Label Language: Temperature Inversions
February 2009
Helicopter application of glyphosate
Application from 2:00 to 5:00 pm
Wind 2-3 mph from N.
Temperature inversion

Image: WSDA
# PASQUILL STABILITY CATEGORIES

<table>
<thead>
<tr>
<th>Surface Wind Speed (at 10 m) m/sec</th>
<th>Insolation</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>A</td>
<td>F</td>
</tr>
<tr>
<td>2-3</td>
<td>A-B</td>
<td>F</td>
</tr>
<tr>
<td>3-5</td>
<td>B</td>
<td>E</td>
</tr>
<tr>
<td>5-6</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>6</td>
<td>C-D</td>
<td>D</td>
</tr>
</tbody>
</table>

**The neutral category, D, should be assumed for overcast conditions during day or night.**

- A = Extremely Unstable
- B = Moderately Unstable
- C = Slightly Unstable
- D = Neutral
- E = Slightly Stable
- F = Moderately Stable
PAWS Stations Capable of Detecting Inversions
Inversions – 2002 – Kennewick

Elevation 429 ft

WSDA - Zamora
Inversions – 2002 – McClure

Elevation 2515 ft

WSDA - Zamora
Inversions at Patterson in 2002
Influence of Volume Applied! How to Account for on Label?
Spray Drift Management

Temperature Inversions
If applying at wind speeds less than 3 mph, the applicator must determine if: 1) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.
Aerial Drift Advisory

Industrial, Noncropland Label - 2007

Milestone®
Specialty Herbicide

- For control of susceptible weeds and certain woody plants, including invasive and noxious weeds, on rangeland, permanent grass pastures (including grasses grown for hay), Conservation Reserve Program (CRP) acres, non-cropland areas (such as roadsides, non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites.
**WIND**
Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. AVOID GUSTY AND WINDLESS CONDITIONS.

**Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

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**TEMPERATURE INVERSIONS**
Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.
8.1 Aerial Equipment

All labeled treatments may be made by aerial application provided that the applicator complies with the precautions and in separate supplemental labeling published by the manufacturer. DO NOT APPLY THIS PRODUCT USING AERIAL EQUIPMENT OTHER THAN THAT SPECIFIED IN THIS LABEL.

Use the recommended rates of this herbicide as indicated herein or in any other supplemental labeling published by Monsanto for this product. Uniform coverage is obtained by applying 44 fluid ounces per acre using aerial spray equipment. Consult Sections of this label for recommended volume of water and instructions.

FOR AERIAL APPLICATION IN ARKANSAS AND LOUISIANA, REFER TO THE FEDERAL SUPPLEMENTAL LABELS FOR THAT STATE OR COUNTY FOR SPECIFIC REQUIREMENTS.

This product, when tank-mixed with dicamba, may be applied by aerial, ground, or non-thermal ground equipment. When tank-mixing this product with 2,4-D, only aerial application in California is allowed. Tank mixtures may be applied by ground equipment in California for fallow and reclamation purposes only. Ensure uniform application. To avoid streaking or spatial variation in application rates, use uniform marking devices.

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to prevent drift movement from aerial applications to agriculture or adjacent sensitive areas:

1. The distance of the outermost nozzles on the boom from the protected area (e.g., riparian buffer, known habitat for threatened or endangered species) or other susceptible area (e.g., wind blowing away from protected area) should be maintained.

2. The nozzles must always point backward, parallel to the airplane's movement, or point downwards more than 45 degrees below the wingspan or rotor.

Importance of Droplet Size

The most effective way to reduce drift potential is through the use of proper spray droplet management strategy is to apply the largest droplets possible. Applying larger droplets reduces drift and ensures that applications are made properly, under the “Wind”, “Temperature and Humidity” and “Weathermax” sections of this label.

When making applications in low relative humidity, set up equipment to produce larger droplets in order to minimize drift. Fog-like sprays that are not properly atomized can result in drift and reduce efficacy. If drift is of concern, use flat spray nozzles. Check spray pattern and make necessary adjustments.
Aerial Drift Reduction Advisory

Wind
Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity
When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions
Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that move upward and rapidly dissipates indicates good vertical air mixing.
3 Notations in Different Label Sections:

**Application Restrictions: Aerial, Do not, and Spray Drift Management-Wind**

Wind: Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

**Do not apply under inversion.** A temporarily lower and lower air temperature creates behavior of smoke. Smoke column reduces in direction and velocity indicated by layering or no lateral movement.

**Herbicide**

Starane® is a trademark of Dow AgroSciences LLC
Salvo® is a registered trademark of Loveland Products, Inc.

For selective postemergence control of annual and perennial broadleaf weeds and volunteer potatoes in small grains and fallow cropland, and for on-farm non-cropland applications
Avoid spray drift. Avoid spray drift as much as possible, by keeping the open nozzle tips at least 12 inches above the plant canopy and by using low pressure and low volume application techniques.

Do not apply with a mist blower.

Spray drift can kill nearby plants. Carefully read and follow all label directions and precautions. If spray drift occurs, wash thoroughly before eating, drinking, or smoking.

