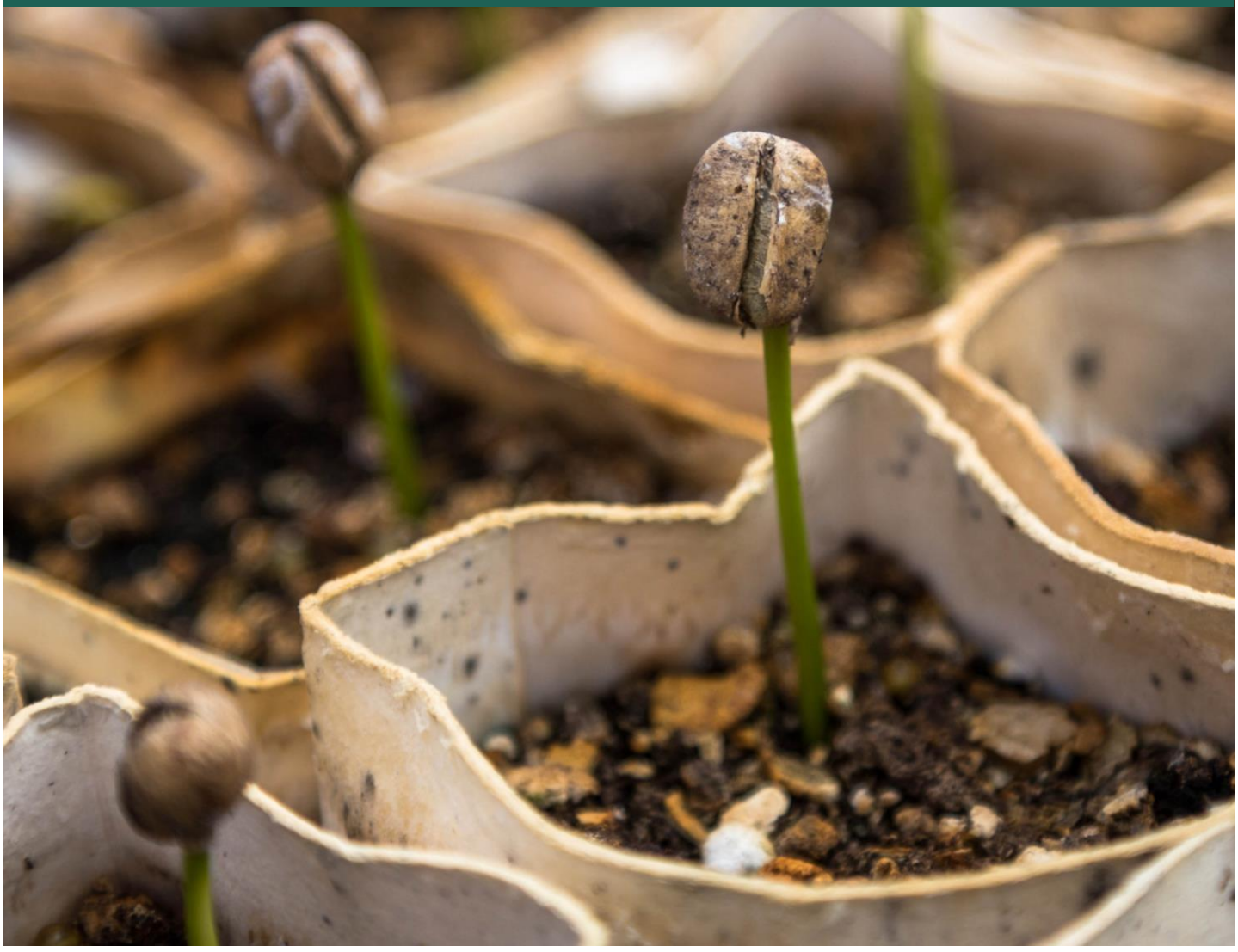
4C PESTICIDE LISTS

Version 4.1



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Version 4.1

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Abbreviations

IPM	Integrated Pest Management
PAN	Pesticide Action Network
PAN HHP	PAN International List of Highly Hazardous Pesticides

1 Introduction

4C Pesticides Lists

The 4C Code of Conduct aims to foster safer workplaces and better living conditions. It includes three lists of pesticides (listed as technical names of active ingredients), which are operated as the 4C Pesticides Lists as part of the 4C Code of Conduct.

