ANNEX CHAPTER 4:

Farming

Document SA-S-SD-22

Version 1.1

English

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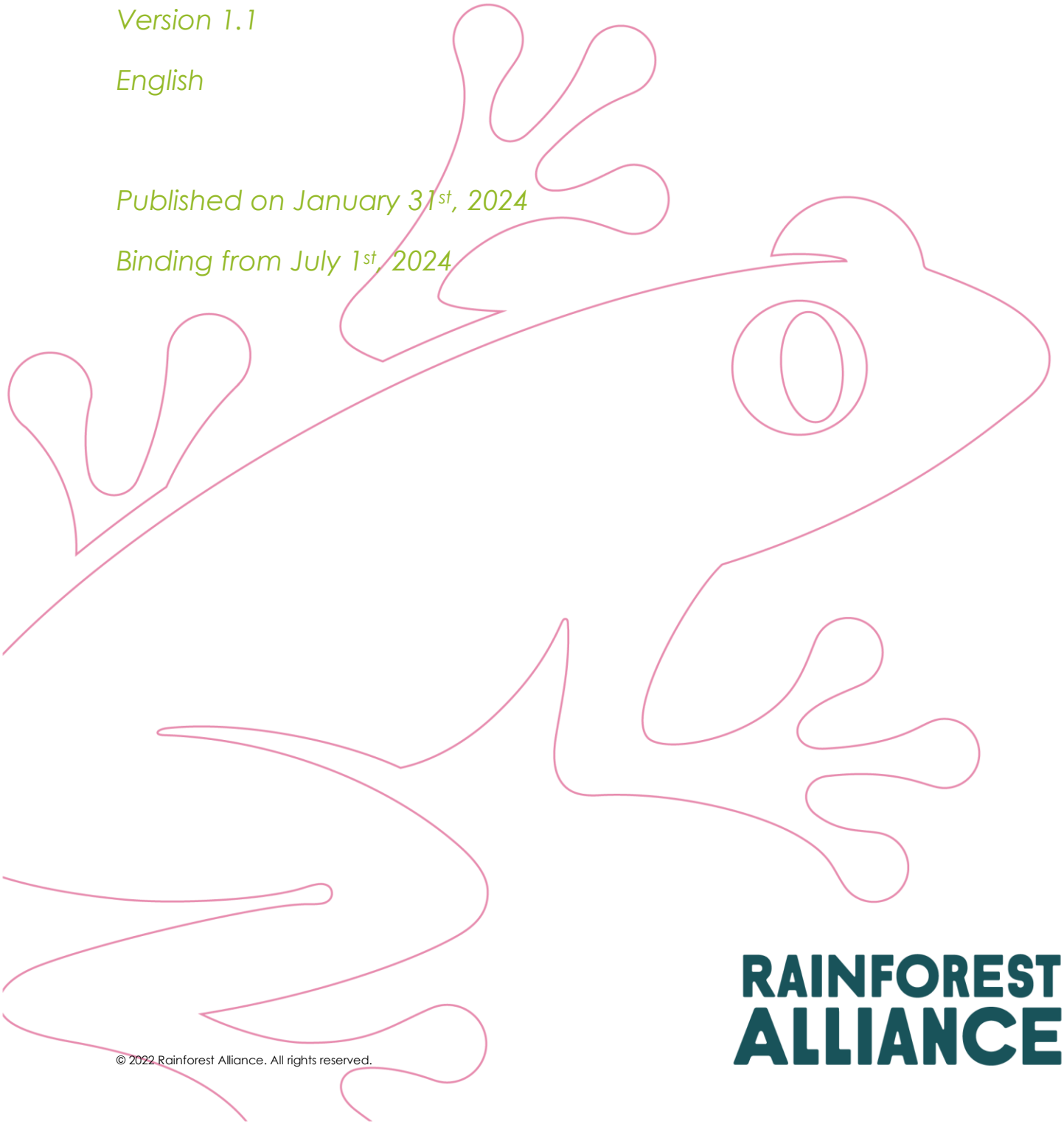

RAINFOREST ALLIANCE

The Rainforest Alliance is creating a more sustainable world by using social and market forces to protect nature and improve the lives of farmers and forest communities.

Name of the document	Date of first publication	Expires by
Annex Chapter 4: Farming	July 1st, 2022	Until further notice
Linked to		
SA-S-SD-1 Rainforest Alliance 2020 Sustainable Agriculture Standard, Farm requirements SA-P-SD-9 Policy on Exceptional use of FAO/WHO highly hazardous pesticides		
Replaces	**Applicable to**	
SA-S-SD-22-V1 Annex Chapter 4: Farming, published on July 1st, 2022	Farm Certificate Holders	

Annexes are binding and must be complied with for certification.

More information

For more information about the Rainforest Alliance, visit www.rainforest-alliance.org, contact info@ra.org or contact the Rainforest Alliance Amsterdam Office, De Ruijterkade 6, 1013AA Amsterdam, The Netherlands.

Translation Disclaimer

For any question related to the precise meaning of the information contained in the translation, please refer to the official English version for clarification. Any discrepancies or differences in meaning due to translation are not binding and have no effect for auditing or certification purposes.

OVERVIEW OF KEY CHANGES

Overview of key changes in this document SA-S-SD-22-V1.1 Annex Chapter 4: Farming, published on January 31st, 2024,
compared to SA-S-SD-22-V1 Annex Chapter 4: Farming, published on July 1st, 2022

Section	Subject	Change
2.	Health and Safety	Additional information and guidance on requirements 5.6.1 and 5.6.16
2.	Health and Safety	List of organophosphates and carbamate pesticides
4.	List of prohibited pesticides	Specified all isomers of Glufosinate-ammonium are in the list of prohibited pesticides
4.	List of prohibited pesticides	Added Paraquat to the list of prohibited pesticides

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S07 PESTICIDES MANAGEMENT

1. RELATED STANDARD REQUIREMENTS

The Rainforest Alliance standard includes multiple requirements that directly and indirectly relate to Integrated Pest Management (IPM):

- Requirements in topic 4.5 on Integrated Pest Management.
- Requirements in topic 4.6 on Agrochemicals Management.
- Requirements in topic 4.7 on Harvest and Post-harvest practices.
- Requirement 5.6.1 on Occupational Health and Safety.
- Requirement 5.6.16 on Medical examination of workers.

1.1. Scope of this Annex

The scope of this annex includes the use of pesticides in agriculture and post-harvest carried out by, or for, the producer. Currently, the use of chemicals by other supply chain actors after selling from the farm is not included in the scope.

