Maryland Department of Natural Resources
Forest Service

Pesticide Environmental and Social Risk Assessment

Pesticide Active Ingredient: Glyphosate

Version 1.1

2021

Appendix 1: National Guidance ESRA for Glyphosate

A Note About Formulations

The FSC Pesticides Policy lists glyphosate and it salts as a restricted, highly hazardous pesticide. Identification of risk in the following environmental and social risk assessment for glyphosate and its salts is primarily based on risk assessments produced by the US Environmental Protection Agency (EPA) and the US Forest Service (USFS). Information regarding formulations from the USFS risk assessment for glyphosate is paraphrased, below[1]. As identification of risk was derived from the EPA and USFS risk assessments, this ESRA utilizes the same approach regarding treatment of formulations and surfactants[1]:

> The USFS considered 52 formulations of glyphosate in its risk assessment (Table 1). When considering formulations, distinct surfactants are more important to the risk assessment than glyphosate's various salts. Additionally, expanded inert statements on product labels is encouraged but not required, and, for the most part, product labels for glyphosate do not clearly designate the use of surfactants.
>
> Use of surfactants are a major issue in the USFS risk assessment for glyphosate, as they may enhance the toxicity of glyphosate but are difficult to account for. For instance, the identify of surfactants is required to be disclosed to the EPA as part of the registration process, but this information is not disclosed publicly, because it is classified as trade secret in the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Surfactants are also added to glyphosate formulations prior to application, further complicating the ability to account for them in this risk assessment.
>
> Acknowledging the ambiguities that are characteristic of glyphosate formulations, the USFS risk assessment indicates that "*This document only assesses a surfactant when it is included as part of the formulated product; it does not assess a surfactant that may be included in the tank mix*". Additionally, some commercial formulations of glyphosate contain other pesticides, and some pesticide labels indicate other pesticides which may be used with glyphosate. The USFS risk assessment indicates that "*As with the previous Forest Service risk assessments (SERA 1996, 2003) and the glyphosate risk assessments conducted by the U.S. EPA/OPP (1996a, 2008a), the current Forest Service risk assessment does not consider formulations with multiple active ingredients*".

Table 1. Glyphosate Formulations Identified by the US Forest Service Risk Assessment[1]

Table 2: Glyphosate Formulations Identified by the Forest Service

Formulation Name	Supplier	EPA Reg. No.	Form	Salt	% a.i.	Surfac-tant	Other
Accord	Monsanto	524-326	L	IPA	41.5%		Aq
Accord Concentrate	DowAgro Sciences	62719-324	L	IPA	53.8%		
Accord SP	DowAgro Sciences	62719-322	L	IPA	41%	X	No longer available
Accord XRT	DowAgro Sciences	62719-517	L	IPA	53.6%	X-POEA[10]	
Accord XRT II	DowAgro Sciences	62719-556	L	DMA	50.2%	Inferred	
Aqua Star	Albaugh, Inc.	42750-59	L	IPA	53.8%	?[7]	
AquaMaster (a.k.a. Export and Rodeo)	Monsanto	524-343	L	IPA	53.8%		Aq
AquaNeat	Riverdale	228-365	L	IPA	53.8%		Aq
Buccaneer	Tenkoz Inc	55467-10	L	IPA	41.0%	X	
Buccaneer Plus	Tenkoz Inc	55467-9	L	IPA	41.0%	X	
Cornerstone	Winfield Solutions Agrisolutions	1381-191 71368-20-1381	L	IPA	41.0%	X	
Cornerstone Plus	Winfield Solutions	1381-192	L	IPA	41.0%	?	
Credit Extra	Nufarm	71368-65	L	Am K	17.86% 16.26%	X POEA?	
Credit Systemic Extra	Nufarm	71368-20	L	IPA	41.0%	X POEA?	
Diamondback	EZ-Ject	83220-1	Sh	IPA	83.5%		Injection
DuraMax	DowAgro Sciences	62719-556	L	DMA	50.2%	Inferred	
Durango (GF-1279)	DowAgro Sciences	62719-517	L	IPA	53.6%	X-POEA[10]	
Durango DMA (GF-1280)	DowAgro Sciences	62719-556	L	DMA	50.2%	Inferred	
Eliminator [4,6]	Gro Tec, Inc	71995-27	L	IPA	41.0%	X	
Foresters' Non Selective	Riverdale	228-381	L	IPA	53.8%	None[8]	
Glyphogan	Makhteshim Agan	66222-105	L	IPA	41.0%	Inferred	
Glyphomax 41 Plus [4]	DowAgro Sciences	62719-322	L	IPA	41.0%	Inferred	
Glyphomax XRT	DowAgro Sciences	62719-517	L	IPA	53.6%	X-POEA[10]	
Gly Star Plus	Albaugh Inc	42750-61	L	IPA	41.0%	X	
Glyphosate VMF	DuPont	352-609	L	IPA	53.8%		Cancelled ?
Glyphosate 41 Plus	CropSmart	42750-61-72693	L	IPA	41.0%	?	
GlyphoMate 41 or Pronto	PBI/Gordon Corporation	2217-847	L	IPA	41.0%	X	
Glyfos Aquatic	Cheminova A/S	4787-34	L	IPA	53.8%		Aq
Glyfos X-TRA	Cheminova A/S	4787-23	L	IPA	41.0%	X 15%[6]	
Glypro	DowAgro Sciences	62719-324	L	IPA	53.8%		
Gly-4 Plus	Universal Crop Protection Alliance	72693-1	L	IPA	41.0%	X	
Helosate Plus	Helm Agro US, Inc	74530-4	L	IPA	41.0%	Inferred	
Hi-yield Killzall	Voluntary Purchasing Groups Inc	67760-49-7401		IPA	53.8%		Aq
Honcho (a.k.a. Roundup Original)	Monsanto	524-445	L	IPA	41.0%	X	
Honcho Plus	Monsanto	524-454	L	IPA	41.0%	X	
Imitator Plus	Drexel Chemical	19713-526	L	IPA	41.0%	?	

