

SYSTEMS OF WEED CONTROL IN WHEAT IN NORTH AMERICA

The WSSA announces publication of the most comprehensive monograph ever published on wheat production practices and methods of managing weeds in wheat in the United States. **SYSTEMS OF WEED CONTROL IN WHEAT IN NORTH AMERICA** contains 22 chapters that total 487 pages and was prepared by 26 weed scientists who have specialized in weed management in cereals. The monograph documents spring and winter wheat production practices in different regions of North America, weed problems, and methods of managing weeds using herbicides and cultural practices.

The monograph is divided into three parts. In the first part, the distribution of weeds of wheat in North America and yield loss assessment are summarized. In the second part, wheat production practices and weed control systems are reviewed for the following regions of North America: the Canadian Prairie Provinces, the Northern, Central, and Southern Great Plains, the Northeast, the Southeast, the Pacific Northwest, and California and Arizona. Finally, the use of the following herbicides in wheat is reviewed: barban, bromoxynil, clopyralid, diclofop, difenzoquat, flamprop, picloram, propanil, substituted triazines, triazinones, and urea herbicides, sulfonylurea herbicides, triallate, and trifluralin. Each chapter on wheat herbicides summarizes knowledge of weed control, application methods, spray additives, crop response, environmental effects on weed control, combination treatments, and environmental fate.

This monograph summarizes weed control methods and research in wheat for the first time. Research conducted over the last 42 years is emphasized (1945 to 1989). The monograph should be useful to weed scientists, extension agents, other agriculturalists, crop consultants, farmers, and herbicide manufacturers, distributors, and sales personnel who are concerned with production of wheat.

SYSTEMS OF WEED CONTROL IN WHEAT IN NORTH AMERICA may be purchased for \$45.00.

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Common and Chemical Names of Herbicides

