

# HRAC Mode of Action Classification 2022

Revised January 2022

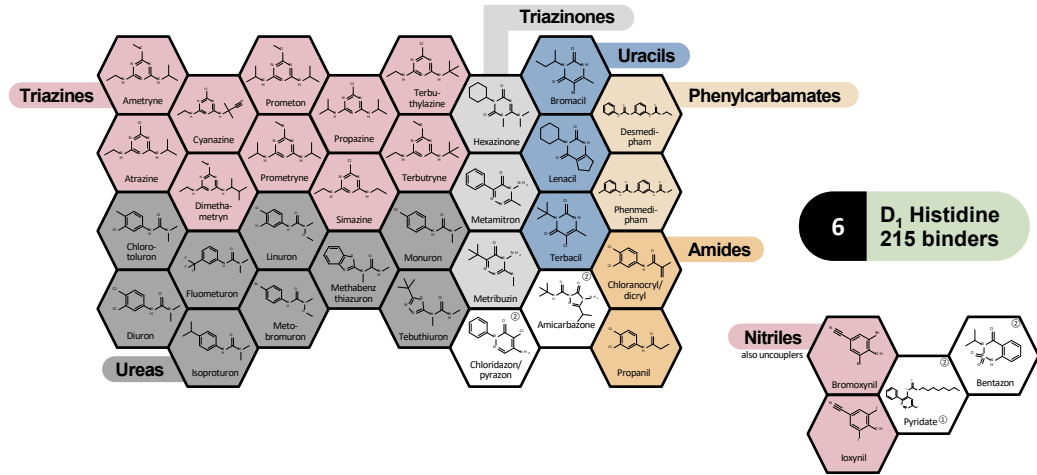


HERBICIDE  
RESISTANCE  
ACTION  
COMMITTEE

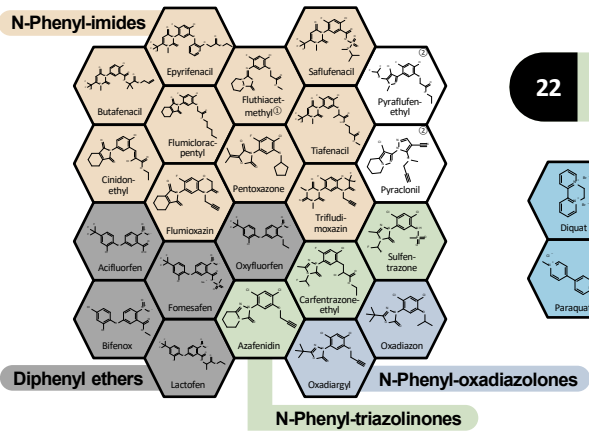
## Light Activation of ROS<sup>a</sup>

### Inhibition of Photosynthesis at PS II

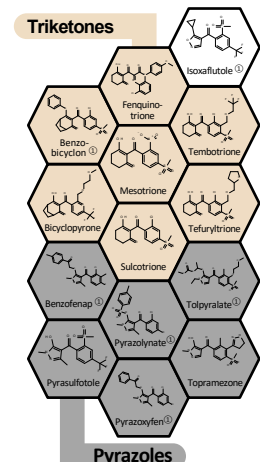
**5** D1 Serine 264 binders (and other non-histidine 215 binders)



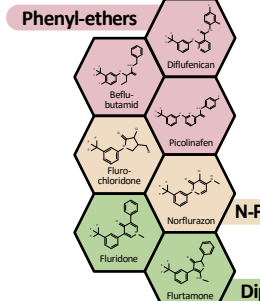
**14** Inhibition of Protoporphyrinogen Oxidase



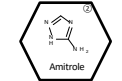
**27** Inhibition of Hydroxyphenyl Pyruvate Dioxygenase



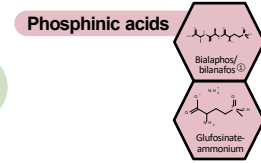
**12** Inhibition of Phytoene Desaturase



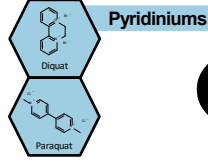
**34** Inhibition of Lycopene Cyclase



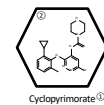
**10** Inhibition of Glutamine Synthetase



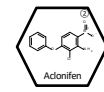
**22** PS I Electron Diversion



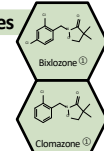
**33** Inhibition of Homogentisate Solanessyltransferase



