APPENDIX 1-6. Use Site Footprints for Glyphosate

1. Agriculture Uses

Use site footprint layers represent the application sites for agricultural and non-agricultural label uses. The best available data to spatially characterize specific agricultural crops in the continuous United States (ConUS) is the Cropland Data Layer (CDL), produced by the U.S. Department of Agriculture. Several methods have been employed to minimize data errors within the CDL. The CDL is a landcover dataset that has over 100 cultivated classes that were grouped into 13 general classes (see **APPENDIX 1-5**). Lumping classes reduces the likelihood of errors of omission and commission between similar crop categories. In selecting how to group crops from the CDL, EPA referred to the grouping used by the U.S. Geological Survey (Baker and Capel, 2011[[1]](#footnote-1)) and the Generic Endangered Species Task Force (Amos et al, 2010[[2]](#footnote-2)). This information considers environmental factors that influence the location of crops and the error matrices provided by USDA with the original CDL data. By considering these agronomic factors in addition to the error matrices it is possible to improve the accuracy and year-to-year matches for these UDLs while retaining agronomic similarities. This categorical aggregation into the UDL crop groups does not account for changes in agricultural practices but the temporal aggregation does. The UDLs used in this assessment include 5 years of the CDL, 2013-2017, aggregated to account for changes year to year such as crop rotations. Anywhere a class occurs within those 5 years would be represented in the footprint layer. These temporally aggregated and categorially grouped layers generated from the CDL are referred to as Use Data Layers or UDLs.

The agricultural classes were further refined by comparing county level National Agricultural Statistics Service (NASS) 2012 Census of Agriculture (CoA) acreage reports to county level UDL acreages (additional detail can be found in the tool documentation, section “**Processing the Census of Agriculture Data”** section). The UDL acreages represent the temporally aggregated and categorically grouped processing steps previously described, summarized at the county level. If a county’s UDL acreage for a given class was lower than the NASS acreage, the UDL extent was expanded within cultivated areas until the UDL acreage matched or exceeded the NASS CoA. Using the temporally and categorially aggregated UDL as an input, a script was developed that compares each UDL in each county to the corresponding NASS CoA acreage report. If the UDL acreage was less than NASS, the raster was expanded in 1 pixel iterations until the NASS acreage value was reached, exceeded, or the area within the cultivated mask was built out. Region growing was restricted using the UDL Cultivated Layer from the last year of the CDL as a mask (2017). This avoids buffering into any non-agricultural landcover types. This method reduced landcover mapping errors by adjusting the extent of each category to the CoA values, in this case, 2012. Additional details and the python scripts for this process can be found in with the tool documentation, **Generating Use Data Layers**, “**CDL to UDL Processing and Action Area Python Scripts**” section.

Every assessment begins with cross-walking registered uses into a landcover category. Chemicals are often not represented by all 13 UDL. Some chemicals specify geographic restrictions for a given use (i.e., application on wheat is limited to the state of Idaho). Geographic limitations for registered uses are imposed on the dataset downstream in the data processing workflow. The geographic restriction should be extracted from the use layer before it is aggregated with all other chemical uses to generate the action area for the chemical. Glyphosate’s agricultural uses are crossed to 9 of the UDLs classes with geographic restrictions on most of them. A complete crosswalk for the glyphosate agricultural uses is provided in **Table 1** generated from **Attachment 1-4.** This crosswalk includes the label use name, the name(s) from the Census of Agriculture, SUUM use site (**APPENDIX 1-4**), and the UDL.

In addition to the potential use site each UDL is buffered in all directions using the ESRI ArcGIS Euclidean distance tool. This buffered area represents the potential exposure area associated with drift.

The CDL is not available for areas outside of the contiguous United States (ConUS). The CoA is often unavailable outside of ConUS as well. The Agricultural UDL Data Sources section describes how agriculture was spatially modeled by regions outside of ConUS, referred to as the non-lower 48 (NL48).

1. Non-Agricultural Uses

Non-agricultural label uses include a wide range of landcover and land use categories. Each label use was carefully considered and cross-walked with the best available landcover data. Where available, the 2011 National Land Cover Dataset (NLCD) was used to represent many non-agricultural label uses. Where NLCD wasn’t available, the NOAA C-CAP dataset and corresponding landcover classes were used. Details on the data sources for each non-agricultural UDL are provided in the Non-Agricultural UDL Data Source section. A complete crosswalk for the glyphosate non-agricultural uses is provided in **Table 2**. This crosswalk includes the label use name, SUUM use site (**APPENDIX 1-4**), and the UDL data sources used to generate each layer are provided in the UDL data source section.

1. Action Area

To create the action area for glyphosate all pertinent agricultural and non-agricultural UDLs are combined. This is completed by placing the UDLs on top of each other and combining them into one footprint. The resulting layer includes all locations found in each of the UDLs and buffered areas represented as minimum distance to a potential use across UDLs. This sets the exposure area for glyphosate related to drift. For additional detail on how the action area is generated see the tool documentation, “**CDL to UDL Processing and Action Area Python Scripts**” section.