Common Name or Designation	Chemical Name
imazapyr	(±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1 <i>H</i> -imidazol-2-yl]-3-pyridinecarboxylic acid
imazaquin	2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1 <i>H</i> -imidazol-2-yl]-3-quinolinecarboxylic acid
imazethapyr	2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1 <i>H</i> -imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic acid
ioxynil	4-hydroxy-3,5-diiodobenzonitrile
isopropalin	4-(1-methylethyl)-2,6-dinitro- <i>N,N</i> -dipropylbenzenamine
isouron	<i>N'</i> -[5-(1,1-dimethylethyl-3-isoxazolyl)]- <i>N,N</i> -dimethylurea
isoxaben	<i>N</i> -[3-(1-ethyl-1-methylpropyl)-5-isoxazolyl]-2,6-dimethoxybenzamide
karbutilate	3-[[dimethylamino]carbonyl]amino]phenyl (1,1-dimethylethyl)carbamate
lactofen	(±)-2-ethoxy-1-methyl-2-oxoethyl 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoate
linuron	<i>N'</i> -(3,4-dichlorophenyl)- <i>N</i> -methoxy- <i>N</i> -methylurea
MAA	methylarsonic acid
MAMA	monoammonium salt of MAA
MCPA	(4-chloro-2-methylphenoxy)acetic acid
MCPB	4-(4-chloro-2-methylphenoxy)butanoic acid
mecoprop	(±)-2-(4-chloro-2-methylphenoxy)propanoic acid
mefluidide	<i>N</i> -[2,4-dimethyl-5-[[trifluoromethyl)sulfonyl]amino]phenyl]acetamide
metham	methylcarbamodithioic acid
methazole	2-(3,4-dichlorophenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione
methoxsulam	<i>N</i> -(2,6-dichloro-3-methylphenyl)-5-7-dimethoxy [1,2,4]triazolo[1,5- <i>a</i>]pyrimidine-2-sulfonamide
metolachlor	2-chloro- <i>N</i> -(2-ethyl-6-methylphenyl)- <i>N</i> -(2-methoxy-1-methylethyl)acetamide
metribuzin	4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4 <i>H</i>)-one
metsulfuron	2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl]benzoic acid
molinate	5-ethyl hexahydro-1 <i>H</i> -azepine-1-carbothioate
monuron	<i>N'</i> -(4-chlorophenyl)- <i>N,N</i> -dimethylurea
monuron TCA	salt of monuron and TCA
MSMA	monosodium salt of MAA
napropamide	<i>N,N</i> -diethyl-2-(1-naphthalenylloxy)propanamide
naptalam	2-[(1-naphthalenylamino)carbonyl]benzoic acid
nicosulfuron	2-[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]- <i>N,N</i> -dimethyl-3-pyridinecarboxamide
nitrofen	2,4-dichloro-1-(4-nitrophenoxy)benzene
norea	<i>N,N</i> -dimethyl- <i>N'</i> -(octahydro-4,7-methano-1 <i>H</i> -inden-5-yl)urea 3α,4α,5α,7α,7α-isomer
norflurazon	4-chloro-5-(methylamino)-2-(3-(trifluoromethyl)phenyl)-3(2 <i>H</i>)-pyridazinone
oryzalin	4-(dipropylamino)-3,5-dinitrobenzenesulfonamide
oxadiazon	3-[2,4-dichloro-5-(1-methylethoxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2-(3 <i>H</i>)-one
oxyfluorfen	2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene
paraquat	1,1'-dimethyl-4,4'-bipyridinium ion
pebulate	5-propyl butylethylcarbamothioate
pendimethalin	<i>N</i> -(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine
perfluidone	1,1,1-trifluoro- <i>N</i> -[2-methyl-4-(phenylsulfonyl)phenyl]methanesulfonamide
phenmedipham	3-[(methoxycarbonyl)amino]phenyl (3-methylphenyl)carbamate
picloram	4-amino-3,5,6-trichloro-2-pyridinecarboxylic acid
primisulfuron	2-[[[(4,6-bis(difluoromethoxy)-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]benzoic acid
profluralin	<i>N</i> -(cyclopropylmethyl)-2,6-dinitro- <i>N</i> -propyl-4-(trifluoromethyl)benzenamine
prometon	6-methoxy- <i>N,N'</i> -bis(1-methylethyl)-1,3,5-triazine-2,4-diamine
prometryn	<i>N,N'</i> -bis(1-methylethyl)-6-(methylthio)-1,3,5-triazine-2,4-diamine
pronamide	3,5-dichloro (<i>N</i> -1,1-dimethyl-2-propenyl)benzamide
propachlor	2-chloro- <i>N</i> -(1-methylethyl)- <i>N</i> -phenylacetamide
propanil	<i>N</i> -(3,4-dichlorophenyl)propanamide
propaquizafop	(<i>R</i>)-2-[[[(1-methylethylidene)amino]oxy]ethyl 2-[4-[(6-chloro-2-quinoxalinyloxy]phenoxy]propanoate
propazine	6-chloro- <i>N,N'</i> -bis(1-methylethyl)-1,3,5-triazine-2,4-diamine
propham	1-methylethyl phenylcarbamate
pyrazon	5-amino-4-chloro-2-phenyl-3(2 <i>H</i>)-pyridazinone
quinclorac	3,7-dichloro-8-quinolinecarboxylic acid
quizalofop	(±)-2-[4-[[6-chloro-2-quinoxalinyloxy]phenoxy]propanoic acid
rimsulfuron	<i>N</i> -[[4,6-dimethoxy-2-pyrimidinyl]amino]carbonyl]-3-(ethylsulfonyl)-2-pyridinesulfonamide
sethoxydim	2-[1-(ethoxymino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one
siduron	<i>N</i> -(2-methylcyclohexyl)- <i>N'</i> -phenylurea
simazine	6-chloro- <i>N,N'</i> -diethyl-1,3,5-triazine-2,4-diamine
sulfometuron	2-[[[(4,6-dimethyl-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]benzoic acid
TCA	trichloroacetic acid
tebuthiuron	<i>N</i> -[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]- <i>N,N'</i> -dimethylurea
terbacil	5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4-(1 <i>H</i> ,3 <i>H</i>)-pyrimidinedione
terbutryn	<i>N</i> -(1,1-dimethylethyl)- <i>N'</i> -ethyl-6-(methylthio)-1,3,5-triazine-2,4-diamine
thifensulfuron	3-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl]-2-thiophenecarboxylic acid
thiobencarb	5-[[4-chlorophenyl]methyl]diethylcarbamothioate
triallate	5-(2,3,3-trichloro-2-propenyl) bis(1-methylethyl)carbamothioate
triasulfuron	2-(2-chloroethoxy)- <i>N</i> -[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]benzenesulfonamide
tribenuron	2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)methylamino]carbonyl]amino]sulfonyl]benzoic acid
triclopyr	[(3,5,6-trichloro-2-pyridinyl)oxy]acetic acid
tridiphane	2-(3,5-dichlorophenyl)-2-(2,2,2-trichloroethyl)oxirane
trifluralin	2,6-dinitro- <i>N,N</i> -dipropyl-4-(trifluoromethyl)benzenamine
2,4-D	(2,4-dichlorophenoxy)acetic acid
2,4-DB	4-(2,4-dichlorophenoxy)butanoic acid
vernolate	5-propyl dipropylcarbamothioate
xyklachlor	2-chloro- <i>N</i> -(2,3-dimethylphenyl)- <i>N</i> -(1-methylethyl)acetamide
Common and Chemical Names of Herbicide Modifiers	
cyometrinil	(<i>Z</i>)-α-(cyanomethoxy)imino]benzeneacetonitrile
dichlormid	2,2-dichloro- <i>N,N</i> -di-2-propenylacetamide
dietholate	<i>O,O</i> -diethyl <i>O</i> -phenyl phosphorothioate
flurazole	phenylmethyl 2-chloro-4-(trifluoromethyl)-5-thiazolecarboxylate
mephenate	4-chlorophenyl methylcarbamate