1.2 Lists of Pesticides within the context of IPM

This document contains the lists of Prohibited, Obsolete, and Risk Mitigation pesticides:

- The use of Prohibited and Obsolete Pesticides is prohibited for certified farms because they are either considered Highly Hazardous Pesticides (HHPs) that present major human health and environmental risks or because they are no longer formally registered or produced, or widely banned.
- The use of the Risk Mitigation Pesticides is discouraged, and producers should strive to avoid the use of these pesticides as they are known to bear significant human health and environmental risks. These substances should only be applied within the context of an IPM strategy, and only when the related risk mitigation measures to protect people and the environment are fully implemented.

2. HEALTH AND SAFETY

Linked to requirement 5.6.1 and 5.6.16

Handling pesticides poses a health risk for workers. Compliance with Requirements 5.6.1 and 5.6.16 is crucial for preventing and addressing these risks.

Under Requirement 5.6.16, management must conduct Cholinesterase tests for workers handling hazardous agrochemicals and share the results with respective workers. Workers regularly dealing with such chemicals require an annual medical examination. Workers handling organophosphates or carbamate pesticides must undergo pre-exposure and periodic medical monitoring, including Cholinesterase testing.

If adverse health effects occur, as per Requirement 5.6.1, management must promptly mitigate risks. Support measures should include temporary task reassignment and provision of necessary medical assistance to affected workers. This should be at no cost to the worker.

This approach emphasizes a commitment to ensuring the safety of those handling pesticides.

Organophosphates and carbamates share the ability to inhibit cholinesterase enzymes and therefore share similar symptomatology during acute and chronic exposures.

Likewise, exposure may occur by different routes in the same person due to multiple uses, and additional toxicity is likely with simultaneous exposure to organophosphates.

1. List of organophosphates and carbamate pesticides

Organophosphates		
- Acephate - Azinphos-ethyl - Azinphos-methyl - Bensulide - Bromophos-ethyl - Cadusafos - Chlorfenvinphos - Chlormephos - Chlorpyrifos - Chlorpyrifos-methyl - Demeton-S-methyl - Diazinon - Diclorvos; DDVP - Dicrotophos - Dimethoate - Disulfoton - Edifenphos	- Ehoprophos; Ethoprop - Ethion - Famphur - Fenamiphos - Fenitrothion - Fenthion (recommended PIC) - Heptenophos - Isoxathion - Leptophos - Malathion - Mevinphos - Methamidophos - Methidathion - Monocrotophos	- Naled - Oxydemeton-methyl - Parathion - Parathion-methyl - Phorate - Phosalone - Phosmet - Phosphamidon - Pirimiphos methyl - Profenofos - Propetamphos - Sulfotep - Terbufos - Trachlorvinphos, Zisomer - Triazophos

Carbamate
- Aldicarb - Bendiocarb - Carbaryl - Carbofuran - Fenoxycarb - Formetanate - Formetanate hydrochloride - Methiocarb - Methomyl - Oxamyl - Pirimicarb - Propoxur

3. EXCEPTIONAL USE PROCEDURE

Under exceptional circumstances, exceptions can be granted for the use of pesticides included on the Prohibited List. Exceptions can be granted for specific crop/pest and geographical scope (country or part of the country). The granted exceptions and conditions of each exception are included in the Exceptional Use Policy. Producers do not need to get additional approval to use an exception that is already included in the Exceptional Use Policy.

When exceptions are granted, these are in principle granted for one year. In cases where one year is not realistic, Rainforest Alliance can choose a different timeframe. In cases where phasing out the exempted pesticide is not possible within the established timeframe, a renewal of the exception can be considered. For this, data on actual pesticide use and an application for a new request following this procedure will be required.

For a formal request, producers need to submit to ipm@ra.org the following information:

- Country and Region
- Name of the pesticide's active ingredient and details of formulation
- Name of the commercial product in use
- Crop (common and scientific name)
- Pest species to be controlled (common and scientific names)
- Evidence that the specific pest species cannot currently be managed by other methods included in the producer's IPM strategy (e.g., cultural or other non-chemical methods)
- Evidence that other alternatives to control this pest species are not registered by the local authority in the specific production country
- Alternatives the producer is working on

Temporary, urgent requests are managed outside the Exceptional Use Policy. For submitting an emergency request, follow the Exceptional Use procedure and include: details of the need, context, and period in which the substance is needed. Indicate in the title of the email: EMERGENCY request.

The Exceptional Use Policy can be found here: Exceptional Use Policy (EUP) | Rainforest Alliance for Business (rainforest-alliance.org)
The template for requests is available at Template for Requests for Exceptional Use of Pesticides | Rainforest Alliance for Business (rainforest-alliance.org)

After consideration by Rainforest Alliance's technical team, granted exceptions will be included in the Exceptional Use Policy, which will be updated half-yearly.

The following procedure will be used[1]:

1. Before June 30/ December 31: Producer sends in a request for an exception.
2. The Rainforest Alliance evaluates the requests and works out required conditions.
3. Every 6 months (By December 31 and June 30): The Rainforest Alliance publishes an updated Exceptional Use Policy, including conditions to work on alternatives.

[1] The Rainforest Alliance Assurance Document, Section 'Rights reserved by the Rainforest Alliance', refers to handling in case of unforeseen cases

4. LIST OF PROHIBITED PESTICIDES

Linked to requirement 4.6.1

This list is based on the FAO/WHO Guidelines for Highly Hazardous Pesticides[2]. These guidelines include the definition of Highly Hazardous Pesticides (HHPs) following eight criteria. The Rainforest Alliance List of Prohibited Pesticides has eight columns that refer to each of these criteria.

1. WHO Category 1A Extremely hazardous for human health, or 1B Highly hazardous for human health - indicated in the table as Acute toxicity;
2. Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Known or presumed carcinogenic (Categories 1A and 1B)- indicated in the table as Chronic toxicity, carcinogenic column;
3. Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Known or presumed mutagenic (Categories 1A and 1B) - indicated in the table as Chronic toxicity, mutagenic column;
4. Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Known or presumed to be reproductive toxicant (Categories 1A and 1B) - indicated in the table as Chronic toxicity, reproductive toxicant column;
5. Montreal Protocol, Ozone-depleting substances - indicated in the table as International Convention, letter M;
6. Rotterdam convention (as contained in Annex III of the Convention and subject to the PIC procedure) - indicated in the table as International Convention, letter R;
7. Stockholm Convention, Persistent Organic Pollutants (POPs) - indicated in the table as International Convention, letter S;
8. Severe effects, pesticide's active ingredients and formulations have shown a high incidence of severe or irreversible adverse effects on human health or the environment as interpreted by Rainforest Alliance - indicated in the table as Severe Effects.