1. UDL Data Sources
	1. Agricultural UDL Data Sources for the CONUS and NL48
* **ConUS**
	+ Corn, Cotton, Soybeans, Wheat, Bermuda Grass Pasture, Citrus, Fallow, Grapes, Other Grains, Other Orchards, Other Row Crops, Pasture, Rice, and Vegetables and Ground Fruit, UDLs generated from the Cropland Data Layer (CDL) 2013-2017. See **APPENDIX 1-5** for details on the specific crops found in each UDL. National UDLS were used.
	+ **Bermuda Grass Pasture**
		- Bermuda Grass pasture is a registered use for glyphosate. It occurs throughout the southern US. This warm season turf grass species is typically grown in the warm season region and the transition zone region of the United States. The USDA defines these zones known as Plant Hardiness Zones (PHZ) based on long term temperature data. It was assumed that Warm Season Grasses are grown in approximately Zone 8 to 11, and transition grasses are grown in approximately Zone 6 to 7. The USDA PHZ 6-11 were combined into a single boundary that was used to refine the range where glyphosate could be used on warm season grass.



* + **Fallow**
		- Fallowis spatially represented using all cultivated land as identified in USDA’s Cropland Data Layer (2017).
	1. Agricultural UDL Data Sources for the NL48
* **Alaska (AK)**
	+ National Land Cover Dataset (NLCD) Cultivated Class (82)
	+ NASS CoA crosswalked to the general crop groups, summarized by county
		- *The summarized CoA data were generated as an option input dataset, and may or may not have been utilized in analysis*
* **Hawaii (HI)**
	+ National Oceanic & Atmospheric Administration (NOAA) Coastal Change Analysis Program (CCAP), Cultivated Class (6)
* **Puerto Rico (PR)**
	+ NLCD Cultivated Class (82)
* **Guam (GU)**
	+ CCAP Cultivated Class (6)
	+ Current CoA is not available for GU
* **Marianas (CNMI)**
	+ CCAP Cultivated Class (6)
	+ Current CoA is not available for CNMI
* **American Samoa (AS)**
	+ CCAP Cultivated Class (6)
	+ Current CoA is not available for AS
* **Virgin Islands (VI)**
	+ CCAP Cultivated Class (6)
	+ Current CoA is not available for VI
	1. Non-Agricultural UDL Data Sources ConUS and NL48

Non-agricultural label uses include a wide range of landcover and land use categories. Each label use was carefully considered and cross-walked with the best available land cover data. Where available, the 2011 National Land Cover Dataset (NLCD) was used to represent many non-agricultural label uses (see below). Where NLCD wasn’t available, the NOAA C-CAP and other dataset outlined below were used. Below is a sample of label classes that were represented using NLCD Developed or Open Space Developed land use categories.

* Grain/cereal/flour bins
* Grain/cereal/flour elevators
* Household/domestic dwellings (perimeter outdoor only)
* Non-agricultural outdoor building structures
* Ornamental and/or shade trees
* Ornamental herbaceous plants
* Ornamental non-flowering plants
* Ornamental woody shrubs and vines
* Refuse/solid waste containers (outdoors)
* Refuse/solid waste sites (outdoors)
* Commercial/Institution-Al/ Industrial Premises/ Equip. (Indoor and Outdoor) – Broadcast, Crack and Crevice/Void
* Domestic Dwellings Outdoor Premises;
* Food Processing Plant Premises (Nonfood Contact) – Crack and Crevice
* Nonagricultural Outdoor Buildings/Structures
* Poultry Litter
* Recreational Areas
* Sewer Manhole Covers and Walls
* Utilities – Broadcast
* Wood Protection Treatment to Buildings/Products Outdoor

When the NLCD was inadequate to represent a label use, other data sources were used in modeling as appropriate. The following list describes each label use and how it was spatially modeled by region.

* **Aquatic Herbicide**
	+ **ConUS**
		- Spatially represented as all area under US jurisdiction
	+ **Alaska**
		- Spatially represented as all area under US jurisdiction
	+ **Hawaii**
		- Spatially represented as all area under US jurisdiction
	+ **Puerto Rico**
		- Spatially represented as all area under US jurisdiction
	+ **Guam**
		- Spatially represented as all area under US jurisdiction
	+ **Marianas**
		- Spatially represented as all area under US jurisdiction
	+ **American Samoa**
		- Spatially represented as all area under US jurisdiction
	+ **Virgin Islands**
		- Spatially represented as all area under US jurisdiction
* **Conservation Reserve Program**

Conservation Reserve Program is spatially represented using all cultivated land as identified in USDA’s Cropland Data Layer (2017), and the Pasture UDL (see **APPENDIX 1-5** for the specific crops from the CDL used to generate the Pasture UDL).

* **Christmas Trees**

Cropland Data Layer (CDL) class 70, Christmas Trees, are used for ConUS. These are not characterized anywhere else.