References considered

The lists are divided into Unacceptable Practices pesticides, Red List pesticides and Yellow List pesticides, taking into account the following considerations:

- The ISEAL Alliance[1] takes as its key technical and scientific references the Highly Hazardous Pesticide List by Pesticide Action Network (PAN) International (March 2021 version). The PAN HHP List is also used as the key reference for hazard criteria used in its pesticide lists.
- The pesticide lists are focused on pesticides which are currently used in coffee production. Within each list, pesticides which are coffee relevant[2] are identified and highlighted for action.

2 Selection Criteria Used for the 4C Pesticide Lists

Hazard and alignment criteria

The 4C Pesticide Lists are based on two selection elements:

- Hazard criteria used in the PAN HHP List. These cover: acute toxicity for humans; chronic health hazards; environmental hazards; and pesticides in relevant international agreements on managing hazardous chemicals.
- Alignment criteria in relation to the status of pesticides on the lists of other relevant standards such as those listed in IPM coalition database.

Summary of criteria

The following section summarises the criteria used in each of the 4C Pesticide Lists. Full details of the hazard criteria and the sources for the official classifications can be found in the PAN International HHP List[3]. Shorter explanatory notes on the hazard classifications used are given at the end of this document.

Alignment with international agreements

Unacceptable Pesticides as described in Unacceptable Practice 8 of the 4C Code of Conduct. Active ingredients are listed under the following international agreements:

- Annex III of the Stockholm Convention on Persistent Organic Pollutants (POPs)
- International agreement aimed at protecting human health and the environment from persistent organic pollutants.
- Annex III of Rotterdam Convention on Prior Informed Consent (PIC)

[1] *For more info on ISEAL, see http://www.isealalliance.org/*
[2] *Coffee relevant pesticides refers to those which are in the revised Red or Yellow lists (or were in the former lists) and which have reported as in current use by some producers.*
[3] *Downloadable via https://pan-international.org/wp-content/uploads/PAN_HHP_List.pdf*

- International agreement that aims to provide governments with information on active ingredients banned elsewhere for health or environmental protection reasons.
- Montreal Protocol on Ozone Depleting Substances
- Global treaty designed to protect the ozone layer by phasing out the production of numerous substances that heavily contribute to ozone depletion. The only pesticide in the Protocol is the fumigant methyl bromide.

Prohibited pesticides

The use of any pesticide or Severely Hazardous Pesticide Formulation on any of these international agreements is an Unacceptable Practice for 4C Units and therefore prohibited within 4C Units in coffee farms and for 4C Compliant Coffee.

Continuous update

NOTE: The pesticide lists of international agreements continue to evolve. The Rotterdam and Stockholm Conventions may therefore add further pesticides to their lists in the future. To give 4C Units time to adapt, any newly listed pesticide under international agreements will be subject to a 3-year phase out period before being included (prohibited) in the 4C Unacceptable Practices list of pesticides.

3 4C Red List Pesticides: 4C Code of Conduct Requirements and Actions to be Promoted

Replace with safer IPM methods

The use of active ingredients listed in the 4C Red list qualifies for a red practice of principle 3.2 of the environmental dimension Use of Pesticides. Red practices have a phase out period of three years after the first certification. This means that 4C Units are expected to stop their use within 3 years at the latest, replacing them with safer Integrated Pest Management (IPM) methods.

Criteria for the Red List:

HAZARD: Pesticides in any one of the 3 most acutely toxic classifications via ingestion, skin contact or inhalation, OR known to be carcinogenic (causing cancer)

4 4C Yellow List Pesticides: 4C Code of Conduct Requirements and Actions to be Promoted

Minimize and replace

As a better practice (green criteria), 4C Units are required to have minimised the use of Yellow List pesticides and, if possible, phased out their use completely by replacing them with IPM alternative methods.