Rainforest Alliance's technical experts will regularly review the Rainforest Alliance List of Prohibited Pesticides. Pesticides added to the respective reference lists of the Montreal Protocol, Rotterdam Convention, Stockholm Convention, WHO (Class Ia or Ib), or GHS (carcinogenicity 1A/1B, mutagenicity 1A/1B, reproductive toxicity 1A/1B) will be included in a revised version of this list. New evidence of substances causing a high incidence of severe or irreversible harm to human health or the environment will also be considered for inclusion. A phase-out period will be defined for newly added substances to support farmers to find alternatives.

Please note that Carbosulfan, Fenthion, and Methoxychlor have been recommended for inclusion in the Rotterdam Convention (PIC) or for inclusion in the Stockholm Convention (POP). In the event that these substances are included in either convention, they will also be included in the Rainforest Alliance Prohibited List. Producers are urged to consider this, use alternative methods where possible, and phase out these pesticides in anticipation of the listing under these conventions.

Main use abbreviations: A: Acaricide, Ad: Adjuvant, Fun: Fungicide, Fum: Fumigant, H: Herbicide, I: Insecticide, N: Nematicide, R: Rodenticide, Wood Pres.: Wood preservation

2 International Code of Conduct on Pesticide Management, Guidelines on Highly Hazardous Pesticides, FAO/WHO, 2016

No.	PROHIBITED PESTICIDES Active ingredient or group	CAS number	Main use	Acute toxicity	Chronic toxicity			International conventions	Severe effects
					Carcinogenic	Mutagenic	Reproductive toxicant		
1.	Abamectin	71751-41-2	I	1B					
2.	Acetochlor	34256-82-1	A, I, N						✓
3.	Acrolein	107-02-8	H	1B					
4.	Alachlor	15972-60-8	H					R	
5.	Aldicarb	116-06-3	I, A	1A				R	
6.	Alpha chlorohydrin	96-24-2	R	1B					
7.	Alpha-BHC; alpha-HCH	319-84-6	I, A					S	
8.	Aluminum phosphide	20859-73-8	Fum						✓
9.	Amitrole	61-82-5	H				✓		
10.	Anthracene oil	90640-80-5	Multiple		✓				
11.	Arsenic and its compounds	several	Multiple	1B (a)	✓				
12.	Atrazine	1912-24-9	H						✓
13.	Azafenidin	68049-83-2	H				✓		
14.	Azinphos-ethyl	2642-71-9	I, A	1B					
15.	Azinphos-methyl	86-50-0	I, A	1B				R	
16.	Benomyl	17804-35-2	Fun			✓	✓		
17.	Beta-cyfluthrin; Cyfluthrin	68359-37-5	I, A	1B					
18.	Beta-HCH; beta-BCH	319-85-7	I, A					S	
19.	Blasticidin-S	2079-00-7	Fun	1B					
20.	Borax; Borate salts*	several	I, A				✓		
21.	Boric acid	10043-35-3	I, A				✓		
22.	Brodifacoum	56073-10-0	R	1A			✓		
23.	Bromadiolone	28772-56-7	R	1A			✓		
24.	Bromethalin	63333-35-7	R	1A					
25.	Bromophos-ethyl	4824-78-6	I	1B					
26.	Bromoxynil3	1689-84-5	H				✓		

3 Bromoxynil and its esters (Bromoxynil butyrate, Bromoxynil heptanoate, and Bromoxynil octanoate) are moved from the Risk Mitigation List to the Prohibited List in Version 1.3, December 17, 2021, due to an update in the GHS Classification as Reproductive toxicant 1B. To facilitate implementation of this change, there is a phase-out period of a year, until December 17, 2022.

No.	PROHIBITED PESTICIDES Active ingredient or group	CAS number	Main use	Acute toxicity	Chronic toxicity			International conventions	Severe effects
					Carcinogenic	Mutagenic	Reproductive toxicant		
27.	Bromoxynil butyrate	3861-41-4	H				✓		
28.	Bromoxynil heptanoate	56634-95-8	H				✓		
29.	Bromoxynil octanoate	1689-99-2	H				✓		
30.	Butocarboxim	34681-10-2	I, A	1B					
31.	Butoxycarboxim	34681-23-7	I, A	1B					
32.	Cadusafos	95465-99-9	N, I, A	1B					
33.	Calcium cyanide	592-01-8	R	1A					
34.	Captafol	2425-06-1	Fun	1A	✓			R	
35.	Carbendazim	10605-21-7	Fun			✓	✓		
36.	Carbetamide	16118-49-3	H				✓		
37.	Carbofuran	1563-66-2	I, A	1B				R	
38.	Chlordane	57-74-9	I, A					R, S	
39.	Chlorethoxyphos	54593-83-8	I, A	1A					
40.	Chlorfenvinphos	470-90-6	I, A	1B					
41.	Chlormephos	24934-91-6	I, A	1A					
42.	Chlorophacinone	3691-35-8	R	1A			✓		
43.	Chlorothalonil	1897-45-6	Fun		✓				
44.	Chlorotoluron	15545-48-9	H						✓
45.	Chlorpyrifos	2921-88-2	I, A				✓		
46.	Chlorpyrifos-methyl	5598-13-0	I, A				✓		
47.	Clothianidin	210880-92-5	I, A						✓
48.	Coumaphos	56-72-4	I, A	1B					
49.	Coumatetralyl	5836-29-3	R	1B			✓		
50.	Creosote	8001-58-9	Wood Pres.		✓				
51.	Cyproconazole	94361-06-5	Fun				✓		
52.	DDT	50-29-3	I, A					R, S	
53.	Demeton-S-methyl	919-86-8	I, A	1B					
54.	Dichlorvos; DDVP	62-73-7	I, A	1B					
55.	Dicofol	115-32-2	I, A					S	
56.	Dicrotophos	141-66-2	I, A	1B					

No.	PROHIBITED PESTICIDES Active ingredient or group	CAS number	Main use	Acute toxicity	Chronic toxicity			International conventions	Severe effects
					Carcinogenic	Mutagenic	Reproductive toxicant		
57.	Difenacoum	56073-07-5	R	1A			✓		
58.	Difethialone	104653-34-1	R	1A			✓		
59.	Dimethomorph4	110488-70-5	Fun				✓		
60.	Dimoxystrobin	149961-52-4	Fun						✓
61.	Dinocap	39300-45-3	Fun				✓		
62.	Dinoterb	1420-07-1	H	1B			✓		
63.	Diphacinone	82-66-6	R	1A					
64.	Disulfoton	298-04-4	I, A	1A					
65.	DNOC and its salts	several	Fun	1B				R	
66.	Dustable powder formul. containing a combination of: benomyl ≥7 %, carbofuran ≥10%, thiram ≥15%.	several	I, A					R	
67.	E-Phosphamidon	297-99-4	I, A	1A				R	
68.	Edifenphos	17109-49-8	I, A	1B					
69.	Endosulfan; alpha-Endosulfann; beta Endosulfan*	115-29-7; 959-98-8; 33213-65-9	I, A					R, S	
70.	Epichlorohydrin	106-89-8	I, A		✓				
71.	EPN	2104-64-5	I, A	1A					
72.	Epoxiconazole	133855-98-8	Fun				✓		
73.	Ethiofencarb	29973-13-5	I, A	1B					
74.	Ethoprophos; Ethoprop	13194-48-4	N, I, A	1A					
75.	Ethylene dibromide; 1,2-dibromethane	106-93-4	Fum		✓			R	
76.	Ethylene dichloride; 1,2-dichloroethane	107-06-2	Fum		✓			R	
77.	Ethylene oxide	75-21-8	Fum		✓	✓		R	
78.	Ethylene thiourea	96-45-7	Other				✓		