* + **ConUS**
		- Cropland Data Layer (CDL) class 70, Christmas Trees
	+ **Alaska**
		- No Christmas Tree land cover data is available
	+ **Hawaii**
		- No Christmas Tree land cover data is available
	+ **Puerto Rico**
		- No Christmas Tree land cover data is available
	+ **Guam**
		- No Christmas Tree land cover data is available
	+ **Marianas**
		- No Christmas Tree land cover data is available
	+ **American Samoa**
		- No Christmas Tree land cover data is available
	+ **Virgin Islands**
		- No Christmas Tree land cover data is available
* **Developed**

Developed land cover is used to spatially represent certain non-agricultural label uses

* + **ConUS**
		- NLCD class 22-24
	+ **Alaska**
		- NLCD class 22-24
	+ **Hawaii**
		- CCAP class 2-4
	+ **Puerto Rico**
		- NLCD class 22-24
	+ **Guam**
		- CCAP class 2
	+ **Marianas**
		- CCAP class 2
	+ **American Samoa**
		- CCAP class 2
	+ **Virgin Islands**
		- CCAP class 2
* **Forest Trees**

Forested areas managed for timber extraction, forested areas, forest tree plantations

* + **ConUS**
		- Cropland Data Layer (CDL) class 70, Christmas Trees
		- Include all the following LandFire Existing Vegetation Type (EVT) classes; "Recently Logged-Herb and Grass Cover", "Recently Logged-Shrub Cover", "Recently Logged-Tree Cover", "Managed Tree Plantation-Northern and Central Hardwood and Conifer Plantation Group", or "Managed Tree Plantation-Southeast Conifer and Hardwood Plantation Group"
		- Include any of the following United States Geologic Survey (USGS) National Gap Analysis Program (GAP) Public Model Ready Events; "Thinning", "Other Mechanical", "Clearcut", "Harvest", or "Reforestation"
		- Include any of the following USGS GAP Land Cover classes; "Recently Logged Areas", "Harvested Forest - Grass/Forb Regeneration", "Harvested Forest-Shrub Regeneration", "Harvested Forest - Northwestern Conifer Regeneration", "Managed Tree Plantation", "Evergreen Plantation or Managed Pine", "Deciduous Plantations"
		- Include either of the following USGS GAP Protected Areas Database classes where NLCD indicates "Forest" (41-43); "3 - managed for multiple uses - subject to extractive (*e.g*., mining or logging) or Off Highway Vehicles (OHV) use" and "4 - no known mandate for protection"
	+ **Alaska**
		- Include either of the following USGS GAP Protected Areas Database classes where NLCD indicates "Forest" (41-43); "3 - managed for multiple uses - subject to extractive (*e.g*., mining or logging) or OHV use" and "4 - no known mandate for protection"
		- Include any of the following USGS GAP Public Model Ready Events; "Thinning", "Other Mechanical", "Clearcut", "Harvest", or "Reforestation"
		- AK LandFire EVT and GAP land cover do not have classes indicative of forest management
	+ **Hawaii**
		- Include the following LandFire EVT class; “Hawai'i Managed Tree Plantation”
		- Include either of the following USGS GAP Protected Areas Database classes where CCAP indicates "Forest" (9-11); "3 - managed for multiple uses - subject to extractive (*e.g*., mining or logging) or OHV use" and "4 - no known mandate for protection"
		- HI GAP land cover and USGS GAP Public Model Ready Events for HI do not have classes indicative of forest management
	+ **Puerto Rico**
		- Include the following GAP land cover classes; “Abandoned dry forest plantation”, “Woody agriculture and plantations: Palm plantations”
		- Include either of the following USGS GAP Protected Areas Database classes where CCAP indicates "Forest" (9-11); "3 - managed for multiple uses - subject to extractive (*e.g.*, .mining or logging) or OHV use" and "4 - no known mandate for protection"
		- PR LandFire EVT is not available
	+ **Guam**
		- Include either of the following USGS GAP Protected Areas Database classes where CCAP indicates "Forest" (9-11); "3 - managed for multiple uses - subject to extractive (*e.g*., mining or logging) or OHV use" and "4 - no known mandate for protection"
		- LandFire EVT, GAP land cover, and USGS GAP Public Model Ready Events are not available for Guam
	+ **Marianas**
		- Include either of the following USGS GAP Protected Areas Database classes where CCAP indicates "Forest" (9-11); "3 - managed for multiple uses - subject to extractive (*e.g*., mining or logging) or OHV use" and "4 - no known mandate for protection"
		- LandFire EVT, GAP land cover, and USGS GAP Public Model Ready Events are not available for the Marianas
	+ **American Samoa**
		- LandFire EVT, GAP land cover, and USGS GAP Public Model Ready Events are not available for the Marianas
		- USGS GAP Protected Areas Database does not indicate areas indicative of forest management
	+ **Virgin Islands**
		- Include either of the following USGS GAP Protected Areas Database classes where CCAP indicates "Forest" (9-11); "3 - managed for multiple uses - subject to extractive (*e.g*., mining or logging) or OHV use" and "4 - no known mandate for protection"
		- LandFire EVT, GAP land cover, and USGS GAP Public Model Ready Events are not available for the Marianas
* **Noncultivated**
	+ **ConUS**
		- Spatially represented as the inverse of all cultivated land as identified in USDA’s Cropland Data Layer (2017).
	+ **Alaska (AK)**
		- Spatially represented as the inverse of the National Land Cover Dataset (NLCD) Cultivated Class (82)
	+ **Hawaii (HI)**
		- Spatially represented as the inverse of the National Oceanic & Atmospheric Administration (NOAA) Coastal Change Analysis Program (CCAP), Cultivated Class (6)
	+ **Puerto Rico (PR)**
		- Spatially represented as the inverse of the NLCD Cultivated Class (82)
	+ **Guam (GU)**
		- Spatially represented as the inverse of the CCAP Cultivated Class (6)
	+ **Marianas (CNMI)**
		- Spatially represented as the inverse of the CCAP Cultivated Class (6)
	+ **American Samoa (AS)**
		- Spatially represented as the inverse of the CCAP Cultivated Class (6)
	+ **Virgin Islands (VI)**
		- Spatially represented as the inverse of the CCAP Cultivated Class (6)
* **Nurseries**