Criteria for the Yellow List:

HAZARD: Pesticides with chronic hazards in the classifications of probable carcinogens, known endocrine disruptors, known reproductive toxins, or known mutagens.

OR

HAZARD: Pesticides with one or more of the environmental hazards featured in the PAN HHP List (bioaccumulation, persistence, high toxicity to bees or aquatic organisms).

For further information, please contact the 4C Services GmbH at: info@4C-services.org.

Table 1: 4C list of unacceptable pesticides

No	Name of active ingredient of pesticide	CAS number	International Conventions		
	The revised 4C Unacceptable List contains 30 pesticides, of which 5 are coffee relevant.		POP	PIC	Montreal
	COFFEE RELEVANT Pesticides				
1	Aldicarb	116-06-3		X	
2	Carbofuran[4]	1563-66-2		X	
3	Endosulfan	115-29-7	X	X	
4	Methyl bromide	74-83-9			X
5	Paraquat dichloride[5]	1910-42-5		X	
	OTHER Pesticides				
6	Alachlor	15972-60-8		X	
7	alpha-BHC; alpha-HCH	319-84-6	X		
8	Azinphos-methyl	86-50-0		X	
9	beta-HCH; beta-BCH	319-85-7	X		
10	Captafol	2425-06-1		X	
11	Carbosulfan[6]	55285-14-8		X	
12	Chlordane	57-74-9	X	X	
13	DDT	50-29-3	X	X	
14	DNOC and its salts	534-52-1		X	
15	Ethylene dibromide (EDB: 1,2-dibromoethane)	106-93-4		X	
16	Ethylene dichloride (EDC)	107-06-2		X	
17	Ethylene oxide	75-21-8		X	
18	Fenthion[7]	55-38-9		X	
19	Fluoroacetamide	640-19-7		X	
20	Hexachlorobenzene (HCB)	118-74-1	X	X	
21	Hexachlorocyclohexane (HCH)	608-73-1		X	
22	Lindane	58-89-9	X	X	
23	Mercury and its compounds	7439-97-6		X	
24	Methamidophos	10265-92-6		X	
25	Monocrotophos	6923-22-4		X	
26	Parathion	56-38-2		X	
27	Parathion-methyl (methyl parathion)	298-00-0		X	
28	Pentachlorophenol (PCP)	87-86-5			
29	Phosphamidon	13171-21-6		X	
30	Trichlorfon[8]	52-68-6		X	
Severely Hazardous Pesticide Formulations (SHPF) listed in Annex III of PIC Convention:					
Dustable powder formulations containing a combination of: benomyl at or above 7%, carbofuran at or above 10% and thiram at or above 15%					
Methamidophos (soluble liquid formulations of the substance that exceed 600 g active ingredient/l)					
Parathion-methyl (emulsifiable concentrate (EC) at or above 19.5% active ingredient and dusts at or above 1.5% active ingredient)					

[4] Carbofuran moved from Red to Unacceptable list
[5] Paraquat dichloride moved from Red to Unacceptable list
[6] Carbosulfan moved from Red to Unacceptable list
[7] Fenthion moved from Yellow to Unacceptable list
[8] Trichlorfon moved from Yellow to Unacceptable list

Phosphamidon (soluble liquid formulations of the substance that exceed 1000 g active ingredient/l)	
The 4C UAP List uses the following 3 hazard criteria in the PAN HHP List related to international agreements:	• Pesticides listed in the Stockholm Convention on Persistent Organic Pollutants (POPs) • Pesticides listed by the Rotterdam Convention on Prior Informed Consent (PIC). • Pesticides listed in the Montreal Protocol on Ozone Depleting Substances.