4 Dimethomorph is added to the Prohibited List in Version 1.2, June 30, 2021, due to an update in the GHS Classification. To facilitate implementation of this change, there is a phase-out period of a year, until June 30, 2022.

No.	PROHIBITED PESTICIDES Active ingredient or group	CAS number	Main use	Acute toxicity	Chronic toxicity			International conventions	Severe effects
					Carcinogenic	Mutagenic	Reproductive toxicant		
79.	Famphur	52-85-7	I, A	1B					
80.	Fenamiphos	22224-92-6	N, I, A	1B					
81.	Fenchlorazole-ethyl	103112-35-2	H		✓				
82.	Fentin Acetate	900-95-8	Fun						✓
83.	Fentin Hydroxide	76-87-9	Fun						✓
84.	Fipronil	120068-37-3	I, A						✓
85.	Flocoumafen	90035-08-8	R	1A			✓		
86.	Fluazifop-butyl	69806-50-4	H				✓		
87.	Flucythrinate	70124-77-5	I, A	1B					
88.	Fluoroacetamide	640-19-7	I, A	1B				R	
89.	Flusilazole	85509-19-9	Fun				✓		
90.	Formetanate	22259-30-9	I, A	1B					
91.	Furathiocarb	65907-30-4	I, A	1B					
92.	Glufosinate-ammonium and isomers	77182-82-2	H				✓		
93.	Heptenophos	23560-59-0	I, A	1B					
94.	Hexachlorobenzene	118-74-1	Fun	1A	✓			R, S	
95.	Hexachlorocyclohexane; BHC mixed isomers	608-73-1	I, A					R	
96.	Hydrogen cyanide	74-90-8	Fum	1A					
97.	Imidacloprid	138261-41-3	I, A						✓
98.	Iprodione	36734-19-7	Fun		✓				
99.	Isoxathion	18854-01-8	I, A	1B					
100.	Lindane	58-89-9	I, A					R,S	
101.	Linuron	330-55-2	H				✓		
102.	Magnesium phosphide	12057-74-8	Fum						✓
103.	Mancozeb5	8018-01-7	Fun				✓		
104.	Mecarbam	2595-54-2	I, A	1B					

5 Mancozeb is moved from the Risk Mitigation List to the Prohibited List in Version 1.2, June 30, 2021, due to an update in the GHS Classification. To facilitate implementation of this change, there is a phase-out period of a year, until June 30, 2022.

No.	PROHIBITED PESTICIDES Active ingredient or group	CAS number	Main use	Acute toxicity	Chronic toxicity			International conventions	Severe effects
					Carcinogenic	Mutagenic	Reproductive toxicant		
105.	Mercury and its compounds	several	Fun					R	
106.	Methamidophos	10265-92-6	I, A	1B				R	
107.	Methidathion	950-37-8	I, A	1B					
108.	Methiocarb	2032-65-7	I, A	1B					
109.	Methomyl	16752-77-5	I, A	1B					
110.	Methyl bromide	74-83-9	Fum					M	
111.	Mevinphos	7786-34-7	I, A	1A					
112.	Molinate	2212-67-1	H						✓
113.	Monocrotophos	6923-22-4	I, A	1B				R	
114.	Nicotine	54-11-5	I, A	1B					
115.	Nitrobenzene	98-95-3	I, A				✓		
116.	Omethoate	1113-02-6	I, A	1B					
117.	Oxamyl	23135-22-0	N, I, A	1A					
118.	Oxydemeton-methyl	301-12-2	I, A	1B					
119.	Paraffin oils with a DMSO content > 3%	several	Adj, A, Fun		✓				
120.	Paraquat	4685-14-7	H						✓
121.	Paraquat dichloride	1910-42-5	H						✓
122.	Parathion	56-38-2	I, A	1A				R	
123.	Parathion-methyl	298-00-0	I, A	1A				R	
124.	PCP; Pentachlorphenol and its salts	87-86-5	Wood Pres.	1B				R, S	
125.	Phorate	298-02-2	I, A	1A				R	
126.	Phosphamidon	13171-21-6	I, A	1A				R	
127.	Phosphine	7803-51-2	Fum						✓
128.	Profoxydim	139001-49-3	H						✓
129.	Propetamphos	31218-83-4	I, A	1B					
130.	Propiconazol	60207-90-1	Fun				✓		
131.	Propylene oxide, Oxirane	75-56-9	Fum		✓	✓			
132.	Quizalofop-p-tefuryl	119738-06-6	H						✓
133.	Silafluofen	105024-66-6	I, A				✓		
134.	Sodium cyanide	143-33-9	R	1B					

No.	PROHIBITED PESTICIDES Active ingredient or group	CAS number	Main use	Acute toxicity	Chronic toxicity			International conventions	Severe effects
					Carcinogenic	Mutagenic	Reproductive toxicant		
135.	Sodium fluoracetate (1080)	62-74-8	R	1A					
136.	Spirodiclofen	148477-71-8	I, A		✓				
137.	Strychnine	57-24-9	R	1B					
138.	Sulfluramid	4151-50-2	I, A					R, S	
139.	Sulfotep	3689-24-5	I, A	1A					
140.	Tebupirimifos	96182-53-5	I, A	1A					
141.	Tefluthrin	79538-32-2	I, A	1B					
142.	Tepraloxydim	149979-41-9	H						✓
143.	Terbufos	13071-79-9	N, I, A	1A					
144.	Thallium sulfate	7446-18-6	R	1B					
145.	Thiacloprid6	111988-49-9	I, A				✓		
146.	Thiamethoxam	153719-23-4	I, A						✓
147.	Thiofanox	39196-18-4	I, A	1B					
148.	Thiometon	640-15-3	I, A	1B					
149.	Thiourea	62-56-6	Multiple						✓
150.	Triadimenol	55219-65-3	Fun				✓		
151.	Triazophos	24017-47-8	I, A	1B					
152.	Tributyltin compounds	several	Fun					R	
153.	Trichlorfon; Metrifonato	52-68-6	I, A					R	
154.	Tridemorph	81412-43-3	Fun				✓		
155.	Triflumizole	68694-11-1	Fun				✓		
156.	Vamidothion	2275-23-2	I, A	1B					
157.	Vinclozolin	50471-44-8	Fu				✓		
158.	Warfarin	81-81-2	R	1B			✓		
159.	Z-Phosphamidon	23783-98-4	I, A	1A				R	

6 Thiacloprid is moved from the Risk Mitigation List to the Prohibited List in Version 1.2, June 30, 2021, due to an update in the GHS Classification. To facilitate implementation of this change, there is a phase-out period of a year, until June 30, 2022.

