

HERBICIDE CLASSIFICATION

..... a tool for preventing herbicide resistance

2007/2008

SQUASH

	Primary Target	Product Name	Chemical Name	Chemical Group	Mode of Action	Herbicide Class
Pre-Plant/Pre-Emergence	Annual grasses + some broadleaves	Frontier	Dimethenamid	Chloroacetamide	Inhibition of Cell Division	K
	Annual grasses + some broadleaves	Alanex, Corral Lasso Micro-Tech Strike	Alachlor			
	Annual grasses	Dual Gold Rapier	Metolachlor			
Pre-Plant/Pre-Emergence	Annual broadleaf and grasses	Pre-empt Treflan NF Tridan 480 Triflur 480	Trifluralin	Dinitroaniline	Inhibition of tubulin formation	D
	Annual broadleaf	Magister	Clomazone	Isoxazolidinones	Inhibition of carotenoid biosynthesis	F
Post-Emergence	Certain broadleaf & Grass weeds	Authority	Sulfentrazone	Triazolone	Inhibition of protoporphyrinogen oxidase	E
	Wild oats + Grass weeds	Centurion Plus	Clethodim	Cyclohexane	Inhibition of ACCase	A
		Poast	Sethoxydim			
		Fusilade Targa Leopard	Fluazifop Quizalofop	Carboxylic acid derivative (fops)		

ONIONS

	Primary Target	Product Name	Chemical Name	Chemical Group	Mode of Action	Herbicide Class	
Pre-Post Emergence	Annual grasses & some Broadleaves	Ramrod flowable	Propachlor	Chloroacetamide	Inhibition of cell division	K	
	Annual Broadleaves & grasses	Pend-X Ruck Stomp Xtra	Pendimethalin	Dinitroaniline	Inhibition of tubulin formation	D	
Post-Emergence	Annual grasses & some Broadleaves	Alanex, Corral, Strike Lasso Micro-Tech	Alachlor	Chloroacetamide	Inhibition of cell division	K	
	Annual Broadleaves & some grasses	Alliacine 40EC Chloro-ipc Nuchem CIPC	Chlorpropham	Carbamate			
	Annual grasses & Broadleaves	Frontier	Dimethanamid	Chloroacetamide	Inhibition of protoporphyrinogen oxidase (PPO)	E	
	Annual Broadleaves & grasses	Foresite	Oxadiazon	Oxadiazole			
	Annual Broadleaves & some grasses	Oxyfluorfen	Oxyfluorfen	Nitrophenyl ether (plus adjuvants)	Inhibition of ACCase	A	
	Annual Broadleaves & some grasses	Oxy 250 SC Goal 40 WP	Oxyfluorfen	Nitrophenyl ether			
	Post-Emergence	Annual Broadleaves & grasses	Gesagard 500 Prometryne 500 Prominent	Prometryn	Triazine	Photosystem II Inhibitors	C
		Annual Broadleaves	Elliortril, Lotril Totril Super	Ioxynil	Hydroxybenzotriole		
		Annual Broadleaves	Tribunil, Trump	Methabenzthiazuron	Substituted Urea	Photosystem II Inhibitors	C
		Annual Broadleaves	Bladex 90 WG	Cyanazine	Triazine		
Annual grasses & Broadleaves		Afalon, Linflo Linuron 50 DF	Linuron	Substituted Urea	Nitrogen Compound	I	
Broadleaves		Basagran	Bentazone				
Annual Broadleaves & grasses		Chloronion Pyramin DF Flag FL	Chloridion	Pyridazinyl	Synthetic auxins & Inhibition of Photosystem II Inhibitors	O	
Grasses	Centurion Plus Poast	Clethodim Sethoxydim	Cyclohexanedione Cyclohexane				
Grasses & Wild Oats	Fusilade WG Gallant NF	Fluazifop-P-butyl Haloxfop	Carboxylic acid derivative	Inhibition of ACCase	A		
Broadleaves & Volunteer potatoes	Twin-star	Fluoxypyr Ioxynil	Pyridine & Hydroxybenzotriole	Synthetic auxins & Inhibition of Photosystem II Inhibitors	C		