Table 2: 4C red pesticide list

No	Name of active ingredient of pesticide	CAS number	Acute Toxicity			Known Carcinogens		
	The 4C RED List contains 80 pesticides, of which 3 are coffee relevant.		WHO 1a	WHO 1b	H330	EPA	IARC	EU GHS
	COFFEE RELEVANT Pesticides							
1	Terbufos	13071-79-9	X					
2	Triazophos	24017-47-8		X				
3	zeta-Cypermethrin	52315-07-8		X				
	OTHER Pesticides							
4	Acrolein	107-02-8		X	X			
5	Alpha-chlorohydrin	96-24-2		X				
6	Anthracene oil	90640-80-5						X
7	Arsenic and its compounds	7778-39-4				X	X	X
8	Azinphos-ethyl	2642-71-9		X				
9	Beta-cyfluthrin; Cyfluthrin	68359-37-5		X	X			
10	Blasticidin-S	2079-00-7		X				
11	Brodifacoum	56073-10-0	X		X			
12	Bromadiolone	28772-56-7	X		X			
13	Bromethalin	63333-35-7	X					
14	Butoxycarboxim	34681-23-7		X				
15	Cadusafos	95465-99-9		X				
16	Chlorethoxyphos	54593-83-8	X					
17	Chlorfenvinphos	470-90-6		X				
18	Chlormephos	24934-91-6	X					
19	Chlorophacinone	3691-35-8	X					
20	Coumaphos	56-72-4		X	X			
21	Coumatetralyl	5836-29-3		X	X			
22	Creosote[9]	8001-58-9						X
23	Demeton-S-methyl	919-86-8		X				
24	Dichlorvos; DDVP	62-73-7		X	X			
25	Dicrotophos	141-66-2		X				
26	Difenacoum	56073-07-5	X					
27	Difethialone	104653-34-1	X		X			
28	Dinoterb	1420-07-1		X				
29	Diphacinone	82-66-6	X					
30	Disulfoton	298-04-4	X					
31	Edifenphos	17109-49-8		X				

[9] Creosote moved from Yellow to Red list

32	E-Phosphamidon[10]	297-99-4	X					
33	Epichlorohydrin	106-89-8						X
34	EPN	2104-64-5	X					
35	Ethiofencarb	29973-13-5		X				
36	Ethoprophos; Ethoprop	13194-48-4	X		X			
37	Famphur	52-85-7		X				
38	Fenamiphos	22224-92-6		X	X			
39	Fenchlorazole-ethyl	103112-35-2						X
40	Fentin acetate	900-95-8			X			
41	Fentin hydroxide	76-87-9			X			
42	Flocoumafen	90035-08-8	X		X			
43	Flucythrinate	70124-77-5		X				
44	Formaldehyde	50-00-0					X	
45	Formetanate	22259-30-9		X	X			
46	Furathiocarb	65907-30-4		X	X			
47	Heptenophos	23560-59-0		X				
48	Isoxathion	18854-01-8		X				
49	Mecarbam	2595-54-2		X				
50	Methidathion	950-37-8		X				
51	Methiocarb	2032-65-7		X				
52	Methomyl	16752-77-5		X				
53	Mevinphos	7786-34-7	X					
54	Nicotine	54-11-5		X	X			
55	Omethoate	1113-02-6		X				
56	Oxamyl	23135-22-0	X		X			
57	Oxydemeton-methyl	301-12-2		X				
58	Paraffin oils; mineral oils	64741-88-4						X
59	Paraffin oils; mineral oils	64741-89-5						X
60	Paraffin oils; mineral oils	64741-97-5						X
61	Paraffin oils; mineral oils	64742-46-7						X
62	Paraffin oils; mineral oils	64742-54-7						X
63	Paraffin oils; mineral oils	64742-55-8						X
64	Paraffin oils; mineral oils	64742-65-0						X
65	Paraffin oils; mineral oils	72623-86-0						X
66	Paraffin oils; mineral oils	97862-82-3						X
67	Phorate	298-02-2	X					
68	Propetamphos	31218-83-4		X				
69	Propylene oxide[11]	75-56-9						X
70	Sodium fluoroacetate (1080)	62-74-8	X		X			
71	Strychnine	57-24-9		X				
72	Sulfotep	3689-24-5	X					
73	Tebupirimifos	96182-53-5	X					
74	Tefluthrin	79538-32-2		X	X			