No.	PROHIBITED PESTICIDES Active ingredient or group	CAS number	Main use	Acute toxicity	Chronic toxicity			International conventions	Severe effects
					Carcinogenic	Mutagenic	Reproductive toxicant		
160.	Zinc phosphide	1314-84-7	R	1B					

(a): some actives in this group are classified WHO 1a or WHO 1b

5. OBSOLETE SUBSTANCES

Linked to requirement 4.6.1

The below table includes pesticides known as '*obsolete*': no longer formally registered or produced, or widely banned. These are included here, as some of these pesticides may still be accessible in some of the countries where Rainforest Alliance certified producers operate.

No.	OBSOLETE pesticides (active ingredient)	CAS number
1.	2,3,4,5-Bistetrahydro-2- furaldehyde	126-15-8
2.	2,4,5-T	93-76-5
3.	2,4,5-TCP, potassium salt	35471-43-3
4.	Aldrin	309-00-2
5.	Binapacryl	485-31-4
6.	Chloranil	118-75-2
7.	Chlordecone (kepone)	143-50-0
8.	Chlordimeform	6164-98-3
9.	Chlorobenzilate	510-15-6
10.	DBCP	96-12-8
11.	Dieldrin	60-57-1
12.	Dinoseb and its salts and esters	88-85-7
13.	Endrin	72-20-8
14.	Heptachlor	76-44-8
15.	Leptophos	21609-90-5
16.	Mirex	2385-85-5
17.	Nitrofen	1836-75-5
18.	Octamethylpyrophosp horamide (OMPA)	152-16-9
19.	Propham	122-42-9
20.	Safrole	94-59-7
21.	Silvex	93-72-1
22.	Strobane	8001-50-1
23.	TDE	72-54-8
24.	Toxaphene (Camphechlor)	8001-35-2

6. LIST OF RISK MITIGATION PESTICIDES

Linked to requirement 4.6.2

This list is based on the work by the Oregon State University Integrated Plant Protection Center's state-of-the-science risk assessment tool ipmPRiME and its latest results7. The use of these substances is permitted only within the context of an IPM strategy and when the related risk mitigation measures as indicated below the table are fully implemented.

Abbreviations Main Use: A: Acaricide, Ad: Adjuvant, Fun: Fungicide, Fum: Fumigant, H: Herbicide, I: Insecticide, N: Nematicide, R: Rodenticide, Wood Pres.: Wood preservation

N.	RISK MITIGATION PESTICIDES	CAS Number	Main Use	Higher-level	Aquatic Risk	Wildlife Risk	Pollinator Risk	Bystander Risk
1.	1,3-Dichloropropene	542-75-6	Fum	✓	✓	✓	✓	✓
2.	2,4-D, 2-Ethylhexyl ester	1928-43-4	H	✓	✓			
3.	2,4-D, isooctyl ester	53404-37-8	H	✓	✓			
4.	Acephate	30560-19-1	I, A	✓		✓	✓	
5.	Acequinocyl	57960-19-7	I, A		✓			
6.	Acetamiprid	135410-20-7	I, A		✓			
7.	Acifluorfen, sodium salt	62476-59-9	H	✓		✓		
8.	Amitraz	33089-61-1	I, A	✓				✓
9.	Anilazine	101-05-3	Fun		✓			
10.	Azoxystrobin	131860-33-8	Fun		✓			
11.	Bendiocarb	22781-23-3	I, A	✓	✓	✓	✓	✓
12.	Benfluralin	1861-40-1	H			✓		
13.	Benfurcarb	82560-54-1	I, A	✓	✓	✓	✓	
14.	Bensulide	741-58-2	H	✓	✓	✓		✓
15.	Bentazon, sodium salt	50723-80-3	H	✓		✓		✓
16.	Bifenthrin	82657-04-3	I, A		✓		✓	
17.	Bromacil	314-40-9	H	✓	✓			
18.	Captan	133-06-2	Fun	✓			✓	
19.	Carbaryl	63-25-2	I, A	✓	✓	✓	✓	
20.	Carbosulfan (recommended PIC)	55285-14-8	I, A	✓	✓	✓	✓	✓

7 Article 'Selection of agrochemicals to reduce human and environmental health risks' by Paul C. Jepson et al, Lancet Planet Health, Feb 2020. DOI: https://doi.org/10.1016/S2542-5196(19)30266-9

N.	RISK MITIGATION PESTICIDES	CAS Number	Main Use	Higher-level	Aquatic Risk	Wildlife Risk	Pollinator Risk	Bystander Risk
21.	Cartap	15263-53-3	I, A	✓	✓		✓	
22.	Chlorfenapyr	122453-73-0	I, A		✓	✓	✓	
23.	Chloropicrin	76-06-2	Fum	✓	✓	✓		✓
24.	Chlozolinate	84332-86-5	Fun	✓	✓			
25.	Copper hydroxide	20427-59-2	Fun	✓		✓		
26.	Copper oxide (ic)	1317-38-0	Fun		✓			
27.	Copper oxide (ous)	1317-39-1	Fun				✓	
28.	Copper oxychloride	1332-40-7	Fun	✓		✓	✓	
29.	Copper oxychloride sulfate	8012-69-9	Fun	✓			✓	
30.	Copper sulfate (anhydrous)	7758-98-7	Fun		✓			
31.	Copper sulfate (pentahydrate)	7758-99-8	I, A	✓	✓	✓	✓	
32.	Cube root extracts	no cas		✓				✓
33.	Cyanazine	21725-46-2	H	✓		✓		
34.	Cycloate	1134-23-2	H	✓			✓	✓
35.	Cyhalothrin	68085-85-8	I, A	✓	✓		✓	
36.	Cyhalothrin, gamma	76703-62-3	I, A	✓	✓			
37.	Cyhalothrin, lambda	91465-08-6	I, A	✓	✓		✓	
38.	Cypermethrin, alpha	52315-07-8	I, A	✓	✓		✓	
39.	Cypermethrin, beta	65731-84-2	I, A	✓	✓		✓	
40.	Dazomet	533-74-4	Fum	✓	✓	✓	✓	
41.	Deltamethrin	52918-63-5	I, A	✓	✓		✓	
42.	Diazinon	333-41-5	I, A	✓	✓	✓	✓	✓
43.	Dichlobenil	1194-65-6	H	✓		✓		
44.	Dichloran	99-30-9	Fun	✓		✓		✓
45.	Diclofop-methyl	51338-27-3	H	✓		✓		
46.	Difenzoquat methyl sulfate	43222-48-6	H	✓		✓		
47.	Diflubenzuron	35367-38-5	I, A	✓	✓	✓		
48.	Dimethenamid	87674-68-8	H		✓			
49.	Dimethenamid-P	163515-14-8	H		✓			
50.	Dimethoate	60-51-5	I, A	✓	✓	✓	✓	✓