**32** Inhibition of Solanessyl Diphosphate Synthase

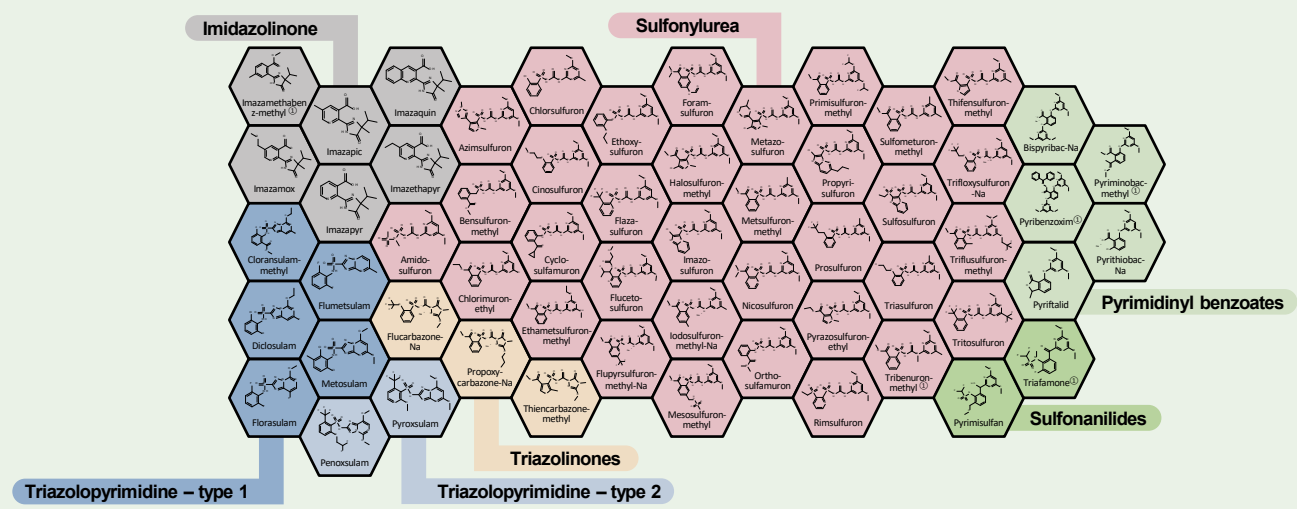


**13** Inhibition of Deoxy-D-Xylulose Phosphate Synthase

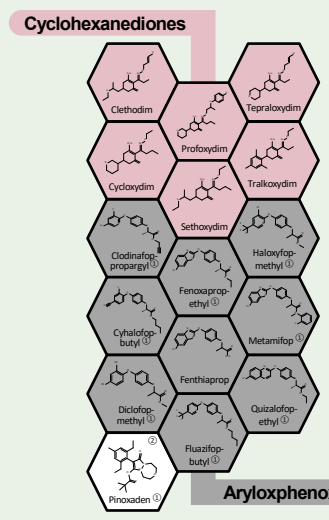


## Cellular Metabolism

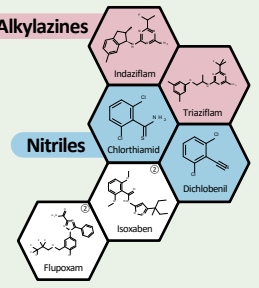
**2** Inhibition of Acetolactate Synthase



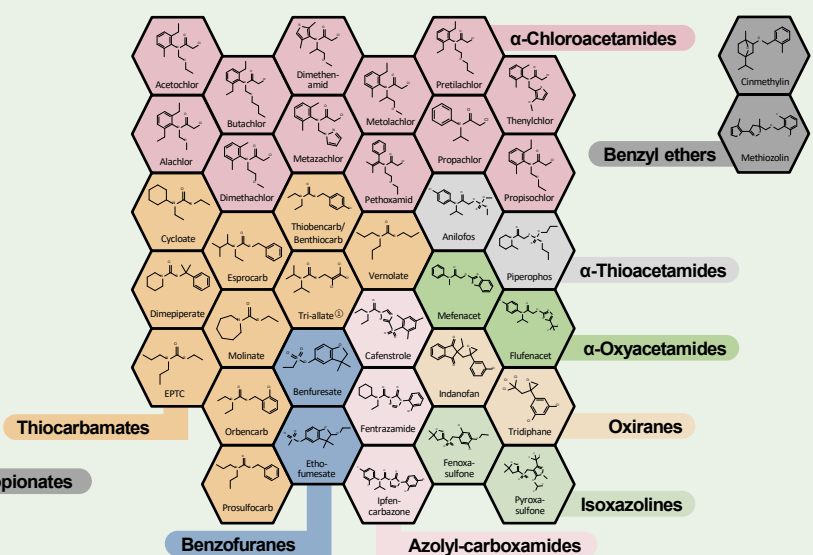
**1** Inhibition of Acetyl CoA Carboxylase



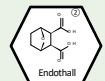
**29** Inhibition of Cellulose Synthesis



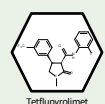
**15** Inhibition of Very Long-Chain Fatty Acid Synthesis



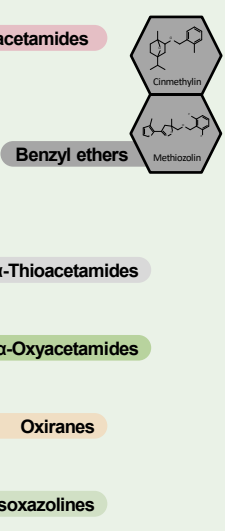
**31** Inhibition of Serine Threonine Protein Phosphatase



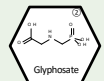
**28** Inhibition of Dihydroorotate Dehydrogenase