[10] E - Phosphamidon moved from Yellow to Red list
[11] Propylene oxide moved from Yellow to Red list

75	Thiofanox	39196-18-4		X				
76	Thiometon	640-15-3		X				
77	Vamidothion	2275-23-2		X				
78	Warfarin	81-81-2		X	X			
79	Zinc phosphide	1314-84-7		X				
80	Z-phosphamidon[12]	23783-98-4	X					
The 4C Red List uses the following 4 hazard criteria in the PAN HHP List:								
Acute toxicity for mammals, including humans:	‘Extremely hazardous’ WHO class 1a according to the World Health Organisation Recommended Classification of Pesticides by hazard; ‘Highly hazardous’ WHO class 1b according to the WHO Recommended Classification of Pesticides by hazard; ‘Fatal if inhaled’ H330 hazard statement according to the Globally Harmonized System (GHS) for classification and labelling of chemicals.							
Cancer hazard:	The highest concern classifications, equivalent to ‘known carcinogen’, according to the US Environmental Protection Agency (EPA), the International Agency for Research on Cancer (IARC) and the Globally Harmonized System (GHS).							

[12] Z-phosphamidon moved from Yellow to Red list

Table 3: 4C yellow pesticide list

No	Name of active ingredient of pesticide	CAS number	Probable Carcinogens		Chronic Toxicity				Environmental Relevance			Acute Toxicity			Known Carcinogens			
	The revised 4C Yellow List contains 77 pesticides, of which 20 are coffee relevant.		EPA	IARC	Muta	Repro	EDC	GHS+ C2 & R2	Bio acc	Very pers in water, soil, or sediment	Very toxic to aquatic organisms	Toxic for bees	WHO 1a	WHO 1b	H330	EPA	IARC	EU GHS
	COFFEE RELEVANT Pesticides																	
1	Abamectin	71751-41-2										X		X	X			
2	Aluminum phosphide	20859-73-8										X			X			
3	Carbaryl	63-25-2	X					X				X						
4	Carbendazim	10605-21-7			X	X												
5	Chlorantraniliprole	500008-45-7								X	X							
6	Chlorothalonil	1897-45-6	X												X			
7	Chlorpyrifos	2921-88-2				X						X						
8	Deltamethrin	52918-63-5						X				X						
9	Dimethoate	60-51-5										X						
10	Diuron	330-54-1	X															
11	Epoxiconazole	133855-98-8	X			X		X										
12	Fenitrothion	122-14-5						X				X						
13	Fipronil	120068-37-3										X						
14	Glyphosate	1071-83-6		X														
15	Lambda-cyhalothrin	91465-08-6										X			X			
16	Malathion	121-75-5		X								X						
17	Mancozeb	8018-01-7	X			X	X	X										
18	Permethrin	52645-53-1	X									X						
19	Propargite	2312-35-8	X						X		X							
20	Thiamethoxam	153719-23-4										X						
	OTHER Pesticides																	
21	Acephate	30560-19-1										X						
22	Amitrole	61-82-5						X										
23	Atrazine	1912-24-9																
24	Azafenidin	68049-83-2				X												
25	Azocyclotin	41083-11-8							X		X				X			
26	Bifenthrin	82657-04-3						X				X						
27	Borax; disodium tetraborate decahydrate	1303-96-4				X												
28	Boric acid	10043-35-3				X		X										
29	Bromoxynil	1689-84-5				X									X			
30	Chlorfenapyr	122453-73-0										X						
31	Chloropicrin	76-06-2													X			
32	Chlorotoluron	15545-48-9						X										
33	Clothianidin	210880-92-5										X						
34	Cyhalothrin, gamma	76703-62-3										X						
35	Cyhalothrin (not lambda)	68085-85-8										X						