N.	RISK MITIGATION PESTICIDES	CAS Number	Main Use	Higher-level	Aquatic Risk	Wildlife Risk	Pollinator Risk	Bystander Risk
51.	Dinotefuran	165252-70-0	I, A		✓		✓	
52.	Diquat dibromide	85-00-7	H	✓		✓		✓
53.	Diquat ion	2764-72-9	H	✓		✓		
54.	Diuron	330-54-1	H	✓		✓		
55.	Dodine	2439-10-3	Fun	✓	✓	✓	✓	
56.	D-trans Allethrin (Bioallethrin)	584-79-2	I, A	✓				✓
57.	Emamectin benzoate	137512-74-4	I, A	✓	✓		✓	
58.	EPTC	759-94-4	H	✓		✓	✓	✓
59.	Esfenvalerate	66230-04-4	I, A	✓	✓		✓	
60.	Ethalfluralin	55283-68-6	H	✓	✓			
61.	Ethion	563-12-2	I, A	✓	✓	✓	✓	✓
62.	Etoxazole	153233-91-1	I, A		✓			
63.	Famoxadone	131807-57-3	Fun		✓	✓		
64.	Fenbutatin-oxide	13356-08-6	I, A	✓	✓	✓		
65.	Fenitrothion	122-14-5	I, A	✓		✓		
66.	Fenoxycarb	79127-80-3 / 72490-01-8	I, A		✓			
67.	Fenpropathrin	39515-41-8	I, A	✓	✓	✓	✓	
68.	Fenpyroximate	134098-61-6	I, A	✓	✓	✓		
69.	Fenvalerate	51630-58-1	I, A	✓	✓		✓	
70.	Fenthion (recommended PIC)	55-38-9	I, A		✓	✓	✓	
71.	Ferbam	14484-64-1	Fun	✓	✓		✓	✓
72.	Fluazinam	79622-59-6	Fun	✓			✓	✓
73.	Flufenacet	142459-58-3	H	✓	✓			
74.	Flumioxazin	103361-09-7	H	✓	✓			
75.	Fluopyram	658066-35-4	Fun			✓		
76.	Flupyradifurone	951659-40-8	I, A				✓	
77.	Folpet	133-07-3	Fun	✓	✓			
78.	Fomesafen sodium	108731-70-0	H	✓				✓
79.	Formetanate hydrochloride	23422-53-9	I, A	✓	✓	✓	✓	

N.	RISK MITIGATION PESTICIDES	CAS Number	Main Use	Higher-level	Aquatic Risk	Wildlife Risk	Pollinator Risk	Bystander Risk
80.	Glyphosate, isopropylamine salt	38641-94-0	H			✓		
81.	Glyphosate-trimesium	81591-81-3	H			✓		
82.	Haloxyfop-P	95977-29-0	H	✓	✓		✓	✓
83.	Hexazinone	51235-04-2	H	✓	✓	✓		
84.	Indoxacarb, S-isomer	173584-44-6	I, A				✓	
85.	Iodosulfuron methyl, sodium salt	144550-36-7	H		✓			
86.	Isoxaben	82558-50-7	H			✓		
87.	Lenacil	2164-08-1	H		✓			
88.	Lime-sulfur	1344-81-6	I, A	✓		✓		
89.	Lufenuron	103055-07-8	I, A		✓		✓	
90.	Malathion	121-75-5	I, A	✓			✓	
91.	Maleic hydrazide	123-33-1	H				✓	✓
92.	Maleic hydrazide, potassium salt	28382-15-2	H				✓	✓
93.	Maneb	12427-38-2	Fun	✓		✓	✓	✓
94.	MCPA, 2-ethyl hexyl ester	29450-45-1	H	✓	✓			
95.	MCPA, isooctyl ester	26544-20-7	H	✓	✓			
96.	Metalaxyl	57837-19-1	Fun	✓		✓		
97.	Metam	144-54-7	Fum	✓	✓	✓		
98.	Metam potassium	137-41-7	Fum	✓	✓	✓		
99.	Metam-sodium	6734-80-1	Fum	✓	✓	✓		
100.	Metconazole	125116-23-6	Fun			✓		
101.	Methoprene	40596-69-8	I, A		✓	✓		
102.	Methoxychlor	72-43-5	I, A	✓	✓			
103.	Methyl iodide	74-88-4	Fum	✓	✓	✓		✓
104.	Methyl isothiocyanate	556-61-6	I, A	✓	✓			✓
105.	Metiram	9006-42-2	Fun	✓		✓		✓
106.	Metolachlor	51218-45-2	H	✓		✓		
107.	Metolachlor, (S)	87392-12-9	H	✓	✓			
108.	Metribuzin	21087-64-9	H	✓		✓		
109.	Mineral oil, refined	8042-47-5	I, A		✓			