Non-agricultural Nurseries represent a land use that is not exclusive to any nationwide land cover class. Nurseries are mapped by using geocoded Dun and Bradstreet (D&B) business database addresses. Label uses that are covered by this UDL found on ornamentals, shrubs/vines, and non-food trees, grown in a non-agricultural setting (*e.g.* Retail Nurseries, Garden supple stores or retail horticultural location. This UDL does not include labels represented by agricultural nursery uses such as trees grown for food, tree plantations or transplanted trees, shrubs, and ornamentals. These agricultural nurseries are captured in the agricultural UDLs described above.

* + **ConUS**
		- Using the Dun and Bradstreet business database, select all records with any SIC Codes starting with “018” (Horticultural Specialties) or “526” (Retail Nurseries, Lawn And Garden Supply Stores)
		- Selected points are then buffered by their facility size attribute. Where facility size is absent, substitute the Census of Agriculture’s average acreage by county, calculated using Nursery Totals. If a county’s nursery acreages are undisclosed, then an average of all county averages is used. A circular buffer is applied, where radius is solved for using the areas previously described. In an effort to map production facilities only and not business offices, use the ‘Location Type’ attribute to categorize locations.
	+ **Alaska**
		- Dun and Bradstreet business database was used in the same method as applied to ConUS.
	+ **Hawaii**
		- Dun and Bradstreet business database was used in the same method as applied to ConUS.
	+ **Puerto Rico**
		- Dun and Bradstreet business database was used in the same method as applied to ConUS.
	+ **Guam**
		- No Dun and Bradstreet business data were available for Guam.
	+ **Marianas**
		- No Dun and Bradstreet business data were available for Marianas.
	+ **American Samoa**
		- No Dun and Bradstreet business data were available for American Samoa.
	+ **Virgin Islands**
		- Dun and Bradstreet business database was used in the same method as applied to ConUS.
* **Open Space Developed**

Open Space Developed (OSD) is used to spatially represent certain non-agricultural label uses

* + **ConUS**
		- NLCD class 21
	+ **Alaska**
		- NLCD class 21
	+ **Hawaii**
		- CCAP class 5
	+ **Puerto Rico**
		- NLCD class 21
	+ **Guam**
		- CCAP class 5
	+ **Marianas**
		- CCAP class 5
	+ **American Samoa**
		- CCAP class 5
	+ **Virgin Islands**
		- CCAP class 5
* **Right-of-Ways**

NLCD developed classes are sufficient for most scenarios. NLCD developed classes are insufficient in cases of rural minor roads, rural transmission lines, and rural pipelines.

* + **ConUS**
		- All NLCD developed classes everywhere (21-24)
			* *\*\* For generating Euclidean distance for ConUS Right-of-Ways (ROW), NLCD Developed classes do not have Euclidean distance algorithms applied. NLCD Developed classes are included in the footprint as a zero value in the final Euclidean distance file. The other component ROW classes do have Euclidean distance algorithms applied.*
		- ESRI Railroads
		- United States Census Bureau’s Topologically Integrated Geographic Encoding and Referencing database (TIGER) transmission (MAF/TIGER Feature Class Code (MTFCC) code L4020) and pipeline (MTFCC code L4010) data
		- Bonneville Power Administration’s (BPA) Right-of-Way data
		- Navteq roads
	+ **Alaska**
		- See ConUS method (without BPA data)
	+ **Hawaii**
		- All National Oceanic & Atmospheric Administration (NOAA) Coastal Change Analysis Program (CCAP) developed classes everywhere (2-5)
		- ESRI Railroads
		- TIGER transmission (MTFCC code L4020) and pipeline (MTFCC code L4010) data
		- NAVTEQ roads
	+ **Puerto Rico**
		- See ConUS method (without BPA data)
	+ **Guam**
		- All CCAP developed classes everywhere (2-5)
		- No ESRI Railroads data available for Guam
		- TIGER transmission (MTFCC code L4020) and pipeline (MTFCC code L4010) data
		- No NAVTEQ roads data available for Guam
	+ **Marianas**
		- All CCAP developed classes everywhere (2-5)
		- No ESRI Railroads data available for Marianas
		- TIGER transmission (MTFCC code L4020) and pipeline (MTFCC code L4010) data
		- No NAVTEQ roads data available for Marianas
	+ **American Samoa**
		- All CCAP developed classes everywhere (2-5)
		- No ESRI Railroads data available for American Samoa
		- No TIGER data available for American Samoa
		- No NAVTEQ roads data available for American Samoa
	+ **Virgin Islands**
		- All CCAP developed classes everywhere (2-5)
		- No ESRI Railroads data available for Virgin Islands
		- No TIGER data available for Virgin Islands
		- No NAVTEQ roads data available for Virgin Islands

Table 1. Crosswalk of glyphosate agricultural uses across crop sources.