Formulation Name	Supplier	EPA Reg. No.	Form	Salt	% a.i.	Surfac-tant	Other
KGro Grass and Weed Killer[5]	Swiss Farms Products Inc,	71995-27-73327	L	IPA	1.92%		
Mirage	Loveland Products	34704-866	L	IPA	41.0%	Inferred	
Ranger Pro	Monsanto	524-517	L	IPA	41.0%	X	
RapidFire	DowAgro Sciences	62719-556	L	DMA	50.2%	Inferred	
Rattler	Monsanto	524-445-ZE-5905	L	IPA	41.0%		
Razor	Nufarm	228-366 [1]	L	IPA	41.0%	X 8%[8]	
Razor Pro	Nufarm	228-366 [1]	L	IPA	41.0%	X 14%[8]	
Rodeo	DowAgro Sciences	62719-324	L	IPA	53.8%		
Roundup Original Max	Monsanto	524-539 [3]	L	K	48.7%	X	
Roundup Pro	Monsanto	524-475 [2]	L	IPA	41.0%	X 14.5%	
Roundup Pro Concentrate	Monsanto	524-539 [3]	L	IPA	50.2%	X 13%	
Roundup ProDry	Monsanto	524-505	G	Am	71.4%	X	
Roundup ProMax	Monsanto	524-579	L	K	48.7%	X	
Roundup UltraMax	Monsanto	524-512	L	IPA	50.2%	X	
Roundup UltraDry	Monsanto	524-504	G	Am	71.4%	X 25%	
Roundup WeatherMax	Monsanto	524-537	L	K	48.8%	X	
RT 3	Monsanto	524-544	L	K	48.8%	X	

[1] Razor and Razor Pro appear to have the same EPA Registration number but the formulations are different.

[2] Based on the EPA master product label, this registration number applies to the following brand names: Roundup Ultra Herbicide; Roundup Ultra RT Herbicide; Roundup Pro Herbicide; Roundup Original II CA; MON 77360 Herbicide; Roundup W Herbicide; Gly 41 Herbicide.

[3] Based on the Product Labels and MSDSs, Roundup Original Max and Roundup Pro Concentrate have the same EPA registration number but contain different salts of glyphosate.

[4] Need specimen label. The EPA labels are not clear (are ambiguous) in terms of the formulation(s) covered.

[5] MSDS cannot be located, including searches of http://www.msdsonline.com and http://www.cdms.net.

[6] From Lajmanovich et al. 2003 but not specifically identified as Glyphos Plus.

[7] Bringolf et al. (2007) state that Aqua Star does not contain the MON 0808 POEA surfactant. It is not clear whether or not this formulation contains a less toxic surfactant.

[8] Information confirmed by Nufarm (Ehresman 2010a).

[9] Dow (Fonseca 2010a) has indicated that Accord SP (EPA Reg. No. 62719-322) is not longer commercialized.