N.	RISK MITIGATION PESTICIDES	CAS Number	Main Use	Higher-level	Aquatic Risk	Wildlife Risk	Pollinator Risk	Bystander Risk
110.	Monolinuron	1746-81-2	H		✓			
111.	Myclobutanil	88671-89-0	Fun	✓		✓		
112.	Naled	300-76-5	I, A	✓	✓	✓	✓	✓
113.	Napropamide	15299-99-7	H	✓		✓		
114.	Norflurazon	27314-13-2	H		✓	✓		
115.	Novaluron	116714-46-6	I, A		✓			
116.	Oryzalin	19044-88-3	H	✓	✓	✓		
117.	Oxadiazon	19666-30-9	H	✓	✓	✓		
118.	Oxycarboxin	5259-88-1	Fun				✓	
119.	Oxyfluorfen	42874-03-3	H	✓	✓	✓		
120.	Oxythioquinox; Chinomethionat	2439-01-2	Fun, A	✓	✓	✓		
121.	PCNB (Quintozene)	82-68-8	Fun	✓	✓		✓	✓
122.	Pendimethalin	40487-42-1	H			✓		
123.	Permethrin	52645-53-1	I, A	✓	✓	✓	✓	
124.	Phosalone	2310-17-0	I, A	✓	✓	✓		
125.	Phosmet	732-11-6	I, A	✓	✓	✓	✓	
126.	Pirimicarb	23103-98-2	I, A	✓	✓	✓	✓	
127.	Pirimiphos methyl	29232-93-7	I, A	✓	✓	✓	✓	✓
128.	Profenofos	41198-08-7	I, A	✓	✓	✓	✓	✓
129.	Prometryn	7287-19-6	H	✓	✓	✓		
130.	Propamocarb hydrochloride	25606-41-1	Fun	✓			✓	
131.	Propanil	709-98-8	H	✓	✓	✓		
132.	Propargite	2312-35-8	I, A	✓		✓		
133.	Propoxur	114-26-1	I, A	✓	✓	✓	✓	✓
134.	Prosulfuron	94125-34-5	H		✓			
135.	Pyraclostrobin	175013-18-0	Fun	✓	✓			
136.	Pyrazophos	13457-18-6	Fun		✓	✓	✓	
137.	Pyrethrins	8003-34-7	I, A	✓			✓	
138.	Pyridaben	96489-71-3	I, A	✓	✓		✓	
139.	Pyridalyl	179101-81-6	I, A		✓			
140.	Resmethrin	10453-86-8	I, A		✓	✓	✓	

N.	RISK MITIGATION PESTICIDES	CAS Number	Main Use	Higher-level	Aquatic Risk	Wildlife Risk	Pollinator Risk	Bystander Risk
141.	Rotenone	83-79-4	I, A	✓			✓	✓
142.	S-Dimethenamid	163515-14-8	H	✓	✓			
143.	Simazine	122-34-9	H			✓		
144.	Sodium chlorate	7775-09-9	H			✓		
145.	Sodium tetrathiocarbonate	7345-69-9	Fun	✓		✓		
146.	Spinetoram (XDE-175-J)	187166-40-1 / 935545-74-7	I, A				✓	
147.	Spinosad (mixture of Factors A & D)	131929-60-7 / 168316-95-8	I, A				✓	
148.	Sulfentrazone	122836-35-5	H	✓		✓		
149.	Tecnazene	117-18-0	Fun	✓	✓	✓	✓	
150.	Teflubenzuron	83121-18-0	I, A		✓			
151.	Terrazole; etridiazole	2593-15-9	Fun	✓		✓		✓
152.	Tetrachlorvinphos, Z-isomer	22248-79-9	I, A	✓	✓	✓	✓	
153.	Tetraconazole	112281-77-3	Fun			✓		
154.	Thiabendazole	148-79-8	Fun		✓	✓	✓	
155.	Thiobencarb	28249-77-6	H	✓	✓	✓		
156.	Thiodicarb	59669-26-0	M	✓	✓	✓	✓	✓
157.	Thiophanate-methyl	23564-05-8	Fun	✓		✓		
158.	Tolfenpyrad	129558-76-5	I, A	✓	✓			
159.	Triallate	2303-17-5	H	✓	✓	✓		
160.	Triazamate	112143-82-5	I, A		✓	✓		
161.	Triclopyr, triethylamine salt	57213-69-1	H	✓		✓		
162.	Trifloxystrobin	141517-21-7	Fun	✓	✓			
163.	Triflumuron	64628-44-0	I, A		✓	✓	✓	
164.	Trifluralin	1582-09-8	H	✓		✓		
165.	Triforine	26644-46-2	Fun				✓	
166.	Triticonazole	131983-72-7	Fun			✓		
167.	Zeta-Cypermethrin	52315-07-8z	I, A	✓	✓		✓	
168.	Zineb	12122-67-7	Fun	✓			✓	
169.	Ziram	137-30-4	Fun	✓	✓	✓	✓	

7. RISK MITIGATION MEASURES REQUIRED WITH THE USE OF RISK MITIGATION PESTICIDES

If substances from the Risk Mitigation Pesticides list are used, the following specific risk mitigation measures apply for the different risk categories:

1. Pesticides indicating **higher-level personal protection required** means that occupational exposure risk assessments have demonstrated potential for exposure, and significant acute or chronic risks. Pesticides listed under Higher-level PPE (Personal Protective Equipment) are only applied if:
    a) PPE is used as prescribed in the product's label or MSDS (Material Safety Data Sheet). If labels do not provide details of PPE for applicators, basic protective clothing with protection for eyes (i.e., a face mask or goggles) and respiratory protection (i.e., a respirator) are worn.
2. Pesticides listed as having **risk to aquatic life** or **risk to terrestrial wildlife** are only applied if:
    a) Mechanisms are established and maintained to avoid contamination by pesticides, through spray drift or other pathways, from treated areas to other non-targeted areas, including natural ecosystems, public roads, areas with human activity and infrastructure. Such mechanisms include non-crop vegetative barriers or non-application zones, or other effective mechanisms.
3. Pesticides listed as having **risk to pollinators** are only applied if:
    a) Less toxic, efficacious pesticides are not available; and
    b) Exposure of natural ecosystems to pesticides is minimized by establishing non-application zones, or *vegetative barriers*; and
    c) Contact of pollinators with these substances is further reduced through:
        i) Substances are not applied to flowering weeds, or flowering weeds are removed; and
        ii) Substances are not applied while the crop is in its peak flowering period.

        Not applicable to banana, cocoa, grapes, lemongrass, pineapple, psyllium, sugar cane, and tea.
4. Pesticides listed as having bystander risk have an increased inhalation risk and are only applied if:
    a) *Restricted Entry Intervals* (REIs) are enforced; and
    b) All application sites are flagged to indicate inhalation risks to bystanders.
    c) Pesticide handlers are using respirators with an organic vapor (OV) cartridge or canister with any N, R, P, or 100-series filter.

Bystanders are defined as persons, other than farmworkers, pesticide handlers, or their families, who are exposed to pesticides by inhalation.

8. REQUIREMENTS FOR AERIAL APPLICATION

Linked to requirement 4.6.7

8.1. Aerial Application by piloted aerial vehicles

Aerial application of pesticides needs to comply with applicable law in the country of use, or the following Rainforest Alliance requirements, whichever is stricter, unless defined differently by the Rainforest Alliance. Please note that Standard Requirement 1.2.1 specifies that in the case where such a law has become obsolete the requirement in the Standard will prevail. The Rainforest Alliance requirements for aerial application set out below may be adapted in future based on scientific evidence.

Requirements

1. Aerial application **by helicopters, planes, or other piloted aerial vehicles** that carry liquids for aerial application must be:
    a. Conducted by a *competent technician,*
    b. Consistent with *MSDS* and/or label instructions, rates, and precautions.