| **Use (From Label-Use)** | **Crop Reported in SUUM** | **Census Of Agriculture** | **ConUS UDL** | **NL48 UDL** |
| --- | --- | --- | --- | --- |
| Alfalfa; Roundup Ready Alfalfa | Alfalfa | HAY; HAYLAGE | Pasture | Pasture |
| Aloe vera | Aloe vera | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Asparagus | Asparagus | ASPARAGUS | Vegetables and Ground Fruit | Ag |
| Bamboo shoots | Bamboo shoots | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Beans (Dry); Legume Vegetables (Succulent)  | Beans (Snap, Bush, Pole, String) | BEANS, SNAP; BEANS, GREEN, LIMA; BEANS, DRY EDIBLE, (EXCL LIMA); BEANS, DRY EDIBLE, LIMA | Vegetables and Ground Fruit | Ag |
| Berry and Small Fruit  | Blueberry | BLUEBERRIES, TAME; BLUEBERRIES, WILD  | Vegetables and Ground Fruit | Ag |
| Berry and Small Fruit ; Cranberry | Caneberries | RASPBERRIES; BLACKBERRIES, INCL DEWBERRIES & MARIONBERRIES; LOGANBERRIES; BOYSENBERRIES | Vegetables and Ground Fruit | Ag |
| Berry and Small Fruit ; Cranberry | Other berries and small fruit | BERRIES, OTHER; CRANBERRIES; CURRANTS | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Broccoli | BROCCOLI | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Brussels Sprouts | BRUSSELS SPROUTS | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Cabbage | CABBAGE, HEAD | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Cauliflower | CAULIFLOWER | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Chinese Cabbage (Nappa) | CABBAGE, HEAD | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Cilantro | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Gai Lon | BROCCOLI | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Kale | GREENS, KALE | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Mustard | MUSTARD, SEED | Other Crops | Ag |
| Brassica Leafy Vegetables Group | Other Brassica (Cole) Leafy Vegetables | VEGETABLES, OTHER; GREENS, COLLARD; GREENS, MUSTARD; GREENS, TURNIP; CAMELINA; CABBAGE, MUSTARD | Vegetables and Ground Fruit | Ag |
| Brassica Leafy Vegetables Group | Rapini | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Buckwheat, Millet (pearl, proso), Quinoa | Other Cereal Grains | BARLEY; RYE; BUCKWHEAT; EMMER & SPELT; MILLET, PROSO | Other Grains | Ag |
| Bulb Vegetables | Garlic | GARLIC | Vegetables and Ground Fruit | Ag |
| Bulb Vegetables | Leek | ONIONS, GREEN | Vegetables and Ground Fruit | Ag |
| Bulb Vegetables | Onions | ONIONS, GREEN; ONIONS, DRY | Vegetables and Ground Fruit | Ag |
| Bulb Vegetables | Other Bulb Vegetables | VEGETABLES, OTHER; POPCORN, SHELLED | Vegetables and Ground Fruit | Ag |
| Cactus (fruit and pads), Palm (heart, leaves, oil) | Cactus Leaf | NON-CITRUS, OTHER, (EXCL BERRIES) | Other Orchards | Ag |
| Cactus (fruit and pads), Palm (heart, leaves, oil) | Cactus Pear | NON-CITRUS, OTHER, (EXCL BERRIES) | Other Orchards | Ag |
| Carrot; Root & Tuber Vegetables | Carrots | CARROTS | Vegetables and Ground Fruit | Ag |
| Citrus Fruit | Grapefruit | GRAPEFRUIT | Citrus | Ag |
| Citrus Fruit | Kumquat | KUMQUATS | Citrus | Ag |
| Citrus Fruit | Lemons | LEMONS | Citrus | Ag |
| Citrus Fruit | Lime | LIMES | Citrus | Ag |
| Citrus Fruit | Oranges | ORANGES | Citrus | Ag |
| Citrus Fruit | Other Citrus Fruits | CITRUS, OTHER; TEMPLES | Citrus | Ag |
| Citrus Fruit | Pomelo | CITRUS, OTHER | Citrus | Ag |
| Citrus Fruit | Tangelo | TANGELOS | Citrus | Ag |
| Citrus Fruit | Tangelos, Bearing | TANGELOS | Citrus | Ag |
| Citrus Fruit | Tangerine | TANGERINES | Citrus | Ag |
| Citrus Fruit | Tangerines, Bearing | TANGERINES | Citrus | Ag |
| Clover, Kudzu, Lespedeza, Lupin, Sainfoin, Trefoil, Velvet bean, Vetch (all types)) | Clover | LEGUMES, CLOVER, RED, SEED; LEGUMES, CLOVER, CRIMSON, SEED; LEGUMES, CLOVER, WHITE SEED; LEGUMES, CLOVER, LADINO, SEED  | Other Crops | Ag |
| Conservation Reserve Program (CRP) Land | Conservation Reserve Program (CRP) Land | NA | CRP | Ag |
| Corn (field, seed, silage); Roundup Ready Corn (GA-21); Roundup Ready Corn 2 (Field Corn with Roundup Ready 2 Technology) (NK603) | Corn | CORN, GRAIN; CORN, SILAGE | Corn | Ag |
| Cotton; Roundup Ready Flex Cotton; Roundup Ready Cotton | Cotton | COTTON | Cotton | Ag |
| Cucurbit Vegetables & Fruits | Bitter Melon | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Cantaloupes | MELONS, CANTALOUP | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Chayote | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Cucumbers | CUCUMBERS | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Melons, Honeydew | MELONS, HONEYDEW | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Other Cucurbit Vegetables | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Pumpkins | PUMPKINS | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Squash | SQUASH | Vegetables and Ground Fruit | Ag |
| Cucurbit Vegetables & Fruits | Watermelons | MELONS, WATERMELON | Vegetables and Ground Fruit | Ag |