Common and Chemical Names of Herbicides

Common Name or Designation	Chemical Name
acetochlor	2-chloro- <i>N</i> -(ethoxymethyl)- <i>N</i> -(2-ethyl-6-methylphenyl)acetamide
acifluorfen	5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid
acrolein	2-propenal
alachlor	2-chloro- <i>N</i> -(2,6-diethylphenyl)- <i>N</i> -(methoxymethyl)acetamide
ametryn	<i>N</i> -ethyl- <i>N'</i> -(1-methylethyl)-6-(methylthio)-1,3,5-triazine-2,4-diamine
amitrole	1 <i>H</i> -1,2,4-triazol-3-amine
AMS	ammonium sulfamate
asulam	methyl[(4-aminophenyl)sulfonyl]carbamate
atrazine	6-chloro- <i>N</i> -ethyl- <i>N'</i> -(1-methylethyl)-1,3,5-triazine-2,4-diamine
barban	4-chloro-2-butynyl 3-chlorophenylcarbamate
benefin	<i>N</i> -butyl- <i>N</i> -ethyl-2,6-dinitro-4-(trifluoromethyl)benzenamine
bensulfuron	2-[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]methyl]benzoic acid
bensulide	<i>O</i> , <i>O</i> -bis(1-methylethyl) <i>S</i> -[2-[(phenylsulfonyl)amino]ethyl]phosphorodithioate
bentazon	3-(1-methylethyl)-(1 <i>H</i>)-2,1,3-benzothiadiazin-4(3 <i>H</i>)-one 2,2-dioxide
benzofluor	<i>N</i> -[4-(ethylthio)-2-(trifluoromethyl)phenyl]methanesulfonamide
benzoylprop	<i>N</i> -benzoyl- <i>N</i> -(3,4-dichlorophenyl)- <i>DL</i> -alanine
bifenox	methyl 5-(2,4-dichlorophenoxy)-2-nitrobenzoate
bromacil	5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1 <i>H</i> ,3 <i>H</i>)pyrimidinedione
bromoxynil	3,5-dibromo-4-hydroxybenzoxirone
butachlor	<i>N</i> -(butoxymethyl)-2-chloro- <i>N</i> -(2,6-diethylphenyl)acetamide
buthidazole	3-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-4-hydroxy-1-methyl-2-imidazolidinone
butylate	<i>S</i> -ethyl bis(2-methylpropyl)carbamothioate
cacodylic acid	dimethyl arsinic acid
CDA	2-chloro- <i>N</i> , <i>N</i> -di-2-propenylacetamide
chloramben	3-amino-2,5-dichlorobenzoic acid
chlorimuron	2-[[[(4-chloro-6-methoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]benzoic acid
chloroxuron	<i>N'</i> -[4-(4-chlorophenoxy)phenyl]- <i>N</i> , <i>N</i> -dimethylurea
chlorpropham	1-methylethyl 3-chlorophenylcarbamate
chlorsulfuron	2-chloro- <i>N</i> -[[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]amino]carbonyl]benzenesulfonamide
cinmethylin	<i>exo</i> -1-methyl-4-(1-methylethyl)-2-[(2-methylphenyl)methoxy]-7-oxabicyclo[2.2.1]heptane
clethodim	(<i>E</i> , <i>E</i>)-(±)-2-[1-[[[3-chloro-2-propenyl]oxy]imino]propyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one
clomazone	2-(2-chlorophenyl)methyl]-4,4-dimethyl-3-isoxazolidinone
cloproxydim	(<i>E</i> , <i>E</i>)-2-[1-[[[3-chloro-2-propenyl]oxy]imino]butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one
clopyralid	3,6-dichloro-2-pyridinecarboxylic acid
CMA	calcium salt of MAA
cyanazine	2-[[4-chloro-6-(ethylamino)-1,3,5-triazin-2-yl]amino]-2-methylpropanenitrile
cycloate	<i>S</i> -ethyl cyclohexylethylcarbamothioate
dalapon	2,2-dichloropropanoic acid
dazomet	tetrahydro-3,5-dimethyl-2 <i>H</i> -1,3,5-thiadiazine-2-thione
DCPA	dimethyl 2,3,5,6-tetrachloro-1,4-benzenedicarboxylate
desmedipham	ethyl[3-[(phenylamino)carbonyl]oxy]phenyl]carbamate
diallate	<i>S</i> -(2,3-dichloro-2-propenyl) bis(1-methylethyl)carbamothioate