36	Daminozide	1596-84-5	X												X			
37	Dimoxystrobin	149961-52-4						X		X	X							
38	Dinocap	39300-45-3				X												
39	Dinotefuran	165252-70-0										X						
40	Diquat dibromide	85-00-7													X			
41	Diquat dichloride	4032-26-2													X			
42	Ethylene thiourea	96-45-7	X			X		X										
43	Fenbutatin-oxide	13356-08-6								X	X				X			
44	Fenoxycarb	72490-01-8	X									X						
45	Fenpropathrin	39515-41-8										X			X			
46	Fenvalerate	51630-58-1										X						
47	Fluazifop-butyl	69806-50-4				X												
48	Flumioxazin	103361-09-7				X												
49	Flusilazole	85509-19-9				X												
50	Glufosinate-ammonium	77182-82-2				X												
51	Haloxyfop-methyl; haloxyfop	69806-40-2	X															
52	Imidacloprid	138261-41-3										X						
53	Linuron	330-55-2				X		X										
54	Magnesium phosphide	12057-74-8													X			
55	Methabenzthiazuron	18691-97-9										X						
56	Molinate	2212-67-1						X										
57	Nitrobenzene	98-95-3				X		X										
58	Phosphine	7803-51-2													X			
59	Picloram	1918-02-01																
60	Potasan	299-45-6													X			
61	Profoxydim	139001-49-3						X										
62	Pyrazophos	13457-18-6										X						
63	Pyrazoxon	108-34-9													X			
64	Quizalofop-p-tefuryl	119738-06-6						X										
65	Resmethrin	10453-86-8	X					X				X						
66	Silafluofen	105024-66-6				X						X						
67	TCMTB	21564-17-0													X			
68	Tepraloxydim	149979-41-9						X										
69	Thiacloprid	111988-49-9	X			X												
70	Thiodicarb	59669-26-0	X									X						
71	Thiourea	62-56-6						X										
72	Tolylfluanid	731-27-1	X												X			
73	Tridemorph	81412-43-3				X												
74	Trifluralin	1582-09-8						X	X									
75	Vinclozolin	50471-44-8				X		X										
76	Zineb	12122-67-7																
77	Ziram	137-30-4													X			

The 4C Yellow List uses the following hazard criteria in the PAN HHP List:

Cancer hazard:	The second highest concern classifications, equivalent to 'probable or likely carcinogen', according to the US Environmental Protection Agency (EPA), the International Agency for Research on Cancer (IARC) and the Globally Harmonized System (GHS)
Chronic health hazards:	Known mutagenic substances (MUT), according to the Globally Harmonized System (GHS). These are known to trigger mutations in human germ cells (eggs or sperm) which can be inherited by the children.

	Known or presumed human reproductive toxicants, (REPRO) according to the Globally Harmonized System (GHS). These substances can adversely affect human reproduction. Endocrine disruptors, (EDC) according to GHS and EU classifications. These substances can upset the hormone signalling systems in humans, with effects on normal development, growth, reproduction, metabolism, and links to cancers of the reproductive organs.
Environmen-tal hazards:	Very persistent in water, soil, or sediment (=P), according to the Stockholm Convention. Very bio accumulative (=B), according to the Stockholm Convention. These substances build up in the food chain, affecting top level predators, including humans. Very toxic for aquatic organisms (=T), according to water flea toxicity threshold data used in the Pesticide Properties Database (University of Hertfordshire). Highly toxic for bees, according to toxicity threshold data of US Environmental Protection Agency. Note that to qualify in the PAN HHP List for environmental hazards, a pesticide must meet two of the three criteria for P/B/T and/or be highly toxic for bees.
Alignment criteria: To ensure alignment with other standards, any pesticides which have 4C Red hazard criteria BUT which are not prohibited by 2 or more other standards are allocated to the 4C Yellow List. These pesticides are indicated in the columns “Acute Toxicity” and “Known Carcinogens”. To see the details of their hazard criteria, please look at the PAN HHP List (June 2014 version).	