| Dry Peas, Lentils and Chickpeas (dry)5 | Dry Beans/Peas | PEAS, DRY EDIBLE; PEAS, DRY, SOUTHERN (COWPEAS); PEAS, AUSTRIAN WINTER; GUAR; LENTILS | Vegetables and Ground Fruit | Ag |
| Fallow Cropland (includes cropland between growing seasons) | Fallow | NA | Fallow | Ag |
| Feed Barley; Barley | Barley | BARLEY | Other Grains | Ag |
| Fruiting Vegetables | Eggplant | EGGPLANT | Vegetables and Ground Fruit | Ag |
| Fruiting Vegetables | Other Fruiting Vegetables | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Fruiting Vegetables | Peppers | PEPPERS, CHILE; PEPPERS, BELL | Vegetables and Ground Fruit | Ag |
| Fruiting Vegetables | Tomatillo | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Fruiting Vegetables | Tomatoes | TOMATOES | Vegetables and Ground Fruit | Ag |
| Globe artichoke | Artichoke | ARTICHOKES | Vegetables and Ground Fruit | Ag |
| Grain Sorghum (Milo) | Sorghum (Milo) | SORGHUM, GRAIN; SORGHUM, SILAGE; SORGHUM, SYRUP | Other Grains | Ag |
| Grapes (raisin, table, wine) | Grapes, Raisin | GRAPES | Grapes | Ag |
| Grapes (raisin, table, wine) | Grapes, Table | GRAPES | Grapes | Ag |
| Grapes (raisin, table, wine) | Grapes, Wine | GRAPES | Grapes | Ag |
| Grass or Turfgrass Seed and Sod Production | Bermudagrass | HAY; HAYLAGE | Bermuda Grass | Pasture |
| Grass or Turfgrass Seed and Sod Production | Forage Hay/Silage | HAY; HAYLAGE | Pasture | Pasture |
| Grass or Turfgrass Seed and Sod Production | Grass, Seed | GRASSES & LEGUMES, OTHER, SEED; GRASSES, BAHIA GRASS, SEED; GRASSES, BENTGRASS, SEED; GRASSES, BERMUDA GRASS, SEED; GRASSES, BLUEGRASS, KENTUCKY, SEED; GRASSES, BROMEGRASS, SEED; GRASSES, FESCUE, SEED; GRASSES, ORCHARDGRASS, SEED; GRASSES, RYEGRASS, SEED; GRASSES, SUDANGRASS, SEED; GRASSES, TIMOTHY, SEED; GRASSES, WHEATGRASS, SEED; LEGUMES, ALFALFA, SEED; LEGUMES, BIRDSFOOT TREFOIL, SEED; LEGUMES, CLOVER, CRIMSON, SEED; LEGUMES, CLOVER, LADINO, SEED; LEGUMES, CLOVER, RED, SEED; LEGUMES, CLOVER, WHITE, SEED; LEGUMES, LESPEDEZA, SEED; LEGUMES, VETCH, SEED | Other Crops | Ag |
| Grass or Turfgrass Seed and Sod Production | Orchardgrass | HAY; HAYLAGE | Pasture | Pasture |
| Grass or Turfgrass Seed and Sod Production | Other Grass Forage, Fodder and Hay | HAY; HAYLAGE | Pasture | Pasture |
| Grass or Turfgrass Seed and Sod Production | Ryegrass | HAY; HAYLAGE | Pasture | Pasture |
| Grass or Turfgrass Seed and Sod Production | Sudangrass | HAY; HAYLAGE | Pasture | Pasture |
| Grass or Turfgrass Seed and Sod Production | Timothy | HAY; HAYLAGE | Pasture | Pasture |
| Grass or Turfgrass Seed and Sod Production | Vetch | LEGUMES, VETCH, SEED | Other Crops | Ag |
| Herbs & Spices | Basil, Sweet | HERBS, DRY; HERBS, FRESH CUT | Vegetables and Ground Fruit | Ag |
| Herbs & Spices | Mint | MINT, OIL; MINT, TEA LEAVES | Vegetables and Ground Fruit | Ag |
| Herbs & Spices | Parsley | PARSLEY | Vegetables and Ground Fruit | Ag |
| Herbs & Spices | Pepper, Spice | HERBS, DRY; HERBS, FRESH CUT; DILL, OIL | Vegetables and Ground Fruit | Ag |
| Herbs & Spices | Rosemary | HERBS, DRY; HERBS, FRESH CUT | Vegetables and Ground Fruit | Ag |
| Herbs & Spices | Sage | HERBS, DRY; HERBS, FRESH CUT | Vegetables and Ground Fruit | Ag |
| Hops; Grass or Turfgrass Seed and Sod Production | Other Nongrass Animal Feeds (Forage, Fodder, Straw, and Hay) | HAY; HAYLAGE; SWITCHGRASS; HOPS | Pasture | Pasture |
| Kenaf, Leucaena | Kenaf, Leucaena | GRASSES & LEGUMES, OTHER, SEED | Other Crops | Ag |
| Kiwi | Kiwifruit | KIWIFRUIT | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Bok Choy | CABBAGE, CHINESE | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Celery | CELERY | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Chinese Greens | CABBAGE, HEAD | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Dandelion Green | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Endive (Escarole) | ESCAROLE & ENDIVE | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Fennel | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Lettuce | LETTUCE | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Other Leafy Vegetables (Except Brassica) | VEGETABLES, OTHER; GINGER ROOT; GINSENG; RHUBARB | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Radicchio | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Spinach | SPINACH | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Swiss Chard | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Leafy Vegetables | Watercress | WATERCRESS | Vegetables and Ground Fruit | Ag |
| Legume Vegetables (Succulent)  | Lima Beans | BEANS, GREEN, LIMA; BEANS, DRY EDIBLE, LIMA | Vegetables and Ground Fruit | Ag |
| Legume Vegetables (Succulent)  | Peas (Fresh/Green/Sweet) | PEAS, AUSTRIAN WINTER; PEAS, CHINESE (SUGAR & SNOW); PEAS, GREEN, (EXCL SOUTHERN); PEAS, GREEN, SOUTHERN (COWPEAS) | Vegetables and Ground Fruit | Ag |