dicamba	3,6-dichloro-2-methoxybenzoic acid
dichlobenil	2,6-dichlorobenzonitrile
dichlorprop	(±)-2-(2,4-dichlorophenoxy)propanoic acid
diclofop	(±)-2-[4-(2,4-dichlorophenoxy)phenoxy]propanoic acid
diethatyl	<i>N</i> -(chloroacetyl)- <i>N</i> -(2,6-diethylphenyl)glycine
difenzoquat	1,2-dimethyl-3,5-diphenyl-1 <i>H</i> -pyrazolium
dinitramine	<i>N</i> ⁺ , <i>N</i> ⁺ -diethyl-2,4-dinitro-6-(trifluoromethyl)-1,3-benzenediamine
dinoseb	2-(1-methylpropyl)-4,6-dinitrophenol
diphenamid	<i>N</i> , <i>N</i> -dimethyl- α -phenyl benzenacetamide
dipropetryn	6-(ethylthio)- <i>N</i> , <i>N'</i> -bis(1-methylethyl)-1,3,5-triazine-2,4-diamine
diquat	6,7-dihydrodipyrido[1,2- α :2',1'- ϵ]pyrazinediium ion
di thiopyr	<i>S</i> , <i>S</i> -dimethyl 2-(difluoromethyl)-4-(2-methylpropyl)-6-(trifluoromethyl)-3,5-pyridinedicarbothioate
diuron	<i>N'</i> -(3,4-dichlorophenyl)- <i>N</i> , <i>N</i> -dimethylurea
DSMA	disodium salt of MAA
endothall	7-oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
EPTC	<i>S</i> -ethyl dipropyl carbamothioate
ethalfuralin	<i>N</i> -ethyl- <i>N</i> -(2-methyl-2-propenyl)-2,6-dinitro-4-(trifluoromethyl)benzenamine
ethametsulfuron	2-[[[[4-ethoxy-6-(methylamino)-1,3,5-triazin-2-yl]amino]carbonyl]amino]sulfonyl]benzoic acid
ethofumesate	(±)-2-ethoxy-2,3-dihydro-3,3-dimethyl-5-benzofuranyl methanesulfonate
fenac	2,3,6-trichlorobenzeneacetic acid
fenoxaprop	(±)-2-[4-[(6-chloro-2-benzoxazolyl)oxy]phenoxy]propanoic acid
fenuron	<i>N</i> , <i>N</i> -dimethyl- <i>N'</i> -phenylurea
fenuron TCA	salt of fenuron and TCA
flamprop	<i>N</i> -benzoyl- <i>N</i> -(3-chloro-4-fluorophenyl)- <i>DL</i> -alanine
fluaizifop	(±)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid
fluaizifop-P	(<i>R</i>)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid
fluchloralin	<i>N</i> -(2-chloroethyl)-2,6-dinitro- <i>N</i> -propyl-4-(trifluoromethyl)benzenamine
fluometuron	<i>N</i> , <i>N</i> -dimethyl- <i>N'</i> -[3-(trifluoromethyl)phenyl]urea
fluorochloridone	3-chloro-4-(chloromethyl)-1-[3-(trifluoromethyl)phenyl]-2-pyrrolidinone
fluoroglycofen	carboxymethyl 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoate
fluridone	1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1 <i>H</i>)-pyridinone
fluroxypyr	[(4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxy]acetic acid
flurtamone	(±)-5-(methylamino)-2-phenyl-4-[3-(trifluoromethyl)phenyl]-3(2 <i>H</i>)-furanone
fomesafen	5-[2-chloro-4-(trifluoromethyl)phenoxy]- <i>N</i> -(methylsulfonyl)-2-nitrobenzamide
fosamine	ethyl hydrogen (aminocarbonyl)phosphonate
glufosinate	2-amino-4-(hydroxymethylphosphinyl)butanoic acid
glyphosate	<i>N</i> -(phosphonomethyl)glycine
halosafen	5-[2-chloro-6-fluoro-4-(trifluoromethyl)phenoxy]- <i>N</i> -(ethylsulfonyl)-2-nitrobenzamide
haloxyfop	2-[4-[[3-chloro-5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoic acid
hexaflurate	potassium hexafluoroarsenate
hexazinone	3-cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4(1 <i>H</i> ,3 <i>H</i>)-dione
imazamethabenz	(±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1 <i>H</i> -imidazol-2-yl]-4(and 5)-methylbenzoic acid (3:2)