MAIZE

	Primary Target	Product Name	Chemical Names	Chemical Group	Mode of Action	Herbicide Class
Pre-Plant/Pre-Emergence	Annual broadleaves & grasses	Ace 840, Maize Guard Roustabout, Sylon Trophy	Acetochlor	Chloroacetamide	Inhibition of Cell Division	K
	Annual broadleaves & grasses	Alanex, Corral Lasso Micro-Tech Strike	Alachlor			
	Annual grasses	Dual Gold Finale	Metolachlor			
Pre-Plant/Pre-Emergence	Annual broadleaves & grasses	Ramrod Flowable	Propachlor	Inhibition of Cell Division	K	
	Annual broadleaves & grasses	Frontier	Dimethenamid			
Pre-Plant/Pre-Emergence	Annual broadleaves & grasses	Stomp Xtra Ruck Pend-X	Pendimethalin	Dinitroaniline	Inhibition of tubulin formation	D
	Broadleaf & some grasses	Jazz Lexone DF Metriphar 48 SC Sencor DF	Metribuzin	Triazinone	Photosystem II Inhibitors	C
	Annual broadleaf weeds	Agpro Atrazine 500 Agpro Terbutylazine, Asset, Atralex 900 WG, Atranez Atralfow, Atralfow 500 Atragranz 90 WG Chemagro Atrazine 90 DF Flowable Atrazine Gardoprim Gesaprim 500 FW Nu-Trazine 900 DF Terb 500, Terbaflow Terbrogan, Tyllanex	Atrazine Terbutylazine	Triazine		
Post-Emergence	Broadleaf & annual grasses	Calais	Acetochlor & Atrazine	Chloroacetamide & Triazine	Inhibition of Cell Division & Photosystem II Inhibitors	K C
	Broadleaf & annual grasses	Spark	Acetochlor & Metribuzin	Chloroacetamide & Triazinone	Inhibition of Cell Division & Photosystem II Inhibitors	K C
	Certain grasses & broadleaf weeds	Callisto	Mesotrione	Trikenone	4-HPPD Inhibitors	F
	Certain broadleaf weeds	Preside	Flumetsulam	Triazolopyrimidine	ALS Inhibitor	B
	California thistle and couch	Beacon	Primisulfuron	Sulfonyleurea		
	Couch, fathen, smooth witchgrass, summer grass and willow weed.	Amaze	Nicosulfuron	Sulfonyleurea	ALS Inhibitor	B
	Annual broadleaves	Emblem	Bromoxynil	Hydroxybenzotriole		
	Annual broadleaves	Agpro Atrazine 500 Agpro Terbutylazine Atralfow, Atralfow 500 Asset, Atralex 900 WG Atranez, Atragranz 90 WG Bladex 90WG, Bruno Chemagro Atrazine 90 DF Cy-pro 90 DF Flowable Atrazine Gardoprim Gesaprim 500 FW Nu-Trazine 900 DF Terb 500, Terbrogan Terbaflow, Tyllanex	Atrazine Terbutylazine Cyanazine	Triazine	Photosystem II Inhibitors	C
	Fathen	Tough	Pyridate	Pyridazine	Synthetic Auxins	I
	California thistle Field bindweed Fathen	Banvel, Buttress Cutlass Kamba 500	Dicamba	Benzoic Acid		
Bathurst Bur Californian thistles Volunteer potatoes	Archer, Multiple Tango, Void Versatill Vivendi 300	Clopyralid	Substituted pyridine	Synthetic Auxins	I	

Strategies for preventing herbicide resistance

- Rotate herbicide classes (colour coded above for clarity)
- Herbicide classes are based on 'Mode of Action' in the plant
- Don't use excessive rates
- Don't use low rates
- Use less residual herbicides
- Use non-herbicide weed control where possible
- Use crop rotations to allow a greater selection of herbicides
- Resistant plants are usually by themselves singularly or in groups.
- Get assistance if you think you have resistance.

