
Pendulum WDG	UAP Northwest	5.5 - 7.0	
Pendulum Aquacap	BASF	4.0 - 8.0	
Pennant	Syngenta	6.5 - 7.5	
Pennant Magnum	Syngenta	pH not a factor	
ProClipse 65 WDG	Nufarm	4.0 - 9.0	
ProSedge 75 WDG	Nufarm	6.0 - 7.0	
Princep 4L	Syngenta	above 4.0	
Prozalin 4L	Prokoz	pH not a factor	best at 6.0 - 7.0
Reward	Syngenta	pH not a factor	
Roundup Pro Dry	Monsanto	5.0 - 7.0	pH range between 5.0 - 7.0 is OK
Roundup Pro 50.2%	Monsanto	5.0 - 7.0	pH range between 5.0 - 7.0 is OK
Scythe	Dow	6.5 - 7.0	
SureGuard WDG	Valent	pH not a factor	
Surflan AS	UPI	pH not a factor	
Touchdown Pro	Syngenta	6.0 - 7.5	
Tower	BASF	5.0 - 7.0	

## INSECTICIDES / MITICIDES

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
Abamectin E-Pro	Nufarm	6.0 - 7.0	
Acephate 97 UP	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Adept	OHP	5.0 - 9.0	stable between 5 - 9
Akari SC	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 - 5.0	
Benefit 60 WSP	Everris	3.0 - 7.0	
Botanigard ES 11.3%	BioWorks	3.0 - 7.8	
Botanigard WP 22%	BioWorks	3.0 - 7.8	
Citation WSP	Syngenta	6.5 - 7.0	
Chlorpyrifos E-Pro 4	Nufarm	5.0 - 8.0	
Conserve SC	Dow	6.5 - 7.5	

## INSECTICIDES / MITICIDES (cont'd)

<u>CHEMICAL</u>	<u>COMPANY</u>	<u>OPTIMUM SPRAY WATER pH</u>	<u>COMMENTS</u>
Decathlon WP	OHP	3.0 - 7.0	
Dipel Pro DF	Valent	6.5 - 7.5	
Discus N/G	OHP	3.0 - 7.0	
Distance EC	Valent	5.5 - 6.5	pH should never drop below 5 or raise over 7
Duraguard ME	BASF	3.0 - 9.0	
Endeavor WSP	Syngenta	7.0 - 9.0	rapidly degrades at low pH
Enstar II / AQ	Wellmark	4.5 - 7.0	
Flagship WG	Syngenta	< 9.0	pH around 9.0 will increase half-life, pH 7.0 is best
Floramite SC	OHP	3.5 - 8.5	GGSPRO recommends an optimum 5.5 - 6.5 for Floramite.
Gnatrol WDG	Valent	6.0 - 8.0	
Hachi-Hachi	SePro	5.5 - 8.0	
Hexygon DF	Gowan	5.0 - 9.0	
Judo	OHP	3.0 - 7.0	
Kontos	OHP	4.0 - 7.0	
Lada	Rotam	5.0 - 7.0	
Lucid	Rotam	4.0 - 7.0	
M-Pede	Dow	6.5 - 7.5	
Mallet 2F	Nufarm	5.0 - 9.0	best at pH 7.5
Marathon II	OHP	3.0 - 7.0	
Mavrik	Lynx	5.0 - 7.0	
Menace GC-F	Nufarm	5.0 - 9.0	
Mesurol 75 WP	Gowan	5.0 - 9.0	
Molt-X	BioWorks	5.5 - 6.5	
Mycotrol O	BioWorks	3.0 - 7.8	
Naturalis L	OHP	5.0 - 13.00	
Nemasys	Becker Underwood	4.0 - 8.0	
Nemashield	BioWorks	4.0 - 8.0	
Ornazin EC	SePro	5.5 - 6.5	important to avoid high pH
Ovation SC	Everris	5.0 - 8.0	
Overture 35 WP	Valent	5.0 - 9.0	not pH sensitive
Pedestal SC	OHP	> 9.0	
Pylon EC	BASF	3.0 - 7.0	
Safari 20 SG	Valent	5.0 - 9.0	not pH sensitive
Saf-T-Side Oil	Brant	pH not a factor	not pH dependent
Sanmite 75% WP	Everris	5.0 - 9.0	
Scimitar	Syngenta	7.0	
Sevin	Bayer Chemical	> 9.0	
Shuttle O	OHP	4.0 - 7.0	
SuffOil-X	Bioworks	pH not a factor	
Talstar Pro	Prokoz	4.0 - 6.0	
Talus SC	SePro	5.5 - 6.5	
Tame 2.4 EC	Valent	5.5 - 6.5	pH should never drop below 5 or above 7
Tetrasan WDG	Valent	6.0 - 8.0	
Triact 70	OHP	3.0 - 7.0	
TriStar 30 SG	Cleary's	5.0 - 9.0	
Ultra-Pure Oil	BASF	3.0 - 8.0	