2. Aerial application by helicopters, planes, or other piloted aerial vehicle is **prohibited** in the following situations:
    a. Agrochemicals with WHO classification 1A Extremely hazardous for human health, and 1B Highly hazardous for human health.
    b. Aerial application of agrochemicals on areas outside the legal limits of the farm, including public roads8, areas with human activity9, animal farms, and natural ecosystems, which include aquatic ecosystems.
    c. Aerial application of agrochemicals when one of the following conditions occurs:
        i. Temperature exceeds 30 ° C
        ii. Wind speed exceeds 15km/h
        iii. There is an inversion phenomenon

3. Equipment used for aerial application by helicopters, planes, or other piloted aerial vehicles must respect the following conditions:
    a. The aircraft is equipped with geographical positioning systems (GPS), and with automatic shut-off valves connected to the GPS system or manual shut-off valves.
    b. The length of the application boom is at a maximum of 80% of the wing length.

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8 When available, the interpretation of this term and other terms related to roads will be based on the applicable legal definition. The purpose of the requirement is to ensure that persons are not being sprayed. This can be ensured by non-application zones along the roads or by closure of the roads. For roads in the farm area through which external persons pass by occasionally, either method may be chosen.

9 Areas where people can be present.

c. The application equipment is in optimal conditions according to its specifications.
d. Application equipment is calibrated every six months by a competent technician and calibration records are kept.

4. Aerial application by helicopters, planes, or other piloted aerial vehicles respects the following requirements to protect human health and natural ecosystems:
    a. Visible signaling systems or effective warning mechanisms are implemented for the notification and protection of third parties. Including
        i. In the case of roads managed by the farm or group administrator, people that may be affected by the aerial application are identified and warned in advance.
        ii. Access to the application areas is prohibited, roads in these areas are closed and the corresponding re-entry periods are respected.
    b. A flight plan[10] that mitigates negative impacts to the adjacent areas of the application area is designed. Agrochemicals are applied in the determined area within the flight plan, and the respective agrochemical non-application zones are respected. The flight altitude is a maximum of 5 meters above the crop or vegetative barriers canopy.
    c. Aerial drift to the adjacent areas is prevented through vegetative barriers or non-application zones. Agrochemical non-application zones are at a minimum:
        i. 30-meter-wide next to public roads, areas with human activity, animal farms, and natural ecosystems (except rivers);
        ii. In the case of rivers, a 15 m non-application zone for each riverbank.
    d. In the case of applications over primary or secondary drains with permanent[11] water
        i. Drainage canals up to 6m in width are covered with vegetation
        ii. Wider drainage canals are lined by vegetation that covers the canals as much as possible (e.g., trees or any other type of vegetation) within three years after certification. Application over wider drains is avoided when possible.
        iii. The planting and coverage of the drainage canals may be implemented in the first three years of certification, provided that in the first and second year, at least one-third of the canals are planted.

5. Each aerial application is documented with an operational report, including:
    a. Location of the property;
    b. Date and time of application (start and end time);
    c. Type of service performed and type of application equipment, including the width of the effective deposition range, model, prefix, and type of used aircraft;

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10 Written statement including the key data of a planned flight including time, flight path, speed, height, weather conditions and other relevant aspects for a safe flight

11 Permanent water means the drains normally have water all year round. This may be interrupted by exceptional weather events like El Niño.

d. Treated crop and area (in hectares) with a sketch of the area indicating its boundaries, barriers, roads, power grids, buildings, sensitive areas (areas with human activity and natural ecosystems), magnetic north, and geographic coordinates (at least one point);
e. Applied agrochemicals, including label name, the active ingredient, concentration (volume per litre, mass per kg, or percentage of the active ingredient) for each product, and quantity of each product applied;
f. Name of the agrochemicals' handlers;
g. Flight and application parameters: height of the flight, weather conditions during application time: temperature range, wind speed, and direction;
h. The direction of application ranges (shots); location of the flight track through georeferencing, specifying whether the application was performed with the Differential Global Positioning System (DGPS).

8.2. Aerial application by drones

In addition to the above requirements for aerial application, the following requirements apply for drones and other Unmanned Aerial Vehicles (UAVs). As the use of drones and the legal regulations for this use are developing fast, these requirements may be updated in the future based on scientific evidence.

Requirements

1. Aerial application of pesticides by drones follows all existing legislation in the country of application. This includes all legislation applicable to drones and/or UAVs in general, and to aerial application of pesticides by drones and/or UAVs in particular.

2. Drones used for the aerial application of agrochemicals are specifically designed and produced for the task of aerial application of chemicals. The drones have safety settings to avoid flying out of the area to be sprayed in case of loss of signal, including flying back to the pilot, hovering in place and/or coming down slowly vertically. The pilot follows all guidance from the producer of the drone, including maximum speeds.

3. Aerial application by drones is performed by licensed pilots who are trained specifically for this task by licensed trainers. Pilots must have at least 1 year of experience flying drones professionally, including at least 6 months, and/or 25 flying hours of experience flying drones designed for aerial application. Pilots carry out a minimum of 50 hours of flying per year with such drones.

4. Before the flight, the pilot receives written documentation of the chemical(s) used (brand name, active ingredient(s), concentration, and all health and environmental risks associated with the active ingredient(s) in that concentration).

5. The flight plan includes where and how to refill the containers.

6. Aerial drift to adjacent areas is prevented through vegetative barriers or non-application zones. Agrochemical non-application zones for drone application are at least 10 meters wide. Certificate Holders may request an exception from the Rainforest Alliance to reduce the non-application zones t to 5 meters where they can provide evidence of the accuracy of drone application within these parameters. Exceptions must be requested and granted before the application occurs.

7. Before the flight, the pilot is fully prepared for emergencies with a procedure and equipment for recovering the vehicle, cleaning up and storing chemicals, and warning people within possible reach of the drone and any spillage of the chemicals carried.

8. The pilot follows all guidance from the producer of the chemical(s) used, including not using a concentration higher than allowed.

9. More than one drone can be flown simultaneously, provided that the navigation systems and flight plan of the drones cannot interfere with each other. One pilot can operate up to three drones at the same time.

10. Aerial application of pesticides by drones is reported directly to Rainforest Alliance at ipm@ra.org in the first application month.

11. If aerial application of agrochemicals is conducted by a subcontractor, the farm owner is liable in case of any accidents or negative effects associated with the use of the drone and responsible for the mitigation of all damage related to it, unless otherwise agreed between the farm owner and subcontractor.

12. Any accident involving drones involved in aerial application of agrochemicals is reported to Rainforest Alliance through ipm@ra.org within a week.