| Oats | Oats | OATS | Other Grains | Ag |
| Oilseed Crops  | Jojoba Bean | JOJOBA | Other Crops | Ag |
| Oilseed Crops  | Other Oil Seed Crops | FIELD CROPS, OTHER; FLAXSEED; SESAME | Other Crops | Ag |
| Oilseed Crops; Roundup Ready Canola (Winter Varieties); Roundup Ready Canola (Spring Varieties); TruFlex Roundup Ready Canola (spring varieties) | Canola (oilseed rape) | CANOLA; RAPESEED | Other Grains | Ag |
| Okra | Okra | OKRA | Vegetables and Ground Fruit | Ag |
| Olive | Olives | OLIVES | Other Orchards | Ag |
| Palm (heart, leaves, oil) | Palm (heart, leaves, oil) | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Pastures planted to any grass (Gramineae family) except corn, sorghum, sugarcane and the cereal and grain crops | Pastureland | HAY; HAYLAGE | Pasture | Pasture |
| Peanut (ground nut) | Peanuts | PEANUTS | Other Row Crops | Ag |
| Pome Fruit | Apples | APPLES | Other Orchards | Ag |
| Pome Fruit | Other Pome Fruits | NON-CITRUS, OTHER, (EXCL BERRIES) | Other Orchards | Ag |
| Pome Fruit | Pears | PEARS | Other Orchards | Ag |
| Pome Fruit | Quince | NON-CITRUS, OTHER, (EXCL BERRIES) | Other Orchards | Ag |
| Rice | Rice | RICE | Rice | Ag |
| Root & Tuber Vegetables | Daikon | DAIKON | Vegetables and Ground Fruit | Ag |
| Root & Tuber Vegetables | Garden Beet | BEETS | Vegetables and Ground Fruit | Ag |
| Root & Tuber Vegetables | Horseradish | HORSERADISH | Vegetables and Ground Fruit | Ag |
| Root & Tuber Vegetables | Other Root and Tuber Vegetables | VEGETABLES, OTHER; CHICORY; TARO | Vegetables and Ground Fruit | Ag |
| Root & Tuber Vegetables | Parsnip | VEGETABLES, OTHER | Vegetables and Ground Fruit | Ag |
| Root & Tuber Vegetables | Potatoes | POTATOES | Vegetables and Ground Fruit | Ag |
| Root & Tuber Vegetables | Radish | RADISHES | Vegetables and Ground Fruit | Ag |
| Root & Tuber Vegetables | Turnip | TURNIPS | Vegetables and Ground Fruit | Ag |
| Rye | Rye | RYE | Other Grains | Ag |
| Safflower | Safflower | SAFFLOWER | Other Grains | Ag |
| Soybean; Roundup Ready and Roundup Ready 2 Yield Soybeans | Soybeans | SOYBEANS | Soybeans | Ag |
| Stone Fruit | Apricots | APRICOTS | Other Orchards | Ag |
| Stone Fruit | Cherries | CHERRIES, SWEET; CHERRIES, TART | Other Orchards | Ag |
| Stone Fruit | Nectarines | NECTARINES | Other Orchards | Ag |
| Stone Fruit | Other Stone Fruits | NON-CITRUS, OTHER, (EXCL BERRIES) | Other Orchards | Ag |
| Stone Fruit | Peaches | PEACHES | Other Orchards | Ag |
| Stone Fruit | Plumcots, Pluot, and Other Plum-Apricot | PLUM-APRICOT HYBRIDS, INCL PLUMCOTS & PLUOTS | Other Orchards | Ag |
| Stone Fruit | Plums/Prunes | PLUMS & PRUNES | Other Orchards | Ag |
| Strawberry | Strawberries | STRAWBERRIES | Vegetables and Ground Fruit | Ag |
| Sugar beet ; Roundup Ready Sugarbeet | Sugar Beets | SUGARBEETS | Other Row Crops | Ag |
| Sugarcane | Sugarcane | SUGARCANE, SEED; SUGARCANE, SUGAR | Other Grains | Ag |
| Sunflower | Sunflowers | SUNFLOWER | Other Row Crops | Ag |
| Sweet Corn; Sweet Corn with Roundup Ready 2 Technology (Roundup Ready Sweet Corn) | Sweet Corn | SWEET CORN | Vegetables and Ground Fruit | Ag |
| Sweet Potato; Root & Tuber Vegetables | Sweet Potato | SWEET POTATOES | Vegetables and Ground Fruit | Ag |
| Tobacco | Tobacco | TOBACCO | Other Row Crops | Ag |
| Tree Nuts | Almonds | ALMONDS | Other Orchards | Ag |
| Tree Nuts | Chestnut | CHESTNUTS | Other Orchards | Ag |
| Tree Nuts | Hazelnuts | HAZELNUTS | Other Orchards | Ag |
| Tree Nuts | Other Tree Nuts | TREE NUTS, OTHER; MACADAMIAS; COFFEE | Other Orchards | Ag |
| Tree Nuts | Pecans | PECANS | Other Orchards | Ag |
| Tree Nuts | Pistachios | PISTACHIOS | Other Orchards | Ag |
| Tree Nuts | Walnuts | WALNUTS, ENGLISH | Other Orchards | Ag |
| Triticale | Triticale | TRITICALE | Other Grains | Ag |
| Tropical and Subtropical Trees and Fruits | Avocados | AVOCADOS | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Cherimoya | NON-CITRUS, OTHER, (EXCL BERRIES) | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Dates, Bearing | DATES | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Figs | FIGS | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Guava | GUAVAS | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Jujube | NON-CITRUS, OTHER, (EXCL BERRIES) | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Mango | MANGOES | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Other Tropical and Subtropical Fruits | NON-CITRUS, OTHER, (EXCL BERRIES); BANANAS; PAPAYAS; PASSION FRUIT | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Persimmons | PERSIMMONS | Other Orchards | Ag |
| Tropical and Subtropical Trees and Fruits | Pomegranates | POMEGRANATES | Other Orchards | Ag |
| Wheat (all)  | Wheat, Spring | WHEAT | Wheat | Ag |
| Wheat (all)  | Wheat, Winter | WHEAT | Wheat | Ag |