[10] Based on information provided by Dow AgroSciences (Fonseca 2010a)

Key:

Form: L=Liquid; G=Granular; Sh=Shells

Salt: Am=Ammonium salt: DMA=Dimethylamine salt; IPA=Isopropylamine salt; K=Potassium salt;

Other: Aq=Aquatic application; Inj=Injection.

Formulations containing herbicides other than glyphosate as the a.e. are not included.

Environmental National Assessment

Pesticide:	**Glyphosate**		***Specific Formulation:***
Hazard Status:	Glyphosate is a restricted, highly hazardous pesticide (HHP) based on its classification in the Chronic Toxicity hazard group and demonstration of the potential for carcinogenic properties (Criterion 3) per the FSC Pesticides Policy (FSC-POL-30-001 V3-0 EN) and the FSC Lists of Highly Hazardous Pesticides (FSC-POL-30-001a EN). However, risks from other FSC hazard groups and toxicity categories were not precluded from this assessment.		Roundup Quick Pro Roundup Pro Concentrate Glyphomax Plus Rodeo Esplanade EZ Makaze
Exposure Elements	**Minimum list of values**	**Description of why/why not a risk**	**National-level Mitigation strategies defined to minimize risk[1]**
Environmental	**Soil (erosion, degradation, biota, carbon storage)**	**Minimal indication of adverse effects to Soil was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are provided, below.** There is potential for soil erosion due to vegetation changes and effects on soil microorganisms. There is minimal indication of adverse effect to terrestrial microorganisms (1): Most studies find minimal effect on soil microorganisms based on field trials, but some contradictory studies find an effect when tests are performed in the lab (1). Effects on terrestrial vegetation may cause changes in microbial populations (1). Changes to terrestrial vegetation may also cause erosion of soil (1).	**Follow all pesticide label application instructions. Follow applicable criterion and indicators from the FSC US FM Standard V1.0 (e.g., Criterion 4.3 for worker safety, Criterion 7.3 for worker training, Criterion 6.5 for protecting water resources, and Criteria 8.1 and 8.2 for Monitoring). Additional risk mitigation strategies are provided below. Organizations should take reasonable steps toward avoiding environmental and social impacts by considering the mitigation strategies provided below, as well as application-, Organization-, or location-specific strategies.** **General consideration of exposure variables designed to mitigate risk:** -Know and understand the specific pesticide formulation and/or tank mixture, as its unique formulation may provide a different risk characterization. -Understand how the mixture of active ingredients affects the pesticides risk profile. -Seek to minimize the frequency, interval, and amount of application. -use the most efficient and effective method of application by seeking to minimize risk to environmental and social values. -Understand the site (e.g., soil type, topography, etc.) and climatic (e.g., wind, temperature, and
	Water (ground water, surface waters, water supplies)	**Minimal indication of adverse effects to Water was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are provided, below.** All formulations may pose risk to sensitive aquatic plant species, while tolerant species should not be adversely affected by non-accidental exposures (1). Due to its herbicidal properties there is potential for secondary effects caused by spray drift to increase risks to non-target aquatic plants (2).	