References:
New Zealand Agrichemical Manual 2002
Novachem Manual 2007/2008

Disclaimer:
Before using any product, read and carefully observe directions, cautionary statements and other information appearing on the product label. This chart is intended to provide accurate and adequate information relating to the subject matters contained in it. It has been prepared and made available to all persons and entities strictly on the basis that LandWISE, its researchers and authors are fully excluded from any liability for damages arising out of any reliance in part or in full upon any of the information for any purpose. No endorsement of named products is intended nor is any criticism of other alternative, but unnamed products.

PEAS

	Primary Target	Product Name	Chemical Names	Chemical Group	Mode of Action	Herbicide Class	
Pre-Plant/Pre-Emergence	Broadleaf & some grass weeds	Stomp Xtra Ruck Pend-X	Pendimethalin	Dinitroaniline	Inhibition of tubulin formation	D	
	Annual broadleaves & grasses	Orion Trifluralin 480 EC Treflan NF Tridan 480 Triflow, Triflow 480 Triflur 480 Trifluralin	Trifluralin	Inhibition of Lipid Synthesis			E
	Wild oats	Avadex Xtra	Triallate				
Pre-Plant/Pre-Emergence	Annual broadleaf weeds	Gardoprim Terbrogan Terb 500	Terbutylazine	Triazine	Photosystem II Inhibitors	C	
	Primarily broadleaf and some grasses	Bladex 90 WG Bruno Gesagard 500 Prometryne 500 Prominent	Cyanazine Prometryn	Triazine	Photosystem II Inhibitors	C	
Broadleaf weeds	Battalion Topogard	Terbutryn/ Terbutylazine					
Post-Emergence	Annual broadleaf & some grasses	Lexone DF Jazz Metriphar 48SC Sencor	Metribuzin	Triazinone	Photosystem II Inhibitors	C	
	Broadleaf weeds	Basagran	Bentazone	Nitrogen Compound	Inhibition of ACCase	A	
	Annual broadleaf	Tribunil Trump	Methabenzthiazuron	Substituted urea			
	Wild oats & grass weeds	Fusilade Gallant, Targa, Leopard Centurion Plus Poast	Fluazifop Haloxfop Quizalofop Clethodim Sethoxydim	Carboxylic acid derivative (fops)	Synthetic Auxin	I	
	Annual broadleaf	Dow Agrosience Nufarm Pasture Guard Soft Touch	MCPB	Phenoxy compound			
Broadleaf weeds	Thistrol plus Tropox plus Select	MCPB-MCPA		Phenoxy compound	Synthetic Auxin	I	
Broadleaf weeds	Pulsar	Bentazone & MCPB	Nitrogen Compound & Phenoxy butyric	Photosystem II Inhibitors & Synthetic Auxins	C		

TOMATOES

	Primary Target	Product Name	Chemical Names	Chemical Group	Mode of Action	Herbicide Class
Pre-Plant/soil inc.	Annual broadleaf & grasses	Orion Trifluralin 480EC Treflan NF, Tridan 480 Triflow, Triflow 480 Trifluralin, Triflur 480	Trifluralin	Dinitroaniline	Inhibition of tubulin formation	D
	Annual broadleaf & some grasses	Jazz, Lexone DF, Metriphar 48SC Sencor	Metribuzin	Triazinone	Photosystem II Inhibitors	C
Post-plant	Annual broadleaf & grasses	Alanex, Corral, Strike Lasso Micro tech	Alachlor	Chloroacetamide	Inhibition of cell division	K
	Grasses	Centurion Plus Fusilade WG Poast	Clethodim Fluazifop-P-butyl Sethoxydim	Cyclohexanedione Carboxylic acid derivative Cyclohexane	Inhibition of ACCase	A
Wild Oats & Grasses	Leopard, Targa	Quizalofop-p-ethyl	Carboxylic acid derivative			