Table 2. Crosswalk of glyphosate non-agricultural uses.

| **Use (From Label-Use)** | **Crop Reported in SUUM** | **Census Of Agriculture** | **ConUS UDL** | **Notes UDL** |
| --- | --- | --- | --- | --- |
| Non-Crop | Applied by Consumers; Ornamental Lawns, Turf, and associated Ornamentals | NA | Developed | Developed |
| Non-Crop | Applied by Landscape Contractors, Ornamental Lawns, Turf, and associated Ornamentals | NA | Developed | Developed |
| Non-Crop | Applied by Landscape Contractors; Ornamental Lawns, Turf, and associated Ornamentals | NA | Developed | Developed |
| Non-Crop | Applied by Lawn Care Operators (primarily includes applications to lawns/turf); Ornamental Lawns, Turf, and associated Ornamentals | NA | Developed | Developed |
| Non-Crop | Applied by Lawn Care Operators, Ornamental Lawns, Turf, and associated Ornamentals | NA | Developed | Developed |
| Aquatic Sites including all bodies of fresh and brackish water that may be flowing, nonflowing or transient including lakes, rivers, streams, ponds, estuaries, rice levees, seeps, irrigation and drainage ditches, ditch banks, canals, reservoirs, wastewater treatment facilities, wetland sites, wildlife habitat restoration and management areas and similar sites. | Aquatic Sites | NA | Aquatic Herbicide | Aquatic Herbicide |
| Conservation Reserve Program (CRP) Land | Conservation Reserve Program (CRP) Land | NA | CRP | CRP |
| Non-Crop | Golf Courses | NA | Open Space Developed | Open Space Developed |
| Non-Crop | Institutional Turf Facilities | NA | Open Space Developed | Open Space Developed |
| Non-Crop | Nursery and Greenhouse Ornamentals | NA | Nurseries | Nurseries |
| Non-Crop | Other Non-Cropland Uses | NA | Noncultivated | Noncultivated |
| Christmas Trees  | Other Non-Food Tree Crops | NA | XmasTrees | N/A |
| Non-Crop | Railways | NA | Right of Way | Right of Way |
| Non-Crop | Rights of Way | NA | Right of Way | Right of Way |
| Non-Crop | Roadways | NA | Right of Way | Right of Way |
| Forestry - Production Areas or Plantations including Site Preparation, Mid-Rotation and other Release Treatments, Timber Stand Improvement, Poplar Production, Silvicultural Nursery Sites, Reforestation Treatments and Maintaining Logging Roads; Pine, Poplar, Eucalyptus, and Other Non-Food Tree Crops | Trees | NA | Forest Trees | Forest Trees |
| Non-Crop | Utility and Pipeline ROWs | NA | Right of Way | Right of Way |

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