		Some formulations are more toxic to aquatic organisms due to the presence of an added surfactant. Rodeo, for example, has no surfactant added because it's intended for use in water to treat aquatic weeds (1). There is potential for contamination of water used for irrigation (1). However, risk of contaminated surface water for drinking water resources is low (1).	humidity) conditions and the likely effect on risk to environmental and social values. -Have appropriate waste management systems in place. **Mitigating Risk to the Environment:** *reduce contact with water resources and minimize application amounts and number of applications.*
Environmental	**Atmosphere (air quality, greenhouse gasses)**	**Minimal indication of adverse effects to Atmosphere was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are provided, below.** Studies done in South America have shown an association between spray formulations mixed with surfactants and the potential for genotoxic effects. However, the exposure concentrations, routes of exposure, and exposure patterns are not relevant to those expected to occur during and after forestry applications in the US (1, 2).	-Never apply directly to water, or areas where surface water is present. This includes when you are cleaning equipment (3). -Reduce applications by considering that when applying to annual or perennial weeds "that have been mowed, grazed, or cut and have not been allowed to regrow to the recommended stage for treatment" reduced control could result (3). -Reduce runoff by considering weather patterns, as weather events like heavy rainfall could wash the product off of targeted foliage (3). -Targeted spray should be uniform and complete, without reaching the point of runoff (3). -Aerial applications should only be made under meteorological conditions that minimize the potential for spray drift (3). **Mitigating Risk to Public Access/Public Welfare:** - Reduce the possibility of public consumption of contaminated wild food (e.g., fruit or fungi) and public exposure to pesticides through public outreach and engagement, limiting access, and/or appropriate signage. For instance, users of the forest may be excluded from the area using barriers or signage until the pesticide dries. **Minimizing Risk of Spray Drift:** *unintentional spray drift has potential to significantly increase risk to the environment and public welfare.* -Minimize potential for drift by increasing droplet
	Non-target species (vegetation, wildlife, bees and other pollinators, pets)	**Most broadleaf plants will be killed or seriously injured by direct exposure to glyphosate, although there is significant range sensitivity among species (1). Minimal indication of adverse effects to other Non-target species (e.g., terrestrial microorganisms, mammals, invertebrates, and birds) was found when glyphosate is used according to label instructions in forestry applications (1). Additional considerations are provided, below.** Hazard for acute exposure to small mammals (rabbits, rats) from consuming contaminated vegetation after terrestrial application (1). Additionally, consumption of contaminated insects may reach level of concern, especially for more toxic formulations (1). Unintentional secondary effects on vegetation may benefit or adversely affect mammals (1). Changes in vegetation are more likely to affect terrestrial invertebrates than their own exposure to	

		glyphosate (1). Potential toxicity for terrestrial animals including insects, birds, and mammals at application rates exceeding common forestry application rates (1). Due to glyphosate being a post-emergence herbicide, foliar contact with it may pose a risk to terrestrial non-target plants. Offsite drift poses a risk to sensitive species (related to application method, application rate, site-specifics, etc.) (1). While terrestrial plants are very sensitive to foliar application, they are substantially less sensitive to soil exposure (per seedling emergence studies) (1). Precaution is needed with application in close proximity to water, as there is a potential of risk to amphibians, invertebrates, algae and other aquatic organisms (1).	size, considering weather patterns, and considering alternative application methods when pesticides must be applied adjacent to sensitive ecological areas (e.g., HCVs, etc.). -Controlling droplet size: volume, pressure, number of nozzles, nozzle orientation, nozzle type, boom length (3). -For ground boom applications: release height during application should be no more than 4 feet above the ground or crop canopy (2). -For ground and aerial applications: nozzles and pressures should be chosen that deliver "fine" or coarser droplets. (Indicated in nozzle manufacturers catalogues; accordance with American Society of Agricultural & Biological Engineers Standard 572.1) (2). -Applicators should not spray during temperature inversions (2). -For aerial applications: should not be applied when wind speeds exceed 15 mph, and if this is the case then the boom length should be adjusted to 65% or "less of the wingspan for fixed wing aircraft and 75% or less of the rotor blade diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed- wing aircraft and 90% or less of the rotor diameter for helicopters. The release height should be no higher than 10 feet from the top of the crop canopy or ground, unless a greater application height is required for pilot safety" (2).
Environmental	**Non-timber forest products (as FSC-STD-01-001 V5-2 FSC Principles and Criteria, criterion 5.1)**	**Minimal indication of adverse effects to Non-timber forest products was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are provided, below.** There is minimal indication of adverse effects to terrestrial microorganisms. There is potential for spray drift to expose surrounding fruit and/or vegetation to glyphosate (1).	
	High Conservation Values (particularly HCV 1-4)	**Minimal indication of adverse effects to High Conservation Values was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are provided, below.** However, unintentional secondary effects on habitat, landscape and ecosystem are possible, primarily due to changes in vegetation (1).	
	Landscape (aesthetics, cumulative impacts)	**Minimal indication of adverse effects to Landscape values was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are**	

		provided, below. However, unintentional habitat/ landscape effects are possible, primarily due to changes in vegetation (1).	
	Ecosystem services (water, soil, carbon sequestration, tourism)	**Minimal indication of adverse effects to Ecosystem services was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are provided, below.** However, unintentional habitat/landscape/ecosystem effects are possible, primarily due to changes in vegetation (1).	

[1] Mitigation strategies have been categorized to avoid redundancy

Sources

(1) USDA/Forest Service. (2011). Glyphosate Human Health and Ecological Risk Assessment Final Report. Prepared by Syracuse Environmental Research Associates, Inc. under USDA Forest Service Contract AG-3187-C-06-0010. Retrieved from https://www.fs.fed.us/foresthealth/pesticide/pdfs/Glyphosate_SERA_TR-052-22-03b.pdf.