SWEETCORN

	Primary Target	Product Name	Chemical Names	Chemical Group	Mode of Action	Herbicide Class
Pre-Plant/Pre-Emergence	Annual broadleaves & grasses	Ace 840, Maize Guard Roustabout, Sylon Trophy	Acetochlor	Chloroacetamide	Inhibition of Cell Division	K
	Annual broadleaves & grasses	Alanex, Corral Lasso Micro-Tech Strike	Alachlor			
	Annual grasses	Dual Gold Finale	Metolachlor			
Pre-Plant/Pre-Emergence	Annual broadleaves & grasses	Ramrod Flowable	Propachlor	Inhibition of Cell Division	K	
	Annual broadleaves & grasses	Frontier	Dimethenamid			
Pre-Plant/Pre-Emergence	Annual broadleaf weeds	Agpro Atrazine 500 Agpro Terbutylazine, Asset, Atralex 900 WG, Atranez Atralfow, Atralfow 500 Atragranz 90 WG Chemagro Atrazine 90 DF Terbutylazine Flowable Atrazine Gardoprim Gesaprim 500 FW Nu-Trazine 900 DF Terb 500, Terbaflow Terbrogan, Tyllanex	Atrazine Terbutylazine	Triazine	Photosystem II Inhibitors	C
	Broadleaf & annual grasses	Calais	Acetochlor & Atrazine	Chloroacetamide & Triazine	Inhibition of Cell Division & Photosystem II Inhibitors	K C
	Certain broadleaf weeds	Preside	Flumetsulam	Triazolopyrimidine	ALS Inhibitor	B
Couch, fathen, smooth witchgrass, summer grass and willow weed.	Amaze	Nicosulfuron	Sulfonyleurea			
Post-Emergence	Annual broadleaves	Emblem	Bromoxynil	Hydroxybenzotriole	Photosystem II Inhibitors	C
	Annual broadleaves	Agpro Atrazine 500 Agpro Terbutylazine Atralfow, Atralfow 500 Asset, Atralex 900 WG Atranez, Atragranz 90 WG Bladex 90WG, Bruno Chemagro Atrazine 90 DF Cy-pro 90 DF Flowable Atrazine Gardoprim Gesaprim 500 FW Nu-Trazine 900 DF Terb 500, Terbrogan Terbaflow, Tyllanex	Atrazine Terbutylazine Cyanazine	Triazine		
	Annual broadleaves	Chemagro Atrazine 90 DF Cy-pro 90 DF Flowable Atrazine Gardoprim Gesaprim 500 FW Nu-Trazine 900 DF Terb 500, Terbrogan Terbaflow, Tyllanex	Atrazine Terbutylazine Cyanazine	Triazine	Photosystem II Inhibitors	C
	Fathen	Tough	Pyridate	Pyridazine	Synthetic Auxins	I
	California thistle Field bindweed Fathen	Banvel, Buttress Cutlass Kamba 500	Dicamba	Benzoic Acid		
Bathurst Bur Californian thistles Volunteer potatoes	Archer, Multiple Tango, Void Versatill Vivendi 300	Clopyralid	Substituted pyridine	Synthetic Auxins	I	

GLYPHOSATE

	Primary Target	Product Name	Chemical Name	Chemical Group	Mode of Action	Herbicide Class
Pre-Plant/Pre emergence	Non selective herbicide	Agpro Glyphosate 360 & 450 Agpro Green Glyphosate & 510 DowAgro Sciences Glyphosate 360 Hortcare Glyphosate 360 Grochem Glyphosate 360 Nuchem Glyphosate 360 Nuchem Glyphosate Gold Nufarm Glyphosate Gold Orion Glyphosate 360 Orion Glyphosate 450 Polaris 450 Proactive Glyphosate 360 Proactive Glyphosate Green Roundup Dry, Roundup Renew Roundup Renew Xtra Roundup transorb Samurai, Touchdown Trounce Gorsekiller	Glyphosate	Glycine	Inhibition of EPSP synthase	M