For selective postemergence control of broadleaf weeds in non-residential turfgrass, including turfgrass grown for seed or sod farms, and certain ornamental plantings, such as conifers, non-leguminous woody species, and ornamental grasses, in landscapes and nurseries.
For selective control of broadleaf weeds in wheat and barley not underseeded with a legume, fallow cropland, grasses grown for seed, rangeland and permanent grass pastures, conservation reserve program (CRP) acres and non-cropland.

**Temperature Inversions**

If applying at wind speeds less than 3 mph, the applicator must determine if: a) conditions of temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.
WATER DISPERSIBLE GRANULE

Maverick® herbicide is a selective herbicide for the control of annual and perennial grasses and broadleaf weeds in winter annual and summer annual crops.

Droplets remain in a concentrated cloud laterally in a concentrated cloud (under low wind speeds) or in a vertical direction due to the light variable winds. Inversions are characterized by increasing fog; however, if fog is not present, the smoke from a ground source or an aircraft sets and often continue into the morning. Inversion conditions with variable wind speeds can influence wind patterns and how they affect drift.

For control of various insects infesting certain field, fruit, nut, and vegetable crops.

<table>
<thead>
<tr>
<th>Group</th>
<th>1B</th>
<th>INSECTICIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Ingredient:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chlorpyrifos: O,O-diethyl-O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate</td>
<td>44.0%</td>
<td></td>
</tr>
<tr>
<td>Other Ingredients</td>
<td>55.1%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>
In addition to Aerial Drift Reduction Advisory

Wind
Drift potential is lowest between factors, including droplet size and speed. Application should be direction and high inversion potential. Every applicator should familiar with local weather patterns.

Dow AgroSciences

Tordon® 22K

Specialty Herbicide

©Trademark of Dow AgroSciences LLC

For control of susceptible broadleaf weeds, woody plants and vines on rangeland and permanent grass pastures, fallow cropland, Conservation Reserve Program (CRP) acres, non-crop areas including forest planting sites, industrial manufacturing sites, ways-of-way such as electrical power lines, communication lines, pipelines, roadsides, railroads, and wildlife openings in forest and non-crop areas

Active Ingredient:
picloram: 4-amino-3,5,6-trichloropicolinic acid,
potassium salt .......................................................... 24.4%
Wind
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Questions to Ask For Quality Language

- Mandatory or Precautionary Language
  - If under 3 mph, applicator must . . .
  - Recognize stable air conditions and avoid . . .

- Volume of Applied Spray
  - Spot spray, small volume – how to exempt
  - Is there a lower limit of spray volume, say if apply under 50 gallons by ground in one day?

- Method of Application
  - Spot, injection, directed/basal spray, chemigation, ground boom, aerial
  - Drop size variance: Coarse
Questions to Ask For Quality Language

• Label Location
  - Spray Drift
  - Spray Drift Aerial Only
  - Per Each Application Method – refer to general inversion precautionary statement

• Herbicide Label Consistency
  - Significant differences among herbicides, other than method of application and site of application

• Location of “Temperature” Inversion
  - Anywhere in area up to 100 feet
  - At or below boom height?
Questions to Ask For Quality Language

- **Critical Time**
  - Hours before sunset, sunrise
  - Night-time spraying: insecticides, fungicides

- **Indicators**
  - Near application site
  - Road dust
APPLICATION METHODS

Ground Application:

1. Apply with ground equipment only. DO NOT APPLY BY AIR.
2. DO NOT OVERLAP SPRAY PATTERNS BEYOND EQUIPMENT MANUFACTURERS RECOMMENDATIONS AS EXCESSIVE RATES MAY RESULT IN ADVERSE CROP RESPONSES.
3. Apply CAPRENO™ Herbicide alone or in tank mixtures in a minimum of 10 gallons of spray mixture per acre. Uniform, thorough spray coverage is important to achieve consistent weed control.
4. Keep the spray boom at the lowest possible spray height above the target surface. Refer to the nozzle manufacturer’s recommendations for proper nozzle, pressure setting and sprayer speed for optimum product performance and minimal spray drift.
5. Uneven application, sprayers not properly calibrated, or improper incorporation may decrease the level of weed control and/or increase the level of adverse crop response. Over application or boom overlapping may result in stand loss. Maintain a constant ground speed while applying this product to ensure proper distribution. MAINTAIN ADEQUATE AGITATION AT ALL TIMES, INCLUDING MOMENTARY STOPS.
6. SPRAY DRIFT MANAGEMENT
   a. To reduce the potential of spray drift to non-target areas, apply this product using nozzles which deliver medium to coarse spray droplets as defined by ASAE standard S-572 and as shown in nozzle manufacturer’s catalogs. Flat fan nozzles of 80° or 110° are recommended for optimum post emergence broadcast coverage. Nozzles that deliver COARSE spray droplets may be used to reduce spray drift provided spray volume per acre (GPA) is increased to maintain coverage of weeds. DO NOT use nozzles that produce FINE (e.g. - Cone) or EXTRA COARSE (e.g., Flood jet) spray droplets.
   b. Only apply this product when the potential for drift to adjacent non-target areas is minimal (e.g., when the wind is 10 MPH or less and is blowing away from sensitive areas). Do not apply during periods of temperature inversions.
   c. To avoid potential adverse effects to non-target areas, maintain a 25 foot buffer between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrub lands), sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.