(2) U.S. Environmental Protection Agency. (2019, May). Glyphosate Proposed Interim Registration Review Decision Case Number 0178 (Docket Number EPA-HQ-OP-2009-0361). Retrieved from https://www.regulations.gov/document?D=EPA-HQ-OPP-2009-0361-14442.

(3) Dow AgroSciences, LLC. (2015). Safety Data Sheet [Rodeo]. Retrieved from https://www.greenbook.net/corteva-agriscience-dow/rodeo.

Social National Assessment

Pesticide:	Glyphosate		***Specific Formulation:***
Hazard Status:	Glyphosate is a restricted, highly hazardous pesticide (HHP) based on its classification in the Chronic Toxicity hazard group and demonstration of the potential for carcinogenic properties (Criterion 3) per the FSC Pesticides Policy (FSC-POL-30-001 V3-0 EN) and the FSC Lists of Highly Hazardous Pesticides (FSC-POL-30-001a EN). However, risks from other FSC hazard groups and toxicity categories were not precluded from this assessment.		Roundup Quick Pro Roundup Pro Concentrate Glyphomax Plus Rodeo Esplanade EZ Makaze
Exposure Elements	**Minimum list of values**	**Description of why/why not a risk**	**National-level Mitigation strategies defined to minimize risk[1]**
	High Conservation Values (especially HCV 5-6)	**Minimal indication of adverse effects to High Conservation Values was found when glyphosate is used according to label instructions in forestry applications.**	**Follow all pesticide label application instructions. Follow applicable criterion and indicators from the FSC US FM Standard V1.0 (e.g., Criterion 4.3 for worker safety, Criterion 7.3 for worker training, Criterion 6.5 for protecting water resources, and Criteria 8.1 and 8.2 for Monitoring). Applicators or persons supervising application of restricted use pesticides are required to be certified in accordance with EPA regulations and state, territorial and tribal laws. Additional risk mitigation strategies are provided below. Organizations should take reasonable steps toward avoiding environmental and social impacts by considering the mitigation strategies provided below, as well as application-, Organization-, or location-specific strategies.** **General consideration of exposure variables designed to mitigate risk:** -Know and understand the specific pesticide formulation, as its unique formulation may provide a different risk characterization. -Understand the mixture of active ingredients. -Seek to minimize the frequency, interval, and amount of application. -Use the most efficient and effective method of application by seeking to minimize risk to environmental and social values.
	Health (fertility, reproductive health, respiratory health, dermatologic, neurological and gastrointestinal problems, cancer and hormonal imbalance)	**Risks to human health for workers is generally considered minimal (1). However, national assessments using the hazard quotient (HQ) methodology, as well as independent reports and research, indicate potential for toxicity in workers and the general public (1) as follows:** Studies done in South America have shown an association between spray formulations mixed with surfactants and the potential for genotoxic effects. However, the exposure concentrations, routes of exposure, and exposure patterns are not relevant to those expected to occur during and after forestry applications in the US (1, 2). Systemic effects in workers due to dermal exposures have been reported and are a potential hazard. Such effects are "consistent with signs of gross over-exposure to glyphosate but would not be expected under normal circumstances" (1). While there is minimal to no hazard for the general public for aquatic applications, there is a potential	