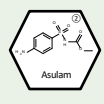
**30** Inhibition of Fatty Acid Thioesterase



**9** Inhibition of Enolpyruvyl Shikimate Phosphate Synthase

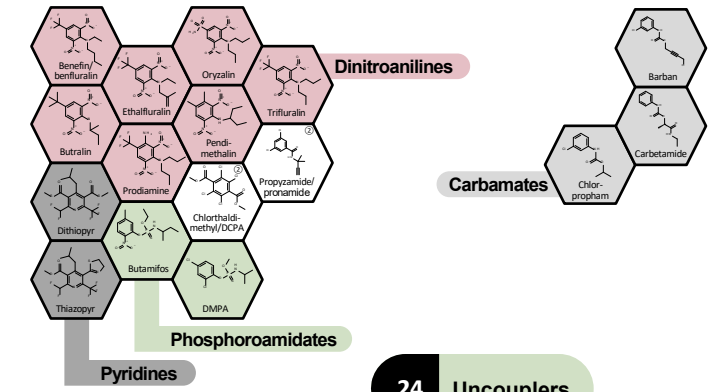


**18** Inhibition of Dihydropterotate Synthase

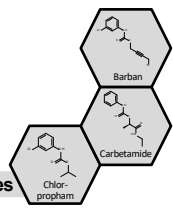


## Cell Division and Growth

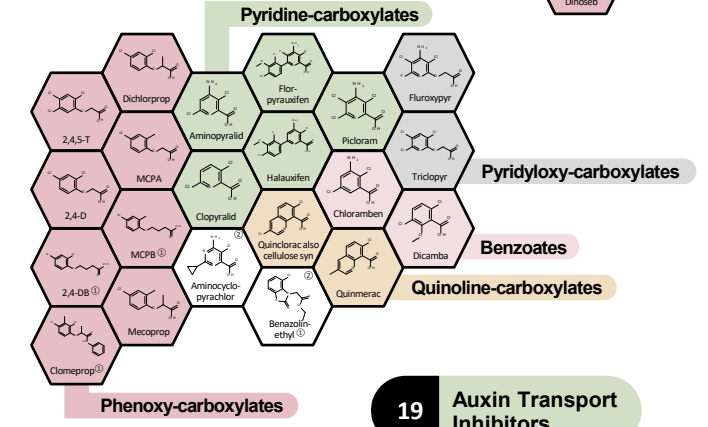
**3** Inhibition of Microtubule Assembly



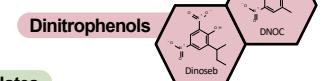
**23** Inhibition of Microtubule Organization



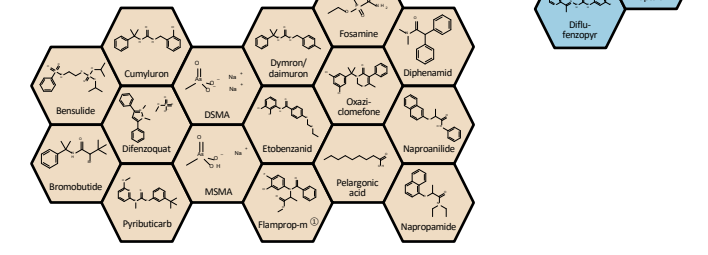
**4** Auxin Mimics



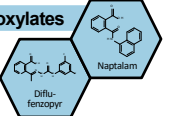
**24** Uncouplers



**0** Unknown Mode of Action



**19** Auxin Transport Inhibitors



HRAC	Legacy HRAC	Mode of Action	HRAC	Legacy HRAC	Mode of Action
1	A	Inhibition of ACCase	19	P	Auxin transport inhibitors
2	B	Inhibition of ALS	22	D	PS I electron diversion
3	K1	Inhibition of microtubule assembly	23	K2	Inhibition of microtubule organization
4	O	Auxin mimics	24	M	Uncouplers
5	C1,2	Inhibition of photosynthesis PS II - Serine 264	27	F2	Inhibition of HPPD
6	C3	Inhibition of photosynthesis PS II - Histidine 215	28	none	Inhibition of dihydroorotate dehydrogenase
9	G	Inhibition of EPSP synthase	29	L	Inhibition of cellulose synthesis
10	H	Inhibition of glutamine synthetase	30	Q	Inhibition of fatty acid thioesterase
12	F1	Inhibition of PDS	31	R	Inhibition of serine threonine protein phosphatase
13	F4	Inhibition of DOXP synthase	32	S	Inhibition of solanessyl diphosphate synthase
14	E	Inhibition of PPO	33	T	Inhibition of homogentisate solanessyltransferase
15	K3	Inhibition of VLCFAs	34	F3	Inhibition of lycopene cyclase
18	I	DHP inhibition	0	Z	Unknown mode of action

<sup>a</sup> Reactive oxygen species  
<sup>1</sup> Indicates pro-herbicide  
<sup>2</sup> HRAC's recommendation is not to include a chemical family name when there is one active in the family. Actives without chemical family names are indicated with a white background