		hazard present for acute exposure in terrestrial application if contaminated vegetation or fruit is consumed (1). There is minimal indication of adverse effects to residential handlers or non-occupational bystanders of glyphosate, this includes adverse effects related to spray drift (2). There is minimal to no hazard to workers identified for terrestrial and aquatic applications , assuming label directions are followed (1). Glyphosate formulations with a surfactant may pose greater risk; care should be taken to read and understand the SDS for glyphosate formulation that may contain a surfactant (1).	-Understand the site (e.g., soil type, topography, etc.) and climatic (e.g., wind, temperature, and humidity) conditions and the likely effect on risk to environmental and social values. -Have appropriate waste management systems in place. **Mitigating Risk to Workers:** *Label instructions should be followed when applying pesticides.* -Reduce exposure by wearing appropriate personal protective equipment (PPE). For instance, use proper attire including long-sleeved shirt and long pants, shoes plus socks, protective eyewear, and gloves (3). -Chemically resistant gloves should be worn, especially when exposure will be prolonged or contact is frequently repeated (3). Appropriate glove barrier materials include: "Butyl rubber. Natural rubber (“latex”). Neoprene. Nitrile/butadiene rubber (“nitrile” or “NBR”). Polyethylene. Ethyl vinyl alcohol laminate (“EVAL”). Polyvinyl chloride (“PVC” or “vinyl”)" (3). -If clothing has been drenched or heavily saturated with product it must be discarded. Persons with contaminated clothing should wash thoroughly after discarding, and before putting on clean clothing (3). -Hands should be washed before eating, drinking, chewing gum, using tobacco or using the toilet (3). -Although most conditions do not require respiratory protection, protection should be worn when irritation occurs or if there is potential to exceed the exposure limit requirements or guidelines (3). **Mitigating Risk to Public Access/Public Welfare:** -Reduce the possibility of public consumption of contaminated wild food (e.g., fruit or fungi) and public exposure to pesticides through public
Social	**Welfare**	**Minimal indication of adverse effects to Welfare was found when glyphosate is used according to label instructions in forestry applications.**	
	Food and water	**Minimal indication of adverse effects to Food and water was found when glyphosate is used according to label instructions in forestry applications. Additional considerations are provided, below.** Risk of contact with vegetation and/or fruit is possible. Consuming fruit and/or vegetation immediately after application was found to be more hazardous to wildlife (1). Risk of contamination of drinking water is low (1).	
	Social Infrastructure; (schools and hospitals, recreational infrastructure, infrastructure adjacent to the management unit)	**Minimal indication of adverse effects to Social Infrastructure was found when glyphosate is used according to label instructions in forestry applications.**	
	Economic viability (agriculture, livestock, tourism)	**Glyphosate application presents risk to sensitive nontarget vegetation (1), which may have economic impacts.**	

		There is a potential for spray drift to cause a risk to sensitive species "at distances of 100 feet for backpack applications, 500 feet for ground broadcast applications, and over 900 feet for aerial applications" (1).	outreach and engagement, limiting access, and/or appropriate signage. For instance, users of the forest may be excluded from the area using barriers or signage until the pesticide dries. -Consider effects on local communities and indigenous peoples when considering limiting access to treatment areas. **Minimizing Risk of Spray Drift:** *unintentional spray drift has potential to increase risk to the environment and public welfare.* -Minimize potential for drift by increasing droplet size, considering weather patterns, and considering alternative application methods when pesticides must be applied near residences, crops, or other public areas. Controlling droplet size includes changes in: Volume, pressure, number of nozzles, nozzle orientation, nozzle type, boom length (3). -For ground boom applications: release height during application should be no more than 4 feet above the ground or crop canopy (2). -For ground and aerial applications: nozzles and pressures should be chosen that deliver "fine" or coarser droplets. (Indicated in nozzle manufacturers catalogues; accordance with American Society of Agricultural & Biological Engineers Standard 572.1) (2). -Applicators should not spray during temperature inversions (2). -For aerial applications: should not be applied when wind speeds exceed 15 mph, and if this is the case then the boom length should be adjusted to 65% or "less of the wingspan for fixed wing aircraft and 75% or less of the rotor blade diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed- wing aircraft and 90% or less of the rotor diameter for helicopters. The release height should be no higher than 10 feet from the top of
Social	**Rights (legal and customary)**	**Minimal indication of adverse effects to Rights, accept when access is restricted, was found when glyphosate is used according to label instructions in forestry applications.**	
	Others	**No additional values were identified in this assessment.**	

			the crop canopy or ground, unless a greater application height is required for pilot safety" (2).

[1] Mitigation strategies have been categorized to avoid redundancy

Sources

(1) USDA/Forest Service. (2011). Glyphosate Human Health and Ecological Risk Assessment Final Report. Prepared by Syracuse Environmental Research Associates, Inc. under USDA Forest Service Contract AG-3187-C-06-0010. Retrieved from https://www.fs.fed.us/foresthealth/pesticide/pdfs/Glyphosate_SERA_TR-052-22-03b.pdf.

(2) U.S. Environmental Protection Agency. (2019, May). Glyphosate Proposed Interim Registration Review Decision Case Number 0178 (Docket Number EPA-HQ-OP-2009-0361). Retrieved from https://www.regulations.gov/document?D=EPA-HQ-OPP-2009-0361-14442.

(3) Dow AgroSciences, LLC. (2015). Safety Data Sheet [Rodeo]. Retrieved from https://www.greenbook.net/corteva-agriscience-dow/rodeo.